BEFORE THE WASHINGTON UTILITIES AND TRANSPORTATION COMMISSION

DOCKET UE-240006

DOCKET UG-240007

EXH. AMM-3

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I. DESCRIPTION OF QUANTITATIVE ANALYSES

Q. What is the purpose of this exhibit?

A. Exh. AMM-3 presents details of my analysis of the cost of equity for the jurisdictional electric and natural gas utility operations of Avista Corp. ("Avista" or "the Company"). First, I will briefly summarize the concept of the cost of equity, along with the risk-return tradeoff principle fundamental to capital markets. Next, I describe my applications of the Discounted Cash Flow ("DCF") model, the Capital Asset Pricing Model ("CAPM"), the empirical form of the CAPM ("ECAPM"), a risk premium analyses based on allowed equity returns for electric utilities, and reference to expected rates of return for electric utilities. This exhibit also presents a market-based test to my utility quantitative analyses by applying the DCF model to a group of low-risk non-utility firms.

A. Overview

Q. What fundamental economic principle underlies any evaluation of investors' required return on equity ("ROE")?

A. The fundamental economic principle underlying the cost of equity concept is the notion that investors are risk averse. In capital markets where relatively risk-free assets are available (*e.g.*, U.S. Treasury securities), investors can be induced to hold riskier assets only if they are offered a premium, or additional return, above the rate of return on a risk-free asset. Because all assets compete with each other for investor funds, riskier assets must yield a higher expected rate of return than safer assets to induce investors to hold them.

Given this risk-return tradeoff, the required rate of return (k) from an asset (i) can be generally expressed as:

$$k_i = R_f + RP_i$$

where: R_f = Risk-free rate of return, and
RP_i = Risk premium required to hold riskier asset i.

Thus, the required rate of return for a particular asset at any point in time is a function of 1) the yield on risk-free assets, and 2) its relative risk, with investors demanding correspondingly larger risk premiums for assets bearing greater risk.

Q. Is there evidence that the risk-return tradeoff principle actually operates in the capital markets?

A. Yes. The risk-return tradeoff can be documented in segments of the capital markets where required rates of return can be directly inferred from market data and where generally accepted measures of risk exist. Bond yields, for example, reflect investors' expected rates of return, and bond ratings measure the risk of individual bond issues. Comparing the observed yields on government securities, which are considered free of default risk, to the yields on bonds of various rating categories demonstrates that the risk-return tradeoff does, in fact, exist.

Q. Does the risk-return tradeoff observed with fixed income securities extend to common stocks and other assets?

A. It is widely accepted that the risk-return tradeoff evidenced with long-term debt extends to all assets. Documenting the risk-return tradeoff for assets other than fixed income securities, however, is complicated by two factors. First, there is no standard measure of risk applicable to all assets. Second, for most assets – including common stock – required rates of return cannot be directly observed. Yet there is every reason to believe that investors exhibit risk aversion in deciding whether or not to hold common stocks and other assets, just as when choosing among fixed-income securities.

Q. Is this risk-return tradeoff limited to differences between firms?

A. No. The risk-return tradeoff principle applies not only to investments in different firms, but also to different securities issued by the same firm. The securities issued by a utility vary considerably in risk because they have different characteristics and priorities. As noted earlier, long-term debt is senior among all capital in its claim on a utility's net revenues and is, therefore, the least risky. The last investors in line are common shareholders. They receive only the net revenues, if any, remaining after all other claimants have been paid. As a result, the rate of return that investors require from a utility's common stock, the most junior and riskiest of its securities, must be considerably higher than the yield offered by the utility's senior, long-term debt.

Q. What are the challenges in determining a just and reasonable ROE for a regulated enterprise?

A. The actual return investors require is unobservable. Different methodologies have been developed to estimate investors' expected and required return on capital, but all such methodologies are merely theoretical tools and generally produce a range of estimates, based on different assumptions and inputs. The DCF method, which is frequently referenced and relied on by regulators, is only one theoretical approach to gain insight into the return investors require; there are numerous other methodologies for estimating the cost of capital and the ranges produced by the different approaches can vary widely. As a result, financial analysts and regulators routinely consider the results of alternative approaches in determining allowed ROEs.

Q. What does this imply with respect to estimating the ROE for a utility?

A. Although the ROE cannot be observed directly, it is a function of the returns available from other investment alternatives and the risks to which the equity capital is

exposed. Because it is not readily observable, the ROE for a particular utility must be estimated by analyzing information about capital market conditions generally, assessing the relative risks of the company specifically, and employing various quantitative methods that focus on investors' required rates of return. These various quantitative methods typically attempt to infer investors' required rates of return from stock prices, interest rates, or other capital market data. Consistent with FERC's conclusion that "[t]here is significant evidence indicating that combining estimates from different models is more accurate than relying on a single model,"[1] my evaluation of a fair ROE for the Company considers the results of multiple financial models, including the DCF, CAPM (and the related ECAPM), risk premium, and expected earnings approaches.

B. Comparable Risk Proxy Group

Q. How do you implement quantitative methods to estimate the cost of common equity for Avista?

A. Application of quantitative methods to estimate the cost of common equity requires observable capital market data, such as stock prices and beta values. Moreover, even for a firm with publicly traded stock, the cost of common equity can only be estimated. As a result, applying quantitative models using observable market data only produces an estimate that inherently includes some degree of observation error. Thus, the accepted approach to increase confidence in the results is to apply alternative quantitative methods to a proxy group of publicly traded companies that investors regard as risk-comparable. The results of the analysis for the sample of companies are relied upon to establish a range of reasonableness for the cost of equity for the specific company at issue.

[1] *Coakley v. Bangor Hydro-Elec. Co.*, 165 FERC ¶ 61,030 at P 38 (2018); *Assan of Bus. Advocating Tariff Equity v. Midcontinent Indep. Sys. Operator, Inc.*, 165 FERC ¶ 61,118 at P 40 (2018).

