Exhibit No. ___T (JAR-1T)
Docket No. UE-050684
Witness: James A. Rothschild

BEFORE THE WASHINGTON UTILITIES AND TRANSPORTATION COMMISSION

WASHINGTON UTILITIES AND TRANSPORTATION COMMISSION, Complainant, v. PACIFICORP, d/b/a Pacific Power & Light Company, Respondent.	DOCKET NO. UE-050684

TESTIMONY OF

JAMES A. ROTHSCHILD

For
STAFF OF
WASHINGTON UTILITIES AND
TRANSPORTATION COMMISSION

RE: PACIFICORP GENERAL RATE CASE
COST OF CAPITAL

November 3, 2005

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I. INTRODUCTION

Q. Please state your name and business address.

A. My name is James A. Rothschild and my address is 115 Scarlet Oak Drive, Wilton, Connecticut 06897.

Q. What is your occupation?

A. I am a financial consultant specializing in utility regulation. I have experience in the regulation of electric, gas, telephone, sewer, and gas utilities throughout the United States.

Q. Please summarize your utility regulatory experience.

A. I am President of Rothschild Financial Consulting and have been a consultant since 1972. From 1979 through January 1985, I was President of Georgetown Consulting Group, Inc. From 1976 to 1979, I was the President of J. Rothschild Associates. Both of these firms specialized in utility regulation. From 1972 through 1976, Touche Ross & Co., a major international accounting firm, employed me as a management consultant. Touche Ross & Co. later merged to form Deloitte Touche. Much of my

consulting at Touche Ross was in the area of utility regulation. While associated with the above firms, I have worked for various state utility commissions, attorneys general, utility customers and public advocates on regulatory matters relating to regulatory and financial issues. These have included rate of return, financial issues, and accounting issues.

Q. Have you prepared an exhibit detailing the cases in which you have provided expert testimony in these areas?

A. Yes. Exhibit No. ___ (JAR-2) lists the cases in which I have testified.

Q. What is your educational background?

A. I received an MBA in Banking and Finance from Case Western University (1971), and a BS in Chemical Engineering from the University of Pittsburgh (1967).

II. PURPOSE

Q. What is the purpose of your testimony?

A. I have been engaged by the Staff of the Washington Utilities and

Transportation Commission to recommend the appropriate capital structure and a fair cost of capital for PacifiCorp, that the Commission should employ in setting rates in this case I have been also asked to review and comment on the cost of capital testimony filed by Company witnesses Dr. Hadaway and Mr. Williams.

Q. Has your cost of capital recommendation assumed that the currently proposed buyout by MEHC would happen?

A. No. My cost of capital recommendation in this case is based on the ownership conditions that existed as of the time the rate case was filed. Should the buyout take place, new cost of capital issues might arise for the Commission's consideration at that time.

III. SUMMARY OF TESTIMONY

Q. Please summarize your testimony.

A. PacifiCorp's overall cost of capital is 7.40%, based upon an 8.95% cost of equity, a 6.427% cost of long-term debt, a 3.32% cost of short-term debt and a 6.59% cost of preferred stock. *See my Exhibit No. ___ (JAR-3), page 1, top*

table. My derivation of the 8.95% cost of equity is summarized in my Exhibit No. ___ (JAR-4).

The appropriate capital structure for ratemaking purposes is 43.50% common equity, 51.3% long-term debt, 4.00% short-term debt and 1.20% preferred stock. *Id.* This is the actual capital structure used by PacifiCorp as of December 31, 2004.

PacifiCorp proposes a capital structure containing 49.5% common equity. This capital structure contains more common equity than necessary. First, the Company's proposed capital structure is improper because it excludes short-term debt. Second, the Company forecasts an unusually large increase in the common equity ratio between the end of 2004 and March 31, 2006. Such an increase would raise PacifiCorp's common equity ratio to atypically high levels, and PacifiCorp offers no cost benefit analysis to support its proposed rate making common equity ratio.

Dr. Hadaway's proposed 11.125% cost of equity is the product of a seriously flawed application of the DCF and risk premium methodologies.

Q. Please summarize the results of your review of the testimony of Company cost of capital witness Dr. Hadaway.

A. My review of the testimony of Dr. Hadaway exposes serious errors in his financial logic and poor mathematical choices, the results of which improperly overstates his cost of equity estimate. These deficiencies cause Dr. Hadaway's 11.125% cost of equity to be higher than PacifiCorp's cost of equity capital.

Problems with the Company's cost of capital presentation include:

1. The Company's proposed capital structure contains too much equity and it does not include any short-term debt.

2. Dr. Hadaway makes errors in his application of the DCF method:

   a) He used overall GDP growth as a proxy for long-term expected growth in earnings per share, dividends per share and stock price per share growth for regulated electric utilities. It is not appropriate to use GDP growth in this manner:;

   b) He used analysts' short-term, five year forecasts of earnings per share as a proxy for long-term sustainable growth. The constant growth form of the DCF model only produces a meaningful estimate of the cost of equity if a long-term sustainable growth rate is used.

c) He was inconsistent because he computed dividend yield based upon a retention rate from one time period, but using a different time period to compute growth based upon the retention rate.

3. Dr. Hadaway erred in his risk premium analysis: His analysis relied on an examination of the differential between long-term interest rates and equity returns allowed by commissions throughout the United States. However, he failed to consider:

a) the normal lag between a decision date and the interest rate level that prevailed during the time the commission decisions were made;

b) whether or not commission decisions were based on historic actual or forecasted interest rates, and

c) whether or not commission decisions produced allowed returns that were consistent with investor demands.

Q. Is there a straightforward check you can use to demonstrate that Dr. Hadaway's own data proves his cost of equity estimate is excessive?

A. Yes. In Exhibit No. ___ (SCH-5), page 1, Dr. Hadaway calculates a risk premium of 3.01%, based on the average return on equity allowed by commissions in excess of the Moody's average utility bond interest rate from 1980-2004. His Exhibit No. ___ (SCH-3), page 2 shows Moody's current average utility bond yield is 5.79%.

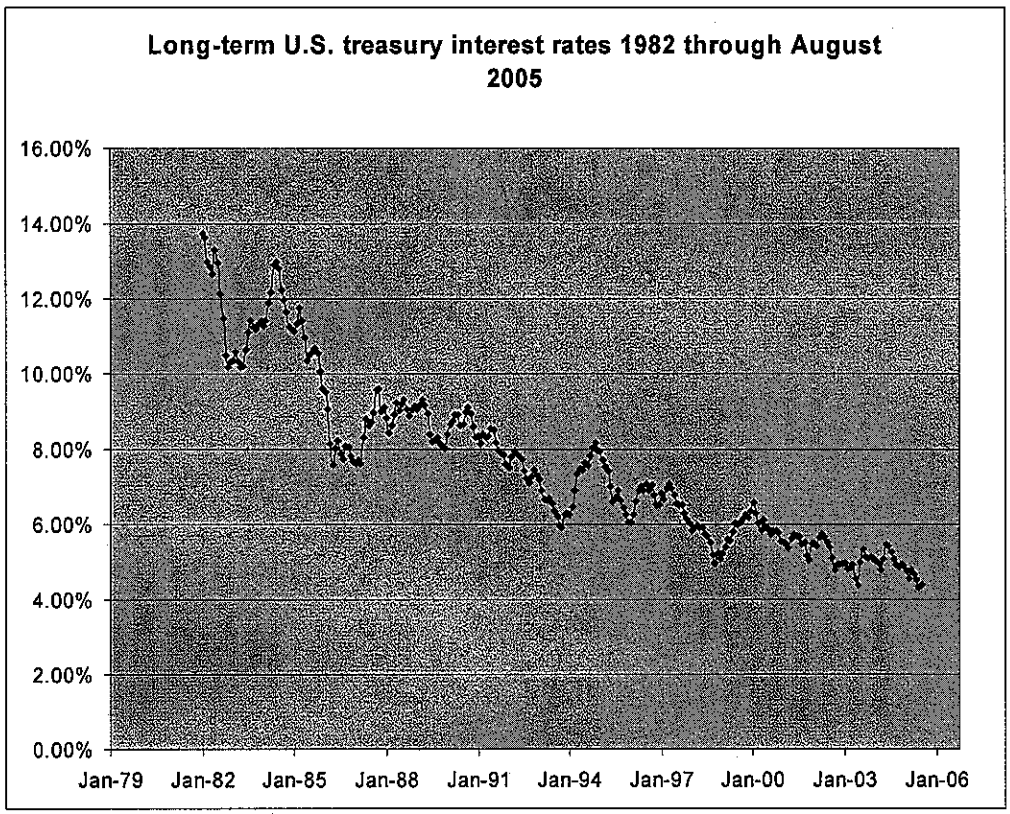
Adding this current bond yield (5.79%) to the result of his calculated risk premium (3.01%) gives a cost of equity of 8.80%.

Instead of accepting this result, Dr. Hadaway applies an invalid statistical analysis to the allowed return data and then improperly uses a forecasted interest rate in order to inflate the 8.80% result all the way up to 10.95%, which he shows in Exhibit No. ___ (SCH-5), page 1.

Q. Please describe the current state of capital markets.

A. Capital cost rates have been on a multi-decade decline. One way to readily observe this decline is to examine the cost rate of long-term debt issued by the United States Treasury. Following is a graph showing the behavior of long-term United States Treasury bonds from 1982 through August 2005. Note that the overall trend in long-term interest rates has been down for a

long time. Consistent with that, one should likewise expect the cost of equity to be on a similar downtrend.



