BEFORE THE WASHINGTON

UTILITIES AND TRANSPORTATION COMMISSION

In the Matter of the Petition of
AVISTA CORPORATION

DOCKETS UE-140188 & UG-140189

DIRECT TESTIMONY OF STEPHEN G. HILL (SGH-1T)

ON BEHALF OF

PUBLIC COUNSEL

JULY 22, 2014

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I. INTRODUCTION / SUMMARY

Q: Please state your name and business address.

A: My name is Stephen G. Hill. My business address is P.O. Box 587, Hurricane, West Virginia 25526 [hillassociates@gmail.com].

Q: By whom are you employed and in what capacity?

A: I am Principal of Hill Associates, a consulting firm specializing in financial and economic issues in regulated industries.

Q: On behalf of whom are you testifying?

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

Q: Briefly, what is your educational background?

A: After graduating with a Bachelor of Science degree in Chemical Engineering from Auburn University in Auburn, Alabama, I was awarded a scholarship to attend Tulane Graduate School of Business Administration at Tulane University in New Orleans, Louisiana. There, I received a Master's Degree in Business Administration. I have been awarded the professional designation of "Certified Rate of Return Analyst," by the Society of Utility and Regulatory Financial Analysts; this designation is based upon education, experience and the successful completion of a comprehensive examination. I have also served on the Board of Directors and am currently Vice President of that national organization. A more detailed account of my educational background and occupational experience appears in Exhibit No. SGH-16.

Q: Have you testified before this or other regulatory commissions?

A: Yes, I have testified in this regulatory jurisdiction and, over the past 30 years, I have testified on cost of capital, corporate finance and capital market issues in more than 300 regulatory proceedings before the following regulatory bodies: the West Virginia Public Service Commission, the Connecticut Department of Public Utility Control, the Oklahoma State Corporation Commission, the Public Utilities Commission of the State of California, the Pennsylvania Public Utilities Commission, the Maryland Public Service Commission, the Public Utilities Commission of the State of Minnesota, the Ohio Public Utilities Commission, the Insurance Commissioner of the State of Texas, the North Carolina Insurance Commissioner, the Rhode Island Public Utilities Commission, the City Council of Austin, Texas, the Texas Railroad Commission, the Arizona Corporation Commission, the South Carolina Public Service Commission, the Public Utilities Commission of the State of Hawaii, the New Mexico Corporation Commission, the Texas Public Service Commission, the Georgia Public Service Commission, the Public Service Commission of Utah, the Kentucky Public Utilities Commission, the Illinois Commerce Commission, the Kansas Corporation Commission, the Indiana Utility Regulatory Commission, the Virginia Corporation Commission, the Montana Public Service Commission, the Public Service Commission of the State of Maine, the Public Service Commission of Wisconsin, the Vermont Public Service Board, the Federal Communications Commission and the Federal Energy Regulatory Commission. I have also testified before the West Virginia Air Pollution Control Commission regarding appropriate pollution control technology and its financial impact on the company

under review and have been an advisor to the Arizona Corporation Commission on matters of utility finance.

Q: What is the purpose of your testimony in this proceeding?

A: Avista Corporation (Avista, the Company) is seeking approval from the Washington Utilities and Transportation Commission (WUTC) for a rate increase for its Washington electric and gas utility operations. As part of that rate increase, Avista is requesting recovery of a return on common equity of 10.1 percent and an after-tax overall rate of return of 7.71 percent, based on a capital structure consisting of 49 percent common equity and 51 percent long-term debt. Public Counsel has requested that I review the rate of return evidence submitted by the Company and undertake my own analysis of the current market-based cost of common equity, and an appropriate ratemaking capital structure.

In addition, because the Company is requesting in this proceeding that the Commission allow its rates to be "decoupled" from unit sales, Public Counsel has requested that I examine the reduction in revenue volatility and investment risk that will occur if decoupling is adopted. Also, because reduced volatility lowers investment risk, I have been asked to quantify the reduction in the allowed return that is necessary to balance the interests of ratepayers and stockholders if decoupling is approved.

Q: Have you prepared exhibits in support or your testimony?

A: Yes. Attached to this testimony are 18 Exhibits (Exhibit Nos. SGH-2 through SGH-19) that provide the analytical support for the conclusions reached regarding the forward-looking overall cost of capital for Avista's utility operations

discussed in the body of this testimony. These Exhibits were prepared by me and are correct to the best of my knowledge and belief.

Q: Please summarize your findings.

A: My testimony is organized into five sections. First, I discuss the cost of capital standard as a measure of the return to be allowed for regulated industries, and review the current economic environment in which the equity return estimate is made.

Second, I review the Company's requested capital structure in comparison to capital structures employed by the utility industry in general. Further, I discuss the financial risk differences and cost of capital implications of the capital structure employed by Avista's Washington operating divisions.

Third, I evaluate the cost of equity capital for similar-risk operations using Discounted Cash Flow (DCF), Capital Asset Pricing Model (CAPM), Modified Earnings-Price Ratio (MEPR), and Market-to-Book Ratio (MTB) analyses.

Fourth, I discuss the cost of capital impact of decoupling utility rates from unit sales. In such a ratemaking regime, the volatility of corporate revenues normally due to changes in the service territory economy or weather (or any other exogenous factor) will be significantly reduced because the Company will be allowed to recover its revenue requirement no matter what its unit sales might be. Through a statistical examination of the Company's electric and gas utility operating results over the past decade, I have quantified the cost of equity impact of the reduced risk imparted by decoupling.

Fifth, I discuss the shortcomings contained in the cost of capital analysis presented by Avista witness Adrien McKenzie. Mr. McKenzie's cost of capital analysis is flawed and results in an equity cost estimate that substantially exceeds the actual market-based cost of equity capital, and, ultimately, does not support the Company's equity return request.

I have estimated the equity capital cost of utility operations similar in operating (business) risk to the Washington operations of Avista Corporation to be in the range of 8.75 percent to 9.50 percent, with a midpoint of 9.125 percent. Because Avista, with a higher bond rating, has lower-than-average financial risk, an equity return below the mid-point of the current cost of equity range is appropriate for ratemaking purposes. Absent the Commission's approval of the Company's requested decoupling plan, then, an appropriate return on common equity for Avista's operations in Washington would be 9.00 percent.

Finally, my analysis shows that the reduction in risk resulting from decoupling amounts to approximately 50 to 80 basis points in the Company's cost of common equity. Reducing Avista's 9.0 percent cost of common equity by 50 basis points would indicate a cost of equity of 8.50 percent. However, that result is below the lower end of what I have determined to be a reasonable range of common equity cost for similar-risk utilities. Therefore, I recommend that, if decoupling is adopted, the Commission set the Company's return on common equity at the low end of that reasonable range of equity capital cost, or 8.75 percent.

Exhibit No. SGH-15 shows that with an allowed return on common equity of 8.75 percent, and the Company's requested ratemaking capital structure consisting of 49 percent common equity and 51 percent long-term debt, the after-tax overall return would be 7.05 percent. With that overall return, the Company would be provided the opportunity to achieve a pre-tax interest coverage of 3.59 times, which is greater than the pre-tax interest coverage earned by the Company, on average, over the past few years (3.10x).[1] Therefore, the return I recommend appropriately balances the interests of the Company and its ratepayers and provides the Company an opportunity to earn a return sufficient to support its financial well-being.

Q: Why should the cost of capital serve as a basis for the proper allowed rate of return?

A: As a guide to assessing an appropriate level of profitability for regulated operations, the Supreme Court of the United States has established that investors in such firms are to be given an opportunity to earn returns that are sufficient to attract capital and are comparable to returns investors would expect in the unregulated sector for assuming the same degree of risk. The *Bluefield* and *Hope* cases provide the seminal decisions.[2] These criteria were restated in the *Permian Basin Area Rate Cases*.[3] However, the Court also makes quite clear in *Hope* that regulation does not guarantee profitability and, in *Permian Basin* that, while

[1] Avista Corporation, S.C.E. Form 10-K, 2013, Schedule 12-"Ratio of Earnings to Fixed Charges." 2009 (3.20x), 2010 (3.03x), 2011 (3.30x), 2012 (2.63x), and 2013 (3.33x); average = 3.10x.
[2] *Bluefield Water Works v. PSC*, 262 US 679 (1923); *FPC v. Hope Natural Gas Company*, 320 US 591 (1944).
[3] 390 US 747 (1968).

investor interests (profitability) are certainly pertinent to setting adequate rates, those interests do not exhaust the relevant considerations.

As a starting point in the rate-setting process, then, the cost of capital of a regulated firm represents the return investors could expect from other investments, while assuming no more and no less risk. Since financial theory holds that investors will not provide capital for a particular investment unless that investment is expected to yield their opportunity cost of capital, the correspondence of the cost of capital with the Court's guidelines for appropriate earnings is clear.

Q: The cost of equity capital is often estimated using a confusing array of economic models and algebraic formulas. Is there a simple way to understand the concept of the cost of equity capital?