Q. What specific proxy group of utilities do you rely on for your analyses?

A. My analyses relied on a proxy group composed of 22 companies, which I refer to as the "Utility Group." In order to develop this group, I began with the following criteria:

1. Included in the Electric Utility Industry groups compiled by The Value Line Investment Survey ("Value Line").

2. Corporate credit ratings from Standard & Poor's Global Ratings ("S&P") and Moody's Investors Service ("Moody's") corresponding to one notch above and below the Company's current ratings. For S&P, this results in a ratings range of BBB-, BBB, and BBB+; for Moody's the range is Baa3, Baa2, or Baa1.

3. No ongoing involvement in a major merger or acquisition that would distort quantitative results.

4. No cuts in dividend payments during the past six months and no announcement of a dividend cut since that time.

Q. Are there any other publicly traded utilities that should be included in the proxy group?

A. Yes. Algonquin should also be considered in evaluating investors' cost of equity for Transco. Algonquin is not rated by Moody's, but it has been assigned a credit rating of BBB by S&P, which falls within the comparable risk band. While not yet included in Value Line's three primary Electric Utility industry groups, Algonquin is a North American diversified generation, transmission, and distribution utility with over $17 billion in total assets. A majority of Algonquin's revenues, earnings, and assets are related to its regulated utility operations,[2] and investors would regard Algonquin as a comparable investment alternative that is relevant to an evaluation of the required rate of return for Avista.

[2] For example, Algonquin reported that during 2022 regulated utility operations accounted for 84% of total revenues, with approximately 82% of regulated revenues being attributable to operations located in the United States. Algonquin Power & Utilities Corp., *Annual Information Form for the Year Ended December 31, 2022* (Mar. 17, 2023).

In addition, Emera Inc.'s electric and gas utility operations are comparable to those of the other utilities in the proxy group. Although Value Line currently includes Emera Inc. in its power industry group, rather than its utility groups, Emera Inc.'s regulated electric and gas utility operations are its dominant businesses and account for approximately 95% of consolidated net income.[3] Emera Inc.'s Florida and New Mexico utility operations account for 69% of consolidated net income.[4] Thus, investors would regard Emera Inc. as a comparable investment alternative that is relevant to an evaluation of the required rate of return for the Company.

Q. How do you evaluate the risks of the Utility Group relative to Avista?

A. My evaluation of relative risk considers four objective, published benchmarks that are widely relied on in the investment community. Credit ratings are assigned by independent rating agencies for the purpose of providing investors with a broad assessment of the creditworthiness of a firm. Ratings generally extend from triple-A (the highest) to D (in default). Other symbols (*e.g.*, "BBB+") are used to show relative standing within a category. Because the rating agencies' evaluation includes virtually all of the factors normally considered important in assessing a firm's relative credit standing, corporate credit ratings provide a broad, objective measure of overall investment risk that is readily available to investors. Although the credit rating agencies are not immune to criticism, their rankings and analyses are widely cited in the investment community and referenced by investors. Investment restrictions tied to credit ratings continue to influence

[3] Emera Inc., *Investors Presentation* (September & October 2023). https://s25.q4cdn.com/978989322/files/doc_presentations/2023/Sep/06/sept-oct-2023-marketing-deck.pdf (last visited Oct. 2, 2023).
[4] *Id.*

capital flows, and credit ratings are also frequently used as a primary risk indicator in establishing proxy groups to estimate the cost of common equity.

While credit ratings provide the most widely referenced benchmark for investment risks, other quality rankings published by investment advisory services also provide relative assessments of risks that are considered by investors in forming their expectations for common stocks. Value Line's primary risk indicator is its Safety Rank, which ranges from "1" (Safest) to "5" (Riskiest). This overall risk measure is intended to capture the total risk of a stock, and incorporates elements of stock price stability and financial strength. Given that Value Line is perhaps the most widely available source of investment advisory information, its Safety Rank provides useful guidance regarding the risk perceptions of investors.

The Financial Strength Rating is designed as a guide to overall financial strength and creditworthiness, with the key inputs including financial leverage, business volatility measures, and company size. Value Line's Financial Strength Ratings range from "A++" (strongest) down to "C" (weakest) in nine steps. Finally, Value Line's beta measures a utility's stock price volatility relative to the market as a whole. A stock that tends to respond less to market movements has a beta less than 1.00, while stocks that tend to move more than the market have betas greater than 1.00. Beta is the only relevant measure of investment risk under modern capital market theory, and is widely cited in academics and in the investment industry as a guide to investors' risk perceptions. Moreover, in my experience Value Line is the most widely referenced source for beta in regulatory proceedings. As noted in *New Regulatory Finance*:

> Value Line is the largest and most widely circulated independent investment advisory service, and influences the expectations of a large number of institutional and individual investors. … Value Line betas are computed on a theoretically sound basis using a broadly based market index, and they are adjusted for the regression tendency of betas to converge to 1.00.[5]

Q. How do the overall risks of your proxy group compare with Avista?

A. Table 1 compares the Utility Group with Avista across five key indicators of investment risk:

TABLE 1
COMPARISON OF RISK INDICATORS

			Value Line		
			Safety	Financial	
	S&P	Moody's	Rank	Strength	Beta
Utility Group	BBB+	Baa2	2	A	0.94
Avista Corp.	BBB	Baa2	2	B++	0.90

Q. What does this comparison indicate regarding investors' assessment of the relative risk associated with your Utility Group?

A. As shown above, Avista's S&P rating is one notch lower than the average for the proxy group, indicating slightly greater risk, while the Company's credit rating from Moody's is identical to the Utility Group average. Likewise, the average Value Line Safety Rank for the Utility Group is equivalent to that assigned to the Company, while Avista's Financial Strength measure indicates slightly greater risk. Meanwhile, Avista's beta value is somewhat lower than the average for the Utility Group, indicating slightly less risk. Considered together, this comparison of objective measures, which consider a broad spectrum of risks, including financial and business position, and exposure to firm-specific factors, indicates that investors would likely conclude that the overall investment risks for Avista are comparable to those of the firms in the Utility Group.

[5] Roger A. Morin, *New Regulatory Finance*, Pub. Util. Reports (2006) at 71.

