BEFORE THE WASHINGTON UTILITIES AND TRANSPORTATION COMMISSION

DOCKET NO. UE-20_____

DOCKET NO. UG-20_____

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 capital market estimates 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"), 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 readily 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.

Q. Is it customary to consider the results of multiple approaches when evaluating a just and reasonable ROE?

A. Yes. In my experience, financial analysts and regulators routinely consider the results of alternative approaches in determining allowed ROEs. It is widely recognized that no single method can be regarded as failsafe; with all approaches having advantages and

shortcomings. As the Federal Energy Regulatory Commission ("FERC") has noted, "The determination of rate of return on equity starts from the premise that there is no single approach or methodology for determining the correct rate of return."[1] More recently, FERC recognized the potential for any application of the DCF model to produce unreliable results.[2] Similarly, a publication of the Society of Utility and Regulatory Financial Analysts concluded that:

> Each model requires the exercise of judgment as to the reasonableness of the underlying assumptions of the methodology and on the reasonableness of the proxies used to validate the theory. Each model has its own way of examining investor behavior, its own premises, and its own set of simplifications of reality. Each method proceeds from different fundamental premises, most of which cannot be validated empirically. Investors clearly do not subscribe to any singular method, nor does the stock price reflect the application of any one single method by investors.[3]

As this treatise succinctly observed, "no single model is so inherently precise that it can be relied on solely to the exclusion of other theoretically sound models."[4] Similarly, *New Regulatory Finance* concluded that:

> There is no single model that conclusively determines or estimates the expected return for an individual firm. Each methodology possesses its own way of examining investor behavior, its own premises, and its own set of simplifications of reality. Each method proceeds from different fundamental premises that cannot be validated empirically. Investors do not necessarily subscribe to any one method, nor does the stock price reflect the application of any one single method by the price-setting investor. There is no monopoly as to which method is used by investors. In the absence of any hard evidence as to which method outdoes the other, all relevant evidence should be used and weighted equally, in order to minimize judgmental error, measurement error, and conceptual infirmities.[5]

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[1] *Northwest Pipeline Co.*, Opinion No. 396-C, 81 FERC ¶ 61,036 at 4 (1997).
[2] Opinion No. 531, 147 FERC ¶ 61,234 at P 41 (2014).
[3] David C. Parcell, *The Cost of Capital – A Practitioner's Guide*, Society of Utility and Regulatory Financial Analysts (2010) at 84.
[4] *Id.*
[5] Roger A. Morin, *New Regulatory Finance*, Pub. Util. Reports, Inc. (2006) at 429.

Thus, while the DCF model is a recognized approach to estimating the ROE, it is not without shortcomings and does not otherwise eliminate the need to ensure that the "end result" is fair. The Indiana Utility Regulatory Commission has recognized this principle:

> There are three principal reasons for our unwillingness to place a great deal of weight on the results of any DCF analysis. One is. . . the failure of the DCF model to conform to reality. The second is the undeniable fact that rarely if ever do two expert witnesses agree on the terms of a DCF equation for the same utility – for example, as we shall see in more detail below, projections of future dividend cash flow and anticipated price appreciation of the stock can vary widely. And, the third reason is that the unadjusted DCF result is almost always well below what any informed financial analysis would regard as defensible, and therefore require an upward adjustment based largely on the expert witness's judgment. In these circumstances, we find it difficult to regard the results of a DCF computation as any more than suggestive.[6]

As this discussion indicates, consideration of the results of alternative approaches reduces the potential for error associated with any single quantitative method. Just as investors inform their decisions through the use of a variety of methodologies, my evaluation of a fair ROE for the Company considers the results of multiple financial models.

Q. What does the above discussion 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

[6] *Ind. Michigan Power Co.*, Cause No. 38728, 116 PUR4th, 1, 17-18 (IURC 8/24/1990).

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,"[7] 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.

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

A. My analyses relied on a proxy group composed of 21 companies, which I refer to as the "Utility Group." In order to develop this group, I began with the following criteria:

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

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 Corporation ("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. Value Line Safety Rank of "2" or "3".

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

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

Q. Is there any other publicly traded utility that is relevant in establishing a proxy group?

A. Yes. Investors would regard Algonquin Power & Utilities, Inc. ("Algonquin") as a comparable investment alternative that is relevant to an evaluation of a just and reasonable ROE for Avista. Although it has not yet been included in Value Line's electric utility industry groups, investors also regard Algonquin as having operations comparable to those of other electric utilities in the proxy group. Algonquin is a North American diversified generation, transmission, and distribution utility with approximately $10 billion in total assets. Algonquin provides regulated utility services to over 750,000 customers in Arizona, Arkansas, California, Georgia, Illinois, Iowa, Kansas, Massachusetts, Missouri, New Hampshire, Oklahoma, and Texas.[8] A majority of Algonquin's revenues,

[8] Algonquin completed its acquisition of Empire District in 2017, which more than doubled its size. Empire District was included in Value Line's electric utility industry group prior to its merger with Algonquin.

earnings, and assets are related to its regulated U.S. utility operations.[9] In addition, Algonquin reports interim and annual consolidated financial statements in U.S. dollars, its dividend is denominated in U.S. dollars, and its common shares are listed on the New York Stock Exchange. While Algonquin is not rated by Moody's, it has been assigned a credit rating of BBB by S&P.