IV. CAPITAL STRUCTURE

A. Principles

Q. What is capital structure?

A. Capital structure refers to the proportion of debt and equity that finances a utility's operations. For example, a company that has $100 in total capital, financed by $40 in common stock and $60 in debt, would have a capital structure of 40% equity and 60% debt.

Q. What is an appropriate capital structure that should be used for ratemaking purposes?

A. An appropriate capital structure for ratemaking purposes is one that can reasonably be expected to produce the lowest overall cost of capital in the long-run.

Debt costs less than equity, but as the percentage of debt increases, financial risk increases. At some point, the higher financial risk increases both the cost of debt and the cost of equity. Therefore, the use of debt should be increased to the point where financial risk remains at acceptable levels while producing the lowest overall cost of capital.

Generally, acceptable risk levels are assured if a company maintains an investment grade bond rating on its senior debt. In this way, a balance between safety and economy is realized.

B. The Appropriate Capital Structure for Setting Rates for PacifiCorp

Q. What capital structure should the Commission use for setting rates in this case?

A. The Commission should set rates in this case using a capital structure consisting of 43.50% common equity, 1.20% preferred equity, 4.00% short-term debt and 51.3% long-term debt. This is shown on my Exhibit No. ___ (JAR-3), page 1, top table.

This capital structure is PacifiCorp's consolidated actual capital structure as of December 31, 2004. It is also a capital structure that produces a reasonable overall cost of capital.

Q. Why is the Company's actual capital structure as of December 31, 2004, reasonable for rate making purposes?

A. It is the capital structure the Company maintained over the past decade to finance its operations. During that period, the Company has been able to maintain an investment grade rating.

The company is now proposing a capital structure with a much higher percentage of common equity. The increase in common equity ratio

would be appropriate only if it would result in a lower cost of capital and meet the test of balancing safety and economy. Otherwise, there would be no justification for the Company to increase the amount of common equity financing its utility operations.

Q. Does the Company's actual capital structure as of December 31, 2004, properly balance safety and economy?

A. Yes. Page 42 of the 2005 *Corporate Ratings Criteria* book by Standard & Poor's shows that for BBB rated utilities the median ratio of total debt to total capital is 59.1% and the median ratio of total debt to total capital for A rated utilities is 54.9%. PacifiCorp's debt ratio is 55.3%, when both short-term and long-term debt are included . Accordingly, the Company's consolidated capital structure as of December 31, 2004 is essentially identical to the median capital structure for PacifiCorp's current A bond rating and is well within the range of acceptability for investment grade.

Q. What coverage ratio would be achieved on your recommended capital structure if your recommended cost of capital were achieved?

A. The coverage ratio is 2.95. Standard & Poors reports that the median coverage for its BBB rated companies is 2.3, and the median coverage for its A rated companies is 3.2.

Q. Does the capital structure you recommend reflect a stable capital structure based on the past history of the Company?

A. Yes. The 43.5% equity ratio is within the 43.1%-46.8% range the Company has maintained for at least the last 10 years. The Company's actual capital structure over that period is shown in my Exhibit No. ___ (JAR-5), page 3, which is the Company's Second Supplemental Response to Staff Data Request No. 42. The first seven lines of that exhibit show the Company's actual capital structure each year for that period. The first three lines show the capital structure excluding short-term debt; the next four lines show the capital structure including the short-term debt used to finance Company operations.

C. Critique of PacifiCorp's Proposed Capital Structure

Q. What capital structure is requested by the Company in this case?

A. The Company requests a capital structure of 49.5% common equity, 1.1% preferred, and 49.4% long-term debt. This is shown in the testimony of PacifiCorp witness Mr. Williams, Exhibit No. ___T (BNW-1T), page 3.

Q. What explains the difference between the capital structure you recommend and the capital structure Mr. Williams recommends?

A. There are two major differences between Staff and Company's proposed capital structures. First, the Company's proposed capital structure contains no short-term debt. Second, the Company's proposed capital structure contains a much higher amount of common equity: Company - 49.5%; Staff – 43.5%.

1. Short-term debt should be included

Q. Why should the Commission adopt a capital structure that contains short-term debt?

A. Short-term debt is a normal, important, and low cost source of capital to the Company. Prudent management will always periodically use a reasonable amount of short-term debt to finance utility operations. Indeed, PacifiCorp

has consistently adopted such a policy to finance utility operations. Therefore, it is reasonable to include some amount of short-term debt in the capital structure for rate making purposes.

Q. Did the Company provide sufficient justification for excluding short-term debt from the capital structure?

A. No. In WUTC Staff Data Request No. 41, part a, PacifiCorp was asked to explain why its proposed capital structure did not include short-term debt. The Company's answer was:

> The Company's practice is to exclude short-term debt when calculating capital structure and cost of capital in regulatory proceedings. This is the same method that the Company utilized in the prior Washington general rate case, Docket No. UE-032065, and general rate cases in other states.

PacifiCorp's response is insufficient justification for excluding short-term debt.

Q. In the Company's last contested general rate case, did the Commission include short-term debt in the Company's capital structure for ratemaking purposes?

A. Yes. I am advised that the Company's last contested rate case was in Cause No. U-86-02. In that case, the Commission accepted a capital structure that included 2% short-term debt, and stated: "... the Commission has accepted on many occasions in the past the use of short-term debt as part of the capital structure." (2nd Supplemental Order at page 28 (1986)).

In that case, the Company proposed to exclude short-term debt in the calculation of overall cost of capital, claiming that it did not use short-term debt to finance its operations. However, the Commission rejected that claim, finding that "short-term debt was used in the capitalization of electric operations."

Furthermore, the Commission found that the cost of short-term debt was declining, and concluded that including short-term debt would balance safety and economy.

Given the very low short-term interest rates in the current environment, it is proper to include this low cost source of capital in determining reasonable rates.

2. *Equity ratio*

Q. You testified that PacifiCorp was proposing a 49.5% equity ratio in a capital structure that contains no short-term debt. What was the Company's actual equity ratio at year-end 2004, excluding short-term debt?

A. PacifiCorp's equity ratio was 45.3% at year-end 2004, excluding short-term debt. This is typical of the actual net-of-short-term debt capital structure PacifiCorp has maintained in recent years. As shown on the third line of my Exhibit No. ___ (JAR-5), page 3, the Company's common equity ratio (excluding short-term debt) was 45.7% at year-end 2001, 44.3% at year-end 2002, 45.7% at year-end 2003, and 45.3% at year-end 2004.

PacifiCorp is now recommending an equity ratio that adds 4.2% to the equity ratio the Company actually employed in 2004 (excluding short-term debt), and has not fully explained the reasons for this significant increase, nor has it quantified how ratepayers are better off from this financing decision.

Q. In the last decade, has PacifiCorp ever increased its equity ratio 4.2% in any one year period?

A. No. My Exhibit No. ___ (JAR-5), page 3 is Company's Second Supplemental Response to Staff Data Request No. 42. It shows that during the last decade, the Company has never previously increased its common equity ratio anywhere near as much as forecast by Company witness Mr. Williams. This is true regardless of how one computes capital structure.

Indeed, as shown on the seventh line of page 3 of that exhibit, the Company's actual capital structure, which includes short-term debt, has been quite stable throughout the ten year period: varying from a low of 43.1% at the end of 2002 up to a high of 46.8% at the end of 1999.

This means that even if PacifiCorp should happen to bring its common equity ratio up to the 49.5% level by March 31, 2006 as forecast by Mr. Williams, that decision would not be representative of the last decade of Company operations.

Q. Has the Company presented any cost/benefit analysis to support the substantial increase in the common equity ratio it proposes?

A. No. Although Mr. Williams claims on pages 6-7 of his direct testimony that the average common equity ratio of the group of comparative electric companies is 53.2%, in fact, the average common equity ratio for the comparative group of electric companies is 48.1%, and the median common equity ratio for the group is 44.9%. This is shown in my Exhibit No. ___ (JAR-5), page 4.

Moreover, the median for the group is more telling than the average because two companies, CH Energy and MGE Energy, have equity ratios of 57% or more, making them outliers distorting the calculation of the group's average. If rather than focus on the median, the two outliers were simply excluded, then the average common equity ratio for the comparative group would be 43.8% common equity.

Q. How do you respond to Mr. Williams' claim that a "strong credit rating" benefits customers (Exhibit No. ___T (BNW-1T) at 7)?

A. The term "strong credit rating" is a relative term. The issue is whether or not the substantial increase in equity ratio proposed by the Company is necessary to either maintain or increase the current bond rating, and worth the extra cost even if it did. The Company has not made either showing.

Q. Please summarize the reasons why the Commission should accept the capital structure you recommend for setting rates in this case.

A. The capital structure I am proposing is consistent with the capital structure that is actually being used by the Company and approximates the capital structure that has been used by the Company for at least a decade. It is a capital structure that is consistent with the capital structure necessary to provide investment grade bond ratings. Investment grade bond ratings are sufficient to provide the Company with access to capital markets on reasonable terms.

Given the long history of PacifiCorp maintaining a common equity ratio in the range I have recommended, the question remains whether or not the proposed common equity ratio will actually provide benefits to ratepayers and appropriately balance safety and economy. The Company's direct case does not address these factors. A temporary increase in the common equity ratio will not result in a permanent increase in bond ratings.