A: Yes. In a regulated ratemaking context such as this, the cost of equity capital can be most easily understood as the rate of profit that should be allowed for the regulated firm. A firm's profit is the amount of money that remains from its revenues after the firm has paid all of its costs—operating costs (commodity supply costs, depreciation, equipment maintenance costs, salaries, fees, taxes, retirement obligations), as well as income taxes and interest costs. That dollar amount of profit, divided by the amount of common equity capital used to finance the firm's regulated assets produces a percentage rate of return on equity. For example, if the profit earned by a utility is $10/year and investors have provided $100 of equity capital, the firm's return on equity (ROE) is 10 percent.

The purpose of all of the economic models and formulas in cost of capital testimony is to estimate, using market data of similar-risk firms, the percentage return equity investors require for that risk-class of firms—in this case, combination gas and electric utility operations. If the percentage profit included in the rates is set equal to the cost of equity capital (the investors' required rate of return), the utility, under efficient management, will be able to attract the capital necessary to maintain the firm's financial integrity and the interests of investors and ratepayers will be balanced, as called for in the U.S. Supreme Court cases cited above.

Simply put, the amount of profit the utility should be allowed the opportunity to earn, as a percentage of the total equity investment, should be equal to the market-based cost of equity capital.

II. ECONOMIC ENVIRONMENT

Q: Why is it necessary to review the economic environment in which an equity cost estimate is made?

A: The cost of equity capital is an expectational, or *ex ante*, concept. In seeking to estimate the cost of equity capital of a firm, it is necessary to gauge investor expectations with regard to the relative risk and return of that firm, as well as that for the particular risk-class of investments in which that firm resides. Because this exercise is, necessarily, based on understanding and accurately assessing investor expectations, a review of the larger economic environment within which the investor makes his or her decision is most important. Investor expectations regarding the strength of the U.S. economy, the direction of interest rates and the

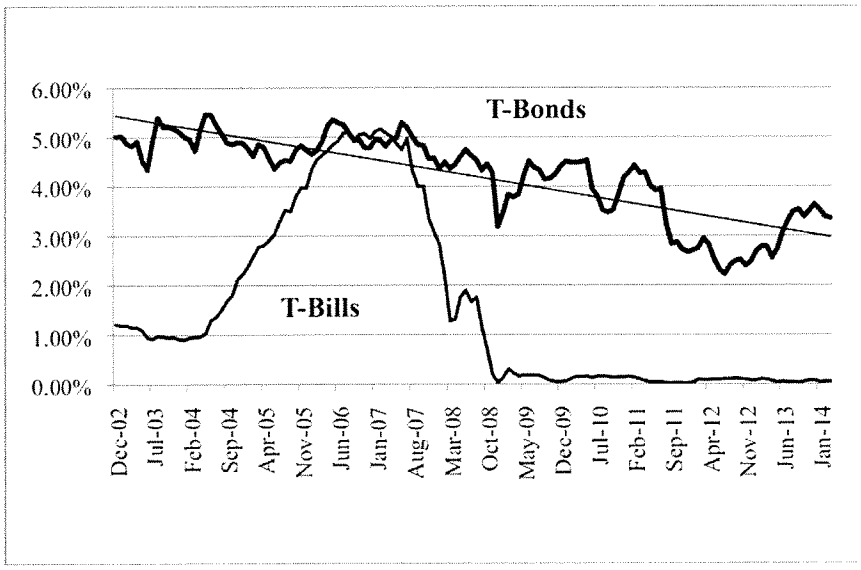
level of inflation (factors that are determinative of capital costs) are key building blocks in the investment decision. The analyst and the regulatory body should review those factors in order to assess accurately investors' required return—the cost of equity capital to the regulated firm.

Q: What is the cost of capital implications of the current market environment?

A: Although more than five years have passed since the events of late 2008 and early 2009, any review of the current economic environment and the current cost of capital must take into account what was the most significant disruption in the financial markets since the Great Depression in the 1930s. As shown in Chart I below, over the past decade there have been wide fluctuations in *short-term* interest rate levels as the Fed raised and lowered the Federal Funds rate to slow down and encourage (respectively) economic growth. However, *long-term* interest rates (20-year T-bonds) have ranged from 3.5 percent to 5 percent over most of that time period, with a slow and relatively steady downward trend. As a result of the 2008/09 economic downturn, long-term Treasury bond yields dipped, for a time, below the lower end of that historical range as the protection against default available with Treasury bonds caused investors to turn to U.S. government bonds as a "safe haven." As the economic downturn moderated and a modest recovery began to appear in 2010, long-term T-bond yields returned to their historical trend.

Chart I

Long- and Short-term U.S. Treasury Interest Rates



In the latter part of 2012, concerns about the international banking industry, centered primarily on the smaller economies in the European Union, caused long-term Treasury yields to again dip below historical trends, as shown in Chart I. However, in mid-year 2013, the expectation that the Fed would begin to reduce its secondary market purchases of Treasury securities, undertaken in order to reduce yields, caused long-term Treasury prices to fall and yields to increase to levels that exceeded the long-term trend and signaled a slowing of the downward trend in interest rates. According to the most recent Federal Reserve Statistical Release H.15, the average 30-year T-Bond yield in April 2014 was 3.52 percent.[4]

[4] http://www.federalreserve.gov/Releases/H15/Current/, May 12, 2014.

The interest rate data in Chart I also indicate that the Fed lowered short-term interest rates to near zero to attempt to lessen the impact of the recession and continues to take a very accommodative stance regarding monetary policy—with short-term T-Bills continuing to yield a near zero return. The Fed has also announced its intention to keep short-term rates low until unemployment declines significantly. Therefore, fundamental long-term capital costs have not increased as a result of the financial crisis in 2008/09 and are currently in line with the long-term downward trend in capital costs that began prior to the financial crisis.

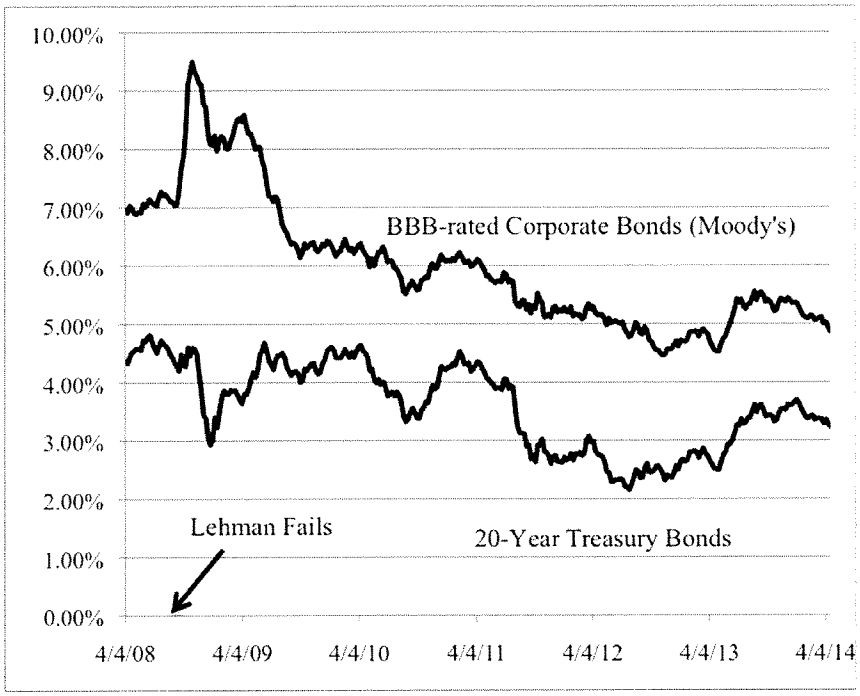
Because the market for U.S. Treasury securities remained liquid throughout the 2008/09 financial crisis and because the liquidity crisis existing during that market disruption has subsided, it is reasonable to believe that the recent yields (approximately 3.6 %) on long-term (30-year) Treasuries are representative of investors' current long-term risk-free return expectations. Therefore, that fundamental building block of capital costs (long-term T-bond yields) provides an indication that in the current economic environment, capital costs continue to be lower than they were prior to the economic troubles of late 2008 and early 2009.

A review of corporate bond yield history, however, indicates that during the financial crisis, declining yields was not the case with corporate bonds. Following the demise of Lehman Brothers and the near-collapse of the financial industry in the U.S. and abroad due to enormous debt obligations related to mortgage-back securities and credit default swaps—even with the commitment of government support of the successor financial institutions—there was a temporary

lack of liquidity in the corporate sector of the bond market. Even though the Fed was driving down short-term Treasury rates to provide additional liquidity for the economy in general, that liquidity was not passed through to the corporate bond market and, with a lack of capital supply, corporate bond yields rose sharply in late 2008 and early 2009. The relative movement of BBB-rated corporate bond yields and U.S. Treasury yields is shown in Chart II, below.

Chart II

Corporate Bonds v. U.S. Treasury Interest Rates



Following the failure of Lehman Brothers, and as the full extent of the debt/derivative risk overhang in the financial industry became known, BBB-rated corporate bond yields began to increase, even as long-term Treasury yields remained relatively steady at about 4.5 percent. According to the database of the

Federal Reserve, BBB-rated corporate bond yields rose dramatically by 250 basis points as the risk of default, and the nervousness of investors increased.

