Conley E. Ward [ISB No. 1683]
GIVENS PURSLEY LLP
601 W. Bannock Street
P.O. Box 2720
Boise, ID 83701-2720
Telephone No. (208) 388-1200
Fax No. (208) 388-1300
cew@givenspursley.com

Attorneys for Potlatch Corporation.
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BEFORE THE IDAHO PUBLIC UTILITIES COMMISSION

IN THE MATTER OF THE APPLICATION OF AVISTA CORPORATION FOR THE AUTHORITY TO INCREASE ITS RATES AND CHARGES FOR ELECTRIC AND NATURAL GAS SERVICE TO ELECTRIC AND NATURAL GAS CUSTOMERS IN THE STATE OF IDAHO.	Case Nos. AVU-E-04-1 AVU-G-04-1

DIRECT TESTIMONY OF JOHN S. THORNTON

ON BEHALF OF POTLATCH CORPORATION

June 21, 2004

ORIGINAL

EXECUTIVE SUMMARY
PREFILED DIRECT TESTIMONY OF
JOHN S. THORNTON, JR.

CASE NOS. AVU-E-04-01 & AVU-G-04-01
AVISTA CORPORATION

Mr. Thornton testifies to Avista Corporation's (Avista) appropriate return on equity (ROE) and overall rate of return (ROR) that should be allowed in rates. Mr. Thornton recommends an 8.5 percent return on common equity based on his capital asset pricing model and discounted cash flow model analyses of the cost of equity to the electric utility industry. He recommends an 8.49 percent overall rate of return.

Mr. Thornton addresses Mr. Malquist's prefiled direct testimony regarding the return on equity, the cost of debt and preferred stock, the capital structure and the rate of return. Mr. Thornton expresses concern that Mr. Malquist recommends an 11.5% ROE based on his personal beliefs without any financial or economic analysis.

Mr. Thornton also addresses the prefiled direct testimony of Dr. William Avera. Dr. Avera presents cost of equity analysis to support Mr. Malquist's return on equity recommendation. Dr. Avera testifies that the 11.5% ROE request represents a conservative estimate of the cost of equity to Avista. Mr. Thornton discusses the problems with Dr. Avera's analyses that lead to Dr. Avera's upwardly biased estimates of the cost of equity.

Prepared Direct Testimony of John S. Thornton, Jr.
Avista Corporation
Case Nos. AVU-E-04-01 & AVU-G-04-01
June 21, 2004

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Witness Identification

Q. PLEASE STATE YOUR NAME AND BUSINESS ADDRESS.

A. My name is John S. Thornton, Jr. and my business address is 7929 East Joshua Tree Lane, Scottsdale AZ 85250.

Q. BY WHOM ARE YOU EMPLOYED AND IN WHAT CAPACITY?

A. I am an independent consultant in utility finance. I appear as a witness on behalf of Potlatch Corporation.

Q. PLEASE DESCRIBE YOUR EDUCATIONAL BACKGROUND AND EXPERIENCE.

A. I hold a Master of Science degree from the University of London, having completed the Master's program (economics with specialty in corporate finance) at The London School of Economics and Political Science (The LSE). I also hold a Graduate Diploma from The LSE. I have participated as a cost of capital expert in numerous electric utility, local gas distribution, and telephone cases in the states of Oregon, Washington, California, Nevada, and Arizona, and I participated in gas pipeline cases before the Federal Energy Regulatory Commission. I was a Senior Economist for the Public Utility Commission of Oregon and its chief rate-of-return witness. I recently left my position as the Chief of the Financial and Regulatory Analysis Section of the Arizona Corporation Commission's Utility Division to consult independently. My background is described further in my Witness Qualifications Statement found on pages 48-50 of Exhibit JST–1.

Scope of Testimony

Q. WHAT WAS YOUR ASSIGNMENT IN THIS CASE?

A. My assignment was to estimate a fair return on equity (ROE) and rate of return (ROR) for Avista Corporation's electric and gas utility operations in this proceeding. I also reviewed Avista Corporation's testimony on the rate of return prepared by Malyn Malquist and cost of equity testimony prepared by Dr. William Avera.

Summary Recommendation

Q. PLEASE SUMMARIZE YOUR FINDINGS ON AVISTA CORP.'S COST OF EQUITY AND RATE OF RETURN.

A. I estimate Avista Corp.'s cost of equity to be 8.5 percent. I recommend an 8.49 percent rate of return, calculated on page 1 of Exhibit JST-1. I also offer ROR calculations incorporating the high and low end of my cost of equity estimates.

Q. WHAT DID YOU FIND IN YOUR REVIEW OF THE COMPANY'S COST OF EQUITY ANALYSES?

A. I found that Mr. Malquist recommends an 11.5 percent return on equity. He provides no cost of equity analysis or reasoning behind his recommendation other than a belief that "the 11.5% provides a reasonable balance of the competing objectives of regaining financial health within a reasonable period of time, and the impacts that increased rates have on our customers." (*See* Direct Testimony of Malyn Malquist, page 22 at 3 to 6.) He also believes that a return on equity greater than 11.5 percent is supported and warranted.

Q. SHOULD THE COMMISSION ADOPT AN 11.5 PERCENT ROE BASED ON MR. MALQUIST'S BELIEFS?

A. No, the Commission should not adopt an 11.5 percent ROE based on Mr. Malquist's beliefs, which are absent of any financial or economic analysis on his part. Mr. Malquist's testimony is also inconsistent with Avista's actions. Avista recently increased its dividend, thereby draining cash from the utility, and Avista fully intends to increase its dividend further. I would recommend that Avista retain that cash, build its equity position or pay off debt and thereby improve its financial health. In Avista's May 25, 2004, Webcast conference, I understood Mr. Malquist to say that Avista would have been increasing dividends even further if it were not for a restrictive bond covenant that limited dividend increases. In other words, Avista is not sufficiently committed to building its own financial house internally. Avista prefers to improve its financial health through higher rates at the expense of ratepayers.

Q. WHAT IS THE PURPOSE OF DR. AVERA'S TESTIMONY?

A. Dr. Avera's purpose is to present his evaluation of Avista's current cost of equity for Avista's jurisdictional electric operations. (*See* Direct Testimony of Dr. William Avera, page 3 at 7 to 9.) He concludes that Avista's cost of equity significantly exceeds 11.5 percent.

Q. WHAT DID YOU FIND IN YOUR REVIEW OF DR. AVERA'S ANALYSIS?

A. I found that his results are upwardly biased and should not be used to set the ROE in this case.

Capital Structure

Q. WHAT IS AVISTA CORPORATION'S RECOMMENDED CAPITAL STRUCTURE?

A. Avista Corporation's recommended capital structure is found in the Prefiled Direct Testimony of Malyn K. Malquist. He recommends the following September 30, 2004, pro forma capital structure:

Avista Corporation Filed Capital Structure	
Debt	48.19%
Trust Preferred Securities	5.79%
Preferred Equity	1.72%
Common Equity	44.30%

Q. DO YOU RECOMMEND ANY CHANGES TO MR. MALYN'S PRO FORMA CAPITAL STRUCTURE?

A. No.

Fair and Reasonable Return on Equity

Q. HOW DO YOU DEFINE THE TERM "COST OF EQUITY?"

A. A firm's cost of equity is that rate of return on equity that investors expect to earn on their equity investment given the risk of the firm. Investors' expected return is equally defined as the return on equity that they expect on other investments of similar risk.[1] My testimony on Avista Corporation's cost of equity starts with a

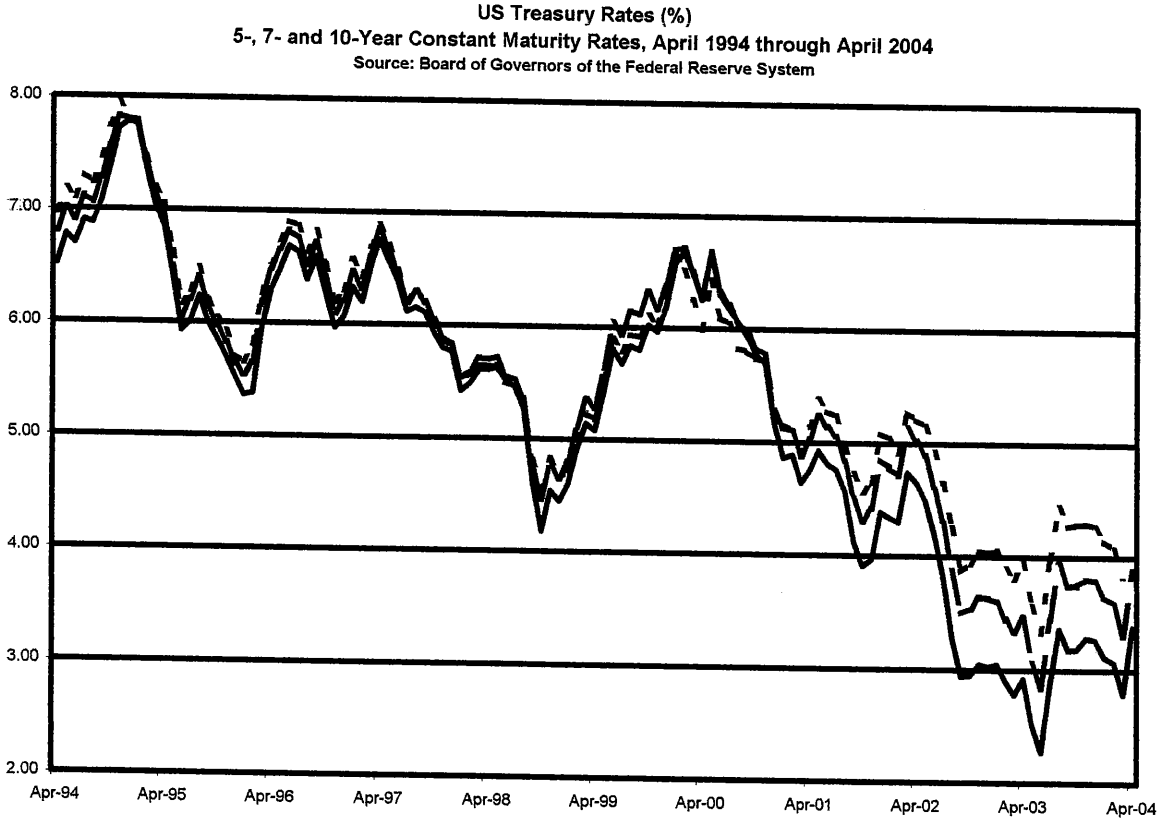
[1] More precisely, the *marginal* investor determines the firm's cost of capital. The marginal investor will bid the price of the security up to a point that the investor expects to earn the cost of capital and no less. Then, the security is in equilibrium. The definition of expected return based on returns on investments of similar risk (the "comparable earnings" standard) also assumes that the alternate security is in equilibrium and the investor does not expect to earn excess profits on that alternate security. For example, assume securities A and B are of similar risk and have a 10 percent cost of equity. Now assume that security B developed an invention such that it will realize a

historical perspective on interest rates and stock returns and then it focuses on the cost of equity to the electric utility industry.