Q. What other publicly traded utility is relevant in establishing a proxy group?

A. Emera should also be included in the proxy group.

Q. Please explain why Emera should be considered.

A. Investors consider Emera to have risks and operations comparable to those of other electric utilities. Emera is primarily engaged in electricity generation, transmission, and distribution; gas transmission and distribution; and utility energy services, and serves approximately 2.5 million customers. Emera completed its acquisition of TECO Energy in 2016. While Emera is currently included in Value Line's "Power Industry" sector, Value Line also reported that Emera's Florida electric utility is its largest operating segment and that "over 95% of earnings now [come] from regulated operations."[10]

Similarly, CFRA highlighted Emera's primary focus on electric utility operations, and classified Emera in its "Electric Utilities" industry group,[11] and Emera reports as an

[9] For example, Algonquin reported that during 2019 regulated utility operations accounted for 84 percent of total revenues, 86 percent of operating income, and 63 percent of total assets. Approximately 95 percent of Algonquin's consolidated revenue and 90 percent of property, plant, and equipment are attributable to operations in the U.S. https://www.sec.gov/cgi-bin/viewer?action=view&cik=1174169&accession_number=0001174169-20-000018&xbrl_type=v#.

[10] The Value Line Investment Survey (Mar. 20, 2020). This is consistent with Emera's 2019 Annual Report, which noted that 95 percent of the company's earnings were derived from regulated investments. *Emera, Inc.*, 2019 Annual Report at 1.

[11] CFRA, *Emera Incorporated*, Quantitative Stock Report (Jun. 24, 2017). CFRA, founded as the Center for Financial Research and Analysis, is one of the world's largest providers of institutional-grade independent equity research, acquired the equity and fund research arm of S&P in October 2016.

"Electric Utility" under the Standard Industrial Classification Code (4911).[12] S&P noted that "Emera, Inc. is a geographically diverse electric and natural gas holding utility company,"[13] and reported that regulated utility operations contribute "about 95% of consolidated cash flow."[14] Thus, investors would regard Emera as a comparable investment alternative that is relevant to an evaluation of the required rate of return for Avista. Emera's operations are dominated by its U.S.-based utilities, which together accounted for approximately 68 percent of consolidated net income and 72 percent of total assets at year-end 2019.[15]

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

[12] *See, e.g.*, Emera, Inc., 2019 SEC Form 40-F, https://www.sec.gov/Archives/edgar/data/1127248/000119312520090975/d904641d40f.htm.
[13] S&P Global Ratings, *Emera Inc. And Subsidiaries 'BBB+' Ratings Affirmed; Outlooks Remain Negative*, RatingsDirect (Mar. 26, 2019).
[14] S&P Global Ratings, *Emera Inc. And TECO Downgraded On Weak Financials, Outlook Stable; Subsidiaries Ratings Affirmed*, Research Update (Mar. 24, 2020).
[15] Emera, Inc., 2019 Financial Statements at Note 5.

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.[16]

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

	Credit Rating		Value Line		
	S&P	Moody's	Safety Rank	Financial Strength	Beta
Utility Group	BBB	Baa2	2	B++	0.89
Avista	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, the S&P and Moody's credit ratings for Avista are identical to the average of credit ratings for the Utility Group. Likewise, the average Value Line Safety Rank and Financial Strength measures for the Utility Group are the same as that assigned to the Company. The average of Value Line's betas for the Utility Group is nearly identical to Avista's beta. 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.

[16] 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 attempt to replicate the market valuation process that sets the price investors are willing to pay for a share of a company's stock. The model rests on the assumption that investors evaluate the risks and expected rates of return from all securities in the capital markets. Given these expectations, the price of each stock is adjusted by the market until investors are adequately compensated for the risks they bear. Therefore, we can look to the market to determine what investors believe a share of common stock is worth. By estimating the cash flows investors expect to receive from the stock in the way of future dividends and capital gains, we can calculate their required rate of return. That is, the cost of equity is the discount rate that equates the current price of a share of stock with the present value of all expected cash flows from the stock. The formula for the general form of the DCF model is as follows:

$$P_0 = \frac{D_1}{(1+k_e)^1} + \frac{D_2}{(1+k_e)^2} + \cdots + \frac{D_t}{(1+k_e)^t} + \frac{P_t}{(1+k_e)^t}$$

where: P_0 = Current price per share;
P_t = Expected future price per share in period t;
D_t = Expected dividend per share in period t;
k_e = Cost of common equity.