As liquidity has been restored to the corporate bond markets, initially through direct government intervention and subsequently through the return of modestly positive economic growth, corporate bond yields have declined substantially from the highs established in the fall of 2008. Over the past several years, investors' concerns have eased, the stock market has rebounded, and corporate bond yields have declined well below pre-crisis levels. As a result, the yield-spread differential between corporate bonds and long-term Treasury securities, while slightly elevated from historical levels, has declined to a more normal level, and corporate bond yields are once again closely tracking Treasury yields, as shown in Chart II. Therefore, because both the absolute level of the risk-free rate and the yield spread between Treasury bonds and corporate bonds have declined since the financial crisis, any concerns that the 2008/09 financial crisis implies continuing financial difficulty in the U.S. capital markets for utilities would not be well founded.

On balance, then, the fixed-income data available in the financial marketplace indicate that, while there were technical difficulties in the corporate bond market that drove up yields for a period of time during the financial crisis, those difficulties have not proven to be a long-term phenomenon, and the high corporate bond yields experienced in the latter part of 2008 and early 2009 do not represent investors' long-term expectations. Those data also indicate that

investors' required return for a risk-free investment and for corporate debt remain low by historical standards.

Simply put, the cost of capital continues to be low. As shown in Chart III below, even with the recent small increase in bond yields that occurred in mid-year 2013 due to investors' expectations regarding Fed "tapering" (i.e., reducing a bond-buying program that held down long-term Treasury yields), current corporate interest rates remain at levels not seen since the 1960s—more than 45 years ago.

Chart III

BBB-rated Corporate Bond Yields

Data from Federal Reserver Statistical Release H.15.

Q: What are the current expectations with regard to the economy and interest rates?

A: As noted, interest rates have remained low following the financial crisis, despite the predictions that a recovering economy would bring interest rate increases.

While that expectation for interest rate increases continues, it is contingent on an improving economy. Although the U.S. economy has shown positive growth since the 2008/09 period, that growth has been modest and not rapid enough to create the capital or commodity shortages that would drive up inflation and interest rates. Yet, as shown in Value Line's most recent quarterly forecast, the expectations for increased interest rates in the future continue.

> **Economic Growth:** As noted, our economy really stepped it up in the late stages of 2013, behind strength in various consumer and industrial categories. In fact, as we turned the calendar, the good times looked as if they would roll on with nary a let up. But Mother Nature had other ideas, and a series of harsh winter storms and record low temperatures hurt business activity in a number of key areas, including hiring, homebuilding, retail spending, and auto sales....For now, we think the likely lack-luster first quarter will be a hiccup, and that GDP growth, which may only come to 2.0%-2.5% in the first quarter, will quicken in the June period and risk another notch or two after midyear, averaging 3%, or so, by then.
>
> **Inflation**: Here, stability remains the rule. In fact, once we look past the most volatile pricing components in the producer and consumer pricing indexes (i.e., after backing out food and energy) to arrive at the so-called core PPI and CPI, we find that annual price increases remain below the 2% threshold that the Federal Reserve maintains is its long-range objective.
>
> **Interest Rates:** This is another area in which stability has been the rule. Of note, the central bank, which controls short-term interest rates directly through its federal funds rate target, has kept that target at 0.25%, or less, for years now. We think this target will remain at that level before increasing in modest increments in 2015 or 2016. Long-term interest rates, which aren't directly controlled by the Fed, but which have stayed in a tight range for some time, as well, also are likely to step up in the next ear or two, as the Fed concludes its bond buying. (The Value Line

Investment Survey, *Selection & Opinion*, February 21, 2014, pp. 4992, 3.)

In that most recent Quarterly Economic Review cited above, Value Line projects long-term Treasury bond rates will average 3.9 percent through 2014 and 4.3 percent in 2015. As noted previously, the Fed's current Statistical Release H.15 indicates that the average 30-year Treasury bond yield in April 2014 was 3.52 percent.

Therefore, the indicated expectation with regard to long-term interest rates is that they are expected to move slightly higher in the future, provided the economic recovery continues to advance at a moderate pace. Simply put, due to the pace of the economy and relatively low core inflation, capital costs are low and are expected to remain low until the economy shows more rapid growth, which Value Line now expects to occur over the next few years. If and when the long-awaited and often-predicted economic recovery does eventually appear, interest rates and capital costs are expected to increase moderately.

III. CAPITAL STRUCTURE

Q: How are the Company's Washington operations capitalized?

A: The capital structure requested by the Company in these proceedings is found on page 8 of the Direct Testimony of Company witness Mark T. Thies and consists of 49 percent common equity and 51 percent long-term debt.

Q: How does the Company's requested capital structure compare to the capital structure utilized, on average, in the electric industry today?

A: Exhibit No. SGH-2 shows the average common equity ratio of the electric companies in the industry is 47.5 percent. For the combination electric and gas companies, the average common equity ratio is 46.3 percent, and for the entire electric industry (electric companies as well as electric and gas combination companies) is 46.7 percent. The average common equity ratio of the sample group of companies selected to estimate the cost of equity for Avista is 48.0 percent.

Therefore, the Company's requested capital structure contains more common equity than average as well as slightly more common equity than the sample group used to estimate the cost of equity. That higher amount of common equity will be more costly for ratepayers because equity capital, on a pre-tax, ratemaking basis is roughly three times more costly than long-term debt capital.

Nevertheless, the Company's requested capital structure with 49 percent common equity is not unreasonable when compared to the capital structure in use by the similar-risk sample group. Moreover, the additional common equity in the capital structure can be accounted for in the allowed return by adjusting the allowed ROE downward to account for Avista's lower financial risk.

Therefore, in determining my recommended overall return in this proceeding, I will rely on the Company's requested capital structure and embedded debt cost rates.

IV. METHODS OF EQUITY COST EVALUATION

A. Discounted Cash Flow.

Q: Please describe the discounted cash flow (DCF) model you used to arrive at an estimate of the cost of common equity capital for the Company in this proceeding.

A: The DCF model relies on the equivalence of the market price of the stock (P) with the present value of the cash flows investors expect from the stock, and assumes that the percentage rate, which discounts the future cash flows (dividends) to the present value (the stock price), equals the cost of capital. The total return to the investor, which equals the required return according to this theory, is the sum of the dividend yield and the expected growth rate in the dividend.

The theory is represented by the equation,

$$k = D/P + g, \qquad (1)$$

where "k" is the equity capitalization rate (cost of equity, required return), "D/P" is the dividend yield (dividend divided by the stock price), and "g" is the expected sustainable growth rate.

Q: What growth rate (g) did you adopt in developing your DCF cost of common equity for the Company's Washington operations?

A: The growth rate variable in the traditional DCF model is quantified, theoretically, as the dividend growth rate investors expect to continue into the indefinite future. The DCF model is actually derived by 1) considering the dividend growing perpetuity, that is, a payment to the stockholder which grows at a constant rate

indefinitely, and 2) calculating the present value (the current stock price) of that perpetuity. The model also assumes that the company whose equity cost is to be measured exists in a steady state environment, i.e., the payout ratio and the expected return are constant and the earnings, dividends, book value and stock price all grow at the same rate, forever.

While that assumption seems to be unrealistic because, in the short term, growth rates in those parameters (dividends, earnings and book value) can be quite different, over the long term it has proven to be true. For example, according to Value Line's published year-by-year retrospective of the Dow Jones Industrials Index (DJI) from 1920 through 2005, the average earnings, dividend, and book value growth rates for the companies in the DJI over that time period were 5.3 percent, 4.9 percent and 5.2 percent.[5] For utility companies, over the long term, average growth rates in earnings, dividends and book value are even closer. Moody's Public Utility Manual reports that, between 1947 and 1999, average growth in earnings, dividend and book value growth of Moody's Electric Utilities was 3.34 percent, 3.22 percent and 3.66 percent, respectively.[6] Therefore, the fundamental DCF assumption that earnings, dividends and book value are expected to grow, over the long-term, at the same sustainable rate of growth is reasonable and is an accurate representation of how firms actually grow over time.

However, even though the long-term fundamental assumptions of the DCF

[5] www.valueline.com, Dow Jones Long Term Chart (PDF).
[6] Moody's ceased publication of its Public Utility Manual in 2001.

have proven to be sound, as with all mathematical models of real-world phenomena, the DCF theory does not precisely "track" reality in the shorter term. Payout ratios and expected equity returns as well as earnings and dividend growth rates do change at different rates over the short-term. Therefore, in order to properly apply the DCF model to any real-world situation and, in this case, to find the long-term sustainable growth rate called for in the DCF theory, it is essential to understand the determinants of long-run expected dividend growth.

Q: Can you provide an example to illustrate the determinants of the long-run sustainable growth called for in the DCF model?

A: Yes. In Exhibit No. SGH-17, I provide an example of the determinants of a sustainable growth rate on which to base a reliable DCF estimate, and I show how reliance on earnings or dividend growth rates alone, absent an examination of the underlying determinants of long-run dividend growth, can produce inaccurate DCF results.

Q: How have you developed an estimate of the expected long-term growth in your application of the DCF model?

A: I have calculated both the historical and projected sustainable growth rates for a sample of utility firms with similar risk to the Company, and I have incorporated other growth rate indicators into the analysis as well. To estimate an appropriate DCF growth rate, I have also relied on published data regarding both historical and projected growth rates in earnings, dividends, and book value for the sample group of utility companies. Recall that DCF theory assumes those earnings, dividends and book value all grow at the same rate. Through an examination of

all of those data, which are available to and used by investors, I estimate investors' long-term growth rate expectations. To that long-term growth rate estimate, I add any additional growth that is attributable to investors' expectations regarding the on-going sale of stock for each of the companies under review.