A Historical Perspective on Interest Rates

Q. FIRST, PLEASE PUT CAPITAL COSTS IN PERSPECTIVE. WHAT HAS BEEN THE TREND OF INTEREST RATES OVER THE PAST TEN YEARS OR SO?

A. Interest rates have declined significantly over the past ten years and breached the record lows seen in 1993. The chart below graphs intermediate-term[2] U.S.



20 percent return to current investors forever. *However, 20 percent is not security B's cost of equity; nor is it security A's.* The marginal investor will bid up the price of security B's stock (the price will double) until the marginal investor only expects to earn the 10 percent cost of equity in equilibrium on security B. The 10 percent equilibrium rate of return is security B's, and security A's, required rate of return.

[2]U.S. Treasury constant-maturity five-, seven-, and ten-year rates published by the Board of Governors of the Federal Reserve System.

Treasury rates from April 1994 through April 2004:

Q. WHERE ARE INTEREST RATES NOW WITH RESPECT TO HISTORICAL RATES?

A. Interest rates are currently low compared to historical rates. The graph below shows ten-year U.S. Treasury constant maturity security yields from April 1953 (the beginning of the data series) through April 2004. You can visually see in the graph that interest rates are near lows over that span of history.

10-Year US Treasury Constant Maturity Rates (%)
April 1953 to April 2004
Source: Board of Governors of the Federal Reserve System

About seventy percent of ten-year-maturity U.S. Treasury constant-maturity rates throughout this historical time period exceed the current 4.73 percent ten-year rate.

The Federal Reserve reported that on May 4, 2004, the Federal Open Market Committee voted to keep its target federal funds rate at 1 percent, a 46-year low. (*See* http://www.stlouisfed.org/.) Interest rates and capital costs are low by historical standards.

A Historical Perspective on Stock Returns

Q. WHAT HAVE BEEN HISTORICAL NOMINAL RETURNS FOR AVERAGE-RISK SECURITIES?

A. The following table reproduces average (arithmetic and geometric) nominal returns for a range of domestic and international stock price indicator series (1972 to 1995):

Annual Percentage Rates of Return for Stock Price Indicator Series: 1972-1995		
Stock Index Series	Arithmetic Average	Geometric Average
Dow Jones Industrial Average	8.91%	7.58%
S&P 500	9.07%	7.79%
AMEX Value Index	12.2%	9.81%
NASDAQ Composite	12.79%	10.67%
Wilshire 5000	9.58%	8.16%
Toronto SE 300 Composite	11.97%	10.68%
Financial Times All-Share	14.24%	9.94%
FAZ	8.61%	6.02%
Nikkei	11.54%	8.76%
Tokyo SE Index	11.78%	8.78%
Morgan Stanley World	9.61%	8.28%
Average	10.94%	8.77%
Source: Frank J. Reilly, Investment Analysis and Portfolio Management, fifth edition, p. 172.		

One should keep in mind that these series measure actual returns, not expected returns. However, any request for an allowed ROE above 11.0 percent

exceeds the geometric mean return for **all** of these indices of average-risk securities' returns. The average electric utility in my sample is significantly less risky than the average security, as I will later discuss in my capital asset pricing model analysis.

Q. PLEASE EXPLAIN THE DIFFERENCE BETWEEN AN ARITHMETIC AND A GEOMETRIC AVERAGE RATE OF RETURN.

A. Let me answer you through an example. Let us say that you invested $100 in a stock. The first year you made 100 percent return on your money (your stock's value has risen to $200), but the second year you lost 50 percent of your money (alas, your stock's value has fallen back to $100). The arithmetic average is the simple average of 100 percent and -50 percent, or 25 percent [(100% + -50%)/2]. The geometric average is a bit more complicated. In this example, you add the number one to each of the annual returns to form two "value relatives," multiply the value relatives together, take the square root, and then subtract the number one:

$$\textit{Geometric average} = \sqrt{(1+100\%)(1+(-50\%))} - 1$$
$$= 0\%$$

Notice in this case the arithmetic average rate of return is spurious. If you invested $100, made 100 percent the next year but then lost 50 percent in the following year, then you would end up with $100, exactly where you started. The geometric average correctly indicates that your average rate of return over two years is zero percent. The arithmetic average rate of return would have you believe that, on average, you made 25 percent return per year. The geometric average rate of return is used to express average rates of return over time.

Q. WHAT HAS BEEN THE LONG-TERM AVERAGE NOMINAL RETURN TO THE AVERAGE-RISK STOCK SINCE 1926?

A. The geometric average return for stocks from 1926 through 2003 was about 0.79 percent per month, or about 10 percent compounded per year.

Q. WHAT HAVE HISTORICAL REAL RETURNS BEEN FOR AVERAGE-RISK SECURITIES?

Wharton School finance professor Jeremy J. Siegel, author of the book *Stocks For The Long Run*, found that the average real return on U.S. equities has been 6.9 percent using 200 years of data from 1802 through 2001.[3] I include pages 11 to 24 of his book on pages 2-12 of Exhibit JST–1 because they discuss a number of issues pertinent to this case, including U.S. stock return history, international equity returns, and the equity premium. The 6.9 percent real return on stocks has been remarkably stable over time. Dr. Siegel writes on pages 12 and 13 of his book,

> "The real return on equities has averaged 6.9 percent per year over the past 200 years.... Note the extraordinary stability of the real return on stocks over all major subperiods: 7.0 percent per year from 1802-1870, 6.6 percent from 1871 through 1925, and 6.9 percent per year since 1926. Even since World War II, during which all the inflation that the United States has experienced over the past 200 years occurred, the average real rate of return on stocks has been 7.1 percent per year. This is virtually identical to the preceding 125 years, which saw no overall inflation. This remarkable stability of long-term real returns is a characteristic of *mean reversion*, a property of a variable to offset its short-term fluctuations so as to produce far more stable long-term returns."

[3] Jeremy J. Siegel, *Stocks for the Long Run*, third edition, McGraw-Hill, 2002, p. 13.

The current expected rate of inflation over the next ten years is approximately 2.7 percent based on U.S. Treasury yield data,[4] leading one to conclude that the average-risk security is expected to yield a nominal 9.6 percent rate of return.

Q. HAVE OTHER MAJOR INTERNATIONAL MARKETS HAD REAL RETURNS GREATER THAN THE HISTORICAL RETURNS IN THE U.S. EQUITIES MARKETS INDICATING A HIGHER MARKET RETURN IF ONE WERE TO INCLUDE INTERNATIONAL EQUITIES?

A. No, in fact just the opposite seems to be the case. Dr. Siegel calculated the following compound annual real equity returns for Germany, the United Kingdom, and Japan:[5]

Compound Annual Real Equity Returns (1926-2001)			
US	Germany	U.K.	Japan
7.00%	6.44%	6.01%	2.93%

Therefore, these international equities' real returns did not exceed the 7.0 percent real return on U.S. equities over the 1926-2001 period and including them would not result in a higher assessment of equities' real expected returns.

Similar conclusions to Dr. Siegel's were reached by Elroy Dimson, Paul Marsh and Mike Staunton in their book *Triumph of the Optimists, 101 Years of Global Investment Returns*. They found that for the 101-year period 1900 to 2000

[4] Estimated as the link relative difference between 10-year U.S. Treasury yield (4.73%) and a ten-year inflation-indexed Treasury security (2.0%) quoted in the May 26, 2004, of *The Wall Street Journal*.
[5] Jeremy J. Siegel, *Stocks for the Long Run*, third edition, McGraw-Hill, 2002, p. 19.

U.S. equities returned 10.1 percent per annum in nominal terms and 6.7 percent in real terms.[6]

Electric Utility Risk and Its Relationship to an Average-Risk Security

Q. ARE ELECTRIC UTILITY COMPANIES MORE RISKY OR LESS RISKY THAN THE AVERAGE-RISK SECURITY?

A. Electric utility companies are significantly less risky than the average-risk security. I provide quantitative evidence to support my assertion in the capital asset pricing model section of my testimony: the average risk security has a capital asset pricing model beta of 1.0, while the average electric utility from my sample has a *Value Line* beta of .72, which is 28 percent less risky than the average-risk security.

Q. WHAT DOES THE EVIDENCE THAT AN ELECTRIC UTILITY IS SIGNIFICANTLY LESS RISKY THAN THE AVERAGE-RISK SECURITY IMPLY ABOUT EXPECTED RETURNS ON ELECTRIC UTILITY EQUITY INVESTMENTS?

A. The fact that an electric utility is less risky than the average-risk security implies that an electric utility's cost of equity and returns are expected to be significantly lower than the average-risk security.

[6] Elroy Dimson, Paul Marsh and Mike Staunton, *Triumph of the Optimists, 101 Years of Global Investment Returns*, Princeton University Press (2002) pages46 and 47.

Cost of Equity to the Electric Utility Industry

Q. WHAT METHODS DID YOU USE TO ESTIMATE THE COST OF EQUITY CAPITAL TO AN AVERAGE ELECTRIC UTILITY AND AVISTA CORPORATION?

A. I used the discounted cash flow (DCF) model and the capital asset pricing model (CAPM). These two models are widely used for estimating the required return on equity. I applied my DCF and CAPM analyses to a sample of electric utility companies. I used a sample in order to limit estimation error that might be involved with applying the models to Avista exclusively.

Sample Selection

Q. WHAT SAMPLE OF COMPANIES DID YOU USE AND HOW DID YOU SELECT THEM?

A. I selected thirty-two electric utilities amongst all the electric utilities covered by *The Value Line Investment Survey* (*Value Line*). I eliminated companies for whom *Value Line* did not report comparable data through at least 1998 or had skipped a dividend or had negative earnings since 1998, companies for whom *Value Line* did not forecast dividends, and companies that did not appear to be primarily domestic integrated electric utility companies.

DCF Model Analysis

Q. PLEASE DESCRIBE THE DISCOUNTED CASH FLOW MODEL.

A. The DCF model[7] is based upon the premise that a company's stock price is equal to the present value of all future dividends expected to be received by a share of stock. The expected dividends are discounted by the company's cost of common equity.