C. Discounted Cash Flow Analyses

Q. How is the DCF model used to estimate the cost of equity?

A. DCF models assume that the price of a share of common stock is equal to the present value of the expected cash flows (i.e., future dividends and stock price) that will be received while holding the stock, discounted at investors' required rate of return. Rather than developing annual estimates of cash flows into perpetuity, the DCF model can be simplified to a "constant growth" form:[6]

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

where: P_0 = Current price per share;
D_1 = Expected dividend per share in the coming year;
k_e = Cost of equity;
g = Investors' long-term growth expectations.

The cost of equity (k_e) can be isolated by rearranging terms:

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

This constant growth form of the DCF model recognizes that the rate of return to stockholders consists of two parts: 1) dividend yield (D_1/P_0), and 2) growth (g). In other words, investors expect to receive a portion of their total return in the form of current dividends and the remainder through price appreciation.

Q. What steps are required to apply the DCF model?

A. The first step is to determine the expected dividend yield (D_1/P_0) for the firm in question. This is usually calculated based on an estimate of dividends to be paid in the

[6] The constant growth DCF model is dependent on a number of strict assumptions, which in practice are never met. These include a constant growth rate for both dividends and earnings; a stable dividend payout ratio; the discount rate exceeds the growth rate; a constant growth rate for book value and price; a constant earned rate of return on book value; no sales of stock at a price above or below book value; a constant price-earnings ratio; a constant discount rate (*i.e.*, no changes in risk or interest rate levels and a flat yield curve); and all the above extend to infinity. Nevertheless, the DCF method provides a workable and practical approach to estimate investors' required return that is widely referenced in utility ratemaking.

coming year divided by the current price of the stock. The second step is to estimate investors' long-term growth expectations (*g*) for the firm. The final step is to sum the firm's dividend yield and estimated growth rate to arrive at an estimate of its cost of common equity.

Q. How do you determine the dividend yield for the Utility Group?

A. Estimates of dividends to be paid by each of these utilities over the next twelve months, obtained from Value Line, serve as D_1. This annual dividend is then divided by a 30-day average stock price for each utility to arrive at the expected dividend yield. The stock prices, expected dividends, and resulting dividend yields for the firms in the Utility Group are presented on page 1 of Exh. AMM-7.

Q. What is the next step in applying the constant growth DCF model?

A. The next step is to evaluate long-term growth expectations, or "*g*", for the firm in question. In constant growth DCF theory, earnings, dividends, book value, and market price are all assumed to grow in lockstep, and the growth horizon of the DCF model is infinite. But implementation of the DCF model is more than just a theoretical exercise; it is an attempt to replicate the mechanism investors used to arrive at observable stock prices. A wide variety of techniques can be used to derive growth rates, but the only "*g*" that matters in applying the DCF model is the value that investors expect.

Q. What are investors most likely to consider in developing their long-term growth expectations?

A. Implementing the DCF model seeks to replicate the forward-looking evaluation of real-world investors. In the case of utilities, dividend growth rates are not likely to provide a meaningful guide to investors' current growth expectations. Utility dividend policies reflect the need to accommodate business risks and investment

requirements in the industry, as well as potential uncertainties in the capital markets. As a result, dividend growth in the utility industry has lagged growth in earnings as utilities conserve financial resources to provide a hedge against heightened uncertainties.

A measure that plays a pivotal role in determining investors' long-term growth expectations are future trends in earnings per share ("EPS"), which provide the source for future dividends and ultimately support share prices. The importance of earnings in evaluating investors' expectations and requirements is well accepted in the investment community, and surveys of analytical techniques relied on by professional analysts indicate that growth in earnings is far more influential than trends in dividends per share ("DPS").

The availability of projected EPS growth rates also is key to investors relying on this measure as compared to future trends in DPS. Apart from Value Line, investment advisory services do not generally publish comprehensive DPS growth projections, and this scarcity of dividend growth rates relative to the abundance of earnings forecasts attests to their relative influence. The fact that securities analysts focus on EPS growth, and that DPS growth rates are not routinely published, indicates that projected EPS growth rates are likely to provide a superior indicator of the future long-term growth expected by investors.

Q. What are security analysts currently projecting in the way of growth for the firms in the Utility Proxy Group?

A. The projected EPS growth rates for each of the firms in the Utility Group reported by Value Line, IBES,[7] and Zacks Investment Research ("Zacks") are displayed on page 2 of Exh. AMM-7.

[7] Formerly I/B/E/S International, Inc., IBES growth rates are now compiled and published by Refinitiv.

Q. How else are investors' expectations of future long-term growth prospects often estimated when applying the constant growth DCF model?

A. In constant growth theory, growth in book equity will be equal to the product of the earnings retention ratio (one minus the dividend payout ratio) and the earned rate of return on book equity. Furthermore, if the earned rate of return and the payout ratio are constant over time, growth in earnings and dividends will be equal to growth in book value. Even though these conditions are never met in practice, this "sustainable growth" approach may provide a rough guide for evaluating a firm's growth prospects and is frequently proposed in regulatory proceedings.

The sustainable growth rate is calculated by the formula, $g = br+sv$, where "b" is the expected retention ratio, "r" is the expected earned return on equity, "s" is the percent of common equity expected to be issued annually as new common stock, and "v" is the equity accretion rate. Under DCF theory, the "sv" factor is a component of the growth rate designed to capture the impact of issuing new common stock at a price above, or below, book value. The sustainable, "br+sv" growth rates for each firm in the Utility Group are summarized on page 2 of Exh. AMM-7, with the underlying details being presented on Exh. AMM-8.

The sustainable growth rate analysis shown in Exhibit AMM-8 incorporates an "adjustment factor" because Value Line's reported returns are based on year-end book values. Since earnings is a flow over the year while book value is determined at a given point in time, the measurement of earnings and book value are distinct concepts. It is this fundamental difference between a flow (earnings) and point estimate (book value) that makes it necessary to adjust to mid-year in calculating the ROE. Given that book value will increase or decrease over the year, using year-end book value (as Value Line does)

understates or overstates the average investment that corresponds to the flow of earnings. To address this concern, earnings must be matched with a corresponding representative measure of book value, or the resulting ROE will be distorted. The adjustment factor determined in Exhibit AMM-8 is solely a means of converting Value Line's end-of-period values to an average return over the year, and the formula for this adjustment is supported in recognized textbooks and has been adopted by other regulators.[8].