Q: Why have you analyzed the market data of several companies similar in risk to Avista?

A: I have used the "similar sample group" approach to cost of capital analysis because it yields a more accurate determination of the cost of equity capital than does the analysis of the data of one individual company. Any form of analysis, in which the result is an estimate, such as growth in the DCF model, is subject to measurement error, i.e., error induced by the measurement of a particular parameter or by variations in the estimate of the technique chosen. When the technique is applied to only one observation (e.g., estimating the DCF growth rate for a single company), the estimate is referred to, statistically, as having "zero degrees of freedom." This means, simply, that there is no way of knowing if any observed change in the growth rate estimate is due to measurement error or to an actual change in the cost of capital. The degrees of freedom can be increased and exposure to measurement error reduced by applying any given estimation technique to a sample of companies rather than to one single company. Therefore, by analyzing a group of firms with similar characteristics, the estimated value (the growth rate and the resultant cost of capital) is more likely to equal the "true" value for that type of operation.

Q: How were the companies selected to be included in the analysis?

A: For the similar-risk sample for Avista's Washington electric and gas operations, all of the electric utility firms followed by Value Line were screened. Companies were selected from that group that had a continuous financial history, a bond rating between "BBB-" and "A-", and had 60 percent or more of revenues generated by electric utility operations. Companies that did not have generation assets, or were in the process of merging or being acquired, or companies that had recently omitted dividends or had unstable book values were omitted from the sample. The data for the electric utility sample group were obtained from the most recent editions of Value Line Investment Survey, *Ratings and Reports*, available at the time of this analysis (February 21, March 21, and May 2, 2014), and A.U.S. Utility Reports, April 2014.

The integrated electric companies included in the similar-risk sample group for purposes of estimating the current cost of equity capital are: TECO Energy (TE), ALLETE (ALE), American Electric Power (AEP), Cleco Corporation (CNL), Entergy Corp. (ETR), OGE Energy Corp. (OGE), Westar Energy (WR), Avista Corp. (AVA), Hawaiian Electric (HE), IDACORP, Inc. (IDA), Northwestern Corp. (NWE), PG&E Corp. (PCG), Pinnacle West Capital (PNW), Portland General (POR), and Xcel Energy (XEL). The statistical data for each of the Value Line electrics, the selection criteria, and the companies selected are shown in Exhibit No. SGH-3.[7]

[7] In the Exhibits accompanying this Testimony, the sample group companies are referenced by their stock ticker symbols.

Q: How have you calculated the DCF growth rates for the sample of comparable companies?

A: Exhibit No. SGH-4, pages 1 through 5, shows the retention ratios, equity returns, sustainable growth rates, book values per share and number of shares outstanding for the comparable sample companies for the past five years. Also included in the information presented in Exhibit No. SGH-4 are Value Line's projected 2014, 2015, and 2017-2019 values for equity return, retention ratio, book value growth rates, and number of shares outstanding.

In evaluating these data, we first review the five-year average sustainable growth rate, which is the product of the earned return on equity (r) and the ratio of earnings retained within the firm (b). For example, Exhibit No. SGH-4, page 1, shows that the five-year average sustainable growth rate for American Electric Power (AEP) is 4.50 percent. The simple five-year average sustainable growth value is used as a benchmark against which we measure the company's most recent growth rate trends. Recent growth rate trends are more investor influencing than are simple historical averages. Continuing to focus on AEP, sustainable growth in 2013 was 3.67 percent—below the average growth for the five-year period. Those recent historical data, then, indicate general growth stability with a slightly moderating growth rate trend. By the 2017-2019 period, however, Value Line projects AEP's sustainable growth will reach a level just below the recent five-year average—3.75 percent. These forward-looking data indicate that investors expect AEP to grow at a rate in the future slightly lower than the growth rate that has existed, on average, over the past five years.

While the five-year projections are given consideration in estimating a proper growth rate because they are available to and are used by investors, they are not given sole consideration. Without reviewing all the data available to investors, both projected and historic, sole reliance on projected information may be misleading. Value Line readily acknowledges to its subscribers the subjectivity necessarily present in estimates of the future:

> We have greater confidence in our year-ahead ranking system, which is based on proven price and earnings momentum, than in 3- to 5-year projections. (Value Line Investment Survey, Selection and Opinion, June 7, 1991, p. 854).

Another factor to consider is that AEP's book value growth is expected to increase at a 4.5 percent rate over the next five years, after increasing at a 4.5 percent rate historically. That signals steady growth for AEP. However, as shown on Schedule 3, page 2, that company's dividend growth rate, which was 4.0 percent historically, is expected to increase to a 4.5 percent rate of growth in the future—higher than the sustainable growth rate projections, and above historical levels. That information would tend to raise investor expectations regarding growth in the future. Earnings growth rate data available from Value Line indicate that investors can expect an increase in the earnings growth rate in the future (4.5 %), a growth rate higher than that which has existed historically (only 1.0 %). Also, Zack's and IBES (investor advisory services that poll institutional analysts for growth earnings rate projections) projects earnings growth rate for AEP of approximately 4.3 percent and 4.23 percent, respectively, over the next five years.

AEP's projected sustainable growth, indicates that investors can expect more moderate growth in the future similar to that which has occurred, on average, in the past. Those projections are countered by an expectation of higher dividend and earnings growth. A long-term sustainable growth rate of 4.25 percent is a reasonable expectation for AEP.

Q: Is the internal or "b times r" growth rate the final growth rate used in the DCF analysis?

A: No. An investor's sustainable growth rate analysis does not end upon the determination of an internal growth rate from earnings retention. Investor expectations regarding growth from external sources (sales of stock) must also be considered and examined. Using the example of AEP, page 1 of Exhibit No. SGH-4 shows that the number of outstanding shares increased at about a 0.5 percent rate over the most recent five-year period. Value Line expects the number of shares outstanding to decline through the 2017-2019 period, bringing the share growth rate to 0.41 percent rate by that time. Therefore, an expectation of share growth of 0.5 percent per year is reasonable for this Company.

As shown on page 1 of Exhibit No. SGH-5, because AEP is currently trading at a market price that is greater than its book value, a long-term expectation of increasing the number of shares outstanding will also increase investors' growth expectations for that company. Multiplying the expected

growth rate in shares outstanding by (1-(Book Value/Market Value)) increases the long-term DCF growth rate for AEP by 17 basis points.[8]

The details of the sustainable growth rate analyses for AEP are discussed here as an example of the methodology used in determining the DCF growth rate for each company in the utility sample group. Exhibit No. SGH-5, page 1, shows the internal, external and resultant overall DCF growth rates for all the electric utility companies analyzed. A narrative description of the growth rate analyses for each of the companies included in the similar-risk sample group is set out in Exhibit No. SGH-18.

Q: Have you checked the reasonableness of your growth rate estimates against other, publicly available growth rate data?

A: The reasonableness of the growth rate estimates for each company are checked against other publicly available sources in Exhibit No. SGH-5, page 2, which shows the DCF growth rates used in this analysis as well as 5-year historic and projected earnings, dividends, and book value growth rates from Value Line, earnings growth rate projections from Zacks or IBES, the average of Value Line and Zacks or IBES growth rates, and the 5-year historical compound growth rates for earnings, dividends and book value for each company under study.

For the electric utility sample group, Exhibit No. SGH-5, page 2 shows that my DCF growth rate estimate for those companies is 4.75 percent. That long-

[8] According to Gordon's original DCF formula, the factor that accounts for additional growth due to sales of stock is "s" the rate of increase in shares outstanding, times "v" the equity accretion rate, defined as (1-M/B). For the utilities under study here, the "sv" term adds an additional 70 basis points to the DCF cost of equity capital.

term growth rate estimate is considerably higher than Value Line's projected average earnings, dividend, and book value growth rate (4.08 percent) but similar to the historical average of those same parameters (4.50 percent). In addition, my DCF growth rate estimate for the similar-risk electric utilities is below IBES and Zacks' earnings growth rate projections: 5.20 percent and 5.17 percent, respectively. Therefore, the average DCF growth rate for the electric utility sample companies is reasonable when compared to other publicly-available growth rate information.

Q: Some analysts rely heavily, if not exclusively, on analysts' earnings growth projections as the growth rate in the DCF; you have not done so. Can you explain why?

A: In my view, earnings growth rate projections are widely available, are used by investors, and therefore deserve consideration in an informed, accurate assessment of the investor expected growth rate to be included in a DCF model. However, projected earnings growth rates should not be used as the *only* source of a DCF growth estimate because projected earnings growth rates are influential in, but not solely determinative of, investor expectations. That is true for several reasons.

First, it is important to realize that, as I discuss in Exhibit No. SGH-17, projected earnings growth rates may over- or understate the growth that can be sustained over time by the companies under review. This is important because long-term sustainable growth is required in an accurate DCF assessment of the cost of equity capital. The efficacy of projected earnings growth rates in any

specific DCF analysis can only be determined through a study of the underlying fundamentals of growth—something that those who rely exclusively on analysts' earnings growth rate projections fail to do.