Q. Does the Company's proposed increase in the common equity ratio result in an increase in the cost of capital?

A. Yes. If the Commission were to adopt the common equity ratio as proposed by the Company's, PacifiCorp's cost of capital would increase, and its revenue requirement would increase by between $1.4 million and $2.6 million annually, depending on whether short-term debt is included or excluded from the Company's requested position. *Please see my Exhibit No. ___ (JAR-3), page 2.*

The above stated increase in the overall annual revenue requirements exists even though I have lowered the cost of equity associated with the capital structure requested by the Company by 0.10% to 0.25%, to reflect the lower financial risk in the capital structure requested by the Company.

Ratepayers should not be burdened with such a substantial cost increase without a substantial showing that the increase in equity ratio provides tangible benefits to ratepayers that justify this substantial cost.

V. COST OF DEBT

A. Cost of Long-Term Debt

Q. What is long-term debt?

A. Long-term debt is debt whose principal does not mature for at least one year from the date of original issue. Typically, long-term debt has a maturity of between one year and 30 years.

Q. How did you calculate the cost of long-term debt for PacifiCorp?

A. For long-term debt, I used the same cost of long-term debt proposed by the Company: 6.427%. I reviewed the Company's calculation of the long-term debt cost, as shown in Exhibit No. ___ (BNW-2), found it to be reasonable, and have therefore used that calculation in my recommended overall cost of capital.

However, the cost of both the variable rate debt and the new expected debt issuance are dependent on future actual interest rates. It is appropriate for the Commission to consider updates to these future interest rate estimates as the hearings progress.

B. Cost of Short-Term Debt

Q. What is short-term debt?

A. Short-term debt is debt that has a maturity of less than one year from the date of original issue.

Q. How did you calculate the cost of short-term debt for PacifiCorp?

A. For short-term debt, I used a cost rate of 3.32%. This was the Company's current actual cost of short-term debt according to the Company's Response to Staff Data Request No. 33.

VI. COST OF PREFERRED EQUITY

Q. What is preferred equity?

A. Preferred equity is equity that is paid its dividend before any dividend payments are made to common equity holders. Unlike common equity, the dividend rate paid to preferred equity holders is specified as of the time that the preferred stock is sold to investors by the company.

Q. How did you calculate the cost of preferred equity for PacifiCorp?

A. I reviewed the Company's preferred stock cost calculations and I accept the preferred stock cost rate proposed by the Company.

VII. COST OF COMMON EQUITY

A. Summary on Cost of Common Equity

Q. What is the cost of common equity for PacifiCorp?

A. The cost of common equity for PacifiCorp is 8.95%.

Q. What methods did you use to estimate the cost of equity for PacifiCorp?

A. The cost of common equity cannot be directly measured, unlike the cost of debt and preferred equity. Therefore, I used the "constant growth" Discounted Cash Flow (DCF) method to calculate the cost of common equity. I also used risk premium/Capital Asset Pricing Model (CAPM) analysis as a check on my DCF results.

Q. What comparative group of electrical utilities did you use in your analysis?

A. I used the same group of seventeen electric utilities that Dr. Hadaway used. The basic financial data for these companies that I used in my analysis is shown in my Exhibit No. ___ (JAR-6).

Q. Please describe the results of your DCF and risk premium/CAPM analyses.

A. As shown on the first line of numbers presented on Exhibit No. ___ (JAR-7), my application of the constant growth DCF method produces a cost of equity between 7.77% and 7.87%. My application of the multi-stage DCF method produces a cost of equity of between 8.52% and 8.66%. *See my Exhibit No. ___ (JAR-8), page 1 and 2.*

My application of the risk premium/CAPM method produces a cost of equity of 7.66%, reflecting risks specific to the electric utility industry, and 9.15% to 9.55% cost of equity indicated by the risk premium/CAPM for a company of average risk. My Exhibit No. ___ (JAR-9) and Exhibit No. ___ (JAR-10) show how these cost rates were developed.

I arrived at a recommended cost of equity of 8.75% for the comparative group of electric utilities based upon the high end of the multi-stage DCF results, rounded up from 8.66% to 8.75%. The high end of the range was chosen to provide a more gradual transition from the prior cost of equity to the current cost of equity environment.

Q. Did you make any adjustment to the 8.75% cost of equity you found appropriate for the comparative group of utilities to reflect PacifiCorp's circumstances?

A. Yes. I recognize that PacifiCorp is using a somewhat lower percentage of common equity than the average for the comparative group. Although PacifiCorp's actual common equity ratio was only slightly lower than the 44.9% median common equity ratio of the comparative group, to be conservative, I based my adjustment on the group average level of 48.1% common equity in the capital structure, rather than the median.

Using the average difference in the common equity ratio between the comparative group and PacifiCorp's actual common equity ratio, I added 0.20% to the 8.75% group average result to arrive at my recommended 8.95% cost of equity for PacifiCorp

Q. What are the primary differences between your application of the DCF and risk premium/CAPM methods and the Company's application of those methods?

A. In the constant growth form of the DCF method, I quantified growth in dividends by computing a constant growth that is sustainable over the long term. By contrast, PacifiCorp witness Dr. Hadaway relied upon inappropriate growth rate factors. In particular, Dr. Hadaway was incorrect to use GDP growth in his DCF analyses. For reasons I explain in detail later in my testimony, GDP growth is not a valid proxy for long-term earnings per share growth.

In the risk premium/CAPM method, I both quantified the actual risk premium based upon the compound annual, or geometric average of historic actual returns, and by separately examining the risk premium in excess of the inflation rate. In addition, I recognized the overwhelming data that shows that risk premiums have been declining for decades. PacifiCorp's analysis not only fails to recognize this fact, but erroneously claims that the risk premium has been increasing.

I explain the importance of these differences in use of the methods in detail later in my testimony.

B. Background

Q. Is PacifiCorp an independent company?

A. No. PacifiCorp is a wholly owned subsidiary of Scottish Power and is in the process of being sold to MidAmerica Energy Holding Company. Because of its status as a wholly owned subsidiary, PacifiCorp's common stock does not trade publicly. Therefore, the only way to obtain a specific reading of investor demands for PacifiCorp is to examine what returns require to invest in comparable companies that do have publicly traded common stock.

1. Basic concepts

Q. What is common equity?

A. "Common equity" represents the funds contributed by the owners of a company to finance the company's operations. Ownership is represented by shares of common stock. The total common equity is the sum of the funds originally paid into the company by the stockholders, plus any earnings that were retained and not paid out as dividends.

Common equity owners elect a company's board of directors. The board of directors work in the best interests of the common stockholders by doing such activities as corporate governance and providing input on other important decisions such as declaring dividends, proposed large capital projects, mergers and acquisitions, etc.

Q. What is the cost of common equity?

A. The cost of common equity is the rate of return that must be offered to investors for them to be willing to buy the common stock.

Q. How do investors realize their return on equity investments?

A. The return on equity, or common stock, is realized in two different forms of cash flow: the dividend; and the change in the stock price.

Total return is the sum of the dividend income and the profit (or loss) obtained from the change in the stock price.

Q. How can one determine the returns that an investment in a particular company will provide?

A. Common equity investors can, at best, only estimate the future cash flows from share ownership.

The return an investor requires is best measured as the return on market prices from actively traded shares in competitive capital markets. The cost of common equity is, therefore, equal to the rate at which investors discount future cash flows in order to determine the price they are willing to pay for ownership in a particular enterprise.

Q. What are the implications of this concept when the utility's stock is selling above or below book value?

A. If the stock's market price should happen to be below the utility's book value, this would not justify providing a lower return than the cost of equity demanded by investors.

Conversely, if the market price should happen to be above the utility's book value, this would not justify providing a higher return than the cost of equity demanded by investors.

As the United States Supreme Court observed in its 1948 decision in *Federal Power Commission v. Hope Natural Gas*, 320 U.S. 591, at page 602, the stock price is "... the end product of the process of rate-making not the

starting point..." and that "... the fact that the value is reduced does not mean that the regulation is invalid."

Therefore, in rate cases it is important to set rates based on a return on book value because it is the book value on the balance sheet that relates to the rate base assets. Rate base is computed from assets that are financed by the book value of debt and of equity.

2. *Methods of calculating the cost of common equity*

Q. What are the basic methods commissions typically use to calculate the cost of equity for electric utilities?

A. The two basic methods are the Discounted Cash Flow ("DCF") method and the risk premium/Capital Asset Pricing Model ("CAPM") method.

Given the preference for the DCF method that has been expressed by the Washington Utilities and Transportation Commission in prior cases, I have based my recommendation on the DCF results, and other methods have been presented as a check on the DCF findings.

Q. Please explain briefly how the DCF method works.

A. The constant growth form of the DCF method starts with the Company's current dividend yield, and adds to that dividend yield an estimate of expected growth to arrive at the estimated cost of equity. To be able to use the constant growth form of the DCF model to produce a reasonably accurate indication of the cost of equity, it is necessary for conditions to prevail such that the same future long-term growth rate for dividends, earnings, book value, and stock price are all best estimated using the same growth rate number.

If forecasted numbers that predict something other than constant growth in every year for earnings, dividends, book value, and stock price, then the DCF method can still be used. However, under those conditions, mathematics requires that the multi-stage version of the DCF model be used instead of the constant-growth form.