Q. Are there significant shortcomings associated with the "br+sv" growth rate?

A. Yes. First, in order to calculate the sustainable growth rate, it is necessary to develop estimates of investors' expectations for four separate variables; namely, "b", "r", "s", and "v." Given the inherent difficulty in forecasting each parameter and the difficulty of estimating the expectations of investors, the potential for measurement error is significantly increased when using four variables, as opposed to referencing a direct projection for EPS growth. Second, empirical research in the finance literature indicates that sustainable growth rates are not as significantly correlated to measures of value, such as share prices, as are analysts' EPS growth forecasts.[9] The "sustainable growth" approach is included for completeness, but evidence indicates that analysts' forecasts provide a superior and more direct guide to investors' growth expectations. Accordingly, I give less weight to cost of equity estimates based on br+sv growth rates in evaluating the results of the DCF model.

[8] *See,* Roger A. Morin, *New Regulatory Finance,* Pub. Utils. Reports, Inc. (2006) at 305-306; *Bangor Hydro-Electric Co. et al*., 122 FERC ¶ 61,265 at n.12 (2008).
[9] Roger A. Morin, *New Regulatory Finance*, Pub. Util. Reports, Inc. (2006) at 307.

Q. What cost of equity estimates are implied for the Utility Group using the DCF model?

A. After combining the dividend yields and respective growth projections for each utility, the resulting cost of equity estimates are shown on page 3 of Exh. AMM-7.

Q. In evaluating the results of the constant growth DCF model, is it appropriate to eliminate illogical estimates?

A. Yes. When applying quantitative methods to estimate the cost of equity, it is essential that the resulting values pass fundamental tests of reasonableness and economic logic. Accordingly, DCF estimates that are implausibly low or high should be eliminated when evaluating the results of this method.

Q. How do you evaluate DCF estimates at the low end of the range?

A. My evaluation of DCF estimates at the low end of the range is based on the fundamental risk-return tradeoff, which holds that investors will only take on more risk if they expect to earn a return to compensate them for the greater uncertainty. Because common stocks lack the protections associated with an investment in long-term bonds, a utility's common stock imposes far greater risks on investors. As a result, the rate of return that investors require from a utility's common stock is considerably higher than the yield offered by senior, long-term debt. Consistent with this principle, DCF results that are not sufficiently higher than the yields available on less risky utility bonds must be eliminated.

Q. Have similar tests been applied by regulators?

A. Yes. FERC has noted that adjustments are justified where applications of the DCF approach and other methods produce illogical results. FERC evaluates low-end DCF results against observable yields on long-term public utility debt and has recognized that it is

appropriate to eliminate estimates that do not sufficiently exceed this threshold,[10] and also excludes estimates that are "irrationally or anomalously high."[11]

Q. Do you exclude any estimates at the low or high end of the range of DCF results?

A. Yes, As highlighted on page 3 of Exhibit AMM-7, I eliminate low-end DCF estimates ranging from -7.5 percent to 7.5 percent. Based on my professional experience and the risk-return tradeoff principle that is fundamental to finance, it is inconceivable that investors are not requiring a substantially higher rate of return for holding common stock. I also exclude a high-end cost of equity estimate of 16.6 percent.

After these exclusions, the lower end of the DCF results is set by a cost of equity estimate of 7.6 percent, while the upper end is established by a cost of equity estimate of 15.7%. While a 15.7 percent cost of equity estimate may exceed the majority of the remaining values, low-end DCF estimates in the 7.6 to 7.8 percent range are assuredly far below investors' required rate of return. Taken together and considered along with the balance of the results, the remaining values provide a reasonable basis on which to frame the range of plausible DCF estimates and evaluate investors' required rate of return.

Q. What cost of equity estimates are implied by your DCF results for the Utility Group?

A. As shown on page 3 of Exh. AMM-7 and summarized in Table 2, below, after eliminating illogical values, application of the constant growth DCF model results in the following cost of equity estimates:

[10] See, e.g., *Southern California Edison Co*., 131 FERC ¶ 61,020 at P 55 (2010).
[11] *Ass'n of Bus. Advocating Tariff Equity v. Midcontinent Indep. Sys. Operator, Inc*., 171 FERC ¶ 61,154 at P 152 (2020).

TABLE 2
DCF RESULTS – UTILITY GROUP

Growth Rate	Average	Midpoint
Value Line	9.7%	9.7%
IBES	10.7%	11.9%
Zacks	9.9%	10.3%
br + sv	9.2%	9.7%

D. Capital Asset Pricing Model

Q. Please describe the CAPM.

A. The CAPM is a theory of market equilibrium that measures risk using the beta coefficient. Assuming investors are fully diversified, the relevant risk of an individual asset (*e.g.*, common stock) is its volatility relative to the market as a whole, with beta reflecting the tendency of a firm's stock price to follow changes in the market. A stock that tends to respond less to market movements has a beta less than 1.00, while stocks that tend to move more than the market have betas greater than 1.00. The CAPM is mathematically expressed as:

$$R_j = R_f + \beta_j(R_m - R_f)$$

where: R_j = required rate of return for stock j;
R_f = risk-free rate;
R_m = expected return on the market portfolio; and,
β_j = beta, or systematic risk, for stock j.

Under the CAPM formula above, a stock's required return is a function of the risk-free rate (R_f), plus a risk premium that is scaled to reflect the relative volatility of a firm's stock price, as measured by beta (β). Like the DCF model, the CAPM is an *ex-ante,* or forward-looking model based on expectations of the future. As a result, in order to produce a meaningful estimate of investors' required rate of return, the CAPM must be applied using

estimates that reflect the expectations of actual investors in the market, not with backward-looking, historical data.