Q. What form of the DCF model is customarily used to estimate the cost of equity in rate cases?

A. Rather than developing annual estimates of cash flows into perpetuity, the DCF model can be simplified to a "constant growth" form: [17]

[17] The constant growth DCF model is dependent on a number of assumptions, which in practice are never strictly 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 of 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.

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

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 in implementing the constant growth DCF model 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 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 is the dividend yield for the Utility Group determined?

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-6.

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. Implementation of the DCF model is solely concerned with replicating 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. This is because utilities have significantly altered their dividend policies in response to more accentuated business risks in the industry, with the payout ratios falling significantly from historical levels. 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. Do the growth rate projections of security analysts consider historical trends?

A. Yes. Professional security analysts study historical trends extensively in developing their projections of future earnings. Hence, to the extent there is any useful information in historical patterns, that information is incorporated into analysts' growth forecasts.

Q. Did Professor Myron J. Gordon, who pioneered the DCF approach, recognize the pivotal role that earnings play in forming investors' expectations?

A. Yes. Dr. Gordon specifically recognized that "it is the growth that investors expect that should be used" in applying the DCF model and he concluded:

> A number of considerations suggest that investors may, in fact, use earnings growth as a measure of expected future growth."[18]

Q. Are analysts' assessments of growth rates appropriate for estimating investors' required return using the DCF model?

A. Yes. In applying the DCF model to estimate the cost of common equity, the only relevant growth rate is the forward-looking expectations of investors that are captured in current stock prices. Investors, just like securities analysts and others in the investment

[18] Myron J. Gordon, *The Cost of Capital to a Public Utility*, MSU Public Utilities Studies (1974) at 89.

community, do not know how the future will actually turn out. They can only make investment decisions based on their best estimate of what the future holds in the way of long-term growth for a particular stock, and securities prices are constantly adjusting to reflect their assessment of available information.

Any claims that analysts' estimates are not relied upon by investors are illogical given the reality of a competitive market for investment advice. If financial analysts' forecasts do not add value to investors' decision making, then it is irrational for investors to pay for these estimates. Similarly, those financial analysts who fail to provide reliable forecasts will lose out in competitive markets relative to those analysts whose forecasts investors find more credible. The reality that analyst estimates are routinely referenced in the financial media and in investment advisory publications (*e.g.*, Value Line) implies that investors use them as a basis for their expectations.

While the projections of securities analysts may be proven optimistic or pessimistic in hindsight, this is irrelevant in assessing the expected growth that investors have incorporated into current stock prices, and any bias in analysts' forecasts—whether pessimistic or optimistic—is irrelevant if investors share analysts' views. Earnings growth projections of security analysts provide the most frequently referenced guide to investors' views and are widely accepted in applying the DCF model. As explained in *New Regulatory Finance*:

> Because of the dominance of institutional investors and their influence on individual investors, analysts' forecasts of long-run growth rates provide a sound basis for estimating required returns. Financial analysts exert a strong influence on the expectations of many investors who do not possess the resources to make their own forecasts, that is, they are a cause of *g* [growth]. The accuracy of these forecasts in the sense of whether they turn out to be correct is not an issue here, as long as they reflect widely held expectations.[19]

Q. Have regulators also recognized that analysts' growth rate estimates are an important and meaningful guide to investors' expectations?

A. Yes. The Kentucky Public Service Commission has indicated its preference for relying on analysts' projections in establishing investors' expectations:

> KU's argument concerning the appropriateness of using investors' expectations in performing a DCF analysis is more persuasive than the AG's argument that analysts' projections should be rejected in favor of historical results. The Commission agrees that analysts' projections of growth will be relatively more compelling in forming investors' forward-looking expectations than relying on historical performance, especially given the current state of the economy.[20]

Similarly, FERC has expressed a clear preference for projected EPS growth rates in applying the DCF model to estimate the cost of equity for both electric and natural gas pipeline utilities:

> Opinion No. 414-A held that the IBES five-year growth forecasts for each company in the proxy group are the best available evidence of the short-term growth rates expected by the investment community. It cited evidence that (1) those forecasts are provided to IBES by professional security analysts, (2) IBES reports the forecast for each firm as a service to investors, and (3) the IBES reports are well known in the investment community and used by investors. The Commission has also rejected the suggestion that the IBES analysts are biased and stated that "in fact the analysts have a significant incentive to make their analyses as accurate as possible to meet the needs of their clients since those investors will not utilize brokerage firms whose analysts repeatedly overstate the growth potential of companies."[21]

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[19] Roger A. Morin, *New Regulatory Finance*, Pub. Util. Reports, Inc. (2006) at 298 (emphasis added).
[20] *Kentucky Utilities Co.*, Case No. 2009-00548 (Ky PSC Jul. 30, 2010) at 30-31.
[21] *Kern River Gas Transmission Co.*, 126 FERC ¶ 61,034at P 121 (2009) (footnote omitted).