To accurately quantify the transition from earnings and dividends expected over the next several years by Value Line and the constant growth earnings that can reasonably be forecast to occur after the transition period, I have supplemented the results obtained from the constant growth DCF with a non-constant or multi-stage DCF method. This multi-stage DCF has

the advantage of being able to properly quantify the effects of the different growth rates forecast by Value Line for earnings, dividends, and book value.

Q. Please explain why the DCF method is commonly relied upon by Commissions in determining a utility cost of equity.

A. If properly applied, the DCF method can directly estimate investors' expected return requirements by examining the prices of actively traded comparable equities in competitive markets. By analyzing the anticipated financial performance for utility, investor return requirements can then be evaluated in the context of what investors will pay for a share of common stock.

Q. Please explain how the risk premium/CAPM methodology.

A. The risk premium method in a generic sense includes the CAPM method. Like the DCF method, the risk premium/CAPM method measures the total return expected by a common stock investor. However, rather than determining this total return by directly estimating stock prices based upon future cash flows, the risk premium/CAPM method examines interest rates

and/or the inflation rate to estimate what total return common stock investors require.

C. Selecting a Comparative Group of Companies

Q. How did you select a comparative group of electric utilities?

A. To reduce controversy, I used the same group of seventeen electric companies selected by company cost of capital witness Dr. Hadaway. These companies are listed on page 4 of my Exhibit Nos. ___ (JAR-5) and ___ (JAR-6).

Q. Why did you use the comparative group?

A. I used the comparative group of companies in part because the common stock of PacifiCorp is not publicly traded, and in part because a broader sampling of investor expectations is possible when a group of companies is used than if only one company is used.

D. The DCF Method

Q. Is the DCF method widely used in utility rate proceedings?

A. Yes. The DCF model is more widely used than any other approach to determining the cost of equity.

1. The basic DCF formula: "k = D/P + g"

Q. Is there a form of the DCF method that is commonly used?

A. Yes. Utility rate proceedings typically focus on a special version of the DCF model commonly referred to as the constant growth model. The formula used is the cost of equity, k, equals the expected dividend yield (D/P, or Dividend divided by Price) plus expected dividend growth (g). In other words:

$$k = D/P + g$$

2. The formula "b x r + sv" can be used to estimate "g" in the DCF formula

Q. How is it possible to ensure that the growth rate used in the constant-

growth version of the DCF model will result in an appropriate constant growth rate indicator for dividends, earnings, book value, and stock price?

A. The most straight-forward and accurate way is to use the "b x r + sv" formula, where "b" is the earnings retention rate, "r" is the future expected return on book equity, and "sv" is a factor that accounts for sustainable growth in book value caused by the sale of new shares of common stock above book value.

The mathematics used to derive the D/P + g form of the DCF model show that the "b x r + sv" formula properly quantifies sustainable growth. However, common mistakes in applying this formula include using historic values of "r" rather than future expected values, and failing to use a retention rate value, "b" that is consistent with the other values input into the DCF model.

Q. Why must the retention rate, "b," be consistent with the other values input into the DCF model?

A. By definition, the retention rate, "b," is the portion of earnings that is NOT paid out as a dividend. Because future earnings will be equal to the return

on book equity times book value, the future anticipated value of the return on book equity "r" defines the future expected earnings rate.

The portion of earnings NOT paid out as a dividend is directly related to the future expected earnings rate and the future dividend rate. When the dividend rate is input into the D/P + g form of the DCF model, the portion of earnings that has been allocated to dividends has already been defined. Therefore, in order to avoid either the double-counting of earnings or the under-counting of earnings, the same definition of the dividend rate that has been used for the value of "D" in the D/P portion of the DCF equation MUST be used to determine the value of the retention ratio, "b", when computing sustainable growth.

Q. How can you assure consistency between the dividend rate used to compute dividend yield, and the dividend rate used to compute the retention ratio?

A. The way to ensure the consistency necessary for a valid result from the constant-growth form of the DCF model is to compute the retention rate "b" based upon the inputs used for the dividend rate "D" and the future expected return on equity, "r."

As I previously stated, by definition, the retention rate "b" is equal to the portion of earnings not paid out as a dividend divided by earnings. The earnings consistent with the value used for "D" is determined by multiplying book value by the value of the future expected return on equity, "r." The book value that should be used is the book value as of the time of the valuation of "D." The result is the future expected rate of earnings that is consistent with the value used for both "D" and for "r."

By subtracting "D" from the future expected earnings and dividing that amount by the same future expected earnings results in a retention rate that contains the necessary consistency. *If any other value for "b" is used, such as a forecasted value for "b" in some future time period, then the result from the constant-growth DCF computation would be invalid.*

E. Application of the DCF Method

Q. How did you apply the constant growth DCF method in this case?

A. I used the formula k = D/P + g. I selected a group of comparative electric utilities, and applied that formula using the financial data for each company in the group.

I started by quantifying the "D/P," which is dividends divided by price: the dividend yield. Next, I computed the growth rate, "g" using the "b x r + sv" formula. Finally, I added the dividend yield (D/P) and the growth rate (g), and the result is the cost of equity based on the constant growth DCF method.

The results of my analysis are shown in my Exhibit No. ___ (JAR-7).

1. Determining the dividend yield: "D/P"

Q. How did you determine the dividend yield, or the "D/P" part of the constant-growth DCF formula?

A. First, I took the current quarterly dividend rate for each company in the comparative group, and multiplied it by 4, to arrive at the current annualized dividend rate.

Second, I converted this annualized dividend rate to a dividend yield by dividing it by the stock price of each company. The stock price I used was determined in two different ways. The first way was to take the actual stock price as of the end of the period I examined. The second way was to take the average of the high and low stock price over the prior year.

Finally, I increased the resulting dividend yield by adding one-half the future expected growth rate. This upward adjustment to the dividend yield is necessary because the DCF formula specifies that the dividend yield to be used is equal to the dividends expected to be paid over the next year divided by the market price. After this adjustment to increase the dividend yield, the yield is equal to an estimate of dividends over the next year.

Q. What were the results of your determination of dividend yield for the comparative group of companies?

A. The dividend yield for the comparative group of electric companies is between 4.12% and 4.43%. This is shown in my Exhibit No. ___ (JAR-7), line 1.

2. *Determining dividend growth, "g," by using the "b x r + sv" formula*

Q. How did you determine dividend growth, or the "g" part of the constant growth DCF formula?

A. For each company in the comparative group, I calculated growth in dividends, or "g," by using "b x r + sv" formula. As I explained earlier, if

this formula is correctly applied, it can produce reliable estimates of dividend growth.

a. Determining "r:" the expected earned return on book equity

Q. How did you determine the value of "r" that you used in the "b x r" portion of the growth rate formula?

A. My estimate for "r" was based upon a review of the actual historic actual return on book equity and future expected returns on book equity for each company. I used the future expected return on book equity reported by Value Line and other analysts' earnings forecasts. The results of these inputs are summarized in my Exhibit No. ___ (JAR 7), footnote A.

I also considered what are likely to be future allowed returns on equity. I concluded that investors expect the future sustainable return on book equity, "r" to be 11.00% for the comparative group.

b. Determining "b:" The earnings retention rate

Q. How did you determine the value of the future expected retention rate "b" that you used in "b x r + sv" formula for growth in dividends?

A. The retention rate, "b", is the residual of the dividend rate, "D", and the future expected return on book equity, "r." Since, by definition, "b" is the fraction of earnings not paid out as a dividend, the only correct value to use for "b" is the one that is consistent with the quantification of the other variables used in the DCF method.

The formula to determine "b" is:

b = 1 - (D/E), where

b = retention rate

D = Dividend rate

E = Earnings rate

Also, "E" is equal to "r" times the book value per share, and book value per share is a known amount. Therefore, I directly computed the value of the retention rate "b" based upon the values of "D", and "r."

Q. What retention rates did you calculate for use in the single-stage DCF method using the "b x r + sv" formula?

A. Based upon the above formula (b = 1-D/E), I computed a retention rate of 24.19% to 25.30% for the comparative electric company group. This is shown in my Exhibit No. ___ (JAR-7), line 2d.

c. Determining "sv:" growth caused by the sale of new common stock above book value

Q. How did you determine the "sv" part of the formula?

A. The "sv" part of the DCF formula recognizes that sales of new common stock above book value can be a source of recurring growth. I quantified this refinancing growth by recognizing that the average market-to-book ratio of the comparative electric companies has been in the range of 1.88 to 1.99. This is shown in my Exhibit No. ___ (JAR-7), line 2a. The average growth in shares of common equity forecast by Value Line is 0.80%. The amount in excess of book value of either 0.88 or 0.99 was then multiplied by 0.80% to arrive at the new financing growth of 0.71% to 0.80% shown on my Exhibit No. ___ (JAR 7), line 4.

3. *Results from application of the DCF method*

Q. Please summarize your DCF results.

A. The results of my constant growth DCF are shown on Exhibit No. ___ (JAR-7). As that exhibit shows, the average dividend yield was 4.12% to 4.43%, and the average growth rate was 3.37% to 3.58%. After making an addition of 0.07% to allow for an increment to the dividend yield for growth to next

year, this produces the DCF-derived cost of equity of between 7.77% and 7.87%, shown on line 7.