Q. How do you apply the CAPM to estimate the cost of common equity?

A. Application of the CAPM to the Utility Group based on a forward-looking estimate for investors' required rate of return from common stocks is presented on Exh. AMM-9. In order to capture the expectations of today's investors in current capital markets, the expected market rate of return is estimated by conducting a DCF analysis on the dividend paying firms in the S&P 500.

The dividend yield for each firm is obtained from Value Line, and the growth rate is equal to the average of the earnings growth projections for each firm published by Value Line, IBES, and Zacks with each firm's dividend yield and growth rate being weighted by its proportionate share of total market value. After removing growth rates that were negative or greater than 20%, the weighted average of the projections for the individual firms implies an average growth rate over the next five years of 9.7 percent. Combining this average growth rate with a year-ahead dividend yield of 2.0 percent results in a current cost of common equity estimate for the market as a whole (R_m) of 11.7 percent.[12] Subtracting a 4.4 percent risk-free rate based on the average yield on 30-year Treasury bonds for the six months ending November 2023 produces a market equity risk premium of 7.3 percent.

Q. What beta values do you use?

A. As noted earlier in my discussion of risk measures for the proxy group, I rely on the beta values reported by Value Line, which in my experience is the most widely referenced source for beta in regulatory proceedings.

[12] Any difference in the summation is due to rounding.

Q. What else should be considered in applying the CAPM?

A. Financial research indicates that the CAPM does not fully account for observed differences in rates of return attributable to firm size. Accordingly, a modification is required to account for this size effect. As explained by Morningstar:

> One of the most remarkable discoveries of modern finance is the finding of a relationship between firm size and return. On average, small companies have higher returns than larger ones. . . . The relationship between firm size and return cuts across the entire size spectrum; it is not restricted to the smallest stocks.[13]

According to the CAPM, the expected return on a security should consist of the riskless rate, plus a premium to compensate for the systematic risk of the particular security. The degree of systematic risk is represented by the beta coefficient. The need for the size adjustment arises because differences in investors' required rates of return that are related to firm size are not fully captured by beta. To account for this, researchers have developed size premiums that need to be added to CAPM cost of equity estimates to account for the level of a firm's market capitalization in determining the CAPM cost of equity.[14] Accordingly, my CAPM analyses incorporated an adjustment to recognize the impact of size distinctions, as measured by the market capitalization for the firms in the Utility Group.

Q. What is the basis for the size adjustment?

A. The size adjustment required in applying the CAPM is based on the finding that *after controlling for risk differences reflected in beta*, the CAPM overstates returns to companies with larger market capitalizations and understates returns for relatively smaller firms. The size adjustments utilized in my analysis are sourced from Kroll, who now publish the well-known compilation of capital market series originally developed by

[13] Morningstar, *2015 Ibbotson SBBI Classic Yearbook*, at p. 99 (footnote omitted).
[14] Originally compiled by Ibbotson Associates and published in their annual yearbook entitled, "Stocks, Bonds, Bills and Inflation," these size premia are now developed by Duff & Phelps and presented in its *Valuation Handbook – Guide to Cost of Capital*.

Professor Roger G. Ibbotson of the Yale School of Management, and most recently published by Kroll. Calculation of the size adjustments involve the following steps:

1. Divide all stocks traded on the NYSE, NYSE MKT, and NASDAQ indices into deciles based on their market capitalization.
2. Using the average beta value for each decile, calculate the implied excess return over the risk-free rate using the CAPM.
3. Compare the calculated excess returns based on the CAPM to the actual excess returns for each decile, with the difference being the increment of return that is related to firm size, or "size adjustment."

New Regulatory Finance observed that "small market-cap stocks experience higher returns than large market-cap stocks with equivalent betas," and concluded that "the CAPM understates the risk of smaller utilities, and a cost of equity based purely on a CAPM beta will therefore produce too low an estimate."[15] As FERC has recognized, "[t]his type of size adjustment is a generally accepted approach to CAPM analyses."[16]

Q. Is this size adjustment related to the relative size of Avista as compared with the proxy group?

A. No. I am not proposing to apply a general size risk premium in evaluating a fair and reasonable ROE for the Company and my recommendation does not include any adjustment related to the relative size of Avista. Rather, this size adjustment is specific to the CAPM and merely corrects for an observed inability of the beta measure to fully reflect the risks perceived by investors for the firms in the proxy groups.

[15] Roger A. Morin, *New Regulatory Finance*, Pub. Utils. Reports, Inc. (2006) at 187.
[16] Opinion No. 531-B at P 117.

Q. What cost of equity is indicated for the Utility Group using the CAPM approach?

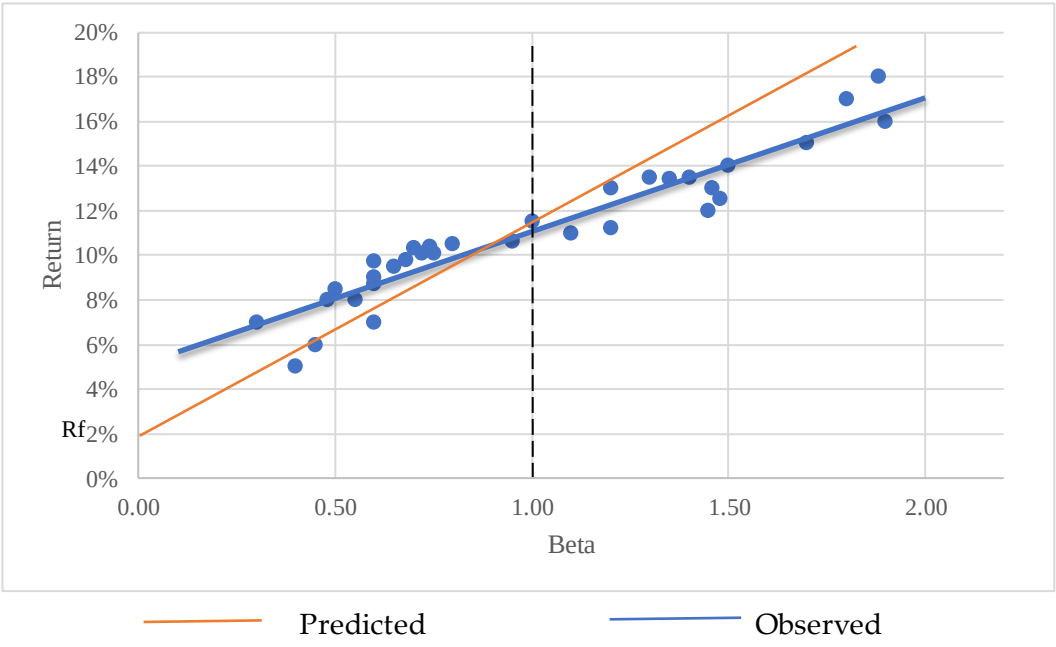
A. As shown on Exh. AMM-9, the CAPM approach implies an average ROE of 11.3 percent, and 11.7 percent after adjusting for the impact of firm size.