The Public Utility Regulatory Authority of Connecticut has also noted that "there is not growth in DPS without growth in EPS," and concluded that securities analysts' growth projections have a greater influence over investors' expectations and stock prices.[22] In addition, the Regulatory Commission of Alaska ("RCA") has previously determined that analysts' EPS growth rates provide a superior basis on which to estimate investors' expectations:

> We also find persuasive the testimony . . . that projected EPS returns are more indicative of investor expectations of dividend growth than historical growth data because persons making the forecasts already consider the historical numbers in their analyses.[23]

The RCA has concluded that arguments against exclusive reliance on analysts' EPS growth rates to apply the DCF model "are not convincing."[24]

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,[25] and Zacks Investment Research ("Zacks") are displayed on page 2 of Exh. AMM-6.

Q. How else are investors' expectations of future long-term growth prospects often estimated for use in 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.

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[22] *Decision*, Docket No. 13-02-20 (Sept. 24, 2013).
[23] Regulatory Commission of Alaska, U-07-76(8) at 65, n. 258.
[24] Regulatory Commission of Alaska, U-08-157(10) at 36.
[25] Formerly I/B/E/S International, Inc., IBES growth rates are now compiled and published by Refinitiv.

Despite the fact that these conditions are seldom, if ever, 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-6, with the underlying details being presented on Exh. AMM-7.

The sustainable growth rate analysis shown in Exhibit AMM-7 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-7 is solely a means of converting Value Line's end-of-period values to an average return over the year.

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-6.

Q. In evaluating the results of the constant growth DCF model, is it appropriate to eliminate illogical low or high-end values?

A. Yes. In 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. I base my evaluation of DCF estimates at the low end of the range 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 produce illogical results. FERC previously evaluated DCF results against

observable yields on long-term public utility debt and recognized that it is appropriate to eliminate estimates that do not sufficiently exceed this threshold.[26] FERC affirmed that:

> The purpose of the low-end outlier test is to exclude from the proxy group those companies whose ROE estimates are below the average bond yield or are above the average bond yield but are sufficiently low that an investor would consider the stock to yield essentially the same return as debt. In public utility ROE cases, the Commission has used 100 basis points above the cost of debt as an approximation of this threshold, but has also considered the distribution of proxy group companies to inform its decision on which companies are outliers. As the Presiding Judge explained, this is a flexible test.[27]

More recently, FERC has established a new test which is based on adding 20 percent of the CAPM market risk premium to the current triple-B bond yield. While this test has no evidentiary support, it does recognize that risk premiums widen when bond yields go down.

Q. What interest rate benchmark do you consider in evaluating the DCF results for Avista?

A. As noted earlier, the S&P and Moody's ratings for Avista are BBB and Baa2, respectively, which fall in the triple-B rating category. Furthermore, utility bonds rated "Baa" represent the lowest ratings grade for which Moody's publishes index values, and the closest available approximation for the risks of common stock, which are significantly greater than those of long-term debt. Accordingly, I referenced average yields on triple-B utility bonds as my benchmark in evaluating low-end results. Monthly yields on Baa bonds reported by Moody's averaged 3.37 percent over the six months ending September 2020.[28]

Current forecasts continue to anticipate higher long-term rates over the near-term. As shown in Table AMM-2 below, forecasts of IHS Markit and the EIA imply an average Baa bond yield of approximately 4.8 percent over the period 2021-2025:

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[26] *See, e.g., Southern California Edison Co*., 131 FERC ¶ 61,020 at P 55 (2010) ("*SoCal Edison*").
[27] Opinion No. 531, 147 FERC ¶ 61,234 at P 122 (2014).
[28] Moody's Investors Service, *CreditTrends.*

TABLE AMM-2
IMPLIED BBB BOND YIELD

	Baa Yield 2021-25
Projected Aa Utility Yield	
IHS Global Insight (a)	3.65%
EIA (b)	4.60%
Average	4.12%
Current Baa - Aa Yield Spread (c)	0.67%
Implied Baa Utility Yield	**4.79%**

(a) IHS Markit, Long-Term Macro Forecast - Baseline (May 28,
(b) Energy Information Administration, Annual Energy Outlook 2020 (Jan. 29, 2020).
(c) Based on monthly average bond yields from Moody's Investors Service for the six-month period Apr. - Sep. 2020.