Mathematically, the DCF model for the cost of equity is represented by the following equation:

$$(1) \quad P_0 = \frac{D_1}{(1+k)} + \frac{D_2}{(1+k)^2} + \frac{D_3}{(1+k)^3} + \ldots \frac{D_n}{(1+k)^n}$$

Equation (1) is quite simple and says that the current price of a stock (P_0) is equal to the sum of expected future dividends (D_1 through D_n) discounted into present value terms at the company's cost of equity (k). D_1 is the dividend expected one year hence, D_2 is the dividend expected two years hence, etc. Dividends can be related to each other by growth rates. For example, D_2 is equal to D_1 times a growth factor, D_3 is equal to D_2 times a growth factor, D_4 is equal to D_3 times a growth factor, etc. In this way, each dividend can be related to the dividend before it through a growth factor. If we already know a stock's price and can estimate forecasted dividends (or dividend growth rates) then we can use equation (1) to give us the cost of equity, k, through a calculation called an "internal rate of

[7] A full derivation is included in the appendix to this testimony. The DCF model was first formalized in John Burr William's book *The Theory of Investment Value* (Cambridge: Harvard University Press, 1938). The concept of discounting dividends to value a stock dates back to at least 1930 and Robert F. Wiese's article "Investment for True Values." *Barrons*, September 8, 1930 p. 5. The DCF model was resurrected by Myron Gordon and E. Shapiro who used it to solve for the cost of equity in their article, "Capital Equipment Analysis: Required Rate of Profit," *Management Science* 102 (October 1956). Myron Gordon expanded the DCF model in the early 1960's, employing the model mainly as a method for estimating the cost of capital. He later published his work in *The Cost of Capital to a Public Utility* (Michigan: MSU Public Utilities Studies, 1974). Myron Gordon is considered the father of modern DCF analysis.

return" calculation. That calculation essentially finds the cost of equity that equates the present value of dividends to the current stock price.

Q. HOW DID YOU APPLY THE DCF MODEL?

A. I applied the DCF model using the multi-stage growth model. The multi-stage growth model is generally superior to the constant-growth DCF model because it allows for flexibility in dividend growth rates. This flexibility is impossible in the constant-growth model. The extra computing cost associated with implementing the multi-stage model is minimal compared to the model's benefits. The multi-stage model cannot be inferior to the constant-growth DCF model; therefore one should use the multi-stage model if possible. I applied the model to each of the thirty-two companies in the sample and I averaged the costs of equity derived from each of the companies. My multi-stage growth model included *Value Line* dividends expected over the next twelve months (the first stage), *Value Line*'s dividend forecasts and their implied dividend growth rates for 2004 to 2007-2009 (the near-term stage) and a series of forecasted dividends growing at a long-term growth rate (the long-term stage). The first input, however, is the current stock price.

Q. WHAT DID YOU USE FOR THE CURRENT STOCK PRICE, P_0?

A. I used closing stock prices for the current stock price, P_0, from the May 26, 2004, issue of *The Wall Street Journal* for May 25, 2004, prices. The most current spot prices are the correct prices to use for P_0 because current spot prices include all current and past information.

The First Stage

Q. WHAT DID YOU USE FOR THE FORECAST DIVIDEND, D_1, FOR THE FIRST STAGE?

A. I obtained forecasts of D_1 (the expected dividend per share over the next twelve months) directly from the May 21, 2004, "Summary and Index" to *Value Line* (Est'd Div'd next 12 mos). This gave me a direct forecast of D_1, or dividends expected over the twelve months. My sample's average dividend yield is 4.55 percent, shown on page 13 of Exhibit JST–1.

The Second Stage

Q. WHAT DID YOU USE FOR THE FORECAST DIVIDENDS FOR THE SECOND OR NEAR-TERM STAGE?

A. I grew the expected dividend per share over the next twelve months (D_1) by *Value Line*'s implied dividend growth rates for the period 2004 to 2007-2009 for three years. The multi-stage model allows one to use *Value Line*'s (interpolated) dividend forecasts for each company to be included in the DCF and it is a superior method to using a constant growth rate across all companies because one is using data more efficiently.

The Third Stage

Q. WHAT DID YOU USE FOR THE FORECAST DIVIDENDS FOR THE THIRD OR FINAL STAGE OF GROWTH?

A. I took the last dividend for each sample company in my near-term stage and grew that dividend at a long-term rate. My estimate of dividend growth in the long-term stage is 3 percent to 5 percent. I estimated the long-term dividend growth

component after reviewing a large amount of historical and forecast electric utility industry and macroeconomic data that can be helpful in estimating long-term dividend growth, and based on my previous experience in estimating dividend growth for electric utilities. My sample's average dividend actually declined between 1998 and 2003. Earnings and book value have both grown, on average, 1.9 and 3.6 percent, respectively. *Value Line*'s estimated "'00-'02/'01-'03 to '07-'09" annual rate of dividend growth for my sample of companies averages 1.6 percent. The same estimates for earnings and book value growth are 3.3 and 4.3 percent, respectively. Sample br, or intrinsic growth, has averaged 3.4 percent for the period 1998 through 2003.

Q. WHAT BROAD MACROECONOMIC DATA MIGHT YOU USE TO GAUGE INVESTORS' EXPECTATIONS OF DIVIDEND GROWTH?

A. One might use economic growth and share growth. Dividends per share is a ratio of total dividend payments divided by total shares outstanding. Therefore, dividend per share growth might be modeled by estimating the expected growth in total dividends (in the numerator) minus the expected growth in shares outstanding (in the denominator). To model total dividend payment growth, one might use national economic growth because electric utility dividends cannot exceed electric industry earnings over the long term and electric utility earnings cannot exceed national domestic economic growth in the long term. Real U.S. gross domestic product (GDP) growth has been 3.26 percent per year from January 1953 through January 2004[8] and current inflation is expected to be 2.7 percent based on my earlier calculation, resulting in nominal growth of 6.0

percent (3.26% + 2.7%). My sample's outstanding shares grew 2.8 percent between 1998 and 2003 and are expected to grow .92 percent from 2003 through 2007-2009. Therefore, subtracting per share growth from nominal GDP growth results in a "dividend"-per-share growth rate range of 3.2 percent (6.0% - 2.8%) to 5.1 percent (6.0% - .92%).

Q. WHAT BROAD MACROECONOMIC DATA SPECIFIC TO DIVIDENDS MIGHT YOU USE TO GAUGE INVESTORS' EXPECTATIONS OF DIVIDEND GROWTH?

A. Jeremy Siegel, in his book *Stocks For The Long Run* (third edition, page 94) reports that real annual per share dividend growth has been 1.09 percent for the period 1871 through 2001 in the following table:

Period	Real GDP Growth	Real Per-Share Earnings Growth	Real Per-Share Dividend Growth
1871-2001	3.91%	1.25%	1.09%
1871-1945	4.51%	0.66%	0.74%
1946-2001	3.11%	2.05%	1.56%

Adding an expected inflation rate of 2.7 percent to a real 1.09 percent real dividend growth rate results in about 3.8 percent expected dividend growth (1.09% + 2.7%). Relying on the post-war 1.56 percent real per share dividend growth rate results in about 4.3 percent annual growth (1.56% + 2.7%). These data suggest about a 4 percent dividend per share growth rate.

Q. WHAT IS THE MARKET-TO-BOOK RATIO FOR YOUR SAMPLE OF COMPANIES AND WHAT DOES IT IMPLY?

[8] Source: U.S. Department of Commerce: Bureau of Economic Analysis.

A. The market-to-book ratio for my sample of companies is 1.62. A market-to-book ratio greater than 1.0 indicates that my sample of utilities is expected to earn accounting ROEs significantly greater than the utilities' costs of equity. I prove this relationship in the appendix. Over earnings can result from many factors, including commissions authorizing ROEs in excess of the costs of equity. The observation that the electric utilities are expected to over earn casts doubt on using expected earnings or earnings growth to estimate long-term dividend per share growth. Therefore, earnings forecasts should not be used as a proxy for the cost of equity because they over estimate the cost of equity.

The market-to-book ratio for Avista is 1.07, indicating that is expected to earn accounting returns close to its cost of equity. *Value Line* forecasts Avista's accounting return on equity to be 8 percent in the 2007-2009 time frame.

Q. WHAT ARE YOUR AVERAGE COST OF EQUITY ESTIMATES FOR YOUR SAMPLE COMPANIES USING THE MULTI-STAGE DCF MODEL AND YOUR RANGE OF LONG-TERM DIVIDEND GROWTH RATES?

A. My estimates are summarized in the table below:

Multi-Stage DCF Estimates	
3% long-term stage growth rate	7.5%
4% long-term stage growth rate	8.4%
5% long-term stage growth	9.2%
Average:	8.4%

I include the summary tables supporting my multi-stage DCF estimates on pages 14-16 of Exhibit JST–1.

Capital Asset Pricing Model Analysis

Q. PLEASE DESCRIBE THE CAPITAL ASSET PRICING MODEL (CAPM).

A. The CAPM is the result of the work of Nobel Prize winning financial economists Harry Markowitz and William Sharpe. The CAPM assumes that investors like investment returns but dislike the risk or volatility associated with those returns.[9] The result is that investors require a greater return for bearing greater risk. The CAPM is based upon modern portfolio theory; the theory that assumes investors purchase assets in portfolios, and in doing so reduce the total variation of their returns. The total variation of a portfolio is less than the sum of its parts because in a diversified portfolio of risky assets some returns are high while others are low, offsetting each other. For example, stock A (a suntan lotion company) and stock B (an umbrella company) are both expected to earn 10 percent and have equivalent risk. However, it seems that returns on the two stocks move in exactly opposite directions. When it is sunny, stock A makes 15 percent but stock B makes 5 percent. When it is rainy, stock B makes 15 percent but stock A makes 5 percent. Combining the two stocks in a portfolio allows all risk to be diversified away, even though each of the companies' returns is still quite uniquely risky independently.[10] The unique risk that can be diversified away becomes irrelevant and investors do not require a return on this diversifiable risk. Diversification

[9] A more complete list of assumptions would include the following: (1) single holding period; (2) no restrictions on short selling or borrowing; (3) perfect and competitive securities market with no transactions costs; (4) the existence of a risk-free rate fixed over the holding period; (5) homogeneous expectations; (6) investors evaluate securities in terms of expectation and variance of future wealth; and, (7) investors are risk averse. Some assumptions can be relaxed and the basic result of the CAPM still holds. For example, the existence of significant transaction costs leads to parallel security market lines to the theoretical security market line, but beta still remains the index of risk.

allows investors to reduce their level of risk exposure for any given level of expected return. The risk that is left is called systematic risk. Systematic risk measures the extent to which a security's returns are correlated with returns in the general market of risky assets. In other words, the insight of the CAPM is that a firm's risk is not simply measured by the variability (standard deviation) of its own returns, but the extent to which its returns are related to market portfolio returns. The CAPM[11] is summarized in the following formula,

$$(2) \qquad E_{t-1}[R_{i,t}] = R_{f,t} + \beta_{i,t}(E_{t-1}[R_{M,t}] - R_{f,t})$$

Q. WHAT DO THESE VARIABLES REPRESENT?

A. $E_{t-1}[R_{i,t}]$ is the investors' expected return on security i over the investment horizon t and it is conceptually equivalent to the k term in the DCF model.[12] This term represents the cost of equity to Avista Corporation that we are attempting to estimate.