E. Empirical Capital Asset Pricing Model

Q. How does the ECAPM approach differ from traditional applications of the CAPM?

A. Empirical tests of the CAPM have shown that low-beta securities earn returns somewhat higher than the CAPM would predict, and high-beta securities earn less than predicted. In other words, the CAPM tends to overstate the actual sensitivity of the cost of capital to beta, with low-beta stocks tending to have higher returns and high-beta stocks tending to have lower risk returns than predicted by the CAPM. This is illustrated graphically in the figure below:

FIGURE 1
CAPM – PREDICTED VS. OBSERVED RETURNS



Because the betas of utility stocks, including those in the Utility Group, are generally less than 1.0, this implies that cost of equity estimates based on the traditional CAPM would understate the cost of equity. This empirical finding is widely reported in the finance literature, as summarized in *New Regulatory Finance*:

> As discussed in the previous section, several finance scholars have developed refined and expanded versions of the standard CAPM by relaxing the constraints imposed on the CAPM, such as dividend yield, size, and skewness effects. These enhanced CAPMs typically produce a risk-return relationship that is flatter than the CAPM prediction in keeping with the actual observed risk-return relationship. The ECAPM makes use of these empirical findings.[17]

As discussed in *New Regulatory Finance*, based on a review of the empirical evidence, the expected return on a security is related to its risk by the ECAPM, which is represented by the following formula:

$$R_j = R_f + 0.25(R_m - R_f) + 0.75[\beta_j(R_m - R_f)]$$

where: R_j = required rate of return for stock j;
R_f = risk-free rate;
R_m = expected return on the market portfolio; and,
β_j = beta, or systematic risk, for stock j.

Like the CAPM formula presented earlier, the ECAPM represents a stock's required return as a function of the risk-free rate (R_f), plus a risk premium. In the formula above, this risk premium is composed of two parts: (1) the market risk premium ($R_m - R_f$) weighted by a factor of 25 percent, and (2) a company-specific risk premium based on the stocks relative volatility [$(\beta)(R_m - R_f)$] weighted by 75 percent. This ECAPM equation, and its associated weighting factors, recognizes the observed relationship between standard CAPM estimates

[17] Roger A. Morin, *New Regulatory Finance*, Pub. Util. Reports, Inc. (2006) at 189.

and the cost of capital documented in the financial research, and corrects for the understated returns that would otherwise be produced for low beta stocks.

Q. Is the ECAPM formula above consistent with the use of Value Line betas?

A. Yes. Value Line beta values are adjusted for the observed tendency of beta to converge toward the mean value of 1.00 over time. The purpose of this adjustment is to refine beta values determined using historical data to better match forward-looking estimates of beta, which are the relevant parameter in applying the CAPM or ECAPM models. Meanwhile, the ECAPM does not involve any adjustment to beta whatsoever. Rather, it represents a formal recognition of findings in the financial literature that the observed risk-return tradeoff illustrated in Figure 1 is flatter than predicted by the CAPM. In other words, even if a firm's beta value were estimated with perfect precision, the CAPM would still understate the return for low-beta stocks and overstate the return for high-beta stocks. The ECAPM and the use of adjusted betas represent two separate and distinct issues in estimating returns.

Q. What cost of equity estimates are indicated by the ECAPM?

A. My applications of the ECAPM are based on the same forward-looking market rate of return, risk-free rates, and beta values discussed earlier in connections with the CAPM. As shown on Exh. AMM-10, applying the forward-looking ECAPM approach to the firms in the Utility Group results in an average ROE estimate of 11.4 percent, or 11.8 percent after incorporating the size adjustment corresponding to the market capitalization of the individual utilities.

F. Risk Premium Approach

Q. Please briefly describe the risk premium method.

A. The risk premium method of estimating investors' required rate of return extends to common stocks the risk-return tradeoff observed with bonds. The cost of equity is estimated by first determining the additional return investors require to forgo the relative safety of bonds and to bear the greater risks associated with common stock, and by then adding this equity risk premium to the current yield on bonds. Like the DCF model, the risk premium method is capital market oriented. However, unlike DCF models, which indirectly impute the cost of equity, risk premium methods directly estimate investors' required rate of return by adding an equity risk premium to observable bond yields.

Q. Is the risk premium approach a widely accepted method for estimating the cost of equity?

A. Yes. The risk premium approach is based on the fundamental risk-return principle that is central to finance, which holds that investors will require a premium in the form of a higher return in order to assume additional risk. This method is routinely referenced by the investment community and in academia and regulatory proceedings, and provides an important tool in estimating a fair ROE for Avista.

Q. How do you implement the risk premium method?

A. Estimates of equity risk premiums for utilities are based on surveys of previously authorized ROEs. Authorized ROEs presumably reflect regulatory commissions' best estimates of the cost of equity, however determined, at the time they issued their final order. Moreover, allowed ROEs are an important consideration for investors and have the potential to influence other observable investment parameters, including credit ratings and borrowing costs. Thus, when considered in the context of a complete and rigorous analysis,

this data provides a logical and frequently referenced basis for estimating equity risk premiums for regulated utilities.