Q. What else should be considered in evaluating DCF estimates at the low end of the range?

A. While a 100 basis point spread over public utility bond yields is a starting place in evaluating low-end values, reference to a static test ignores the implications of the inverse relationship between equity risk premiums and bond yields. Specifically, the premium that investors demand to bear the higher risks of common stock is not constant. As demonstrated empirically in the application of the risk premium method,[29] equity risk premiums expand when interest rates fall, and vice versa.

For example, based on a review of its precedent for evaluating low-end values, FERC established a 100 basis point risk premium over Moody's bond yield averages as a threshold to eliminate DCF results in *SoCal Edison*, citing prior decisions in *Atlantic Path*

[29] Exhibit AMM-10, page 4.

15,[30] *Startrans*,[31] and *Pioneer*[32] in support of this policy.[33] Because bond yields declined significantly between the time of those findings and the study period in this case, the inverse relationship implies a significant increase in the equity risk premium that investors require to accept the higher uncertainties associated with an investment in utility common stocks versus bonds. As shown on page 4 of Exhibit AMM-6, recognizing the inverse relationship between equity risk premiums and bond yields would indicate a current low-end threshold in the range of approximately 5.8 percent to 6.6 percent. The impact of widening equity risk premiums should be considered in evaluating low-end cost of equity estimates. FERC's more recent methodology based on the CAPM market risk premium indicates a low-end threshold of 5.4 percent.

Q. What do you conclude regarding the reasonableness of DCF values at the low end of the range of results?

A. As highlighted on page 3 of Exhibit AMM-6, after considering these tests and the distribution of individual estimates, I eliminate low-end DCF estimates in the range of -3.4 percent to 6.3 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. As a result, consistent with the threshold established by utility bond yields, the values below the threshold provide little guidance as to the returns investors require from utility common stocks and should be excluded.

[30] *Atl. Path 15, LLC*, 122 FERC ¶ 61,135 (2008) ("*Atlantic Path 15*").
[31] *Startrans IO, LLC*, 122 FERC ¶ 61,306 (2008) ("*Startrans*").
[32] *Pioneer Transmission, LLC*, 126 FERC ¶ 61,281 (2009) ("*Pioneer*").
[33] *SoCal Edison* at P 54.

Q. Do you also recommend excluding estimates at the high end of the range of DCF results?

A. Yes. As shown on page 3 of Exh. AMM-6, I excluded a single high-end cost of equity estimate of 14.5 percent. After excluding this value, the upper end of the cost of common equity range produced by the DCF analysis is set by a cost of equity estimate of 14.0 percent. While a 14.0 percent cost of equity estimate may exceed the majority of the remaining values, low-end DCF estimates in the 6 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 is implied by your DCF results for the Utility Group?

A. As shown on page 3 of Exh. AMM-6 and summarized in Table 3, below, after eliminating illogical values, application of the constant growth DCF model results in the following cost of equity estimates:

TABLE 3
DCF RESULTS – UTILITY GROUP

Growth Rate	Average	Midpoint
Value Line	9.3%	10.4%
IBES	9.4%	9.8%
Zacks	9.3%	10.1%
br + sv	8.8%	8.8%

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 stock's 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. Why is the CAPM approach an appropriate component of evaluating the cost of equity for Avista?

A. The CAPM approach (which also forms the foundation of the ECAPM) generally is considered to be the most widely referenced method for estimating the cost of equity among academicians and professional practitioners, with the pioneering researchers of this method receiving the Nobel Prize in 1990. Because this is the dominant model for estimating the cost of equity outside the regulatory sphere, the CAPM (and ECAPM) provides important insight into investors' required rate of return for utility stocks, including Avista.

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-8. 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 Composite Stock Index ("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. Based on the weighted average of the projections for the individual firms, current estimates imply an average growth rate over the next five years of 9.2 percent. Combining this average growth rate with a year-ahead dividend yield of 2.3 percent results in a current cost of common equity estimate for the market as a whole (R_m) of 11.6 percent.[34] Subtracting a 1.4 percent risk-free rate based on the average yield on 30-year Treasury bonds for the six months ending September 2020 produces a market equity risk premium of 10.2 percent.

Q. What is the source of the beta values you used to apply the CAPM?

A. As I do in the development of my proxy group discussed above, 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.

[34] Any difference in the summation 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.[35]

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.[36] 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. 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

[35] Morningstar, *2015 Ibbotson SBBI Classic Yearbook*, at p. 99 (footnote omitted).
[36] 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*.

the risks perceived by investors for the firms in the proxy groups. As FERC has recognized, "This type of size adjustment is a generally accepted approach to CAPM analyses."[37]

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

A. As shown on Exh. AMM-8, after adjusting for the impact of firm size the CAPM approach implies an average cost of equity estimate of 11.2 percent for the Utility Group.