Second, the studies that support the use of analysts' earnings projections measure the ability of analysts' estimates to predict stock prices versus simple historical averages of other parameters. In that sort of simplistic comparison, analysts' projections perform better. However, I am not aware of any cost of capital analyst who relies exclusively on historical average growth rates, nor is it reasonable to believe that any astute investor would do so. Therefore, while studies do indicate that analysts' earnings growth estimates are better indicators of stock prices than simple historical averages of other growth rate parameters, those studies do not provide any basis for exclusive reliance on earnings growth projections in a DCF analysis.

Third, the sell-side institutional analysts that are polled by IBES and similar services offer relatively "rosy" expectations for the stock they follow—even when the analyst's actual expectations for the stock are not so sanguine. Simply put, some analysts overstate growth expectations to make the stocks they want to sell look more attractive. Although claims are often made that the opinions of sell-side analysts are not affected by the profits made by the other parts of the business that actually trade those securities, the "Cinderella effect" (analysts' overstating stock expectations) is not a new phenomenon, and is recognized in academia. As the authors of a widely-used finance textbook note

regarding the use of projected earnings growth rates in a DCF analysis:

> Estimates of this kind are only as good as the long-term forecasts on which they are based. For example, several studies have observed that security analysts are subject to behavioral biases and their forecasts tend to be over-optimistic [See, for example, A. Dugar and S. Nathan, "The Effect of Investment Banking Relationships on Financial Analysts' Earnings Investment Recommendations, *Contemporary Accounting Research* 12 (1995), pp. 131-160]. If so, such DCF estimates of the cost of equity should be regarded as upper estimates of the true figure."[9]

As Chan and Lakonishok note in "The Level and Persistence of Growth Rates," published in the *Journal of Finance* (Vol. LVIII, No. 2, April 2003, p. 643), "[t]here is no persistence in long-term earnings growth beyond chance, and there is low predictability even with a wide variety of predictor variables. Specifically, IBES growth forecasts are overly optimistic and add little predictive power." This concern regarding investors' use of analysts' growth estimates is also underscored by an investor's service sponsored by the *Wall Street Journal*:

> You should be careful when looking at analyst recommendations for several reasons. First of all, many analysts suffer from a conflict of interest between the firm that employs them and the company whose stock they track. Often times, an analyst will be responsible for issuing reports on a company that is a current or potential client of their employer (usually an investment bank). Since they know that their employer would like to keep the client's business, the analyst may be tempted to issue a rosier outlook for the stock than what it really deserves.[10]

[9] Brealey, Meyers, Allen, Principles of Corporate Finance, 8th Ed., McGraw-Hill Irwin, Boston, MA, (2006), p. 67.
[10] (Investorguide.com, "University," Analysts and Earnings Estimates, www.investorguide.com/igustockanalyst.html).

Also, as reported in an April 2010 article in McKinsey Quarterly, entitled "Equity Analysts: Still too bullish," over the past 25 years the equity analysts polled by IBES have projected long-term earnings growth of 10 percent to 12 percent for unregulated companies, whereas actual (realized) growth has been about 6.0 percent.[11]

Fourth, much of the academic work touted as support for reliance on earnings growth is based on data from the IBES database (now owned by Thomson); however, academic research recently published in the *Journal of Finance* indicates that there have been non-random, systematic errors in that database, which call into question the reliability of research (such as the research on the reliability of analysts' earnings estimates) based on those data. The researchers document that the historical contents of the IBES data base have been "quite unstable over time," and state:

> Data are the bedrock of empirical research in finance. When there are questions about the accuracy or completeness of a data source, researchers routinely go to great lengths to investigate measurement error, selection bias, or reliability. But what if the very contents of a historical database were to change, in error, over time? Such changes to the historical record would have important implications for empirical research. They could undermine the principle of replicability, which in the absence of controlled experiments is the foundation of empirical research in finance. They could result in over- or underestimates of the magnitude of empirical effects, leading researchers down blind alleys. Also to the extent that financial-market participants use academic research for trading purposes, they could lead to resource allocation.... We document that the historical contents of the I/B/E/S

[11] McKinsey & Company is a global management-consulting firm.

recommendations database have been quite unstable over time.[12]

Therefore, even the research that purports to show that analysts' earnings growth rates are "superior" to simple historical average growth rates is called into question due to the above-cited flaws in the historical IBES database.

In summary, exclusive reliance on projected earnings growth for determining a DCF growth rate in a cost of capital analysis is not a reliable method of analysis and is likely to lead to an equity cost estimate that overstates the actual market-determined cost of equity capital.

Q: Does this conclude the growth rate portion of your DCF?

A: Yes.

Q: How have you calculated the DCF dividend yields?

A: The current dividend yields for each of the sample group companies are shown in Exhibit No. SGH-6. The per share dividend is that projected over the next year by Value Line, and the stock price is the daily closing average stock price for each company over the most recent six-week period. Exhibit No. SGH-6 shows that the average dividend yield of the similar-risk sample group of integrated electric companies is 3.90 percent.

Q: What is the cost of equity capital estimate for the electric utility sample group utilizing the DCF model?

A: Exhibit No. SGH-7 combines the long-term sustainable growth rate for each of the companies in the sample group with the expected dividend yield. The result is

[12] Lungqvist, Malloy, Marston, "Rewriting History," *The Journal of Finance*, Vol. 64, No. 4, August 2009, pp. 1935-1960.

an average DCF equity cost estimate of 8.65 percent.

Q: Have you provided an additional DCF analysis based solely on forward-looking growth rate projections?

A: Yes. In an effort to minimize the impact of judgment on the outcome of the cost of equity estimate for Avista, I have also employed a "mechanical" DCF analysis. This type of DCF analysis utilizes dividend yield and growth rate data provided in investor-service publications as the basis for determining a DCF equity cost estimate. Data for all the electric utilities followed for Value Line are utilized—the entire publicly-traded electric utility industry is included in the analysis. All growth-rate data are projected. That is, both dividend yields and growth rates are projected for the future (as called for in DCF theory). The projected year-ahead dividend yield for each company is published in The Value Line Investment Survey. In addition, Value Line also publishes projected earnings, dividend, book value and sustainable (or "b x r") growth rates for each of the electric utilities it follows. In addition to those growth rates, projected earnings growth rates for each company published by IBES and Zack's are also used to determine the DCF growth rate for each company.

Exhibit No. SGH-8 shows that the projected year-ahead dividend yield for each electric company is added to the average of all available projected growth rates (Value Line's earnings, dividends, book value and "b x r" growth, as well as, Zack's and IBES earnings growth rate projections). The only growth rates that are not included in the analysis are those that are non-positive (i.e., zero or negative), because it is reasonable to believe that investors would not expect long-

term negative growth in a viable investment.

The result of the mechanical DCF shown in Exhibit No. SGH-8, based on the entire electric industry and all forward-looking dividend yield and growth rate projections is an average DCF equity cost estimate of 8.42 percent.

B. Capital Asset Pricing Model.

Q: Please describe the Capital Asset Pricing Model (CAPM) you used to arrive at an estimate for the cost rate of equity capital for Avista in this proceeding.

A: The CAPM states that the expected rate of return on a security is determined by a risk-free rate of return plus a risk premium, which is proportional to the non-diversifiable (systematic) risk of a security. Systematic risk refers to the risk associated with movements in the macro-economy (the economic "system") and thus, cannot be eliminated through diversification by holding a portfolio of securities. The beta coefficient (β) is a statistical measure that attempts to quantify the non-diversifiable risk of the return on a particular security against the returns inherent in general stock market fluctuations. The formula is expressed as follows:

$$k = r_f + \beta(r_m - r_f), \qquad (2)$$

where "k" is the cost of equity capital of an individual security, "r_f" is the risk-free rate of return, "β" is the beta coefficient (a measure of relative volatility), "r_m" is the average market return and "$r_m - r_f$" is the market risk premium.

Q: What have you chosen for a risk-free rate of return in your CAPM analysis?

A: As the CAPM is designed, the risk-free rate is that rate of return investors can

realize with certainty. The nearest analog in the investment spectrum is the 13-week U. S. Treasury bill. However, T-Bills can be heavily influenced by Federal Reserve policy, as they have been over the past three years. While longer-term Treasury bonds have equivalent default risk to T-Bills, those longer-term government securities carry maturity risk that the T-Bills do not have. When investors tie up their money for longer periods of time, as they do when purchasing a long-term Treasury, they must be compensated for future investment opportunities forgone as well as the potential for future changes in inflation. Investors are compensated for this increased investment risk by receiving a higher yield on T-Bonds. When T-Bills and T-Bonds exhibit a "normal" (historical average) spread of about 1.5 percent to 2 percent, the results of a CAPM analysis that matches a higher market risk premium with lower T-Bill yields or a lower market risk premium with higher T-Bond yields, are very similar.

As noted in the previous discussion of the macro-economy, in an attempt to fend off a recession and to inject liquidity into the financial system, the Fed acted vigorously over the past four years to lower short-term interest rates. Recently, T-Bills have produced an average yield just above zero. Also, as noted in my discussion of the current economic environment, the current yield for long-term T-Bonds is 3.62 percent. In addition, Value Line reports that the average yield on 30-year Treasury bonds over the most recent six-week period (March 21, 2014 through April 25, 2014) is 3.55 percent. Therefore, for purposes of a forward-looking CAPM analysis in this proceeding, 3.75 percent will serve as a reasonable estimate of investors' current long-term risk-free rate.

