BEFORE THE WASHINGTON UTILITIES & TRANSPORTATION COMMISSION

WUTC V. PACIFICORP D/B/A PACIFIC POWER & LIGHT COMPANY

DOCKET NOS. UE-050684 and UE-050412

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

ON BEHALF OF

PUBLIC COUNSEL

November 3, 2005

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

TABLE OF CONTENTS

TABLES AND GRAPHS

HILL EXHIBIT LIST

HILL EXHIBIT LIST (cont.)

Exhibit No. ___ (SGH-10)   DCF Growth Rates and Comparison

Exhibit No. ___ (SGH-11)   Stock Price, Dividends, Yields

Exhibit No. ___ (SGH-12)   DCF Cost of Equity Capital

Exhibit No. ___ (SGH-13)   CAPM Cost of Equity Capital

Exhibit No. ___ (SGH-14)   Earnings–Price Ratio Understate the Cost of Capital

Exhibit No. ___ (SGH-15)   Modified Earnings-Price Ratio Analysis

Exhibit No. ___ (SGH-16)   Market-To-Book Ratio Analysis

Exhibit No. ___ (SGH-17)   Ratemaking Capital Structure

1   **I. INTRODUCTION / SUMMARY**

2   **Q. Please state your name, occupation and address.**

3   A. My name is Stephen G. Hill. I am self-employed as a financial consultant, and principal

4   of Hill Associates, a consulting firm specializing in financial and economic issues in

5   regulated industries. My business address is P.O. Box 587, Hurricane, West Virginia,

6   25526 (e-mail: sghill@compuserve.com).

7   **Q. Briefly, what is you educational background?**

8   A. After graduating with a Bachelor of Science degree in Chemical Engineering from

9   Auburn University in Auburn, Alabama, I was awarded a scholarship to attend Tulane

10   Graduate School of Business Administration at Tulane University in New Orleans,

11   Louisiana. There I received a Master's Degree in Business Administration. More

12   recently, I have been awarded the professional designation, "Certified Rate of Return

13   Analyst" by the Society of Utility and Regulatory Financial Analysts. This designation is

14   based upon education, experience and the successful completion of a comprehensive

15   examination. I have also been elected to the Board of Directors of that national

16   organization. A more detailed account of my educational background and occupational

17   experience appears in Exhibit No.__(SGH-2).

18   **Q. Have you testified before this or other regulatory commissions?**

19   A. Yes, I have previously presented testimony in this jurisdiction and have testified on cost

20   of capital, corporate finance and capital market issues in more than 225 regulatory

21   proceedings before the following regulatory bodies: the West Virginia Public Service

22   Commission, the Texas Public Utilities Commission, the Oklahoma State Corporation

23   Commission, the Public Utilities Commission of the State of California, the Public

24   Service Commission of New Hampshire, the Georgia Public Service Commission, the

25   Public Utilities Commission of the State of Minnesota, the Ohio Public Utilities

1 Commission, the Insurance Commissioner of the State of Texas, the North Carolina

2 Insurance Commissioner, the Rhode Island Public Utilities Commission, the City Council

3 of Austin, Texas, the State of Maine Public Service Commission, the South Carolina

4 Public Service Commission, the Public Utilities Commission of the State of Hawaii, the

5 New Mexico Corporation Commission, the Wisconsin Public Service Commission, the

6 State of Texas Railroad Commission, the Public Service Commission of Utah, the Illinois

7 Commerce Commission, the Kansas Corporation Commission, the Indiana Utility

8 Regulatory Commission, the Virginia Corporation Commission, the Public Service

9 Commission of Maryland, the Pennsylvania Public Utilities Commission, the Montana

10 Public Service Commission, the Maine Public Utilities Commission, the Vermont Public

11 Service Board, the Federal Communications Commission and the Federal Energy

12 Regulatory Commission. I have also testified before the West Virginia Air Pollution

13 Control Commission regarding appropriate pollution control technology and its financial

14 impact on the Company under review.

15 **Q. On behalf of whom are you testifying in this proceeding?**

16 A. I am testifying on behalf of the Attorney General of Washington, Public Counsel (PC).

17 **Q. What is the purpose of your testimony?**

18 A. In this testimony, I present the results of studies I have performed related to the

19 appropriate return on equity to be applied to the electric utility operations of PacifiCorp,

20 d/b/a Pacific Power & Light (the Company), currently a subsidiary of Scottish Power,

21 Inc. (the Parent). In the body of my testimony, I explain the studies I have performed in

22 support of my recommendation. In addition to my testimony regarding the Company's

23 current cost of equity capital and capital structure for its electric utility operations, I

24 review the cost of capital testimony provided by Dr. Sam Hadaway and discuss the

25 shortcomings contained therein.