$R_{f,t}$ is the return on the risk-free asset during time period t. A default-free U.S. Treasury security is generally used as the proxy for the risk-free asset.

$\beta_{i,t}$ is an index of security i's systematic risk, called beta, expected over the investment horizon t.

$E_{t-1}[R_{M,t}] - R_{f,t}$ is the expected market risk premium. The market risk premium entices investors to invest in the market portfolio of risky securities

[10] More precisely, assuming that the variance of returns of companies A and B are the same, the portfolio of them together has the variance: $\sigma^2(A) + \sigma^2(B) + 2\rho(A,B)\sigma(A)\sigma(B)$. If $\rho(A,B) = -1$ (the securities' returns are perfectly negatively correlated), and $\sigma(A) = \sigma(B)$,then the portfolio variance equals 0.

[11] The CAPM's derivation can be found in many finance textbooks, including Ross and Westerfiled's book *Corporate Finance* (St. Louis: Time Mirror/Mosby College Publishing, 1988).

instead of the lower-yielding risk-free asset. The premium for investing in the market portfolio of risky assets is called the market risk premium.

Q. WHAT DOES THE CAPM FORMULA SAY?

A. The CAPM formula, equation (2), is intuitive and simple. The formula says that investors expect a yield on a company's risky security to equal the risk-free rate plus a risk premium. That company-specific premium is determined by multiplying beta, the measure of risk, by the overall market risk premium.

Q. WHAT DOES BETA MEASURE?

A. Beta measures the systematic risk of a company and it can be thought of as an index of relative riskiness. Systematic risk is the only form of risk that is relevant to estimating a company's cost of equity because all other risk can be eliminated through diversification (that is, buying a stock along with a portfolio of other stocks) as I discussed earlier. Systematic risk can be thought of more concretely as an index reporting the extent to which a security's returns are correlated with overall market returns (and the general economy). The average-risk security has a beta of 1.0 by definition and its returns are perfectly correlated with the market's returns. A more risky security has a beta greater than 1.0, and a less risky security has a beta less than 1.0. Public utilities generally have betas below 1.0 and are considered much less risky than the average firm.

Q. WHAT INFORMATION IS NEEDED TO APPLY THE CAPM?

A. We need estimates of the following over an assumed investment horizon of "t" years:

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[12] The two methods can produce different results, in principle, as articulated by M.J. Gordon and L.I. Gould in their article "Comparison of the DCF and HPR Measures of the Yield on Common Shares," *Financial Management* (Winter 1984).

The risk-free rate (R_f);

Beta (β_i); and,

The market risk premium ($E[R_m] - R_f$).

Q. HOW DID YOU APPLY THE CAPM FORMULA?

A. I applied the CAPM formula by first assuming that investors have an intermediate-term investment horizon, which I defined as between five and ten years long. An investment horizon is a period over which investors expect to hold securities when they first purchase those securities. The investment horizon is more formally called a holding period in financial economics.

Q. WHY DO YOU NEED TO MAKE AN EXPLICIT ASSUMPTION ABOUT INVESTORS' HOLDING PERIODS WHEN APPLYING THE CAPM?

A. The CAPM is known as a holding period model. One makes estimates of the risk-free rate, beta, and the market risk premium over some particular holding period to estimate the cost of equity during that period. The holding period length corresponds to the subscript "t" in equation (2).

Q. WHY DID YOU CHOOSE AN INTERMEDIATE-TERM HOLDING PERIOD?

A. I chose an intermediate-term holding period in conjunction with using intermediate-term U.S. Treasury securities (Treasuries) and based on my assumption that investors' expected investment horizons are intermediate in length. Intermediate-term Treasury yields are the most appropriate yields to use for rate making because short-term Treasuries (T-bills) can be too volatile for the rate-making process, though academic CAPM studies use short-term Treasuries. Long-term Treasuries (T-bonds) contain a "price risk" premium that should be

estimated and extracted before use in the CAPM.[13] I have never seen long-term Treasuries used in any academic study of the CAPM. Thirty-year Treasuries weren't even sold until fifteen years or so after the CAPM's publication and the U.S. Treasury has suspended its sales of the thirty-year bond. The U.S. Treasury no longer publishes a rate for maturities over 20 years. The intermediate term also corresponds most closely to the typical period during which utility rates are in effect and the period during which shareholders would require compensation. Authorized rates of return are not set as frequently as monthly, or as infrequently as every thirty years, but somewhere in between the two extremes. After establishing my holding period, I estimated the risk-free rate.

Risk-Free Rate

Q. WHAT IS YOUR ESTIMATE OF THE RISK-FREE RATE AND HOW DID YOU ESTIMATE IT?

A. I estimated the risk-free rate to be 4.3 percent. My estimate is based upon an average of intermediate-term U.S. Treasury securities' spot rates published in *The Wall Street Journal*. Published rates as determined by the capital markets are objective, verifiable, and readily available, as opposed to rates published by a forecasting service which are not necessarily objective, and are certainly not verifiable or readily available. I averaged the yields-to-maturity of three intermediate-term (five-, seven- and ten-year) U.S. Treasury securities quoted in the May 26, 2004, edition of *The Wall Street Journal*.[14] The page on which I

[13] Ibbotson Associates' *SBBI 2004 Yearbook*, page 175, estimates this long-term bond premium at 1.6 percent.

[14] The rates were: 3.88%, 4.40%, and 4.73%.

relied is included as page 17 of Exhibit JST–1. Page 18 of Exhibit JST–1 also shows a variety of interest rates. Notice that the Discount Rate, a key rate on the economy, is quoted at 2.00 percent and the Prime Rate is 4.00 percent. Interest rates and capital costs are low and investors can reasonably expect low authorized ROEs based on these low interest rates.

Beta

Q. WHAT IS YOUR ESTIMATE OF BETA?

A. I provide three beta estimates (.55, .59, and .72) for the Commission's consideration. They are derived from *Value Line*. My better beta estimates, as I discuss below, are the average *Value Line* betas for my sample of companies after correcting for a *Value Line* procedure that tends to bias utility betas upwards.

Q. ARE *VALUE LINE* BETAS THE BEST BETAS ON WHICH TO RELY FOR ESTIMATING THE COST OF EQUITY FOR UTILITIES?

A. No. Statistical evidence I reviewed indicates that other types of betas better represent actual market returns than *Value Line*-type betas which are ordinary least squares betas. These other betas include Fisher-Kamin betas and Wells (autoregressive conditional heteroskedasticity-corrected) betas. However, these other betas are not currently available to me and so I relied on the best information I had available. I made improvements to the reported *Value Line* betas by "de-adjusting" them somewhat. *Value Line* betas are adjusted toward 1.0 (actually toward 1.06 implicitly) under the presumption that betas naturally move toward 1.0 over time. The problem for estimating electric utility betas is that electric utility betas are less than 1.0 and they haven't historically shown a

systematic tendency over time to move toward 1.0. Therefore, *Value Line*'s procedure upwardly biases beta estimates for electric utilities.

Q. WHAT IS *VALUE LINE*'S ADJUSTMENT PROCEDURE AND HOW DID YOU IMPROVE *VALUE LINE*'S REPORTED BETAS BY DE-ADJUSTING THEM?

A. *Value Line*'s adjustment formula is,

Adjusted V-L beta: = .35 + .67*(unadjusted beta)

The average beta for my sample of electric utilities is .72. Reversing the formula to de-adjust a .72 beta results in a .55 unadjusted (or raw) average beta.

Unadjusted V-L beta: .55 = (.72 - .35)/.67

I also provide a beta re-adjusted to 1.0, but only by 10 percent:

Re-adjusted beta: **.59** = 10%x(1.0) + 90%x(55)

I report CAPM results based on these three betas: .55, .59, and .72. My sample companies' 2003 capital structures , *Value Line* betas, and my adjustments to them are shown on page 19 of Exhibit JST–1.

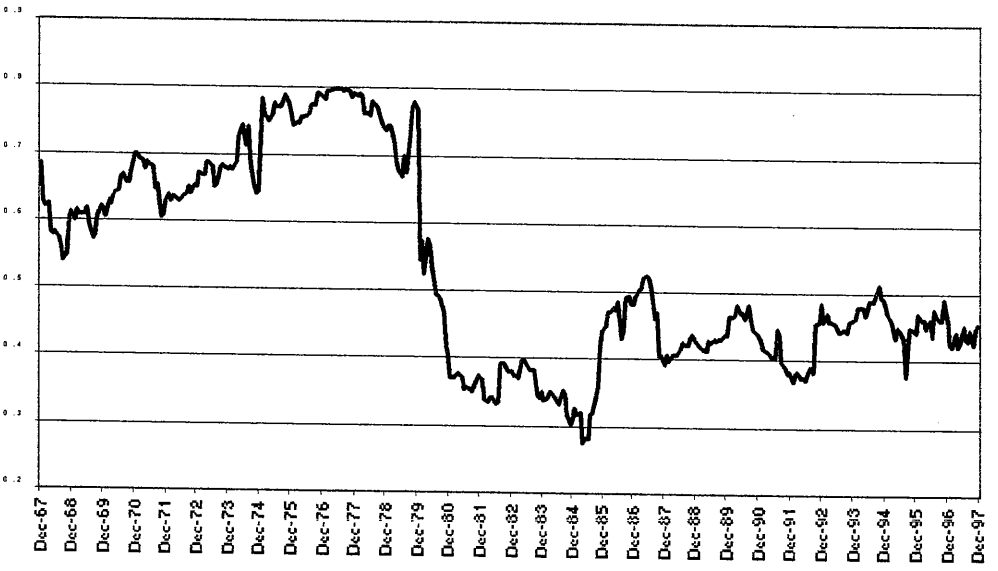
Q. HAVE ELECTRIC UTILITY BETAS SYSTEMATICALLY RISEN TOWARD 1.0 OVER TIME?