The results of my multi-stage DCF method are shown on Exhibit No. ___ (JAR-8). This exhibit shows that the cost of equity indicted by the multi-stage DCF is between 8.52% and 8.66%, depending upon the time period used to quantify stock price.

F. Risk Premium/CAPM Method

Q. Please describe the risk premium/CAPM method.

A. The risk premium/CAPM method estimates the cost of equity by calculating the "premium" investors require in order to own equity over a another security, which has a more explicitly calculated return requirement. Typically, analysts add a risk premium to United States Treasury securities or some other similar proxy.

1. The basic risk premium method

Q. What is the basic form of the risk premium method?

A. Typically, the risk premium method adds a "risk premium" to the debt cost of a secure debt investment to estimate what additional return an investor would require before choosing to invest in a common stock instead of that debt instrument.

Q. Is the risk premium method the same as the Capital Asset Pricing Model, or "CAPM" method?

A. The CAPM method is a form of the risk premium method that makes an adjustment for risk based on the correlation of stock returns to the overall market, often called a *"beta."*

2. *Risk premiums are declining*

Q. Have risk premiums been stable over time?

A. No. Risk premiums have declined in recent years, and it is very important to understand this historical fact when estimating return requirements with the risk premium/CAPM method.

Q. Have you prepared an exhibit that supports your assertion that there has been a decline in risk premiums?

A. Yes. My Exhibit No. ___ (JAR-10), pages 5 and 6, show that the difference between earned returns on debt and common stocks has been narrowing over time.

This exhibit compares the historic actual earned returns on common stocks and bonds from 1926 through 2004 using a 30-year moving average. Thirty years is long enough to see if there is a trend to the earned returns, but not so short as to be overly influenced by short-term volatility in earned returns. The data show that the decline in the risk premiums is persistent and undeniable.

Q. Why has the premium between common stocks and debt declined over many decades?

A. There are several factors. Most recently, the reduction of the marginal tax rate on capital gains relative to the tax rate on ordinary income has narrowed the equity risk premium. Since investors are concerned about after tax returns, reductions in the tax rate on dividends reduces investors

pre-tax return requirements, thereby narrowing the spread of return requirements between equity and other less risky investments..

Second, the decline in risk premiums reflects the fact that common stocks have become less volatile over time. Risk is proportional to expected volatility. The data on page 108 of the Ibbotson and Associates' "2004 Yearbook" show that between 1925 and 2003, the volatility of common stocks has been declining, and in contrast, the volatility of long-term government bonds has been increasing.

Therefore, the convergence in the volatility of common stock prices and government bond prices brings the relative risk closer together in today's capital markets than earlier times. This explains why the difference in risk between equity and debt has declined over time, and therefore, common stock investors now require a lower premium over debt than they did in the past.

Q. Has this decline in risk premiums been acknowledged by the financial community?

A. Yes. For example, in 1999 Federal Reserve Board Chairman Alan Greenspan observed that "equity risk premiums have generally declined

during the past decade is not in dispute." *Business Week* reported in its April 5, 1999 issue that historic risk premiums were once in the 7.4% range, but had fallen to between 3% and 4%.

In an October 4, 2001 report, Credit Suisse First Boston concluded that the equity risk premium over Treasury Bonds was 3.7%, and the equity risk premium over Baa rated corporate bonds was 1.9%.

More recently, in its "Stocks, Bonds, Bills, and Inflation 2004 Yearbook," Ibbotson Associates concluded that the equity risk premium was now 3.84%.

Q. Have you prepared an exhibit that analyzes the risk premium of common stock relative to bonds?

A. Yes. My Exhibit No. ___ (JAR-10), page 5, bottom graph, shows that the risk premium of common stock over 30 year Treasury securities is in the 3% to 4% range.

Q. How did you determine the appropriate risk premium for securities other than United States Treasury securities?

A. I determined the average historic risk spread between long-term Treasury securities and the other long-term securities as shown on page 2 of my Exhibit No. ___ (JAR-10). The 4% risk premium was increased or decreased as warranted by the historic data when applied to each of the separate interest rate categories to which I applied the risk premium method.

3. The geometric average should be used to compute historical actual returns

Q. What mathematical method is appropriate to use to compute historic actual returns when deriving the risk premium?

A. The geometric average. The geometric average takes into account the effect of compound interest over time.

The geometric average is the measure supported by the financial literature and empirical analysis. I present a discussion of that literature and empirical analysis in my Exhibit No. ___ (JAR-12), which explains why the geometric average is appropriate.

G. Application of the Risk Premium/CAPM Method

1. *Inflation Risk Premium Method*

Q. What is the inflation risk premium method?

A. The inflation risk premium method is premised upon the concept that investors require a "real" return in excess of inflation . All returns therefore have a component of compensation for the use of capital and expected inflation.

Q. How did you apply the inflation risk premium method?

A. I applied the inflation risk premium method by adding the investors' current expectation for inflation of 2.55% to the long-term rate earned by common stocks, net of inflation, of 6.6% to 7.00%, to derive a cost of equity of 9.15% to 9.55%.

Q. How did you determine the 6.6% to 7.0% long-term rate earned by common stocks, net of inflation?

A. I relied on the book entitled *Stocks for the Long Run* (McGraw Hill 2002), by Dr. Jeremy Siegel, a professor at the Wharton School. Professor Siegel examined the real returns achieved by common stocks from 1802 through 2001. He concluded on page 12 that:

> The growth of purchasing power in equities not only dominates all other assets but also shows remarkable long-term stability. Despite extraordinary changes in economic, social, and political environments over the past two centuries, stocks have yielded between 6.6 and 7.0 percent per year after inflation in all major subperiods.
>
> Accordingly, 6.6% to 7.0% is a good proxy for the long-term real rate of return of common stocks.

Q. How did you determine the 2.55% investors' current expectations for inflation?

A. I compared the interest rate on conventional United States Treasury Bonds with the interest rate on inflation-indexed United States Treasury Bonds.

Q. Please explain the nature of these bonds, and how your comparison of the two quantifies investors' current inflation expectations.

A. The United States government issues inflation-indexed treasury bonds. The total return received by investors in these bonds is a fixed interest rate plus

an increment to the principal based upon the actual rate of inflation that occurs over the life of the bond. In contrast, conventional United States Treasury Bonds compensates investors in the traditional fashion for inflation through the explicit coupon rate of the bond. Therefore, by comparing the interest rates of these two types of bonds, the future inflation rate anticipated by investors can be quantified.

Q. Based on your analysis of these two types of Treasury Bonds, what is the current inflation expectation of investors?

A. As of the end of June, 2005, it is about 2.55%. Exhibit No. ___ (JAR-9) shows this calculation. Long-term, inflation-indexed Treasury securities are yielding 1.74%, while conventional long-term Treasury securities were yielding 4.25%. The difference between 4.25% and 1.74% is 2.51%, which I rounded up to 2.55%.

Q. What is the investor's current cost of equity for an investment of average risk, using the inflation risk premium method?

A. As shown on line 7 of my exhibit, adding the current 2.55% inflation expectation to the 6.6% to 7.0% range from Professor Siegel's book,

produces an inflation risk premium cost of equity of 9.15% to 9.55% for an equity investment of average risk, with a mid-point of 9.35%.

Q. What does that mean for PacifiCorp?

A. Because the risk of PacifiCorp and the group of comparative electric utilities is below average, this supports my conclusion that the cost of equity for PacifiCorp is no more than 8.95%.

2. *Debt Risk Premium Method*

Q. What is the debt risk premium method?

A. The debt risk premium method is a method that estimates the cost of equity based upon the historic difference between the earned total return on debt investments and the earned total return on common equity investments.

Q. How did you determine the cost of equity using the debt risk premium method?

A. I separately determined the proper risk premium applicable to long-term treasury bonds, long-term corporate bonds, intermediate-term treasury

bonds and short-term treasury bills. I used a wide array of data points across the yield curve to achieve results that are less impacted by a temporary imbalance that may exist in the debt maturity "yield curve."

These analyses are shown on pages 2-5 of my Exhibit No. ___ (JAR-10), and a summary of the results is shown on page 1 of that exhibit. The figures printed in bold on that schedule show the risk premium results that are obtained based upon different possible length treasury bonds and the result obtained from using AAA corporate debt. These results produce indicated costs of equity that vary between 7.23% and 8.23%.

H. Conclusions on the Cost of Common Equity for PacifiCorp, Based on the Results of the DCF and Risk Premium/CAPM Analyses

Q. What is the cost of common equity for PacifiCorp?

A. The cost of common equity for PacifiCorp is 8.95%.

Q. How did you use your DCF and risk premium/CAPM analyses to derive that cost of common equity for PacifiCorp?

A. As I explained earlier, the cost of common equity indicated by the constant growth form of the DCF method applied to the comparative group of

electric companies is 7.77% to 7.87%, and the cost of equity based upon the multi-stage DCF applied to the same group of companies is 8.52% to 8.66%.

Recognizing that the cost of equity is less today than it has been in past decades, to smooth the transition my recommended cost of equity was based upon the high end of the range indicated by the DCF method, rounded up to 8.75%. I then added 0.20% to this 8.75% cost of equity to allow for the higher risk caused by the somewhat lower percentage of common equity in the capital structure of PacifiCorp as compared to the comparative group.