1   **Q. Have you prepared exhibits in support of your testimony?**

2   A. Yes, Exhibit Nos. __(SGH-3) through (SGH-5) contain additional detail regarding certain

3   aspects of my narrative testimony in this proceeding. Exhibit Nos. __(SGH-6) through

4   (SGH-17) provide the analytical support for the conclusions reached regarding the cost of

5   equity and overall cost of capital for the integrated electric utility operations of

6   PacifiCorp presented in the body of the testimony. These Exhibits were prepared by me

7   and are correct to the best of my knowledge and belief.

8   **Q. Please summarize your testimony and findings concerning the rate of return that**

9   **should be utilized in setting rates for PacifiCorp's utility operations in this**

10   **proceeding.**

11   A. My testimony is organized into four sections. First, I discuss the cost of capital standard

12   as a measure of the return to be allowed for regulated industries, and review the current

13   economic environment in which my equity return estimate is made.

14   Second, I review the Company's requested capital structure as well as the manner

15   in which it has recently capitalized its operations. I also review the capital structures

16   prevalent the electric utility industry currently. I provide an assessment of an appropriate

17   ratemaking capital structure that will balance economic efficiency and financial safety.

18   Third, I evaluate the cost of equity capital for similar-risk utility operations using

19   Discounted Cash Flow (DCF), Capital Asset Pricing Model (CAPM), Modified Earnings-

20   Price Ratio (MEPR), and Market-to-Book Ratio (MTB) analyses.

21   Fourth, I comment on the pre-filed cost of capital testimony submitted by

22   Company witness, Dr. Sam Hadaway.

23   I have estimated the equity capital cost of electric utility companies to fall in a

24   range of 8.75% to 9.50%. Within that range, I estimate the equity cost of the Company's

25   utility operations to be in the middle of a reasonable range of equity costs for fully-

1   integrated electric utilities —9.125%.

2   In addition, I recommend that the current cost of equity be applied to a capital

3   structure consisting of 44.0% common equity, 1.0% preferred stock, 52.0% long-term

4   debt and 3.0% short-term debt. That capital structure is based on the Company's recent,

5   actual capital structure and is similar to electric industry averages.

6   Applying a 9.125% equity capital cost to the ratemaking capital structure I

7   recommend produces an overall cost of capital of 7.51% (see Exhibit No.__SGH-17).

8   That overall return would afford the Company an opportunity to achieve a pre-tax interest

9   coverage of 2.83 times. According to PacifiCorp's June 30, 2005 S.E.C. form 10-Q

10   (Exhibit 12.1), the average pre-tax interest coverage for PacifiCorp's operations over the

11   past three years was 2.20 times. Therefore, the equity return and capital structure I

12   recommend offer the Company an opportunity to exceed its prior pre-tax interest

13   coverage levels and, thereby, improve its current bond rating. The equity return I

14   recommend is sufficient to support or improve the Company's current bond rating and

15   fulfills the requirement of providing the Company an opportunity to earn a return which

16   is commensurate with the risk of its utility operations and serves to support and maintain

17   the Company's ability to attract capital.

18   **Q. Mr. Hill, can you briefly explain why your recommended return on equity for**

19   **PacifiCorp is below 10 per cent?**

20   A. Yes. Simply put, the current and expected market-based cost of capital is relatively low

21   by historical standards. As I explain subsequently in my testimony, long-term interest

22   rates (an indicator of overall capital cost rates), even with recent increases in short-term

23   Treasury rates, remain near 40-year lows. I also present objective capital market evidence

24   that investor return expectations are far more modest than they have been in the past.

25   Also, the Company's own testimony in the instant case supports the accuracy of

4

1   an equity return recommendation below 10%. Company witness Hadaway's traditional

2   Discounted Cash Flow analyses indicate current equity capital cost rates for a group of

3   electric utilities similar in risk to PacifiCorp of 9.3% (Dr. Hadaway direct testimony

4   Exhibit No. ___ SCH-4, Page 1). (Dr. Hadaway elects to "disinclude" those results in

5   estimating the cost of equity in this proceeding.)