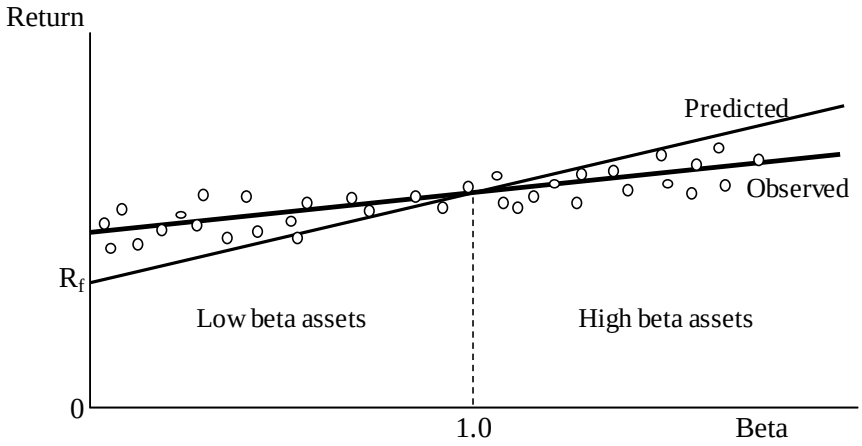
E. Empirical Capital Asset Pricing Model

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:

[37] Opinion No. 531-B, 150 FERC ¶ 61,165 at P 117 (2015).

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 relationships.[38]

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:

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

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

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

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 [(β)(R_m - R_f)] weighted by 75 percent. This ECAPM equation, and its associated weighting factors, recognizes the observed relationship between standard CAPM estimates 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 use of the ECAPM 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.[39] 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. Have other regulators relied on the ECAPM?

A. Yes. The staff of the Public Utilities Commission of Colorado has recognized that, "The ECAPM is an empirical method that attempts to enhance the CAPM analysis by

[39] *See, e.g.*, Marshall E. Blume, *Betas and Their Regression Tendencies*, Journal of Finance (Jun. 1975), pp. 785-795.

flattening the risk-return relationship,"[40] and relied on the exact same standard ECAPM equation presented above.[41] The Wyoming Office of Consumer Advocate, an independent division of the Wyoming Public Service Commission, has relied on this same ECAPM formula in estimating the cost of equity for a natural gas utility.[42]

The ECAPM approach has been relied on by the Staff of the Maryland Public Service Commission. For example, Maryland Staff Witness Julie McKenna noted that "the ECAPM model adjusts for the tendency of the CAPM model to underestimate returns for low Beta stocks," and concluded that, "I believe under current economic conditions that the ECAPM gives a more realistic measure of the ROE than the CAPM model does."[43] The New York Department of Public Service also routinely incorporates the results of the ECAPM approach in determining allowed ROEs.[44] The Regulatory Commission of Alaska has also relied on the ECAPM approach, noting that:

> Tesoro averaged the results it obtained from CAPM and ECAPM while at the same time providing empirical testimony that the ECAPM results are more accurate then [sic] traditional CAPM results. The reasonable investor would be aware of these empirical results. Therefore, we adjust Tesoro's recommendation to reflect only the ECAPM result.[45]

The Wyoming Office of Consumer Advocate, an independent division of the Wyoming Public Service Commission, has also relied on this same ECAPM formula in estimating the cost of equity for a natural gas utility, as have witnesses for the Office of Arkansas Attorney General.[46] More recently, the Montana Public Service Commission

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[40] Proceeding No. 13AL-0067G, *Answer Testimony and Attachments of Scott England* (July 31, 2013) at 47.
[41] *Id.* at 48.
[42] Docket No. 30011-97-GR-17, *Pre-Filed Direct Testimony of Anthony J. Ornelas* (May 1, 2018) at 52-53.
[43] *Direct Testimony and Exhibits of Julie McKenna*, Maryland PSC Case No. 9299 (Oct. 12, 2012) at 9.
[44] *See, e.g.,* New York Public Service Commission, Cases 19-E-0065 19-G-0066, *Prepared Fully Redacted Testimony of Staff Finance Panel* (May 2019) at 94-95.
[45] Regulatory Commission of Alaska, Order No. P-97-004(151) (Nov. 27, 2002) at 145.
[46] Docket No. 30011-97-GR-17, *Pre-Filed Direct Testimony of Anthony J. Ornelas* (May 1, 2018) at 52-53; Docket No. 17-071-U, *Direct Testimony of Marlon F. Griffing, PH.D.* (May 29, 2018) at 33-35.

determined that "[t]he evidence in this proceeding has convinced the Commission that the Empirical Capital Asset Pricing Model ("ECAPM") should be the primary method for estimating . . . the cost of equity" for a gas distribution utility under its jurisdiction.[47]

Q. What cost of equity is indicated by the ECAPM?

A. My applications of the traditional 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-9, applying the forward-looking ECAPM approach to the firms in the Utility Group results in an average ROE estimate of 11.4 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.