Before finalizing my recommendation, I considered that the cost of common equity indicated by the equity risk premium/CAPM method is 7.66%, after making specific adjustment for the risk of the electric utility business. I also considered that the cost of equity indicated by the inflation premium method is 9.15% to 9.55% before making an adjustment for the lower than average risk faced by PacifiCorp. Since this 9.15% to 9.55% range is applicable to the S&P 500, which is in a higher risk category than the comparative electric group, these results from the inflation premium method are an additional confirmation that my 8.95% recommended cost of

equity for PacifiCorp is a fully fair and reasonable return on equity to allow to PacifiCorp.

VIII. EVALUATION OF THE TESTIMONY AND EXHIBITS FILED ON BEHALF OF PACIFICORP BY DR. HADAWAY

A. Summary

Q. Please summarize the testimony of Dr. Hadaway.

A. Dr. Hadaway recommends a cost of equity for PacifiCorp of 11.125%. He relied upon several different DCF analyses of the common stock for a proxy group of electric companies. He tested his DCF result by examining the results of his "bond-yield-plus-equity risk-premium" analysis, based on Moody's single-A cost of utility debt.

B. Dr. Hadaway's Application of the DCF Method

Q. How did Dr. Hadaway apply the DCF Method in this case?

A. Dr. Hadaway applied three different versions of the DCF Method: 1) the "Traditional Constant Growth" DCF Method; 2) the "Constant Growth" DCF Method; and 3) a "Two-Stage Growth" DCF Method.

Q. What are the results of Dr. Hadaway's DCF analysis?

A. Using the Traditional Constant Growth DCF Method, Dr. Hadaway found a cost of equity of 9.3% (average) and 9.5% (median). Using the Constant Growth DCF Method, Dr. Hadaway found a return on equity of 11.2%. Using the Two-Stage Growth DCF Method, Dr. Hadaway found a cost of equity of 10.8% (average) and 10.7% (median).

Dr. Hadaway summarizes the results of his application of these methods on page 1 of his Exhibit No. ___ (SCH-4), and his calculations are summarized on pages 2-4 of that exhibit.

Q. In each of these three versions of the DCF model presented by Dr. Hadaway, what factor did he primarily rely upon in estimating the growth component?

A. Dr. Hadaway gives significant weight to GDP growth in each of version of the DCF model he used. He weights GDP growth 25% in calculating the

"g" in his Traditional Constant Growth DCF Model. He gives a 100% weighting to GDP growth in calculating "g" in his Constant Growth DCF Model, and in his Two-Stage Growth DCF Model, he uses GDP growth exclusively for the second stage growth estimate.

In short, Dr. Hadaway's DCF results depend upon the propriety of using GDP growth in the growth component of the DCF formula. This is a serious flaw in his DCF analysis.

1. Dr. Hadaway erred by using GDP growth in the DCF Model

Q. What is "GDP" and what does it measure?

A. "GDP" stands for Gross Domestic Product. It is a commonly used economic indicator that provides an estimate of the total amount of value created by an economy within a country.

Q. Is GDP growth a valid indicator of the kind of growth appropriate for use in the DCF model?

A. No, not at all. Growth in the general economy has no relationship whatsoever with estimating investor growth expectations within the DCF

model. Dr. Hadaway's reliance on GDP growth in all three of his DCF approaches means that his DCF results must be completely rejected.

Q. What is the basic reason that GDP growth is not appropriate to use in the DCF model?

A. The growth rate that is required for the DCF model is the growth in cash flow PER SHARE. As I explained earlier, cash flow growth experienced by stock investors comes in the form of dividend growth and/or stock price growth. Both dividends and stock price growth are derived from earnings per share growth. Measures of overall growth of the United States economy such as GDP might have some, albeit imprecise, relationship to total earnings of a particular company or industry. However, and especially for the regulated electric utility industry, overall GDP growth is not related to the dividends PER SHARE growth, earnings PER SHARE growth, or stock price growth that are the crucial growth factors used in the DCF method.

While GDP growth can influence total kwh sales levels, it might or might not influence total earnings levels of the electric utility, and it does

not influence earnings per share levels, especially for a regulated industry such as the electric utility industry.

In conclusion, Dr. Hadaway's use of GDP as a proxy for investor expectations of long term growth in dividends artificially inflates his DCF estimate of the cost of equity.

2. *Eliminating GDP growth from Dr. Hadaway's DCF calculation gives an 8.6% cost of common equity, not the 9.3% or 9.5% cost Dr. Hadaway calculated*

Q. What would Dr. Hadaway's DCF study indicate as the cost of equity had he not used GDP as a proxy for investor growth expectations?

A. His DCF study would show a cost of equity of 8.63%. Exhibit No. ___ (SCH-4), page 2, Column 13 shows an estimate of growth of 4.75%. If the "GDP Growth" column of figures were eliminated in his computation of the average growth rate, his average growth rate would decline from 4.75% to 4.05%, and his cost of equity would decline from 9.3% (average) or 9.5% (median), down to 8.6%. This calculation is shown in my Exhibit No. ___ (JAR-11). The top half of that exhibit includes GDP growth, and the bottom half eliminates GDP growth. The 8.63% figure is shown at the bottom of page 2.

Q. From an end result perspective, is this corrected 8.6% cost of equity an acceptable, proper result from the constant growth DCF method?

A. Yes. It is consistent with my cost of equity recommendation of 8.95%.

3. Other problems with Dr. Hadaway's growth rate analysis

Q. Would you please compare and contrast your use of the "b*r" factor for estimating investor growth expectations in the DCF?

A. Yes. Dr. Hadaway's "b x r" growth rate computation shown on page 2 of his Exhibit No. ___ (SCH-4), reflects the same components of my "b x r" calculation shown on my Exhibit No. ___ (JAR-7).

Dr. Hadaway's value for the future expected return on equity, "r", is 10.90%, ([Exhibit No. ___ (SCH-4), page 2, Column 8), compared to my rate of 11.0%, shown on my Exhibit No. ___ (JAR-7). These are reasonably comparable figures.

However, Dr. Hadaway used a retention rate of 32.81%, (Exhibit No. ___ (SCH-4), page 2, Column 6), and I used a retention rate of 24.19% to 25.30%. (Exhibit No. ___ (JAR-7).

Dr. Hadaway's retention rate is derived from Value Line's forecast of the retention rate. The retention rate I used is equal to the percentage of earnings that has to be retained by the company if the dividends used to compute the dividend yield are actually paid, and if the 11.0% value for the future expected return on equity, "r", were actually earned.

Q. What is wrong with Dr. Hadaway's use of the retention rate based on what is reported by Value Line?

A. The retention rate reported by Value Line is inconsistent with the dividend rate Dr. Hadaway used in the computation the dividend yield.

The retention rate and payout ratio are complementary. If one forecasts the retention rate to grow, then the portion of earnings available to pay dividends must decline. Dr. Hadaway's DCF has not accounted for a lower dividend yield under the forecast that the company will retain more of its earnings.

Q. What is the consequence of Dr. Hadaway's failure to make the dividend rate and the retention rate consistent in his analysis?

A. Dr. Hadaway's failure to make the dividend yield component and the growth component of his DCF model consistent has introduced an unnecessary and avoidable error that cannot be explained as simply a matter of judgment.

4. Dr. Hadaway erred in his use of Zacks reported five year growth rates

Q. How did Dr. Hadaway use growth rates from Zacks Investment Research?

A. Dr. Hadaway used Zacks five year growth rates as one of the four growth measures he averaged in his Traditional Constant Growth DCF Model. The growth rate from Zacks is shown in his Exhibit No. ___ (SCH-4), page 2, Column 10, entitled "Zacks."

Q. How does Zacks compute the five year growth rates it publishes?

A. Zacks Investment Research compiles analysts' expectations of growth expressed as the compound annual growth in earnings per share from the most recently completed fiscal year to a period five years out into the future.

Q. What is your opinion of the estimates published by Zack's and its use by financial analysts?

A. Analysts have a long track record of being overly optimistic on growth rates. However, Zacks consensus estimate of earnings growth can be helpful, if it is used correctly.

Q. Has Dr. Hadaway's used Zacks five year growth estimate rate in his constant growth DCF model correctly?

A. No. A five year growth rate is too dependent upon the level of earnings that were achieved in the base year to be of use in the DCF model, without further analysis.

Q. Have you prepared an exhibit that explains the how an analyst could correctly use Zacks earning estimates in a DCF Model?

A. Yes. My Exhibit No. ___ (JAR-6), page 3 shows the method to properly adjust Zacks estimates for growth rates in earnings.

It uses the Zacks growth rates as inputs into the computation of what the return on book equity these companies would have to achieve in order to realize the Zacks consensus growth rate.

My Exhibit No. ___ (JAR-6), page 3, shows that the companies would have to have an expected return on book equity of 11.65% (mean) and 11.18% (median). This value is consistent with my estimation of investor expectations of what these companies will earn on book equity in the future. Note that the expected return on book equity is different than the cost of equity.

Just as in the case of bonds that pay interest rates higher than demanded by investors, when the return on book equity is higher than investors demand, the price of the stock is bid up to levels higher than book value. Because the cost of equity is the return rate demanded by investors on the market price investment, the cost of equity is different from the return on book equity unless stock price is exactly equal to book value.

Book value growth is only the proper form of growth for the constant growth DCF if earnings, dividends and stock price are all growing at the same rate as book value i.e. at the b *r rate.