6 **Q. Have other regulatory bodies determined single-digit equity returns to be**

7   **appropriate over the last year?**

8 A. Yes, while Regulatory Research Reports indicates that the equity return awards over the

9   first six months of this year (January-June 2005) have averaged 10.36% for electrics and

10   10.56% for gas utilities,[1] capital costs have been low and there have been many single-

11   digit equity return awards over the past couple of years. The regulatory jurisdictions of

12   New York, New Jersey, Arkansas, Tennessee, Colorado, Connecticut, New Hampshire

13   and Wyoming awarded equity returns below 10% during 2003 and 2004.[2] In addition,

14   the West Virginia Public Service Commission last year set the equity return of a water

15   utility company at 7.0%.[3] More recently, the New Hampshire Public Service Commission

16   determined the cost of equity capital of integrated electric utility operations to be 9.4%[4].

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[1] Regulatory Research Associates, *Regulatory Focus*, July 6, 2005.

[2] New York: Rochester Gas & Electric, 9.96%, NY PUC Lexis 140; St. Lawrence Gas Co., 9.5%, NY PUC Lexis 427; Crown Point Telephone Corp., 8.93%, NY PUC Lexis 474; Chazy & Westport Telephone Corp., 8.01%, NY PUC Lexis 475; Fishers Island Electric, 9.0%, NY PUC Lexis 497. New Jersey: Jersey Central Power & Light, 9.5%, NJ PUC Lexis 248; Rockland Electric Co., 9.75%, NJ PUC Lexis 259. Arkansas: Arkansas Western Gas Co., 9.9%, Ark. PUC Lexis 397. Tennessee: Tennessee-American Water Co., 9.9%, Case No. 03-00118. Wyoming: Lower Valley Energy, Inc., 9.21%, Wyo. PUC Lexis, 128, Colorado: Phillips County Telephone, 9.5%, Col. PUC Lexis 1428, Connecticut: Connecticut Light & Power, 9.85%, Docket No. 03-07-02, New Hampshire: Kearsarge Telephone Company, 8.89%, Docket No. DT 01-221, Verizon New Hampshire, 8.82%, Docket No. DT 02-110.

[3] W.V.P.S.C. Case No. 03-0353-W-42T, West Virginia-American Water Works, January 2, 2004.

[4] Docket No. DE 04-177, Public Service Company of New Hampshire, New Hampshire Pubic Utilities Commission Order No. 24,473, June 8, 2005.

1   **Q. Mr. Hill, do you intend that the returns you cite, allowed by other regulators for**

2   **other companies in other jurisdictions, be used to determine the cost of capital in**

3   **this proceeding?**

4   A. No. The cost of common equity capital should be determined in any regulatory

5   proceeding by a reasoned review of current capital market data and proper application of

6   econometric models. The determination of an appropriate ratemaking cost of capital

7   based on current capital costs of utilities similar in risk to PacifiCorp is the primary focus

8   of my testimony in this proceeding. I believe that analysis should form the basis of the

9   return to be allowed in this proceeding. In a recent rate decision, the Arkansas Public

10   Service Commission recognized the problems of basing the allowed return in one

11   regulatory jurisdiction on returns allowed in other jurisdictions for other companies:

12

13   "Several parties present as evidence information on recent
14   allowed returns for LDC's in other states (T. 837-841, 911-
15   913, 940-942(, (Hadaway Exhibits SCH-11 and SCH-12),
16   (T. 135, 209, 243, 1888) This Commission gives no weight
17   to such data for three reasons. First, there is an element of
18   circularity involved if this Commission, as well as other
19   state Commissions, rely upon rate of return determinations
20   in other states for determining the appropriate allowed
21   return for utilities in their states. Second, neither this
22   Commission not the parties have had an opportunity to
23   probe the factors that made up the allowed return
24   determinations in the other states. This Commission must
25   make determinations based upon the evidence presented in
26   testimony and hearings before this Commission, pursuant
27   to the laws of the State of Arkansas. Third, this sort of
28   comparison is akin to piecemeal ratemaking and is
29   unacceptable. For example, we do not know the other state
30   commissions' policies regarding rate base, expenses,
31   depreciation, etc. As noted by CEUG witness Staley:
32   '[E]very natural gas utility has different needs, different
33   risks, different load profiles, and different performance
34   levels. Consequently, every natural gas utility should have
35   a uniquely determined ROE.' (T. 1302)" (Docket No. 04-
36   121-U, Centerpoint Energy Arkla, Arkansas Public Service

1   Commission, Order No. 16, September 19, 2005, pp. 45,

2   46).