A. No, they have not systematically risen toward 1.0, at least not since 1967.

Q. ON WHAT DO YOU BASE YOUR CONCLUSION?

A. I performed a study examining the monthly sample average beta[15] of 74 electric utilities from 1967 to 1997. The results of my study are graphed below. CAPM beta risk has clearly fallen since the mid 1960s and 1970s. The chart below depicts the history of the average electric utility beta over time:

Electric Utility OLS Betas Over Time
December 1967 through December 1997



The graph would have looked like a ramp heading upward to 1.0 if electric utility betas had been systematically rising toward 1.0. The last beta on the graph is .46, which is only 0.9 less than the current .55 raw *Value Line* beta that I discussed above. Therefore, both the chart and recent evidence indicate that electric utility betas have not tended to systematically rise toward 1.0.

Q. WHY DO YOU CALCULATE A *VALUE LINE* BETA ADJUSTED TOWARD 1.0 BY 10 PERCENT?

A. I report a "re-adjusted" *Value Line* beta adjusted to 1.0 by 10 percent based on statistical studies of ordinary least squares betas and their forecast ability. The studies found that if an ordinary least squares beta is to be used and if it must be adjusted toward 1.0 then the best adjustment is 10 percent, on average.

[15] 60-month ordinary least squares.

Market Risk Premium

Q. WHAT IS YOUR RANGE OF MARKET RISK PREMIUM ESTIMATES?

A. My range of estimates is 6.1 percent to 7.8 percent.

Q. HOW DID YOU CALCULATE YOUR MARKET RISK PREMIUM RANGE?

A. My market risk premium range is my best estimate of the historical market risk premium (6.1 percent) and my current market risk premium (7.8 percent). If one consistently uses the long-run average market risk premium to estimate the expected market risk premium, one should, on average, be correct. Dr. Siegel, cited above, found that U.S. equities' real returns were quite stable over long periods and averaged 6.9 percent historically. At any one time the current market risk premium might be greater or less than the historical average. Estimating the current market risk premium presents more difficulty but it is useful information if it can be estimated with some confidence.

Q. PLEASE DESCRIBE WHAT AN INTERMEDIATE-TERM MARKET RISK PREMIUM IS AND HOW YOU ESTIMATED IT.

A. The expected market risk premium for an investor with an intermediate-term holding period is the difference between expected compounded returns on the market portfolio and the compounded returns on the risk-free asset over an intermediate period. For example, the historical market risk premium is the difference in returns between an investor's two accounts: one invested in the stock market and the other invested in U.S. Treasury securities, both over an intermediate period. The difference is then annualized.

I estimated the historical market risk premium by the following steps:[16]

1. I used the Center for Research in Securities Prices' 1926-1999 NYSE/AMEX/NASDAQ returns as a proxy for the theoretical market portfolio returns. I updated market returns through 2003 using Ibbotson Associates' *Stocks, Bonds, Bills, and Inflation 2004 Yearbook* (large company stock total return index [S&P 500]).

2. I used 1926-2003 data on intermediate-term U.S. Treasury securities rates from Ibbotson Associates' *Stocks, Bonds, Bills, and Inflation 2004 Yearbook* to estimate risk-free rates over that period. I used two different series from the *Yearbook*: yields (ex ante rates) and total returns (ex post rates). I performed separate analyses using each of the series.

3. I separated my 1926 to 2003 data into holding periods of five to ten years each such that all my data were used once, but only once (this method is technically called the simple unbiased estimator). I then calculated the average rate-of-return difference between holding the market portfolio and holding the risk-free rate over the intermediate term and then I annualized the difference.

My estimates are shown below:

Historical Market Risk Premium Estimates	
Ex Ante Risk-Free Rates	
72-month holding period	6.10%
78-month holding period	6.70%
104-month holding period	6.30%
Average:	6.40%
Ex Post Risk-Free Rates	
72-month holding period	5.70%
78-month holding period	6.30%
104-month holding period	5.50%
Average:	5.80%
Average of two midpoints:	6.10%
Estimates rounded to three decimal places	

The average of my midpoint estimates is 6.1 percent.

[16] My method is substantially the same as published by Russell J. Fuller and Kent A. Hickman in their article, "A Note on Estimating the Historical Risk Premium" *Financial Practice and Education* (Fall/Winter 1991) pp. 45-48.

Q. HOW DID YOU ESTIMATE THE CURRENT MARKET RISK PREMIUM?

A. I estimated the current market risk premium by essentially the same method that I used to calculate the historical market risk premium but I applied the method to forecasted data. For the forecast return on the market, I used *Value Line*'s forecasted dividend yield and capital appreciation for all 1,700 stocks it covers three to five years hence, or four years on average. *Value Line* forecasts 1.7 percent dividend yield over the next twelve months and 50 percent price appreciation three to five years hence. This gave me a total return forecast of about 11.9 percent per year for this broad basket of *Value Line* stocks over the next four years. The rate on a four-year U.S. Treasury note is currently 3.57 percent.[17] The implied annual expected market risk premium from these figures is 7.8 percent[18] (rounded to three decimal places). This calculation assumes a four-year holding period which is less than my five- to ten-year holding period assumption and it would lead to a biased-upward market risk premium estimate (shorter holding period assumptions tend to result in higher market risk premium estimates). However, I do not expect the bias to be significant enough to outweigh the benefit of the calculation.

Q. WHAT ARE YOUR CAPM COST OF EQUITY ESTIMATES?

A. My CAPM estimates, based on my three beta estimates and my historical and current market risk premium estimates, follow:

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[17] May 26, 2004, edition of *The Wall Street Journal*.

[18] The calculation is not the simple difference of the annualized market return and the annual risk-free rate. The nominal annual rate is calculated from the ratio of the two value relatives, one for the market basket and the other for the investment in the risk-free rate, and then annualized (annualized nominal monthly).

CAPM Estimates							
	$E(R_i)$	**=**	**Risk-Free Rate**	**+**	**Beta**	*****	**MRP**
Historical MRP	7.70%	=	4.30%	+	0.55	*	6.1%
	7.90%	=	4.30%	+	0.59	*	6.1%
	8.70%	=	4.30%	+	0.72	*	6.1%
Current MRP	8.60%	=	4.30%	+	0.55	*	7.8%
	8.90%	=	4.30%	+	0.59	*	7.8%
	9.90%	=	4.30%	+	0.72	*	7.8%
Average	**8.60%**						
Cost of equity estimates rounded to three decimal places.							

Cost of Equity Estimates to The Electric Utility Industry

Q. PLEASE SUMMARIZE YOUR COST OF EQUITY RANGE AND POINT ESTIMATES FOR THE ELECTRIC UTILITY INDUSTRY AND EXPLAIN HOW YOUR RANGE WAS CHOSEN.

A. I estimate that the cost of equity to the electric utility industry is within a range of 7.5 percent to 9.9 percent, based on my estimates shown in the table below:

Summary of Cost of Equity Estimates To The Electric Utility Industry	
DCF low	7.50%
DCF midpoint	8.40%
DCF high	9.20%
CAPM low	7.70%
CAPM midpoint	8.60%
CAPM high	9.90%
Electric industry cost of equity:	**8.50%**

My point estimate is 8.5 percent, the average of my DCF and CAPM midpoints.

Cost of Equity Estimates and ROE Recommendation For Avista Corp.

Q. SHOULD YOU ADJUST YOUR COST OF EQUITY FROM THE ELECTRIC UTILITY SAMPLE FOR DIFFERENCES IN CAPITAL STRUCTURES BETWEEN THE SAMPLE AND AVISTA CORP?

A. Yes. One should consider differences in capital structures between a sample and the company to which the estimate is applied (a higher percentage of debt in a capital structure implies a higher cost of equity because of increased financial risk). This adjustment is intended to be consistent with the CAPM. However, the percentage of common equity in Avista's filed capital structure (44.3 percent) is not significantly different from my sample's average level of common equity (45 percent). Therefore, I did not make any adjustment and I used my sample average cost of equity as my estimate of Avista's cost of equity. My estimate of Avista's cost of equity is 8.5 percent.

Recommended Rate of Return

Q. WHAT RATE OF RETURN (ROR) DO YOU RECOMMEND?

A. I recommend an 8.49 percent ROR. I also present two other ROR calculations based on my high and low cost of equity estimates. The three ROR calculations are shown on page 1 of Exhibit JST–1.

Q. IS YOUR ROR EXPECTED TO MAINTAIN THE COMPANY'S FINANCIAL INTEGRITY?

A. Yes. The interest coverage ratio implied by my recommended 8.49 percent ROR is 2.69, which can be expected to maintain or enhance the Company's financial integrity. Standard and Poor's *Corporate Ratings Criteria* (page 50) reports that

the median interest coverage ratio for utilities rated BBB was 2.1 in the 2000-2002 period. Avista Corporation's current rating for senior secured debt is BBB-. Neither of my other options results in a coverage ratio less than 2.1. Standard and Poor's *Corporate Ratings Criteria* reports that the median ROE for BBB-rated utilities was 7.4 percent (my recommendation is higher, which is better for the Company) and total debt to total capital was 62.6 percent (Avista's filed capital structure has 55.7 percent debt and preferred stock, which is lower and better for the Company). Therefore, the end result of my recommendation should allow Avista to maintain its financial integrity, earn returns comparable to returns of companies of similar risk, and attract capital.

Examination of Mr. Malquist's 11.5% Return on Equity Recommendation

Q. ON WHAT DOES MR. MALQUIST BASE HIS 11.5 PERCENT RETURN ON EQUITY RECOMMENDATION?

A. Mr. Malquist bases his recommendation on his own personal belief that "the 11.5% provides a reasonable balance of the competing objectives of regaining financial health within a reasonable period of time, and the impacts that increased rates have on our customers." (*See* Direct Testimony of Malyn Malquist, page 22 at 3 to 6.) He also believes that a return on equity greater than 11.5% is supported and warranted. He provides no financial analysis or cost of equity calculations to support his recommendation.

Q. SHOULD THE COMMISSION ADOPT AN 11.5 PERCENT ROE BASED ON MR. MALQUIST'S PERSONAL BELIEF?

A. No. The Commission should not adopt an 11.5 percent ROE based on Mr. Malquist's personal beliefs and assertions.

Examination of Dr. Avera's Cost of Equity Analysis

Q. PLEASE SUMMARIZE DR. AVERA'S COST OF EQUITY ANALYSIS.

A. Dr. Avera performed a constant-growth DCF on a sample of eight "western" electric utilities, an allowed ROE premium analysis on an undefined number of companies, a realized risk premium on an undefined number of companies, and a CAPM on his electric utility sample. His range of estimates from these methods is 10.2 percent to 11.7 percent. He adds 0.2 percentage points to his cost of equity estimates to account for flotation costs. I address his cost of equity analyses in turn, and then I address the inappropriateness of his increasing a cost of equity for flotation costs and for a unique risk adder based on bond yields.