5. *Dr. Hadaway erred in his use of Value Line earnings per share growth forecasts*

Q. How did Dr. Hadaway use Value Line earnings per share growth forecasts in his DCF analysis?

A. Dr. Hadaway used Value Line earnings per share growth forecasts as one of the four growth measures he averaged in his Traditional Constant Growth DCF Model. The growth rate from Value Line is shown in his Exhibit No. ___ (SCH-4), page 2, Column 11, entitled "Value Line."

Q. How does Value Line compute the five year growth rates it publishes?

A. Value Line's earnings per share forecast is computed somewhat differently than Zacks. Rather than use earnings from only the most recently completed fiscal year as the base year earnings, Value Line starts with an average of earnings per share from the three most recently completed fiscal years. It then compares that historic actual earnings rate to the earnings per share Value Line expects for a period approximately 5 years into the future.

Value Line's published earnings per share growth rate is the compound annual rate of growth in earnings per share from the historic average to the future projected earnings per share.

Q. Does Dr. Hadaway's use of the Value Line five year growth rate in his constant growth DCF improve the accuracy of his DCF estimate?

A. No. Including the Value Line earnings per share growth in addition to the Value Line derived "b x r" growth rate computation simply provides an additional, but less accurate way of quantifying the very same input.

6. Dr. Hadaway's Two-Stage Growth DCF Model overstates investor return requirements

Q. Please explain Dr. Hadaway's application of the Two-Stage Growth DCF Model.

A. In Dr. Hadaway's Two-Stage Growth DCF Model, he uses a non-constant growth estimate. This is sometimes called a "multi-stage" DCF analysis.

Dr. Hadaway implemented the non-constant growth version of the DCF method by relying on Value Line's forecast of dividends for the first five years as his expected cash flow in his first stage. As explained by Dr. Hadaway on page 24 of his direct testimony, Exhibit No. ___T (SCH-1T), in the first stage of this multi-stage DCF model, he used the Value Line forecasted dividend growth rate of "...only 3.28 percent."

For the second stage, Dr. Hadaway jumps this dividend growth rate all the way up to 6.6 percent, making it equal to the 6.6 percent that he has

determined to be the long-term GDP growth rate. This is shown on page 4, Column 30 of his Exhibit No. ___ (SCH-4).

Q. You previously explained why it is not appropriate to use GDP growth in the DCF formula. Does that explanation also apply to Dr. Hadaway's application of the Two Stage Growth DCF Model?

A. Yes. While the first stage of his two-stage approach has some relevance in a DCF method, his second stage analysis relies on a GDP growth rate, and this heavily influences the answer he obtained. Accordingly, Dr. Hadaway's two stage growth rate fails to provide any reliable insight into the cost of equity, because of all the infirmities that result from using GDP growth in a DCF analysis.

C. Dr. Hadaway's Application of the Risk Premium Method

Q. How did Dr. Hadaway apply the risk premium method in this case?

A. Dr. Hadaway's risk premium method compares the authorized returns on equity awarded to electric utility companies to the long-term interest rate on utility bonds. He concludes that the indicated risk premium is 4.25%,

which he added to the projected single-A utility debt rate of 6.7%, in order to produce an indicated return on equity of 10.95, or 11.0%, rounded.

On page 26, lines 20-23, of his direct testimony, Dr. Hadaway goes on to state that his risk premium estimate is lower than what has been found in other studies, such as the risk premium available from Ibbotson Associates in its "2004 Yearbook."

Q. Do you agree with Dr. Hadaway's risk premium method?

A. No. It is improper to use forecasted interest rates for utility bonds. Second, Dr. Hadaway incorrectly presumes a cause and effect relationship between utility commission decisions for return on equity and his flawed calculation of interest rates.

For example, had Dr. Hadaway simply added his estimate of risk premium of 4.25% to the average actual interest rate, his risk premium analysis would have produced a cost of equity of 8.80%.

1. Dr. Hadaway erred by using forecasted interest rates

Q. Why is it inappropriate to use forecasted interest rate data?

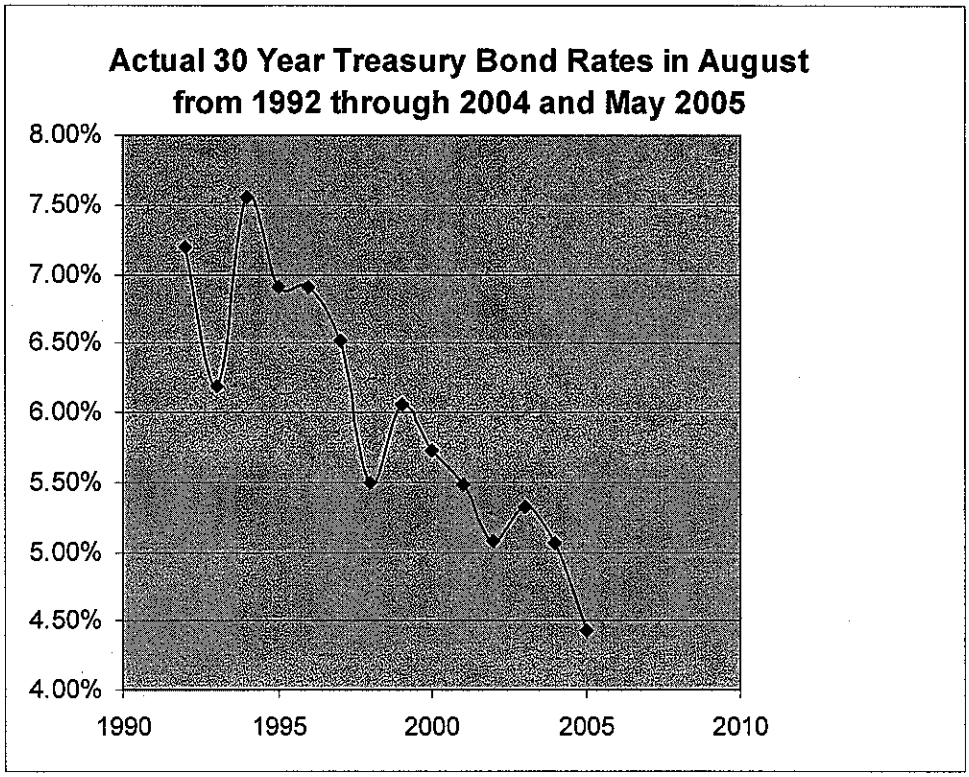
A. Interest rates have been on a multi-decade decline, but even in the face of this persistent decline, forecasting services have continued to predict rising interest rates. Accordingly, forecasted interest rate data has not been proven reliable.

Q. Have you done any specific analysis that shows a continued upward bias in interest rate forecasts?

A. Yes. My analysis shows that, on average, Value Line's forecast of long-term Treasury Bonds was too high by 1.22%. Compared to AAA Corporate bonds, from 1992 through the present, Value Line's long-term interest rate forecast was correct only once, it was too low (by 0.20%) only once, and it forecast higher interest rates than subsequently occurred 11 times out of the 13 forecasts. On average, Value Line's interest rate forecast was too high by 1.11%.

Q. Have you prepared a graph showing the general trend in interest rates from 1992 to present?

A. Yes. Following is a graph showing how interest rates on long-term Treasury Bonds have behaved since 1992.



The above graph shows that there has been an undeniable trend towards lower interest rates at least since 1992.

Q. Why have you shown interest rate data from 1992 to present?

A. The period 1992 to present is the same time period for which I have Value Line interest rate forecasts.

Q. What conclusions are appropriate to draw based on your comparison between this actual general decline in interest rates, and Value Line's interest rate forecasts?

A. The data shows that interest rate forecasts are not reliable. Moreover, even though interest rates kept going lower than Value Line had predicted, Value Line continued to forecast higher interest rates. While there were a few temporary up-ticks in interest rates, such as from 1993 to 1994 and 1998 to 1999, overall, the continued decline in long-term interest rates has overwhelmed the occasional up-tick in interest rates, both in terms of frequency and magnitude.

Q. Do you recommend that the cost of equity be determined based upon the expectation of a continued decline in interest rates?

A. No. While projecting a continued decline in long-term interest rates would be consistent with the historic data, it is preferable to determine the cost of equity based upon current market conditions which actually reflects future expectations. A valid measure of the market's expectation regarding interest rates is expressed in actual long-term interest rates, not interest rate forecasts produced by forecasting services.

2. *Dr. Hadaway erred by assuming an inverse relationship between risk premiums and interest rates*

Q. How does Hadaway structure his risk premium analysis?

A. As Dr. Hadaway explains on pages 25-26 of his direct testimony, he structured his risk premium analysis based on the assumption that as interest rates increase, risk premiums decrease, and vice versa. He calls this an "inverse relationship." Based on this assumption, he uses the results of a regression to develop a risk premium of 4.25%. He adds this 4.25% to a projected single A utility debt cost of 6.7% to get a return on equity of 11% (10.95% rounded).

Q. What is the basis for Dr. Hadaway's claim of an inverse relationship between interest rates and risk premiums?

A. Dr. Hadaway's response to part c of Staff Data Request No. 15, Dr. Hadaway states: "The inverse relationship between interest rates and risk premiums is not based on financial theory. It is an observation of historical results."

Q. Upon what "historical results" does Dr. Hadaway base his assumption?

A. Dr. Hadaway relied on a 1992 study by Robert S. Harris and Felicia C. Marston. He also performs a regression analysis comparing commission authorized returns on equity using the date of the commission decision, to "contemporaneous" interest rates on long-term utility bonds. He then uses the Ibbotson Associates "2004 Yearbook" to support his resulting risk premium of 4.25%.