3   I mention the equity returns in other cases simply to inform this Commission that

4 other regulators in other jurisdictions have, over the past two years, elected to allow

5 utilities to earn returns that are relatively close to the current cost of common equity

6 capital—and those returns are below 10%. I do not expect this Commission to make its

7 cost of equity determination based on the decisions[5] of other regulatory bodies but on the

8 facts evident in this proceeding.

9 **Q. Why should the cost of capital serve as a basis for the proper allowed rate of return**

10   **for a regulated firm?**

11 A. The Supreme Court of the United States has established, as a guide to assessing an

12   appropriate level of profitability for regulated operations, that investors in such firms are

13   to be given an opportunity to earn returns that are sufficient to attract capital and are

14   comparable to returns investors would expect in the unregulated sector for assuming the

15   same degree of risk. The Bluefield and Hope cases provide the seminal decisions.

16   [Bluefield Water Works v. PSC, 262 US 679 (1923); FPC v. Hope Natural Gas

17   Company, 320 US 591 (1944)]. *These criteria were restated in the* Permian Basin Area

18   Rate Cases, 390 US 747 (1968). However, the Court also makes quite clear in Hope that

19   regulation does not guarantee profitability and, in Permian Basin, that, while investor

20   interests (profitability) are certainly pertinent to setting adequate rates, those interests do

21   not exhaust the relevant considerations.

22   As a starting point in the rate-setting process, then, the cost of capital of a

23   regulated firm represents the return investors could expect from other investments, while

24   assuming no more and no less risk. Since financial theory holds that investors will not

25   provide capital for a particular investment unless that investment is expected to yield

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[5] [Bluefield Water Works v. PSC, 262 US 679 (1923); FPC v. Hope Natural Gas Company, 320 US 591
(1944)]. *These criteria were restated in the* Permian Basin Area Rate Cases, 390 US 747 (1968).

1   their opportunity cost of capital, the correspondence of the cost of capital with the

2   Court's guidelines for appropriate earnings is clear.

3 Q. **Mr. Hill, in your summary you have used phrases like "the cost of equity", "overall**

4   **cost of capital", and "capital structure." prior to explaining the details of your**

5   **analysis in this proceeding, can you provide the Commission some definitions of the**

6   **terminology you will use as well as the scope of the issues addressed in your**

7   **testimony?**

8 A. Yes, I can.

9   In order to build a utility infrastructure (in this case, an electric utility system), a

10   firm must attract capital (money) from investors that is, in turn, used to construct the

11   facilities (utility plant) necessary to meet its public service obligation. In very simple

12   terms, the value of the utility plant appears on the asset side of the Company's balance

13   sheet (the electric plant comprises the utility's assets), and is equal in value to the monies

14   received from investors which were used to build the plant, which appear on the

15   liabilities side of the Company's balance sheet (the capital received from investors

16   comprises the utility's liabilities).[6]

17   Investors provide capital to the firm in several different forms. The relative

18   percentages or the mix of those different forms of capital provided by investors is called

19   the capital structure. For a utility operation, the capital structure represents the source of

20   the investor-supplied funds with which the firm has built its utility plant. The capital

21   structure is generally comprised of common equity (monies supplied by investors when

22   they purchase the stock of a Company and by profits retained by the Company), long-

23   term debt (monies supplied by investors who buy notes and bonds issued by the

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[6] In reality of course, a utility has more assets than its plant investment (such as cash or other liquid
investments) as well as more liabilities than the capital provided by investors (such as accounts payable).
However, for the overview discussion here those details can be overlooked.

1   Company), short-term debt (monies supplied by investors who buy the commercial paper

2   issued by the Company or by banks that lend money to the Company on a short-term

3   basis), and an equity/debt hybrid called preferred stock (monies supplied by investors that

4   buy the preferred stock of the Company). Each of those types of securities—each type of

5   capital provided by investors—has a cost rate associated with it. Moreover, the cost rate

6   of each type of security is directly related to its relative investment risk.