Q. DR. AVERA SEEMS TO PORTRAY A RATHER GLOOMY OUTLOOK FOR THE ELECTRIC UTILITY INDUSTRY. DO YOU SHARE HIS PESSIMISM?

A. I do not share his pessimism. On page 15 beginning at line 3 of his direct testimony he states,

> "Combined with a stagnant economy and global uncertainties, the dramatic upward shift in investors' risk perceptions and the weakened financial picture of most industry participants, have combined to produce a severe liquidity crunch in the electric power industry."

His view seems to be supported by reports from 2002 and early 2003.

However, a more recent report by Fitch Ratings, titled *Fitch 2004 Outlook: U.S. Utilities and Merchant Energy Companies Both Stabilize* dated December 15, 2003, says,

> "Although the Outlook for the regulated and unregulated sectors is stable in both cases, this masks the divergent paths both segments have taken. While the investor-owned utilities (IOUs) either maintained creditworthiness or are well on their way to recovery, the merchant or competitive energy sector will need much more time (and consistent favorable developments) to recover."

I include Fitch's synopsis of its report as pages 20-21 of Exhibit JST–1. I do not share Dr. Avera's pessimism but look for financial improvements to IOUs in 2004 and beyond.

Q. IS HIS SAMPLE OF EIGHT WESTERN ELECTRIC UTILITIES APPROPRIATE?

A. I find that his sample is overly restrictive and that useful information on the risk of owning shares in an electric utility can be gained from companies in addition to those defined by *Value Line* as operating in the West (his sample universe). A small sample results in less efficient estimates and in which one should have less confidence. For example, in calculating the dividend yield in the DCF model, a larger sample allows for random daily fluctuations in spot stock prices to even themselves out, resulting in a more efficient estimator. An eight-company sample is less reliable than a thirty two-company sample, all else being equal.

I am also concerned that Dr. Avera's sample includes Sempra Energy that has divested its generation, according to *Value Line*, and Xcel Energy, Inc. that operates primarily in mid-western states and is emerging from its discontinued non-regulated NRG operations resulting in accelerated dividend growth.

Dr. Avera's Constant-Growth DCF Analysis

Q. HOW DID DR. AVERA APPLY THE DCF?

A. Dr. Avera used the constant-growth DCF model. He calculated a forward-looking 4.2 percent dividend yield from *Value Line* data, to which he added a 5 to 7 percent growth rate range.

Q. DO YOU AGREE WITH DR. AVERA'S DIVIDEND YIELD CALCULATION?

A. I take issue with his calculation of the dividend yield, though his 4.2 percent dividend yield is within my range of estimates that averaged 4.55 percent. The problem with his calculation is that he takes the dividend forecasts and stock prices from the same *Value Line Summary & Index* publication. His procedure is inappropriate because if the particular edition of *Value Line* from which he took dividend forecasts had any new information then that information would not be reflected in the (old) stock price that appears in the same edition. One should take stock price data after dissemination of the *Value Line* dividend forecast information in case the forecast contains any news. I point this out in order to make the record complete in this case.

Q. DO YOU AGREE WITH DR. AVERA'S 5 TO 7 PERCENT DIVIDEND GROWTH FORECAST ASSUMPTION?

A. No. I do not agree that investors could reasonably expect dividends for Dr. Avera's sample of companies to grow at 5 to 7 percent per year forever. His own data do not support a 5 to 7 percent dividend growth forecast. Dr. Avera relies on earnings growth forecast data shown on page 42 of his direct testimony. Those data show earnings growth forecasts between 2.4 percent and 5.4 percent.

Furthermore, those earnings growth forecasts are near term (not indefinite) in length and earnings growth forecasts are widely known to be overly optimistic. The average dividend growth rate for his sample companies for the ten years 1994 through 2003 is close to zero (0.219 percent). (*See* page 22 of Exhibit JST–1 for this calculation.) Dr. Avera's assumption that his companies will suddenly and forever increase their dividends by 6 percent per year forever after 2004 seems to be tremendously optimistic to the point of incredible. A six percent annual growth rate would exceed the historical dividend per share growth rate of the whole economy, according to evidence I presented earlier.

Q. WHAT ARE *VALUE LINE*'S DIVIDEND GROWTH PROJECTIONS FOR DR. AVERA'S SAMPLE COMPANIES?

A. *Value Line* publishes dividend forecasts for 2004, 2005, and the 2007-2009 period. The implied dividend growth rate for his sample is 3.35 percent for 2004 to 2007-2009 and 3.35 percent for the 2005 to 2007-2009 period. (*See* page 23 of Exhibit JST–1 for these calculations.) Therefore, one cannot conclude that investors reasonably expect an average annual 6 percent dividend growth in the near future (through 2009) much less into infinity.

Q. IF DR. AVERA'S DATA SUPPORTED A 3.0 PERCENT TO 5.0 PERCENT RANGE WHAT WOULD BE HIS DCF ESTIMATES?

A. Dr. Avera's cost of equity estimates would be 7.2 percent (4.2% + 3.0%) to 9.2 percent (4.2% + 5.0%) using a 3 to 5 percent growth rate range. In other words, a more reasonable interpretation of his data would lead to results near my range of estimates.

Dr. Avera's Allowed ROE Premium Analysis

Q. WHAT IS DR. AVERA'S ALLOWED ROE APPROACH AND IS IT AN ACCEPTABLE APPROACH TO USE IN THIS PROCEEDING?

A. Dr. Avera's allowed ROE approach compares annual average authorized ROEs for the years 1974 through 2002 with the yield on Moody's annual average public utility bond yield. This approach is frought with problems, from theoretical to statistical.[19] The fatal flaw of the approach is that the Idaho Public Utilities Commission is in no way able to determine what these allowed ROEs actually represent, what companies are used in the analysis, what data underlie the ROEs, to what capital structures they were applied, what risks the electric utility industry was facing at the time of the decisions, or what methods were used to arrive at them. For example, how many of the allowed ROEs in Dr. Avera's sample already include a flotation cost adjustment to which Dr. Avera would add a second adjustment in this proceeding? Other adjustments might also infect the allowed ROE such as the market pressure adjustment that utilities have sought, or an upward bias from applying the quarterly DCF model, which utilities have sought, or use of the "comparable earnings method," an inferior approach to estimate a cost of equity. Moreover, since market-to-book ratios have been above 1.0 for most of the years I have been performing electric utility cost of equity analysis, I conclude that allowed ROEs have, on average, been too high according

[19] Dr. Avera's regression includes the average public utility bond yield on both sides of his equation. Therefore, his "independent" variable is not truly independent. Even if there were no relationship between allowed ROEs and the average public utility bond yield, a regression of the premium of allowed ROEs above the average public utility bond yield and the average public utility bond yield would appear to show a relationship.

to the DCF model. Dr. Avera's approach simply reinforces past errors into Avista Corporation's future rates, and therefore his approach is circular in its logic.

This Commission has no way of evaluating these other authorized ROEs from other jurisdictions. Authorized ROEs from other jurisdictions and under other capital market circumstances do not determine the current cost of equity for Avista Corporation.

One would hope that commissions' cost-of-equity methods would improve over time. Dr. Avera's allowed ROE method locks in the lower common denominator of analyses performed years ago into future rates.

Dr. Avera's study in no way corrects for changing industry risk. Above, I presented evidence that electric industry risk has declined since the 1974-1979 period. Dr. Avera's study locks in dated and higher industry risk to the extent that it appropriately estimates the cost of equity at all (which I do not believe).

Dr. Avera's analysis does not account for the increasing risk of bonds since about 1970 (bonds can have betas too). I discuss this problem more fully below but the net result is that his method unambiguously overestimates the cost of equity.

Finally, Dr. Avera's study errs in that even if using other authorized ROEs were valid, he has not determined on what risk-free rates these other allowed ROEs were actually based. Commission orders can appear many months after any risk-free rate data on which they were based and taking yearly averages as Dr. Avera does only obscures any relationship. Interest rates declined for much of his period of study. Dr. Avera's method is out of step by mismatching authorized ROEs with declining interest rates.

In short, I recommend that the Commission give Dr. Avera's allowed ROE approach no weight. The reasoning is circular and it is not based on any substantial capital market theory.

Dr. Avera's Realized Rate of Return Analysis

Q. PLEASE EXPLAIN DR. AVERA'S REALIZED RATE OF RETURN APPROACH.

A. Dr. Avera calculates the average premium of realized electric utility stock returns above A-rated public utility bonds for the period 1946 through 2002. His calculated premium is 4.01 percent. He then adds this 4.01 percent premium to a (November 2003) 6.61 percent BBB-rated public utility bond rate.

Q. IS HIS APPROACH APPROPRIATE?

A. No. His approach is not appropriate for several reasons. First, realized returns on electric utility stocks include both systematic risk (that is rewarded in the CAPM) and unsystematic risk. This limited portfolio is exposed to unsystematic risk because it is not fully diversified into other industries such as banking, retail, etc. The problem is that unsystematic risk does not require a return and it is not priced in the market precisely because it can be diversified away. Dr. Avera's method effectively includes this unsystematic risk into his cost of equity estimate. The volatility of his sample's returns from 1994 through 2002 (25 percent) is greater than the volatility of the S&P 500 for the same period (22 percent), a clear indication of the unsystematic risk he is pricing into his analysis. His method asks ratepayer to recompense stockholders for risks that stockholders have diversified away.

Second, his analysis makes no allowance for changes in electric utility industry risk over the years. In fact, it incorporates varying risk levels over the entire 1946-2002 period, an approach that is certainly inconsistent with his CAPM approach which uses a current beta. This approach is really nothing more than the old "comparable earnings method" in stock return clothes.

Third, Dr. Avera's method does not take into account any increase in single-A rated public utility bonds' risk over the period. Below, I discuss Dr. Laurence Booth's finding that long-term bonds' betas have increased and how realized excess return premium methods will result in an upwardly biased estimate of the cost of equity to utilities.

Fourth, actual returns in the market likely exceeded expected returns for much of the time period on which Dr. Avera relied. As Fama and French indicate in their article "Equity Premium" *The Journal of Finance* volume LVII, number 2 (April 2002),

> "Our evidence suggests that the high average return for 1951 to 2000 is due to a decline in discount rates that produces a large unexpected capital gain. Our main conclusion is that the average stock return of the last half-century is a lot higher than expected."

Dr. Avera chose almost the same period and his analysis is affected by the same problem: realized returns exceeded expected returns.