Q. Is Dr. Hadaway justified in relying on the 1992 study by Harris and Marston to support his assumption that there is an inverse relationship between interest rates and risk premiums?

A. No. The conclusions from that study were based on a historical ten-year period that contained highly unusual financial markets. It is not appropriate to apply the circumstances from that period to current circumstances to estimate a reasonable risk premium.

Q. What time period was analyzed in that study, and what was unusual about that period?

A. The study analyzed the ten-year period 1982 to 1991. During the early 1980's, interest rates in the United States were not only very high, but they

were extremely volatile. The yield on long-term Treasury Bonds averaged 13.73% in January 1982 yet, on a monthly average basis, they were as low as 10.18% that year, a price swing of approximately 30% for a very "low risk" security.

Moreover, just prior to 1982, inflation rates were over 10% from October 1978 through February 1981. 1982 was a year of a very bad recession, which caused inflation rates to decline to the 3-6% range. However, investors were still sensitive to the extreme inflation rates experienced from 1978 through 1981and continued to price securities as if high inflation rates would return.

Indeed, these high inflation rates devastated bond investors. The elevated uncertainties about the possibility of future inflation rates not only returning, but possibly reaching new highs after the recession, caused investors to perceive the bond market (even the bond market for long-term treasuries) to be especially risky.

Q. Did the authors of the study recognize these sorts of unusual circumstances?

A. Yes. For example, on page 68 of the study, the authors noted that "... during the high interest rate period of the early 1980s, the high level of interest rate volatility made fixed income investments more risky holdings than they were in a world of relatively stable rates." That statement is accurate, and it is consistent with the volatile financial indicators I listed.

Q. Is it appropriate for Dr. Hadaway to apply conclusions from the 1982-1991 period to this case?

A. No. The results from that period are not representative of current conditions. In more recent periods, inflation has been lower and much more stable than at any time during the late 1970's and early 1980's. Therefore, bond investors' fears about runaway inflation are no longer present, and the risk premium demanded today is much lower.

Q. Has Dr. Hadaway defended his regression analysis that purports to measure a cause an effect relationship between utility commission authorized rates of return and "contemporaneous" interest rates on long-term utility bonds?

A. No, for two basic reasons. First, Dr. Hadaway has not established that the interest rates he used were in fact "contemporaneous" with the commission cost of equity determinations. Second, Dr. Hadaway has not explained why there should be an inverse relationship between interest rates and risk premiums. In fact, financial data and financial theory do not support his assumption of an inverse relationship.

Q. Please explain why Dr. Hadaway has not established that the interest rates he used were in fact "contemporaneous" with the commission cost of equity determinations.

A. The date of a commission decision on cost of equity does not necessarily reflect the financial conditions that exist at the time the decision is issued. That is because in rate cases, there is often a significant difference between the vintage of information in the record on cost of capital, and the date the commission's decision is made based on that record. This is caused by a lag between the time the record closes and a commission decision is rendered, a lag between the time cost of capital data is collected and included in testimony, and a lag caused by cost of capital witnesses who rely on stock

price data and/or interest rate data that span more than a year of historic data.

Because interest rates have been trending downtrend since 1982, a longer lag between the information in the record, and the interest rate that exists on the date the commission order is issued, will result in a smaller risk premium. Dr. Hadaway fails to measure this effect.

Q. You also stated that Dr. Hadaway has not explained why there should be an inverse relationship between interest rates and risk premiums. Why is that a problem?

A. As I explained, Dr. Hadaway has no financial theory to support his claim that risk premiums increase when interest rates decrease. A positive correlation resulting from a regression analysis does not necessarily prove a cause and effect relationship exists.

Q. Is there financial evidence that there is not an inverse relationship between equity risk premiums and interest rates?

A. Yes. First, as I explained earlier in this testimony, equity risk premiums have generally declined during the past ten or fifteen years.

Second, I conducted a large, DCF-based study several years ago, comparing DCF indicated cost of equity for each of the electric utilities covered by Value Line to various factors about the company and the financial environment over a five-year period ending in about 1993.

Among the factors I examined was the relationship between the DCF indicated cost of equity and interest rates. My analysis showed that the risk premium declines as interest rates decline.

Q. Is Dr. Hadaway correct to conclude from his regression analysis that if interest rates increase by one percentage point, that the risk premium declines by .42 percentage points (Exhibit No. ___T (SCH-1T), page 26, lines 7-10)?

A. No, for all the reasons I have previously given. Also, I conducted a study in which I examined the actual risk premiums between bonds of different risk levels. I compared the interest rate on Aa rated utility bonds with the interest rate on Baa rated utility bonds.

This is a simple way of comparing the impact that the level of interest rates has on the risk premium, because just as equity costs more

than debt because it is more risky than debt, Baa rated debt costs more than Aa rated debt because it also is more risky than debt.

That study showed that one cannot predict a particular risk premium based on a particular interest rate.

Q. Have you prepared an exhibit that portrays the results of that study?

A. Yes. The results are shown in my Exhibit No. ___ (JAR-13). The study shows the change in the interest rate that is required to attract capital from an Aa rated bond to a Baa rated bond decreases as interest rates decrease, and increases as interest rates increase. This evidence also confirms that risk premiums are neither constant nor linear. Merely knowing the prevailing interest rate level does not provide the absolute level of the risk premium to expect.

For example, at an interest rate of 4.0%, risk premiums of between approximately 0.20% and 0.50% have existed in the 1946 to 1995 era. As the interest rate increases, the band tends to widen. At an interest rate of 10.0%, risk premiums of between approximately 0.40% and 1.4% have existed.

Q. Does financial theory support a decline in the risk premium as interest rates decline, contrary to Dr. Hadaway's assumption?

A. Yes. Additional risk has meaning to an investor in relative terms, not absolute terms. For example, in an environment when long-term Treasury Bonds are yielding 12%, an investor could earn a pre-tax return of $12,000 per year on a $100,000 investment. In order for such an investor to be enticed into moving the low risk long-term Treasury Bond into an investment of higher risk, the investor would have to see an opportunity for a return higher than $12,000 to make it worthwhile to take on the additional risk.

In an environment where long-term treasuries are paying 12%, a more risky investment that is paying a 6% premium over treasuries would yield 18%, or $18,000 on the same investment. From the perspective of the available return, the investor could achieve a 50% higher return IF the more risky investment works out as hoped.

Contrast this to an environment in which long-term treasuries are paying 5%. On the same $100,000 investment, the investor in long-term treasuries can expect to earn $5,000 per year. If, as Dr. Hadaway contends, the risk premium were to go up when interest rates go down, it would take

even more than a 6% premium over the 5% interest rates to entice the investor to invest in the more risky investment. Note that even if the risk premium remained constant at 6%, let alone increase, the more risky investment would provide the investor with an opportunity to increase the return on the $100,000 of investment capital from $5,000 on the treasury to (5% + 6%, or 11%) $11,000 on the more risky investment.

The return increment to the investor would be a full 120% higher than on the low risk treasury when interest rates on the treasury were 5% while they would only be 60% higher on the more risky investment versus the treasury when interest rates were high --- and that is merely if the risk premium remains constant.

If Dr. Hadaway were correct, then in the case of the 5% interest rate environment on long-term treasuries, he would argue that the 6% risk premium should be INCREASED. In reality, the enticement necessary to increase the income on the $100,000 investment is far lower (as a percentage of the investment) than when the interest rate on United States treasuries is 12%.

In fact, to keep the actual income opportunity the same percentage improvement in the 5% environment, if the risk premium were 6% in the

12% environment, the risk premium would have to drop from 6% to 2.5% to keep the extra income incentive the same.

Q. Was Dr. Hadaway justified in using a 4.5% risk premium based on the Ibbotson Associates 2004 Yearbook to support his risk premium analysis (Exhibit No. ___ (SCH-1T), page 27, lines 1-7)?

A. No. The Ibbotson Associates "2004 Yearbook" provides substantial data that shows historic returns on numerous financial instruments. However, when using this historic data for the purpose of determining future returns equity investors can expect (*i.e.*, the cost of equity), the 2004 Yearbook calculates the equity risk premium, using the geometric average method, to be 3.84 percent. Page 189 of the 2004 Yearbook specifically states:

> **Long-Term Market Predictions**
>
> Ibbotson and Chen believe that stocks will continue to provide significant returns over the long run, averaging around 9.22 percent per year, assuming historical inflation rates. The geometric equity risk premium, based on the supply side earnings model, is calculated to be 3.84 percent.

Q. If Dr. Hadaway had used this 3.84% equity risk premium from the Ibbotson Associates "2004 Yearbook," what would be the result?

A. Adding 3.84% to his 6.7% debt cost would have given a cost of equity of 10.54%, compared to the 11.2% Dr. Hadaway calculated.

IX. CONCLUSIONS AND RECOMMENDATIONS

Q. Please summarize your conclusions and recommendations in this case.

A. PacifiCorp should be allowed an overall cost of capital of 7.40%. This is based upon a cost of equity of 8.95%. This cost of equity should be applied to a capital structure containing 43.5% common equity, 51.3% long-term debt, 4.00% short-term debt, and 1.20% preferred stock.

Q. Does this conclude your testimony?

A. Yes.