7   The debt securities of a firm are the least risky to the investor because they are

8   issued with a contractual agreement by the firm to pay a certain percentage rate of

9   interest on the value of the debt (the face amount of the bond), and the bondholders are,

10   legally, first-in-line for payment when the firm honors its obligations. In other words,

11   there is more certainty that the bondholder will receive her promised return than will the

12   equity holder of the same firm because the bondholder must be paid first. As an example,

13   a $1000 bond with a coupon rate of 6% would provide the investor a contractual return of

14    $60 annually [$1000 x 6% = $60] every year until the bond matures, at which time the

15   investor would receive back from the Company the face value of the bond—$1000.

16   Because debt securities are the most certain income stream to the investor, they carry the

17   least risk and investors require the lowest return for that type of corporate security.

18   Therefore, debt is the generally cheapest form of capital for the Company.

19   Within the "debt" category of securities there are many types of debt, each with

20   varying degrees of risk. Short-term debt, which is debt with maturities generally less than

21   one year is the least risky to investors, and least costly to the firm. Short-term debt is the

22   least risky due to the term structure of interest rates. Investors most often require greater

23   compensation to assume the risk of investing in a longer-term debt security due to

24   uncertainty regarding the level of inflation and interest rates in the distant future and

25   tying up their money for a longer period of time. The additional risk of investing in

1   longer-term debt securities is called maturity risk. Short-term debt generally offers

2   investors a lower yield (return) than does long-term debt and is, thus, less costly to the

3   firm.

4   Long-term debt can be secured by the physical assets of the Company. That is, in

5   case of bankruptcy the assets of the firm can be sold, and the monies raised from the sale

6   of those assets is used, first, to honor the firm's obligation to the bondholders whose debt

7   was secured by those assets. That type of bond is called a mortgage bond. In effect, the

8   physical property of the utility is mortgaged to secure the debt obligation. Utilities also

9   issue a type of bond called a "debenture," which is, simply, unsecured debt. That type of

10   bond represents a promise to pay interest and principal but is not secured by physical

11   assets. Unsurprisingly, investors require a slightly higher return for investing in a

12   debenture rather than a mortgage bond of the same Company—their principal is more

13   secure with the latter.

14   Also, it is important to note that interest on debt is tax-deductible. That is, prior to

15   paying income taxes, the firm will deduct its interest expense from its operating earnings.

16   Therefore, the cost of utility debt to ratepayers is simply the interest expense of the debt,

17   there is no additional tax impact as with common equity. Overall, debt is the cheapest

18   form of financing for a company because debt holders have a superior claim to any other

19   security in the event of bankruptcy and debt holders are more likely to recover their

20   investment even in a worst case scenario, i.e., bankruptcy.

21 **Q. What is preferred stock?**

22 A. From the firm's point of view, occupying the next higher rung on the cost of capital scale

23   is preferred stock. Preferred stock is a hybrid security that has some aspects of common

24   equity and some aspects of debt. Preferred is debt-like in that there is a pre-determined,

25   contractual interest rate offered the investor (which is the cost of that type of capital to

1   the Company). In other words, investors purchase the preferred stock of a firm knowing

2   what the quarterly dividend is going to be. Unlike common stock, the quarterly dividend

3   associated with preferred stock does not increase over time—it remains at the

4   contractually stated level.

5   There are many varieties of preferred stock, but one primary difference between

6   preferred stock and debt is that if the preferred dividend is not met, the preferred stock

7   holders are not able to require that the firm liquidate its assets to pay the promised cash

8   flows as the debt-holders can. If a preferred dividend is omitted, however, the firm is

9   often required to accrue and eventually pay that deferred dividend. So, to the investor, the

10   income stream from a preferred stock investment is less secure than that of a debt holder

11   but more secure than that of a common stock holder. The cost rate of preferred stock,

12   absent any income tax considerations, then, is higher than debt, and preferred stock is a

13   more expensive form of capital for the firm than debt.

14   Preferred stock also has some aspects of equity capital in that, as I noted above,

15   the dividend can be omitted without bankruptcy considerations for the firm. Also

16   preferred stockholders have an ownership interest in the firm (something bondholders do

17   not have) and can vote on corporate-related issues. Preferred dividends are not tax-

18   deductible to the Company that issues the preferred stock and require an income tax

19   addition to the cost rate in a ratemaking context. In other words, ratepayers have to

20   provide not only the dividends on the preferred stock but also the income tax payments

21   that must be paid on those monies earned by the utility.