[47] Montana Public Service Commission, Docket No. D2017.9.80, Order No. 7575c (Sep. 26, 2018) at P 114.

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. I base my estimates of equity risk premiums for electric utilities 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. Is it circular to consider risk premiums based on authorized returns in assessing a fair ROE for Avista?

A. No. In establishing authorized ROEs, regulators typically consider the results of alternative market-based approaches, including the DCF model. Because allowed risk premiums consider objective market data (*e.g.*, stock prices, dividends, beta, and interest rates), and are not based strictly on past actions of other regulators, this mitigates concerns over any potential for circularity.

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 3 of Exh. AMM-10, 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 2019.[48] Over this 46-year period, these equity risk premiums for electric utilities average 3.76 percent, and the yield on public utility bonds average 8.10 percent.

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

A. Yes. There is considerable evidence that the magnitude of equity risk premiums is not constant and that 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.

[48] Yield averages reported by Moody's are for seasoned bonds with a remaining maturity of 20 years or more.

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), Carelton, 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.[49]

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.[50] This relationship is illustrated in the figure on page 4 of Exh. AMM-10. As shown there, the "R-squared" value[51] for the equity risk premium-utility bond interest rate relationship is approximately 0.9. This is an extremely high score and indicates a strong inverse relationship between equity risk premiums and utility bond interest rates.

Q. What are the implications of this relationship under current capital market conditions?

A. 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

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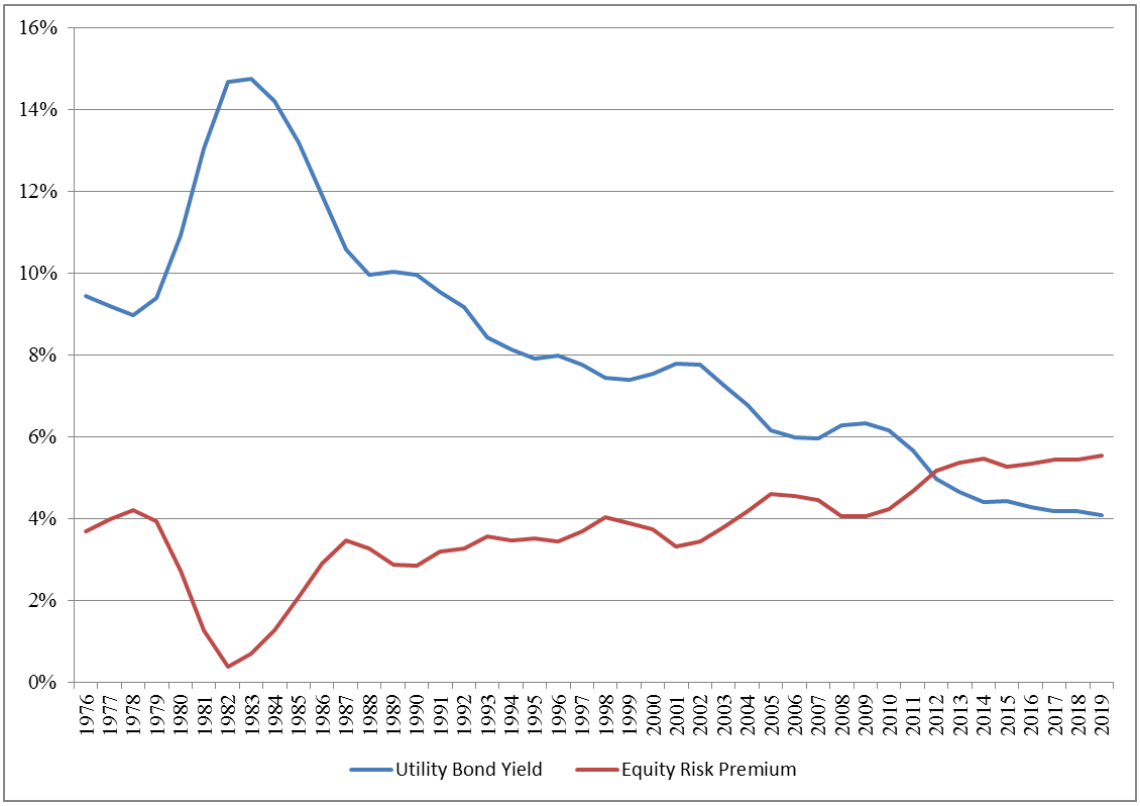
[49] Roger A. Morin, *New Regulatory Finance*, Pub. Util. Reports (2006) at 128.
[50] *See, e.g.*, California Public Utilities Commission, Decision 08-05-035 (May 29, 2008); Entergy Mississippi Formula Rate Plan FRP-7, https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=&ved=2ahUKEwiLs4Sy67nsAhVKHqwKHddgA1wQFjABegQIBRAC&url=https%3A%2F%2Fcdn.entergy-mississippi.com%2Fuserfiles%2Fcontent%2Fprice%2Ftariffs%2Feml_frp.pdf&usg=AOvVaw1vyc6J_1IccZshzpfCtD0v (last visited Oct. 16, 2020); Opinion No. 531, 147 FERC ¶ 61,234 at P 147 (2014).
[51] R-squared (R^2) is a statistical measure that represents the proportion of the variance for a dependent variable (in this case, the equity risk premium level) that is explained by an independent variable (utility bond yields) in a regression model.