Fifth, and most obviously, Dr. Avera inappropriately added his premium based on A-rated bonds to a BBB-rated bond yield. His mismatch results in a high premium added to a high bond yield resulting in a biased-upward cost of equity estimate. The bias is inherent because A-rated bonds have lower yields than BBB-rated bonds.

Q. HAVE ANY PUBLISHED STUDIES INVESTIGATED THE PROBLEM WITH THE RISK PREMIUM METHOD?

A. Yes. Laurence Booth's article "Estimating the Equity Risk Premium and Equity Costs: New Ways of Looking at Old Data"[20] investigated the increase in the risk of long-term bonds and found that their betas have been increasing since about 1970. Four of his main conclusions follow:

> "(1) Examination of bond market performance and market interest rates experienced since 1925 make it abundantly clear that the *term premium bias* is significant. As a result, the long-run realized excess return over long-term bonds cannot be used as a risk premium to add to current long-term bond yields.
>
> (2) Total bond market risk (as measured by standard deviation of returns) has significantly increased over the last 20 years, and at time has been almost equal to that of the equity market. This indicates that the equity risk premium over long-term bonds is unlikely to have been constant.
>
> (3) Bond market betas, whether measured based on ten-year annual returns or five-year monthly returns, have increased from the negligible level prior to the 1970s to the 0.40-0.80 range by 1990s. As a result, conventional risk premiums over long-term bond yields that may have been valid in earlier periods are excessive in the current interest rate environment.
>
> **(4) With bond market betas of 0.40-0.80, risk premiums for lower risk equity securities, such as utilities, should be close to zero."**
>
> (emphasis added)

Dr. Avera's realized return approach suffers from upward bias because it did not take into account either the decreasing electric utility betas on one hand or increasing bond betas on the other. These two effects have worked since the

[20] Laurence Booth, "Estimating the Equity Risk Premium and Equity Costs: New Ways of Looking at Old Data" *Journal of Applied Corporate Finance* Vol. 12, No.1 (Spring 1999) pp. 100-112.

1970s to squeeze the equity risk premium for utilities close to zero, according to Dr. Booth.

Dr. Avera's CAPM Analysis

Q. HOW DOES DR. AVERA IMPLEMENT THE CAPM?

A. Dr. Avera implements the CAPM on his sample of electric companies by estimating a risk-free rate, market risk premium, and an electric-utility industry beta.

Risk-Free Rate

Q. WHAT IS DR. AVERA'S RISK-FREE RATE AND HOW DID HE ESTIMATE IT?

A. Dr. Avera's risk-free rate is 5.2.percent. The rate represents the "average of the daily yields on long-term government bonds for December 2003 reported by the U.S. Department of the Treasury at www.treas.gov" according to his exhibit (*see* WEA-6). The Federal Reserve website before June 1, 2004, indicated that the data were "Based on the unweighted average of the bid yields for all Treasury fixed-coupon securities with remaining terms to maturity of 25 years and over. Averages of business days." That data series was terminated.

Q. DOES THE U.S. TREASURY CONTINUE TO CALCULATE AND PUBLISH THE DATA SERIES THAT DR. AVERA CHOSE?

A. No. On June 1, 2004, the U.S. Treasury discontinued the "LT>25" average due to a dearth of eligible bonds. First, the fact that few bond were available to begin with should make one question whether these long-term U.S. bonds could have actually been used as a risk-free asset by investors. Second, the fact that they are

now unavailable to the point of being a "dearth" as the U.S. Treasury describes it should eliminate any need to consider them because they don't exist. Nevertheless, I will describe below the problems with using a long-term U.S. Treasury security for the risk-free asset in a CAPM.

Q. IS DR. AVERA'S CHOICE OF A LONG-TERM U.S. TREASURY YIELD FOR THE RISK-FREE RATE APPROPRIATE?

A. No. Dr. Avera's choice of a long-term U.S. Treasury security yield as the proxy for the risk-free rate is not appropriate for a number of reasons.

(1) The CAPM is a holding period model, as I explained earlier. One makes estimates of the risk-free rate, beta, and the market risk premium over the investors' expected holding period. The use of a long-term U.S. Treasury bond for the risk-free asset implies a long-term holding period. I do not find his implied assumption reasonable. Studies I have seen in other cases indicate that investors' holding periods are nearer to two years in length, if not intermediate in term, and I have never seen a study indicating that the average investor has a holding period of greater than twenty-five years, which is the implied holding period in using the risk-free rate Dr. Avera chose.

(2) I do not see value in using the U.S. Treasury's calculated average rate for December 2003 as a source when Dr. Avera could have looked up an actual market-based Treasury yield in *The Wall Street Journal* or other such source to make estimates that were consistent in time with his DCF estimates (December 26, 2003).

(3) I have never seen an academic study of the CAPM use long-term U.S. Treasury bonds for the risk-free asset.

(4) Long-term U.S. Treasury yields contain a "liquidity risk premium." One could subtract the liquidity risk premium from the long-term rate before using the rate in a CAPM, as described in Brealey and Myers' book, *Principles of Corporate Finance*[21],

> "The risk-free rate could be defined as a long-term Treasury bond yield. If you do this, however, you should subtract the risk premium of Treasury bonds over bills...This figure could be in turn be used as an expected average future r_f in the capital asset pricing model."

Dr. Avera did not estimate or subtract the liquidity risk premium from his long-term risk-free rate estimate before using it in his capital asset pricing model. Ibbotson Associates' *SBBI 2004 Yearbook* estimates the liquidity risk premium at 1.6 percent (page 175).

(5) Use of a long-term U.S. Treasury bond rate creates implementation issues such as the inability to correctly estimate a historical market risk premium and the increased difficulty of estimating beta. For example, a twenty-five-year assumed holding period requires twenty-five years of both stock market data and long-term U.S. Treasury rate data before an analyst can calculate a single sample historical market risk premium over a twenty-five-year period. The data frequency used in the beta estimate should correspond as well as possible to the assumed holding period. The same implementation problem exists for estimating a market risk premium.

[21] Richard A. Brealey and Stewart C. Myers: *Principles of Corporate Finance*, 3rd ed., McGraw-Hill Book Co., New York (1988): pp. 184.

(6) Finally, Dr. Avera has a holding-period consistency problem throughout his CAPM analysis that biases his estimates upward. I summarize his inconsistencies below in a table.

Beta

Q. WHAT BETA ESTIMATE DOES DR. AVERA RELY ON AND HOW DID HE DERIVE IT?

A. Dr. Avera's beta estimate is .77, the average *Value Line* beta for his sample.

Q. DO YOU AGREE WITH HIS BETA ESTIMATE?

A. No. I do not entirely agree with his beta. *Value Line*'s adjustment procedure (electric utility betas are adjusted upward toward about 1.0) is not optimal for estimating electric utility betas, as I discussed earlier. This upward bias should be at least considered and offered for correction before deriving a cost of equity to the electric utility industry.

Market Risk Premium

Q. WHAT MARKET RISK PREMIUM DOES DR. AVERA RELY ON?

A. Dr. Avera's market risk premium estimate is 8.5 percent, a DCF-derived market risk premium.

Q. HOW DID DR. AVERA ESTIMATE THE MARKET RISK PREMIUM?

A. Dr. Avera performed a DCF model estimate of the cost of equity to the Standard & Poor's 500 (13.7 percent) and subtracted the same 5.2 percent average December 2003 long-term Treasury bond yield he used for the risk-free rate to arrive at an 8.5 percent market risk premium.

Q. DO YOU AGREE WITH HIS METHOD AND CALCULATIONS?

A. His method might have merit but he has assumed that dividends on the Standard and Poor's 500 composite companies will grow at 12.1 percent per year forever. I find this assumption unreasonable given historical per share dividend growth in the U.S. stock market (1.09 percent real growth) and historical growth of the U.S. economy as a whole (3.26 percent real growth) minus share growth that I discussed earlier. Those data suggested a 3 to 5 percent nominal growth rate range. A leap to 12.1 percent annual per share dividend growth into infinity could not be reasonably expected by investors.

Q. PLEASE SUMMARIZE ANY CONSISTENCY ISSUES IN DR. AVERA'S CAPM ANALYSIS AND THEIR BIASES.

A. The table below summarizes my findings:

Summary of Dr. Avera's CAPM Application Consistency Issues		
Variable	Implicit Holding Period	Bias/reason
Risk-free rate	Greater than 25 years	Upward bias—doesn't extract liquidity risk premium; data discontinued
Beta	Weekly	Upward bias—calculation assumes shorter than a reasonable holding period assumption and inappropriately adjusted upward to 1.0 without consideration of an unadjusted beta
Market risk premium	Greater than 25 years	Upward bias—unrealistic forecast of indefinite 12.1% dividend growth in the S&P DCF leads to an unrealistically high market risk premium; no consideration of historical premium

Dr. Avera's Flotation Cost Adjustment

Q. IS DR. AVERA'S 0.20 PERCENTAGE POINT FLOTATION COST ADJUSTMENT APPROPRIATE?

A. I do not recommend adjusting the cost of equity upward for flotation costs or "market pressure." This topic is controversial and complex. Dr. Avera has not

shown that Avista Corporation, specifically, will incur any such costs and in what amounts. I recommend that the Commission avoid increasing Avista Corp.'s ROE for flotation costs. Furthermore, he applies his flotation cost adder to all equity, both contributed capital and retained earnings that never incurred such costs.

Q. PLEASE COMMENT ON DR. AVERA'S FLOTATION COST ADJUSTMENT.

A. I have two general points to make about Dr. Avera's flotation cost adjustment:

1. Dr. Avera's flotation cost adjustment compensates Avista for costs that aren't specifically incurred by Avista Corporation. The flotation costs appear to be from some undefined study(ies) of costs in other jurisdictions and summarized by Roger Morin in his book.

2. The proposed adjustment lacks support. Dr. Avera relies on a conclusion whose study and details are left unexamined by Dr. Avera and lacking working papers. He presents neither the theory behind his adjustment nor the method of the adjustment nor the details behind the adjustment's calculation. Such an adjustment deserves full presentation if it is to be seriously proposed in this case.

Q. DID DR. AVERA ACCOUNT FOR ALL STOCK EXPENSES IN HIS ADJUSTMENT, SUCH AS FEES THAT WOULD REDUCE HIS ESTIMATE?

A. No. His flotation cost adjustment appears to fail to account for stock purchase fees, otherwise known as brokers' fees, as opposed to the stock issuance fees he did consider. These fees result in an investor paying more than the price quoted on the stock exchange, and would reduce the required dividend yield in the DCF,

offsetting the issuance cost adjustment. The effect of brokers' fees is analyzed in David Habr's article, "Commission Staff Report: A Note on Transaction Costs and the Cost of Common Equity for a Public Utility," NRRI Quarterly Bulletin 9:1. Brokers' fees of 5 percent would completely offset a 5 percent flotation cost adjustment.