22   It is important to understand that the cost to the Company of preferred stock, and

23   long- and short-term debt is contractually set. That is, the annual return that will be

24   realized by investors and, thus, the cost to the utility for all of those types of capital is set

25   out contractually and is relatively easily determined for ratemaking purposes. Of course,

1   there can be differences of opinion on projected short-term debt interest rate levels or the

2   amount of debt refinancing expense to include in the embedded cost rates, but the rate

3   impact of those differences are usually minor. The determination of the cost of common

4   equity capital, a primary focus of this testimony, is quite a different matter.

5   **Q. Why is the determination of the cost of common equity capital different from the**

6   **determination of the cost of the other types of capital used by utility companies?**

7   A. The cost of common equity capital to the utility is the return investors require in the

8   marketplace for the stock of a security of similar risk. In that regard, the cost of common

9   equity is similar to the cost of any other type of capital. For example, the cost of debt to

10 the utility is the return investors require in the marketplace for similar-risk debt securities.

11 The difference is that debt is issued with a rate of return (a percentage yield) established

12 by contractual agreement. With common equity capital, there is no such contractual

13 agreement and the investors' required return—the cost of common equity capital to the

14 firm must be estimated using econometric models such as the Discounted Cash Flow

15 (DCF).

16   The cost of common equity can also be thought of, simply, as the profit the utility

17 will be allowed to earn. For example, if the Commission sets rates for PacifiCorp using a

18 cost of common equity of 9%, then they are setting rates which, under normal operating

19 conditions and the auspices of efficient management, will result in a profit of 9% on the

20 common equity investment in the firm, after all operating expenses, depreciation,

21 purchased power expenses and taxes have been paid.

22   Common equity is the most expensive form of capital for a firm. Common stock

23 dividends are not tax deductible and, because of that fact, from a ratepayer point of view,

24 common equity capital is roughly twice as expensive as debt capital. For example,

25 assume the cost of long-term debt for a utility firm is 6% and the cost of common equity

1   is 9%, after tax. In order for the utility to be able to pay the income taxes that will be due

2   on its 9% common equity return (which, again, is the Company's profit), ratepayers will

3   have to provide the 9% return as well as the taxes on that 9% return, or a 13.85% pre-tax

4   return on equity [9% / (1-35%tax rate) = 9%/65% = 13.85%]. Therefore, the cost of

5   common equity to the ratepayer is more than twice that of debt capital (in our example,

6   13.85% v. 6%).

7   For that reason, the selection of the ratemaking capital structure is important to

8   ratepayers as well as to the utility. If the capital structure used for ratemaking purposes

9   contains more common equity capital than is commensurate with the risk of the utility

10   operation, or more common equity than the utility actually employs, that factor can

11   impart capital costs to the ratepayer that exceed the utility's actual costs and are

12   economically inefficient.

13   Finally, because the common dividend is not contractually guaranteed, common

14   equity is the least risky form of capital to the utility firm from a financial risk perspective.

15   Firms that have relatively high levels of common equity capital in their capital structure

16   mix have concomitantly lower financial risk and, conversely, firms that have relatively

17   low levels of common equity capital in their capital structure mix (high levels of debt

18   capital) have higher financial risk.

19 **Q. What determines the mix of the different types of capital in the capital structure of a**

20   **firm?**

21 A. The manner in which a firm is most economically capitalized is a function of the

22   volatility of the income stream generated by the assets of the firm or, in other words, the

23   firm's operating (business) risk. For example, if a firm has an income stream that is not

24   volatile and which can be predicted with near certainty, then a capital structure consisting

25   of even 100% debt would not be problematic or risky. In fact, it would be the most cost-

1   effective capital structure in that instance because debt is the least expensive form of

2   investor-supplied capital for a firm and, without the possibility of operating income being

3   insufficient to meet the debt service requirements, a 100% debt capital structure would be

4   the prudent choice.

5   As the income stream of a firm becomes more volatile (more risky), financial

6   theory holds that the amount of debt used should decline in order to avoid a default event

7   (the failure to meet the required debt service costs). Although the reduction of lower-cost

8   debt and the addition of higher-cost common equity will raise the firm's overall cost of

9   capital, that increase is appropriate and economically efficient because it more

10   appropriately matches the firm's financial risk with the increase in business risk. In that

11   way, given an increased level of business risk, the cost of capital is minimized and the

12   financial health of the firm is better assured.