Q: What market risk premium have you used in your CAPM analysis?

A: In their 2011 edition of Stocks, Bonds, Bills and Inflation, Morningstar indicates that the average market risk premium between stocks and T-Bills over the 1926–2010 time period is 6.0 percent (based on an arithmetic average), and 4.4 percent (based on a geometric average). Those long-term average values are widely used as an estimate of the forward-looking market risk premium in the CAPM analysis.

As noted previously, immediately following the 2008/09 financial crisis and again last year, investor worries regarding the international financial system caused investors to be more concerned about default risk and seek the safety of risk-free investments. Because of that fact, the yields on long-term U.S. Treasury bonds declined more rapidly than the yields on corporate debt (see Chart II). For that reason, it is reasonable to rely on the upper-most end of the historical risk premium range (6.0 %) published by Morningstar/Ibbotson in calculating a current cost of equity capital.

Q: What values have you chosen for the beta coefficients in the CAPM analysis?

A: With regard to the CAPM beta coefficient, Value Line reports beta coefficients for all the stocks it follows. Value Line's beta is derived from a regression analysis between weekly percentage changes in the market price of a stock and weekly percentage changes in the New York Stock Exchange Composite Index over a period of five years. The average beta coefficient of the sample of the electric utility companies is 0.77.

Q: What is your cost of equity estimate for the sample of electric utility companies using the CAPM?

A: Exhibit No. SGH-9 shows that the combination of a 3.75 percent risk-free rate, with an average beta of 0.77 and a market risk premium of 6.0 percent is 8.37 percent. That result is lower than the DCF results previously presented.

C. Modified Earnings Price Ratio.

Q: Please describe the modified earnings-price ratio (MEPR) analysis you use to estimate the cost of equity capital.

A: The earnings-price ratio is the expected earnings per share divided by the current market price. In cost of capital analysis, the earnings-price ratio alone (which is one portion of this MEPR analysis) can be useful in a corroborative sense, since it can be a good indicator of the proper range of equity costs when the market price of a stock is near its book value. When the market price of a stock is *above* its book value, the earnings-price ratio *understates* the cost of equity capital. Exhibit No. SGH-10 contains mathematical proof for this concept. The opposite is also true, i.e.; the earnings-price ratio *overstates* the cost of equity capital when the market price of a stock is *below* book value.

Under current market conditions, the electric utilities under study have an average market-to-book ratio of 1.51 and, therefore, the average earnings-price ratio, alone, will understate the cost of equity for the sample group. However, the earnings-price ratio is not used alone as an indicator of equity capital cost rates. Because of the relationship among the earnings-price ratio, the market-to-book ratio and the investor-expected return on equity, described mathematically in Exhibit No. SGH-10, the earnings-price ratio is modified by averaging projected equity returns with the current earnings-price ratio for the companies under study.

It is that modified analysis that will assist in estimating an appropriate range of equity capital costs in this proceeding.

Q: What is the relationship between the earnings-price ratio, the expected return on equity, and the market-to-book ratio?

A: When the expected return (ROE) approximates the cost of equity, the market price of the utility approximates its book value and the earnings-price ratio provides an accurate estimate of the cost of equity. As the investor-expected return on equity for a utility (ROE) begins to exceed the investor-required return (the cost of equity capital), the market price of the firm will tend to exceed its book value. Also as explained above, the earnings-price ratio understates the cost of equity capital in that instance.

Conversely, in situations where the expected equity return is below what investors require, market prices fall below book value. Further, when market-to-book ratios are below 1.0, the earnings-price ratio overstates the cost of equity capital. Thus, the expected rate of return on equity and the earnings-price ratio tend to move in a countervailing fashion around a central locus, and that central locus is the cost of equity capital. Therefore, the average of the expected book return and the earnings price ratio provides a reasonable estimate of the cost of equity capital.

These relationships represent general rather than precisely quantifiable tendencies but are useful in corroborating other cost of capital methodologies. The Federal Energy Regulatory Commission, in its generic rate of return hearings, found this technique useful and indicated that under the circumstances of market-

to-book ratios exceeding unity, the cost of equity is bounded above by the expected equity return and below by the earnings-price ratio (e.g., 50 Fed Reg, 1985, p. 21822; 51 Fed Reg, 1986, pp. 361, 362; 37 FERC ¶ 61,287). The mid-point of these two parameters, therefore, produces an estimate of the cost of equity capital which, when market-to-book ratios are different from unity, is far more accurate than the earnings-price ratio alone.

Q: Is there theoretical support for the use of an earnings-price ratio in conjunction with an expected return on equity as an indicator of the cost of equity capital?

A: Yes. Elton and Gruber, Modern Portfolio Theory and Investment Analysis (New York University, Wiley & Sons, New York, 1995, pp. 401-404) provide support for reliance on the modified earnings price ratio analysis.

The Elton and Gruber text posits the following formula,

$$k = (1-b)E/(1-cb)P, \text{ where} \qquad (3)$$

"k" is the cost of equity capital, "b" is the retention ratio, "E" is earnings, "P" is market price, and "c" is the ratio of the expected return on equity to the cost of equity capital (ROE/k). This formula shows that when ROE = k, "c" equals 1.0, and the cost of equity capital equals the earnings-price ratio. Moreover, in that case, ROE is greater than "k" (as it is in today's market), "c" is greater than 1.0, and the earnings-price ratio will understate the cost of equity. Also, the more that ROE exceeds "k," the more the earnings price ratio will understate "k." In other words, those two parameters, the earnings-price ratio and the expected return on

equity (ROE), orbit around the cost of equity capital, with the cost of equity as the locus, and fluctuate so that their mid-point approximates the cost of equity capital.

Assuming an industry average retention ratio of about 30 percent (i.e., 70 percent of earnings are paid out as dividends), the stochastic relationship between the expected return (ROE) and the earnings price ratio can be determined from Equation (3), above, as shown in Table I below. Most importantly, Equation (3) shows that the average of the EPR and ROE (which is my MEPR analysis) will approximate "k," the cost of equity capital.

Table I

SUPPORT FOR THE MODIFIED EARNINGS PRICE RATIO ANALYSIS

Cost of Equity	Retention Ratio	ROE	ROE/k	Earn-Price Ratio	M.E.P.R. (ROE+EPR)/2
[1]	[2]	[3]	[4]=[3]/[1]	[5]	[6]=([3]+[5])/2
10.00%	35.00%	13.00%	1.3	8.38%	10.69%
10.00%	35.00%	12.00%	1.2	8.92%	10.46%
10.00%	35.00%	11.00%	1.1	9.46%	10.23%
10.00%	35.00%	10.00%	1.0	10.00%	10.00%
10.00%	35.00%	9.00%	0.9	10.54%	9.77%
10.00%	35.00%	8.00%	0.8	11.08%	9.54%
10.00%	35.00%	7.00%	0.7	11.62%	9.31%

[5] From Equation (3): $E/P = k(1-cb)/(1-b)$

As the data in Table I show, the average of the expected return (ROE) and the earnings price ratio (EPR) produces an MEPR estimate of the cost of common equity capital of sufficient accuracy to serve as a check of other analyses, which is how I use the model in my testimony.

Q: What are the results of your MEPR analysis for the sample group?

A: Exhibit No. SGH-11 shows the IBES projected 2015 per share earnings for each of the firms in the sample groups. Recent average market prices (the same market prices cited in the DCF analysis), and Value Line's projected return on equity for 2014 and 2017-2019 for each of the water companies are also shown.

The average earnings-price ratio for the electric utility sample group, 6.59 percent, is below the cost of equity for those companies due to the fact that their average market-to-book ratio is currently well above unity (average M/B = 1.51). The sample gas companies' 2015 expected book equity return averages 9.20 percent. For the entire gas sample group, then, the mid-point of the earnings-price ratio and the current equity return is 7.90 percent.

Exhibit No. SGH-11 also shows that the average expected book equity return for the sample of electric utilities over the next three- to five-year period is 9.67 percent. The midpoint of that long-term projected return on book equity (9.67 %) and the current earnings-price ratio (6.59 %) is 8.12 percent. Both of those results are below the cost of equity estimate provided by the DCF, indicating the DCF result may be somewhat overstated.

D. Market-To-Book Ratio Analysis.

Q: Please describe your market-to-book (MTB) analysis of the cost of common equity capital for the sample group.