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. This relationship is illustrated in the figure below, which is based on three-year rolling averages for the utility bond yields and risk premiums shown on page 3 of Exh. AMM-10.

FIGURE 2
INVERSE RELATIONSHIP



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 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 4 of Exh. AMM-10, the equity risk premium for electric utilities increased approximately 42 basis points for each percentage point drop in the yield on average public utility bonds. As illustrated on page 1 of Exh. AMM-10, with the yield on average public utility bonds for the six months ending September 2020 being 3.01 percent, this implied a current equity risk premium of 5.90 percent for electric utilities. Adding this equity risk premium to the yield on Baa utility bonds of 3.37 percent produces a current cost of equity of 9.27 percent.

Q. What cost of equity estimate is produced by the risk premium approach after incorporating forecasted bond yields?

A. As note earlier, widely cited forecasts indicate that utility bond yields will increase over the period when the rates established in this proceeding will be in effect. This is documented in Table AMM-4 below, which compares current interest rates on 10-year and 30-year Treasury bonds, triple-A rated corporate bonds, and double-A rated utility bonds with the average of near-term projections from Blue Chip Financial Forecasts, Energy Information Administration ("EIA"), IHS Markit, and Value Line:

TABLE 4
INTEREST RATE TRENDS

	Sep. 2020	Average 2021-25	Change Basis Pts
10-Yr. Treasury	0.7%	1.9%	123
30-Yr. Treasury	1.4%	2.2%	82
Aaa Corporate	2.3%	3.0%	72
Aa Utility	2.6%	4.1%	150

Sources:
Moody's Investors Service.
https://fred.stlouisfed.org/.
Value Line Investment Survey, Forecast for the U.S. Economy (Aug. 28, 2020).
IHS Markit, Long-Term Macro Forecast - Baseline (Jun. 29, 2020).
Energy Information Administration, Annual Energy Outlook 2020 (Jan. 29, 2020).
Wolters Kluwer, Blue Chip Financial Forecasts (Jun. 1, 2020).

Accordingly, in addition to the use of current bond yields, I also applied the risk premium approach based on a forecasted yield for 2021-2025.

As shown on page 2 of Exh. AMM-10, after adjusting for changes in interest rates since the study period, this implies an equity risk premium of 5.31 percent for electric utilities. Adding this equity risk premium to the average implied yield on long-term Baa public utility bonds for 2021-2025 of 4.79 percent results in an implied cost of equity of 10.10 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*[52] and *Hope*.[53] 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 simple, but powerful concept underlying the expected earnings approach is that investors compare each investment alternative with the next best opportunity. If the utility is unable 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.

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

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 directly 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 rates of return on equity are 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-11. 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.[54] Accordingly, these year-end values are converted to average returns using the same adjustment factor discussed

[54] 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.

earlier and developed on Exh. AMM-7. As shown on Exh. AMM-11, Value Line's projections for the Utility Group suggest an average ROE of approximately 10.3 percent, with a midpoint value of 10.9 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 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

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. Clearly, the total capital invested in utility stocks is only the tip of the iceberg of total common stock investment, and there are a plethora 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 form 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.[55]

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 for Avista?

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 1.00 or less; and
5) have investment grade credit ratings from S&P and Moody's.

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

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

A. Table 5 compares the Non-Utility Group with the Utility Group and Avista across the measures of investment risk discussed earlier:

TABLE 5
COMPARISON OF RISK INDICATORS

	Credit Rating		Value Line		
	S&P	Moody's	Safety Rank	Financial Strength	Beta
Non-Utility Group	A	A2	1	A+	0.83
Utility Group	BBB	Baa2	2	B++	0.89
Avista	BBB+	Baa1	2	B++	0.90

As shown above, the risk indicators for the Non-Utility Group generally 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 Wal-Mart, 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 2.4 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 analysts EPS growth projections, as described earlier for the Utility Group, with the results being presented in

Exh. AMM-12. As summarized in Table 6, below, application of the constant growth DCF model resulted in the following cost of equity estimates:

TABLE 6
DCF RESULTS – NON-UTILITY GROUP

Growth Rate	Average	Midpoint
Value Line	10.4%	10.4%
IBES	9.5%	9.9%
Zacks	9.6%	9.9%

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.