13   An example of how the amount of debt in the capital structure varies with the

14   operational or business risk of a firm is found in a recent publication by Standard &

15   Poor's regarding utility business risk. A June 2004 publication by Standard & Poor's, in

16   which that bond rating agency re-aligned its business risk profile scores for utility

17   companies, indicates that the companies with higher business risk are required to have a

18   lower debt ratio (less debt, more equity) in order to earn the same bond rating as a firm

19   with lower business risk.[7]

20   For example, Standard & Poor's indicates that energy merchant/marketing

21   companies have high business risk. On a scale of 1 to 10 with, 10 representing the highest

22   risk, energy trading companies have an average business risk profile score of 9. In order

23   to achieve a bond rating of "BBB", companies with a business risk profile of 9, according

24   to Standard & Poor's, should have a total debt ratio ranging between 40% and 50% of

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[7] Standard & Poor's Ratings Direct, *New Business Profile Scores Assigned for U.S. Utility and Power Companies: Financial Guidelines Revised*, June 2, 2004.

1   total capital. (A debt ratio between 40% and 50% corresponds to an equity ratio between

2   50% and 60%.)

3   In contrast, fully-integrated combination utilities, like PacifiCorp, have lower

4   business risk than energy trading companies, and have an average risk profile score of

5   about 5. According to Standard & Poor's, in order to achieve a "BBB" bond rating, those

6   companies should be capitalized with a total debt ratio between 50% and 60% of total

7   capital (or an equity ratio between 40% and 50% of total capital). Therefore, companies

8   with lower business risk (like utility operations) are effectively capitalized with more

9   debt and less equity than companies with higher business risk (like energy trading

10   companies).

11   **Q. Does this conclude your overview of the terms and concepts used in your testimony?**

12   A. Yes, it does.

<h1 style="text-align:center">II. ECONOMIC ENVIRONMENT</h1>

14   **Q. Why is it important to review the economic environment in which an equity cost**

15   **estimate is made?**

16   A. The cost of equity capital is an expectational, or *ex ante*, concept. In seeking to estimate

17   the cost of equity capital of a firm, it is necessary to gauge investor expectations with

18   regard to the relative risk and return of that firm, as well as that for the particular risk-

19   class of investments in which that firm resides. Because this exercise is, necessarily,

20   based on understanding and accurately assessing investor expectations, a review of the

21   larger economic environment within which the investor makes his or her decision is most

22   important. Investor expectations regarding the strength of the U.S. economy, the direction

23   of interest rates and the level of inflation (factors that are determinative of capital costs)

24   are key building blocks in the investment decision. These factors should be reviewed by

25   the analyst and the regulatory body in order to accurately assess investors' required

1   return—the cost of equity capital to the regulated firm.

2 **Q. Why do you believe an equity return in the range of 8.75% to 9.50% is reasonable**

3   **for an electric utility in today's economic environment?**

4 A. The overall level of fixed-income capital costs has been relatively low for several years,

5   and continues to be low at the current time. Although, as shown in the chart below, there

6   has been upward movement in *short-term* interest rate levels over the past year as the

7   economy has improved, long-term interest rates have remained relatively steady.

8   Moreover, as the economy began to improve at mid-year 2004 and as short-term rates

9   started to climb in response to Federal Reserve credit-tightening, long-term rates actually

10   fell. This indicates that even though the Fed has raised short-term interest rates, investors

11   may not be convinced that the overall level of economic growth will be sufficient to

12   warrant an increase in long-term interest rates.