A: The Market-to-Book Ratio (MTB) technique of cost of equity analysis is a derivative of the DCF model that adjusts the capital cost derived for inequalities that might exist in the market-to-book ratio. This method is derived algebraically

from the DCF model and therefore, cannot be considered a strictly independent check of that method. However, the MTB analysis is useful in a corroborative sense. The MTB seeks to determine the cost of equity using market-determined parameters in a format different from that employed in the DCF analysis. In the DCF analysis, the available data is "smoothed" to identify investors' long-term sustainable expectations. The MTB analysis, while based on the DCF theory, relies instead on different point-in-time data projected one year and five years into the future and thus, offers a practical corroborative check on the traditional DCF. The MTB formula is derived as follows:

Solving for "P" from Equation (1), the standard DCF model, we have

$$P = D/(k-g). \quad (6)$$

But the dividend (D) is equal to the earnings (E) times the earnings payout ratio, or one minus the retention ratio (b), or

$$D = E(1-b). \quad (7)$$

Substituting Equation (7) into Equation (6), we have

$$P = \frac{E(1-b)}{k-g} . \quad (8)$$

The earnings (E) are equal to the return on equity (r) times the book value of that equity (B). Making that substitution into Equation (8), we have

$$P = \frac{rB(1-b)}{k-g} \quad . \qquad (9)$$

Dividing both sides of Equation (9) by the book value (B) and noting from Equation (3) that g = br+sv,

$$\frac{P}{B} = \frac{r(1-b)}{k-br-sv} \quad . \qquad (10)$$

Finally, solving Equation (10) for the cost of equity capital (k) yields the MTB formula:

$$k = \frac{r(1-b)}{P/B} + br + sv. \qquad (11)$$

Equation (11) indicates that the cost of equity capital equals the expected return on equity multiplied by the payout ratio, divided by the market-to-book ratio plus growth. Exhibit No. SGH-12 shows the results of applying Equation (11) to the defined parameters for the similar-risk electric utility firms in the comparable sample group. Page 1 of Exhibit No. SGH-12 utilizes current year (2014) data for the MTB analysis, while page 2 utilizes Value Line's 2017-2019 projections. The

MTB cost of equity for the sample of electric utility firms, recognizing a current average market-to-book ratio of 1.51 is 8.59 percent using the current year data, and 8.75 percent using projected three- to five-year data. Those point-in-time estimates are equal to or greater than the DCF equity cost estimates derived previously.

E. Summary.

Q: Please summarize the results of your equity capital cost analyses for the sample group of similar-risk companies.

A: The results of the cost of equity analyses described herein are shown below.

Table II

Method	Cost of Equity
Traditional DCF	8.65%
Mechanical DCF	8.42%
Capital Asset Pricing Model	8.37%
Modified Earnings Price Ratio	7.90%/8.13%
Market-to-Book Ratio	8.59%/8.75%

The traditional DCF, which is the most reliable indicator of the current cost of equity, indicates a cost of equity capital of 8.65 percent. The Mechanical DCF equity cost estimate is lower at 8.42 percent. The average of the corroborating analyses (CAPM, MEPR, and MTB) indicates a cost of equity ranging from 8.31 percent to 8.44 percent. That information indicates that the 8.65 percent traditional DCF result may be somewhat overstated as an estimate of the current cost of common equity capital.

Given the results described and rounding to the nearest quarter percent, a reasonable point-estimate for the current cost of common equity capital for an electric utility with risk characteristics similar to the sample group analyzed is 8.75 percent. As noted in the discussion of the economic environment, the expectation with regard to the economy and interest rates is that with a continued economic expansion, interest rates will increase over the next two years. Therefore, a reasonable range for setting equity capital cost rates ranges from 8.75 percent to 9.50 percent. The mid-point of that range is 9.125 percent.

The average bond rating of the sample group of companies used to estimate the cost of common equity is BBB+ (Standard & Poor's) and Baa1 (Moody's). Avista's bond rating is "A-"from S&P and "Baa1" from Moody's. Therefore, Avista's bond rating is slightly higher than that of the sample group. In addition, the Company's requested common equity ratio (49 %) is higher than the average common equity ratio of the sample group of companies (48 %). For these reasons, absent approval by this commission of a decoupling regulatory regime for Avista's Washington operations, a return on common equity below the mid-point established by the sample group would be appropriate. In this instance, absent the approval of decoupling by this Commission, an allowed return on common equity of 9.0 percent is reasonable for Avista's electric and gas utility operations.

Q: If the Commission elects to grant the Company's request to decouple revenues from unit sales, should the allowed return on common equity be lower than it would be under traditional regulation, i.e., if decoupling is not

allowed?

A: Yes. As I explain the next section, and in more detail in Exhibit No. SGH-19, decoupling will lower revenue volatility, which lowers the Company's operating risk. Lower risk calls for a lower allowed return.

V. EQUITY COST IMPACT OF DECOUPLING

Q: Please explain how decoupling reduces a utility's investment risk and why lowering the allowed return is necessary in order to balance the interests of ratepayers and stockholders.

A: Decoupling mechanisms decrease the operational risk of a utility. Through decoupling, the revenues determined to be necessary in the rate proceedings will be earned no matter what the kWh sales are. The utility, therefore, is far more likely to earn its allowed return and that probability is unaffected by the types of exogenous events (weather, economic downturns) that would, absent decoupling, affect the utility's revenue stream. The lower revenue volatility created by decoupling affords the utility a greater opportunity to earn its allowed return and also tends to reduce volatility in the utility's income stream.

In addition, because operating risk (the risks related to the operations of the utility) is a fundamental indicator of risk, lower operating risk also contributes to lower financial risk. For example, if operating risk is reduced to zero (i.e., if revenues and income in the future are known with absolute certainty) there is no financial risk even if the firm is capitalized with a high percentage of debt. Even in that high-debt case, the future debt service will be met because the monies available for that purpose are known with certainty and there is no probability that

debt service will not be met. In that case, then, the use of debt financing does not contribute to the investment risk of the firm. Therefore, the more certain the future revenue and income stream (the lower the operating risk) the more certain it is that firm will be able to meet its fixed financial obligations and both business (operating) and financial risk are lowered.

Decoupling will lower the Company's operating risk compared to traditional regulation. It lowers risk by helping to ensure that the revenue approved for recovery through rates will be realized—no matter how many kWh or Mcf are sold. If the Company does not sell enough kilowatt-hours to generate the promised revenues due to abnormal economic conditions, or weather, or unexpected customer conservation (or any other exogenous factor that might depress sales), rates will be adjusted so that the Company fully recovers its authorized revenue requirement. Having a fully assured revenue requirement recovery through decoupling significantly reduces the Companies' revenue volatility, which translates into more certain, less risky income stream for investors. As will be discussed in more detail subsequently, reducing the Companies' revenue volatility lowers the cost of common equity.

Revenue stabilization, through decoupling, produces significant reduction in the risk borne by investors, as discussed in detail and quantified in Exhibit No. SGH-19.

Q: Absent a reduction in the allowed return to account for the lower risk imparted by decoupling, would a shift in risk between stockholders and ratepayers occur?

A: Yes, absent a downward adjustment to the allowed return on equity there would be a shifting of risk from stockholders to ratepayers. There is no risk-shifting from the Company and its stockholders to ratepayers as long as the reduced investment risk afforded by the decoupling mechanism is recognized in the return on equity or profit the Company is allowed to earn. The decoupling mechanisms will lower the Companies' investment risk but, if the allowed returns are not reduced to recognize that lower risk, ratepayers will provide, through rates, a return on equity that overstates the Company's actual cost of capital. Moreover, in that case, stockholders will be unnecessarily advantaged by receiving an allowed return higher than that which they require and higher than the Company's cost of common equity capital.

Q: Have you undertaken an analysis to estimate the equity cost impact on Avista's Washington gas and electric operations?

A: Yes, that analysis is contained in Exhibit Nos. SGH-13, SGH-14, and SGH-19. The volatility of the net revenue stream of Avista's electric and gas operations (i.e., gross revenues less fuel expenses, which are recovered under a different regulatory mechanism) was measured over the 2000-2012 period—a period long enough to provide a normal range of revenue volatility for the Company but recent enough to be representative of Avista as it currently exists. That statistical examination of the gas and electric operations actual historical revenue volatility allowed a determination of a range three standard deviations above and below the historical net revenue trend. Given those historical results it was possible to

determine the average volatility of the net revenue streams.[13]

Due to the fact that all risk may not be captured in the analysis of historical data, a small percentage of the companies in the sample group have some sort of decoupling rate regime the analysis assumes, conservatively, that the actual historical net revenue variance will be reduced by approximately one-half by decoupling. With that assumption it was possible to calculate the reduction in probability of any extreme negative outcome occasioned by the reduction in net revenue volatility. Using the historical average rate base and capital structure, that reduction in net revenues was translated into a reduction in net income and, then, in to a percentage return on equity.

The analysis contained in Exhibit No. SGH-19 and shown in Exhibits Nos. SGH-13 and SGH-14 indicate that an appropriate ROE decrement to account for the lower risks of decoupling for Avista's Washington electric operations is approximately 50 basis points and for Avista's Washington gas utility operations is approximately 80 basis points.

Q: You indicated previously that, absent decoupling, a 9.0 percent return on equity for the Company would be reasonable. What is the appropriate return on common equity for Avista with decoupling?

A: The range I have determined for the current cost of common equity for companies similar in risk to Avista ranges from 8.75 percent to 9.50 percent. Absent decoupling, a reasonable estimate of Avista's cost of equity is 9.0 percent.

[13] I introduced the methodology used here to assess the cost of equity impact of the reduced net revenue volatility afforded by decoupling in 1992 at the NARUC 4th National Conference on Integrated Resource Planning.

Reducing that cost of equity by 50 to 80 basis points would produce a cost of equity of 8.20 percent for Avista's gas utility operations and 8.50 percent for the Company's Washington electric utility operations. However, both of those results would be below the lower end of what I believe is, currently, a reasonable range of the cost of equity capital. Therefore, I recommend that the Commission not employ the full decoupling decrement and, instead, in order to affirmatively recognize the lower risk of decoupling, allow the Company an ROE at the low end of the reasonable range—8.75 percent.