Q. How do you calculate the equity risk premiums based on allowed returns?

A. The ROEs authorized for electric utilities by regulatory commissions across the U.S. are compiled by S&P Global Market Intelligence and published in its *RRA Regulatory Focus* report. On page 2 of Exh. AMM-11, the average yield on long-term public utility bonds is subtracted from the average allowed rate of return on common equity for electric utilities to calculate equity risk premiums for each year between 1974 and 2022.[18] As shown there, over this period equity risk premiums for electric utilities average 3.89 percent and the yields on public utility bonds average 7.83 percent.

Q. Is there any capital market relationship that must be considered when implementing the risk premium method?

A. Yes. The magnitude of equity risk premiums is not constant and equity risk premiums tend to move inversely with interest rates. In other words, when interest rate levels are relatively high, equity risk premiums narrow, and when interest rates are relatively low, equity risk premiums widen. The implication of this inverse relationship is that the cost of equity does not move as much as, or in lockstep with, interest rates. Accordingly, for a 1 percent increase or decrease in interest rates, the cost of equity may only rise or fall some fraction of 1 percent. Therefore, when implementing the risk premium method, adjustments may be required to incorporate this inverse relationship if current interest rate levels diverge from the average interest rate level represented in the data set.

[18] My analysis encompasses the entire period for which a consistent set of published data is available. Yield averages reported by Moody's are for seasoned bonds with a remaining maturity of 20 years or more.

Current bond yields are lower than those prevailing over the risk premium study periods. Given that equity risk premiums move inversely with interest rates, these lower bond yields also imply an increase in the equity risk premium that investors require to accept the higher uncertainties associated with an investment in utility common stocks versus bonds. In other words, higher required equity risk premiums offset the impact of declining interest rates on the ROE.

Q. Has this inverse relationship been documented in the financial research?

A. Yes. There is considerable empirical evidence that when interest rates are relatively high, equity risk premiums narrow, and when interest rates are relatively low, equity risk premiums are greater. This inverse relationship between equity risk premiums and interest rates has been widely reported in the financial literature. As summarized by *New Regulatory Finance*:

> Published studies by Brigham, Shome, and Vinson (1985), Harris (1986), Harris and Marston (1992, 1993), Carleton, Chambers, and Lakonishok (1983), Morin (2005), and McShane (2005), and others demonstrate that, beginning in 1980, risk premiums varied inversely with the level of interest rates – rising when rates fell and declining when rates rose.[19]

Other regulators have also recognized that, while the cost of equity trends in the same direction as interest rates, these variables do not move in lock-step.[20] This relationship is illustrated in the figure on page 3 of Exh. AMM-11.

Q. What cost of equity is implied by the risk premium method using surveys of allowed ROEs?

A. Because risk premiums move inversely with interest rates and current bond yields are significantly lower than the average over the study period, it is necessary to adjust

[19] Roger A. Morin, *New Regulatory Finance*, Pub. Util. Reports (2006) at 128.
[20] *See, e.g.*, California Public Utilities Commission, Decision 08-05-035 (May 29, 2008); Entergy Mississippi Formula Rate Plan FRP-7, https://cdn.entergy-mississippi.com/userfiles/content/price/tariffs/eml_frp.pdf (last visited Dec. 12, 2023); *Martha Coakley et al.*, 147 FERC ¶ 61,234 at P 147 (2014).

the average equity risk premium over the study period to reflect the impact of changes in bond yields. Based on the regression output between the interest rates and equity risk premiums displayed on page 3 of Exh. AMM-11, the equity risk premium for electric utilities increased approximately 43 basis points for each percentage point drop in the yield on average public utility bonds. As illustrated on page 1 of Exh. AMM-11, with the yield on average public utility bonds for the six months ending November 2023 being 5.85 percent, this implied a current equity risk premium of 4.74 percent for electric utilities. Adding this equity risk premium to the yield on Baa utility bonds of 6.09 percent produces a current cost of equity of 10.83 percent.

G. Expected Earnings Approach

Q. What other analyses do you conduct to estimate the cost of common equity?

A. I also evaluate the cost of common equity using the expected earnings method. Reference to rates of return available from alternative investments of comparable risk can provide an important benchmark in assessing the return necessary to assure confidence in the financial integrity of a firm and its ability to attract capital. This expected earnings approach is consistent with the economic underpinnings for a fair rate of return established by the U.S. Supreme Court in *Bluefield*[21] and *Hope*.[22] Moreover, it avoids the complexities and limitations of capital market methods and instead focuses on the returns earned on book equity, which are readily available to investors.

Q. What economic premise underlies the expected earnings approach?

A. The expected earnings approach is based on the concept that investors compare each investment alternative with the next best opportunity. If the utility is unable

[21] *Bluefield Water Works & Improvement Co. v. Pub. Serv. Comm'n*, 262 U.S. 679 (1923) ("*Bluefield*").
[22] *Federal Power Comm'n v. Hope Natural Gas Co*., 320 U.S. 391 (1944) ("*Hope*").

to offer a return similar to that available from other opportunities of comparable risk, investors will become unwilling to supply the capital on reasonable terms. For existing investors, denying the utility an opportunity to earn what is available from other similar risk alternatives prevents them from earning their opportunity cost of capital. Such an outcome would violate the *Hope* and *Bluefield* standards and undermine the utility's access to capital on reasonable terms.

Q. How is the expected earnings approach typically implemented?

A. The traditional comparable earnings test identifies a group of companies that are believed to be comparable in risk to the utility. The actual earnings of those companies on the book value of their investment are then compared to the allowed return of the utility. While the traditional comparable earnings test is implemented using historical data taken from the accounting records, it is also common to use projections of returns on book investment, such as those published by recognized investment advisory publications (*e.g.*, Value Line). Because these returns on book value equity are analogous to the allowed return on a utility's rate base, this measure of opportunity costs results in a direct, "apples to apples" comparison.

Moreover, regulators do not set the returns that investors earn in the capital markets, which are a function of dividend payments and fluctuations in common stock prices, both of which are outside their control. Regulators can only establish the allowed ROE, which is applied to the book value of a utility's investment in rate base, as determined from its accounting records. This is analogous to the expected earnings approach, which measures the return that investors expect the utility to earn on book value. As a result, the expected

earnings approach provides a meaningful guide to ensure that the allowed ROE is similar to what other utilities of comparable risk will earn on invested capital.