Q. SHOULD A UTILITY RECOVER ITS FLOTATION COSTS IN RATES?

A. Yes. Flotation costs are a necessary cost of business. However, I recommend that expected normalized issuance expenses be recovered as an expense item, not through a ROE increase.

Finally, as I mentioned above, when the market-to-book ratio is greater than 1.0, under the DCF model, a firm is expected to earn more than its cost of capital. The market to book ratio for my sample is 1.62, implying that my sample companies are already expected to earn more than their costs of equity. Boosting the authorized ROE above the cost of equity through a flotation cost adjustment would provide a one-time gain to shareholders at the expense of ratepayers.

Q. DO YOU RECOMMEND THE IDAHO PUC FORMALLY REJECT THE FLOTATION COST ADJUSTMENT TO AVISTA'S ROE IN FAVOR OF THE ACCOUNTING TREATMENT YOU'VE DISCUSSED?

A. Yes, I recommend the order in this proceeding find that the flotation cost adjustment to ROE is inappropriate, and should be rejected in favor of an accounting treatment for valid common stock issuance expenses.

Dr. Avera's Assessment of Avista's Unique Risk

Q. PLEASE EXPLAIN HOW DR. AVERA JUSTIFIES MOVING TO THE HIGH END OF HIS COST OF EQUITY ESTIMATES TO ACCOUNT FOR AVISTA CORPORATION'S UNIQUE RISK?

A. Dr. Avera's discussion, beginning on page 60 of his testimony and titled "Relative Risks," concludes that "...the capital markets would require approximately 3.0 to 5.8 percent in additional return in order to compensate for the greater risks associated with speculative grade debt instruments... Investors would undoubtedly require a significantly greater premium for bearing the higher risk associated with the more junior common stock of a utility with Avista's below investment grade rating." (*See* Direct Testimony of Dr. Avera, page 62 at 11-15.) His analysis leads him to conclude that the uppermost end of his 10.4 to 11.9 percent range is justified.

Q. IS DR. AVERA'S RISK ADJUSTMENT APPROPRIATE?

A. No, Dr. Avera's increase to his cost of equity estimates to account for Avista Corporation's BB bond rating is not appropriate for several reasons.

(1) Increasing a return on equity to account for the unique risks of a company's debt is inconsistent with modern corporate finance theory, notably the capital asset pricing model for which the Nobel Prize in Economics was awarded. Specifically, as I discussed earlier, the CAPM and modern portfolio theory have shown us that investors can avoid risk by diversifying. Since investors can hold diversified portfolios, the only equity risk that remains and is priced in the market is systematic risk. In my example above I discussed a suntan lotion company and an umbrella company. Through diversification, the unique risk of each of the

investments is diversified away and an investor cannot expect, in a competitive market, to be systematically rewarded for taking on risk that is diversified away.

(2) Adding a bond rating premium to a cost of equity analysis is not consistent with either the CAPM or the DCF. Adding a bond premium to an equity cost is arbitrary and unwarranted.

(3) Adding a unique risk adder to Avista Corporation because of its poor financial situation would inappropriately compensate investors for the Company's past imprudence to the extent that past imprudence, or utility diversification, contributed to its current financial situation and below-investment-grade ratings.

Q. HAS THIS ISSUE OF INCLUDING UNIQUE RISK IN A COST OF EQUITY ANALYSIS BEEN ADDRESSED IN A RECENT PUBLICATION?

A. Yes. The issue has been addressed in award-winning article titled "How Improper Risk Assessment Leads to Overstatement of Required Returns for Utility Stocks" published in the *National Regulatory Research Institute Journal of Applied Regulation*, Vol. 1, June 2003. That article concludes,

> "Risk and return are important issues in regulatory proceedings. Understanding how risks affect stock prices leads to better estimates of the market's required return on utility stocks. Risks that are specific to the utility affect expectations about future utility cash flows, but they have little bearing on the investors' required return. Regulators should therefore ignore testimony suggesting that firm-specific risks influence the required return. Once the inappropriate firm-specific risk adjustments are eliminated, regulators will likely find that required returns on most utility stocks today are below 10%."

I include that article as pages 24-47 of Exhibit JST–1. The proper approach to estimating the cost of equity to Avista Corporation is by using market-based

models of the cost of equity to firms of comparable risk rather than by arbitrarily adding risk adjustments to account for firm-specific unique risks.

Q. DO BOND HOLDERS AND COMMON EQUITY OWNERS HAVE THE SAME INTERESTS AND CAN BOND YIELDS BE DIRECTLY COMPARED TO REQUIRED RETURNS ON EQUITY?

A. Bond holders and stockholders frequently have divergent interests. Bond holders might very well focus on firm-specific risk because they are concerned about the probability of default, a probability that is affected by firm-specific issues and measured by bond ratings. The reason for this focus of concern is that, unlike a stock, bond holders' expected returns are capped at the coupon rate of debt. That is to say, even if the firm has excess returns it will still, at best, only pay out to bond holders the coupon rate of the outstanding debt. For example, say a utility issues 8 percent coupon debt. The most it will ever pay bondholders is 8 percent but the company might pay less than 8 percent if the bonds have any risk at all. An investor's expected return on the bond is, therefore, less than 8 percent and might be 7 percent for example. The possibility of default means that the bond holders' expected returns are actually lower than the coupon rate of debt. Therefore, bond holders focus on the probability of default. Adding a bond holder's default premium for Avista Corporation's BB-rated bonds to a cost of equity is, therefore, inappropriate because the two are not comparable.

Dr. Avera's Cost of Equity Conclusion

Q. WHAT IS DR. AVERA'S COST OF EQUITY CONCLUSION?

A. Dr. Avera concludes that Avista Corporation's required return on equity falls in the upper end of his 10.4 to 11.9 percent cost of equity range and that the 11.5 percent ROE that Avista requested is conservative. His cost of equity estimates go as high as 17.7 percent (11.7 percent from the electric industry CAPM plus the 0.20 percent flotation cost adjustment plus the 5.8 percent unique risk adder).

Conclusion

Q. WHAT DO YOU CONCLUDE GIVEN THE EVIDENCE YOU REVIEWED?

A. I conclude that the Commission should authorize an 8.5 percent ROE and an 8.49 percent ROR, but I offer two other alternatives based on my high and low cost of equity estimates.

The Commission should reject Mr. Malquist's 11.5 percent recommendation because it is not based on a cost of equity analysis or any other evidence other than his personal belief.

Dr. Avera significantly overestimated Avista Corporation's cost of equity, particularly in a period when interest rates are not far from historical post-war lows. His adder for the unique risk of Avista Corporation is also inappropriate. His analyses are upwardly biased and inconsistent with current capital markets and capital market theory.

Q. DOES THIS COMPLETE YOUR PREFILED DIRECT TESTIMONY?

A. Yes, it does.

Appendix

Derivation of the Constant-Growth DCF Model Cost of Equity

Stock I's price today (P_0) is equal to its value, which in turn is worth the present discounted value of its expected dividends ($D_{1...n}$), discounted by the stock's cost of equity ($\mathbf{k_i}$):

$$(1) \quad P_0 = \frac{D_1}{(1 + k_i)} + \frac{D_2}{(1 + k_i)^2} + \frac{D_3}{(1 + k_i)^3} + \ldots + \frac{D_n}{(1 + k_i)^n}$$

Now assume that dividends 2 through n are related to dividend 1 by a constant growth rate, g_i, such that:

$$(2) \quad D_2 = D_1 \times (1 + g_i)$$
$$(3) \quad D_3 = D_1 \times (1 + g_i)^2$$
$$(4) \quad D_n = D_1 \times (1 + g_i)^{n-1}$$

Expressing equation (4) in terms of D_1:

$$(5) \quad P_0 = \frac{D_1}{(1 + k_i)} + \frac{D_1 \times (1+g_i)}{(1 + k_i)^2} + \frac{D_1 \times (1 + g_i)^2}{(1 + k_i)^3} + \quad + \frac{D_1 \times (1 + g_i)^{n-1}}{(1 + k_i)^n}$$

Now, multiply each side by $1 + k_i$:

$$(6) \quad P_0 \times (1 + k_i) = D_1 + \frac{D_1 \times (1 + g_i)}{(1 + k_i)} + \frac{D_1 \times (1 + g_i)^2}{(1 + k_i)^2} + \ldots + \frac{D_1 \times (1+g_i)^{n-1}}{(1 + k_i)^{n-1}}$$

The right hand side of the equation can be expressed using summation notation:

$$(7) \quad P_0 \times (1 + k_i) = \sum_{t=0}^{n-1} D_1 \times \frac{(1+g_i)^t}{(1 + k_i)^t}$$

Now, we assume that dividends are paid infinitely ($n \to \infty$). The right hand side of equation (7) becomes the sum of a geometric series. We can simplify equation (7) by assuming that $k_i > g_i$ (for convergence):

$$(8) \quad P_0 \; x \; (\; 1 + k_i \;) = \frac{D_1}{1 - \frac{(\; 1 + g_i \;)}{(\; 1 + k_i \;)}}$$

Simplifying:

$$(9) \quad P_0 \; x \; (\; 1 + k_i \;) = \frac{D_1}{\frac{1 + k_i - 1 - g_i}{(\; 1 + k_i \;)}}$$

Canceling terms and simplifying further:

$$(10) \quad P_0 = \frac{D_1}{k_i - g_i}$$

Manipulating equation (10) to solve for the cost of equity:

$$(11) \quad k_i = \frac{D_1}{P_0} + g_i$$

This is the constant-growth DCF formula for the cost of equity and is often referred to as "the Gordon model."

Note that this proof does not require any assumption of the relationship between D_0 and D_1.

Demonstration that Expected Market ROE is Greater than Expected Book ROE when M/B Ratio is Greater than 1.0

Start by assuming that the expected market return in dollars (expected market ROE times the market value of equity) is equal to the expected book return in dollars (expected book ROE times the book value of equity),

$$k_i \; x \; M = r_{Book} \; x \; B$$

Move the expected rates of return to the right hand side and the equity values to the left hand side,

$$\frac{M}{B} = \frac{r_{Book}}{k_i}$$

Now make the observation that if *M/B* equals 1.0 then r_{Book} must equal k_i because the ratio r_{Book}/k_i is also equal to one. However, if *M/B* is greater than 1.0, then the ratio r_{Book}/k_i is greater than 1.0, and therefore, the expected book ROE must be greater than the expected market ROE.