Q: Are there published studies that show that decoupling increases rather than reduces investment risk for utilities?

A: Yes. There is such a study, published in 2011 by the Brattle Group, that indicates decoupling does not reduce risk. However, the decoupling study performed by the Brattle Group is not a reliable indication of the cost of equity capital impact of decoupling. There are several reasons why the study is not a reliable basis for ratemaking:

1. The conclusion of the study, i.e., decoupling *increases* the cost of equity, is simply antithetical to modern financial theory. A reduction in revenues and earnings volatility that result from the application of decoupling will reduce operating risks. Any first-year finance student would be able to confirm that investment risk is directly related to the volatility of the income stream of that investment, because that concept is a basic tenet of finance. Yet, the Brattle Group study concludes that a reduction in volatility due to decoupling actually raises risk and investors' required

returns. That conclusion, and the study, could be disregarded on that basis alone.

2. The conclusions of the study are based on the cost of equity estimates presented in testimony by the members of the Brattle Group and, thus, do not serve as independent, unbiased, estimates subject to arms-length analysis.

3. The study is based on equity cost estimates for gas utilities, not electric utilities, and the market-traded companies included in the study were allowed to have as much as 50 percent of the earnings provided by unregulated operations. Attempting to discern small movements in cost of capital estimates for regulated operations is very difficult when the entity being examined also contains unregulated operations which are affected by different factors than the regulated operations.

4. The Brattle Group cost of equity study period encompasses the recent 2008/2009 "great recession." Any attempt to discern movements in equity capital costs due to one particular aspect of regulation would have to be characterized as difficult, at best.

5. The study includes gas companies that have varying amounts of decoupling as well as varying types of decoupling (some have full decoupling, some have "weather-related" decoupling, some have decoupling related to conservation initiatives), not all of which carry the same risk-reducing aspects. In fact, the Brattle Group study shows that 63 percent of the regulated subsidiaries included in the sample had no decoupling at all.

6. Finally, the ultimate capital cost measure used by the Brattle Group was the overall after-tax weighted-average cost of capital (ATWACC) rather than the cost of equity. Moreover, the ATWACC calculated by the Brattle Group is based on market-value capital structures and, because utility stock prices substantially exceed book values, that measure serves to exaggerate the cost of capital. Rate base/rate of return regulation is based on book values, not market values and using the latter to attempt to discern capital cost differences that may arise from changes in regulatory business risk is improper and would lead to an unreliable result.

In summary, the illogical result and questionable analysis of the Brattle Group study does not provide a reliable basis for this Commission to assess the equity cost impact of decoupling.

Q: Have other regulatory commissions lowered allowed returns to recognize the lower risks of a decoupling rate regime?

A: Yes. According to a December 2012 report by Pamela Morgan of Graceful Systems, the Commissions that have awarded an explicit reduction in the allowed return on common equity have done so within a range of 10 to 50 basis points.[14] However, as that same report points out, most of the decoupling decisions—even those where risk reduction is recognized by the parties in the proceeding—do not include an explicit reduction:

> Just over half of the time a utility has adopted decoupling, it has been as the result of commission approval of multi-party settlement agreements. It is

[14] Morgan, P., "A Decade of Decoupling for US Energy Utilities: Rate Impacts, Designs and Observations," Graceful Systems, LLC, December 2012, p. 14.

> impossible to know what the settling parties discussed in the course of reaching a settlement but one can conclude that the level of benefits to the utility and customers satisfied all signing parties. Settlements resolved the issue in favor of no ROE reduction in Arkansas, Colorado, Georgia, Idaho, Indiana, Maryland (for Washington Gas Light), Michigan (for Upper Peninsula Power), New Jersey, New York, North Carolina, Ohio, Oregon, Utah, Washington, and Wisconsin. In virtually all these cases, the commission's consideration of the issue is limited to a determination whether the settlement in its entirety is in the public interest.
>
> The next most common reason for the lack of an [explicit] ROE reduction is Commission rejection of making such an adjustment separately from all of the other considerations that result in an ROE decision. In Massachusetts, Connecticut and Hawaii, the Commissions found that decoupling reduces the utility's business risk but declined any specific quantification and considered this along with model results, comparisons to proxy companies, and other considerations such as management quality and public policy changes in choosing an ROE within the range to which experts had testified.[15]

The Morgan study also notes that, while decoupling causes rate adjustments that are both up and down, across all electric and gas utilities 63 percent of all adjustments to bring rates to authorize were surcharges and 37 percent were refunds. The surcharges to customers from decoupling outnumber the refunds two-to-one. Therefore, the shift in risk from the utility to the ratepayer afforded by decoupling, on average, causes rates to increase. That risk shift should be offset by a reduction in the allowed ROE.

[15] pp. 14-15.

As noted above, my analysis indicates that a reduction in the allowed ROE from 50 to 80 basis points is reasonable. However, in this instance, due to constraints imposed by the designated range of reasonableness for the cost of equity capital, the recommended decoupling-related ROE reduction is 25 basis points—from 9.0 percent to 8.75 percent.

Q: What is the overall return produced with your recommended return on equity of 8.75 percent?

A: Exhibit No. SGH-15 shows that with an allowed a return on common equity of 8.75 percent, and the Company's requested ratemaking capital structure consisting of 49 percent common equity and 51percent long-term debt, the after-tax overall return would be 7.05 percent. With that overall return, and assuming a 35 percent Federal tax rate, the Company would have the opportunity to achieve a pre-tax interest coverage of 3.39 times. That level of interest coverage is greater than the pre-tax interest coverage earned by the Company, on average, over the past five years (3.10x).[16] Therefore, the return I recommend balances the interests of the Company and its ratepayers, includes a decrement to recognize the lower risk of decoupling and provides the Company an opportunity to earn a return sufficient to support its financial position as called for in *Hope* and *Bluefield.*

Q: Is it reasonable to apply the reduction to the allowed return on equity when the decoupling policy is implemented?

A: Yes. The Company's risk is reduced when the manner in which the collect

[16] Avista Corporation, S.C.E. Form 10-K, 2013, Schedule 12-"Ratio of Earnings to Fixed Charges." 2009 (3.20x), 2010 (3.03x), 2011 (3.30x), 2012 (2.63x), and 2013 (3.33x); average = 3.10x.

revenues is changed. Because the cost of equity is forward-looking, or expectational, a change in ratemaking policy now portends substantial changes that will exist in the future. As such, at the point when those changes are implemented the cost of capital will change. If the ROE is not lowered concurrently with the change in revenue collection, the utility will be unnecessarily advantaged by being allowed to collect an equity return in rates that is higher than the cost of that type of capital. Ratepayers will be unnecessarily disadvantaged by providing an equity return in rates that is higher than the utility's cost of capital.

VI. COMPANY COST OF CAPITAL ANALYSIS

Q: What methods has Company witness Mr. McKenzie used to estimate the cost of equity capital in this proceeding?

A. Mr. McKenzie has based his equity return recommendation for Avista's Washington operations on a DCF analysis of a sample group of BBB-rated electric utilities. In addition, Mr. McKenzie has relied on an Empirical CAPM (ECAPM) analysis, along with a Risk Premium analysis based on allowed returns. For corroboration purposes, Mr. McKenzie also prepared a traditional CAPM analysis and a Comparable Earnings analysis, which he terms an "expected earnings approach." Finally, Mr. McKenzie also includes an analysis of the cost of equity of unregulated firms.

With those methods, Mr. McKenzie estimates the current cost of equity for Avista to be in the range of 9.50 percent to 11 percent. To that estimate, he adds 15 basis points for flotation costs to reach a recommended cost of equity

range of 9.65 percent to 11.15 percent. Within that range, the Company has selected a 10.1 percent return on common equity on which to base the rate request in this proceeding.

Mr. McKenzie's equity cost analyses suffer from flaws that cause his equity cost estimates to be overstated. I will discuss the shortcomings of each of Mr. McKenzie's cost of capital methods in the order in which they are presented in his Direct Testimony: DCF, ECAPM, Risk Premium, CAPM, Expected (Comparable) Earnings, and the DCF analysis of firms that are not rate-regulated.

A. Mr. McKenzie's DCF Analysis.

Q: What are your comments regarding Mr. McKenzie's DCF analysis?

A: Mr. McKenzie's DCF analysis of electric utility companies, shown in his Exhibit No. AMM-6, overstates the cost of equity for two primary reasons. First, his DCF results rely primarily on projected earnings growth. While, as I discussed in Section III of my testimony, sell-side analysts' projected earnings growth overstates actual long-term growth. Even though the overstatement with utility companies is less than that with unregulated firms, relying only on projected earnings growth will tend to provide a DCF cost of equity estimate that is overstated.

The fact that analysts' projected earnings growth rates overstate the cost of capital is shown on page 3 of Mr. McKenzie's Exhibit No. AMM-6. That Exhibit shows that the average of Mr. McKenzie's three earnings-centric DCF results is 9.7 percent, while the DCF result for his sustainable growth (br+sv) analysis is 8.6 percent--fully 100 basis points less.