This expected earnings test does not require theoretical models to indirectly infer investors' perceptions from stock prices or other market data. As long as the proxy companies are similar in risk, their expected earned returns on invested capital provide a direct benchmark for investors' opportunity costs that is independent of fluctuating stock prices, market-to-book ratios, debates over DCF growth rates, or the limitations inherent in any theoretical model of investor behavior.

Q. What cost of equity is indicated for utilities based on the expected earnings approach?

A. For the firms in the Utility Group, the year-end returns on common equity projected by Value Line over its forecast horizon are shown on Exh. AMM-12. As I explained earlier in my discussion of the br+sv growth rates used in applying the DCF model, Value Line's returns on common equity are calculated using year-end equity balances, which understates the average return earned over the year.[23] Accordingly, these year-end values are converted to average returns using the same adjustment factor discussed earlier and developed on Exh. AMM-8. As shown on Exh. AMM-12, Value Line's projections for the Utility Group suggest an average ROE of approximately 10.8 percent.

II. NON-UTILITY BENCHMARK

Q. What is the purpose of this section of your testimony?

A. This section presents the results of my DCF analysis applied to a group of low-risk firms in the competitive sector, which I refer to as the "Non-Utility Group." This

[23] For example, to compute the annual return on a passbook savings account with a beginning balance of $1,000 and an ending balance of $5,000, the interest income would be divided by the average balance of $3,000. Using the $5,000 balance at the end of the year would understate the actual return.

analysis is not directly considered in arriving at my recommended ROE range of reasonableness; however, it is my opinion that this is a relevant consideration in evaluating a fair and reasonable ROE for the Company's utility operations.

Q. Do utilities have to compete with non-regulated firms for capital?

A. Yes. The cost of capital is an opportunity cost based on the returns that investors could realize by putting their money in other alternatives. The total capital invested in utility stocks is only the tip of the iceberg of total common stock investment, and there is a myriad of other enterprises available to investors beyond those in the utility industry. Utilities must compete for capital, not just against firms in their own industry, but with other investment opportunities of comparable risk. Indeed, modern portfolio theory is built on the assumption that rational investors will hold a diverse portfolio of stocks, not just companies in a single industry.

Q. Is it consistent with the *Bluefield* and *Hope* cases to consider investors' required ROE for non-utility companies?

A. Yes. The cost of equity capital in the competitive sector of the economy forms the very underpinning for utility ROEs because regulation purports to serve as a substitute for the actions of competitive markets. The Supreme Court has recognized that it is the degree of risk, not the nature of the business, which is relevant in evaluating an allowed ROE for a utility. The *Bluefield* case refers to "business undertakings attended with comparable risks and uncertainties." It does not restrict consideration to other utilities. Similarly, the *Hope* case states:

> By that standard, the return to the equity owner should be commensurate with returns on investments in other enterprises having corresponding risks.[24]

[24] *Federal Power Comm'n v. Hope Natural Gas Co.*, 320 U.S. 391 (1944) ("*Hope*").

As in the *Bluefield* decision, there is nothing to restrict "other enterprises" solely to the utility industry.

Q. Does consideration of the results for the Non-Utility Group make the estimation of the cost of equity using the DCF model more reliable?

A. Yes. The estimates of growth from the DCF model depend on analysts' forecasts. It is possible for utility growth rates to be distorted by short-term trends in the industry, or by the industry falling into favor or disfavor by analysts. Such distortions could result in biased DCF estimates for utilities. Because the Non-Utility Group includes low risk companies from many industries, it helps to insulate against any possible distortion that may be present in the results for a particular sector.

Q. What criteria do you apply to develop the Non-Utility Group?

A. The comparable risk proxy group is composed of those U.S. companies followed by Value Line that:

1) pay common dividends;
2) have a Safety Rank of "1";
3) have a Financial Strength Rating of "A" or greater;
4) have a beta of less than 1.00; and
5) have investment grade credit ratings from S&P and Moody's.

Q. How do the overall risks of this Non-Utility Group compare with the Utility Group and Avista?

A. Table 3 compares the Non-Utility Group with the Utility Group and Avista across the measures of investment risk discussed earlier:

TABLE 3
COMPARISON OF RISK INDICATORS

			Value Line		
			Safety	Financial	
	S&P	Moody's	Rank	Strength	Beta
Non-Utility Group	A-	A2	1	A+	0.80
Utility Group	BBB+	Baa2	2	A	0.94
Avista Corp.	BBB	Baa2	2	B++	0.90

As shown above, all of the risk indicators for the Non-Utility Group suggest less risk than for the Utility Group and Avista.

The companies that make up the Non-Utility Group are representative of the pinnacle of corporate America. These firms, which include household names such as Coca-Cola, Procter & Gamble, and Walmart, have long corporate histories, well-established track records, and exceedingly conservative risk profiles. Many of these companies pay dividends on a par with utilities, with the dividend yield for the group averaging 2.3 percent. Moreover, because of their significance and name recognition, these companies receive intense scrutiny by the investment community, which increases confidence that published growth estimates are representative of the consensus expectations reflected in common stock prices.

Q. What are the results of your DCF analysis for the Non-Utility Group?

A. I apply the DCF model to the Non-Utility Group using the same analysts EPS growth projections described earlier for the Utility Group, with the results being presented in Exh. AMM-14. As summarized in Table 4, below, application of the constant growth DCF model resulted in the following cost of equity estimates:

TABLE 4
DCF RESULTS – NON-UTILITY GROUP

Growth Rate	Average	Midpoint
Value Line	10.5%	11.0%
IBES	10.9%	11.4%
Zacks	11.0%	11.7%

As discussed earlier, reference to the Non-Utility Group is consistent with established regulatory principles. Required returns for utilities should be in line with those of non-utility firms of comparable risk operating under the constraints of free competition. Because the actual cost of equity is unobservable, and DCF results inherently incorporate a degree of error, cost of equity estimates for the Non-Utility Group provide an important benchmark in evaluating a fair and reasonable ROE for Avista.