RECENT INTEREST RATE CHANGES
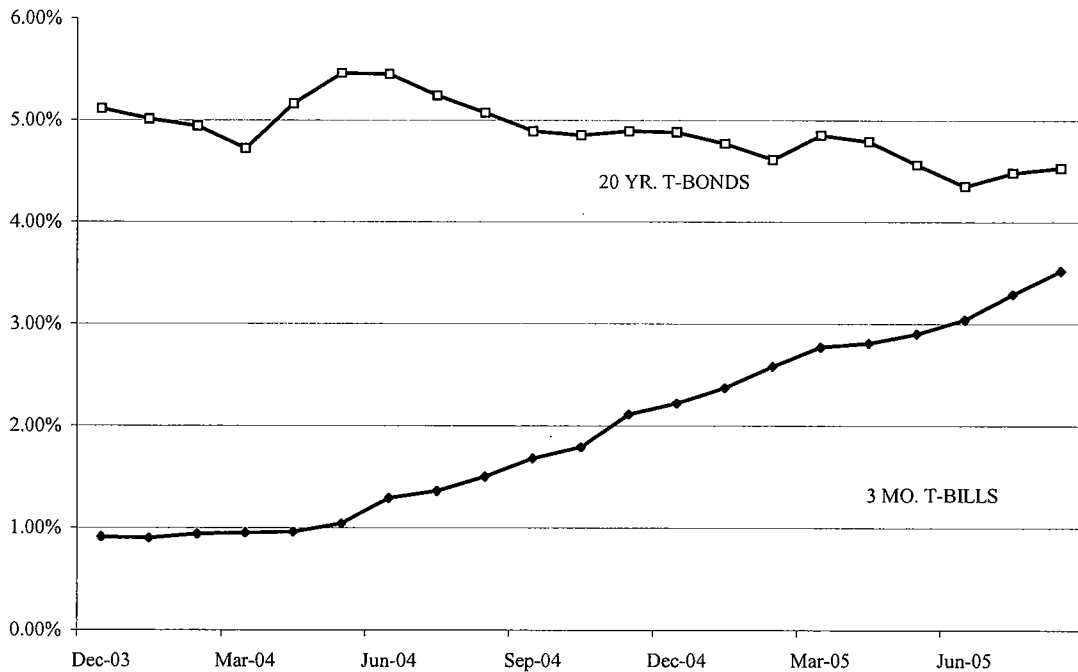
13

14   Data from Federal Reserve Statistical Release H.15

1   Also, there are examples in the capital marketplace indicating that investor return

2   requirements are low by historical standards. A recent A.G. Edwards report on the gas

3   utility industry, which is relatively similar in risk to the electric utility industry, shows

4   that market return expectations for gas utility stocks are well below historical earned

5   returns.[8] The report states that, for a sample of 20 large and small gas distributors, the

6   median total return expectation (dividend yield plus expected growth—a DCF-type

7   calculation) is 8.4%.

8   In addition, in a letter recently published by Public Utilities Fortnightly, an

9   electric industry analyst confirms that investors currently expect single-digit returns from

10   their utility investments:

12   "Finally, let's get real about investor expectations,
13   now that investors have begun to get real. Articles on the
14   topic fill the financial journals. They feature variants on
15   this theme: Over time the average equity investment
16   produces an annual total return (dividends plus stock price
17   appreciation) of 6.5 per cent per year in real terms, the bulk
18   of which comes from the dividend component. Add
19   inflation expectations to that number, and you get an 8.5 to
20   9.5 percent return in nominal terms. The average back-to-
21   basics utility yields about 5 to 6 percent and might grow 3
22   to 4 percent per year, which adds up to produce a total
23   return expectation of 8 to 10 percent per year, not far from
24   the return the journals posit for the market."

26   (Hyman, Leonard, Senior Consultant, R.J. Rudden Associates, "Letters to the Editor,
27   *Public Utilities Fortnightly*, August 2004, p. 10).

28   The "articles in the financial journals," to which the author of the preceding quote

29   refers, relate to recent research involving the market risk premium. The market risk

30   premium is the additional return above the risk-free rate of interest that investors expect

31   to earn by investing in stocks rather than risk-free U.S. Treasury securities. The

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[8] A.G. Edwards, "Gas Utilities Quarterly Review," April 4, 2005.

1   "traditional" view (largely supported by the earned return data over the past 70 years

2   published by Ibbotson Associates[9]) assumes that investors require a risk premium of

3   about 6.5% above the risk-free rate to invest in stocks. With a current long-term T-Bond

4   yield of approximately 5%, that traditional assumption indicates an investor expectation

5   of an 11.5% return for the stock market in general [5% + 6.5% = 11.5%]. Of course,

6   expected utility returns would be lower, because utilities have less investment risk than

7   the stock market generally.

8   However, the new research referenced in the letter quoted above indicates that

9   Ibbotson data is skewed upward and the actual market risk premium is much, much

10   lower—in the range of 3% to 4.5%.[10] In other words, the recent academic research

11   indicates that current investor return requirements are considerably lower than has been

12   traditionally assumed. Even Roger Ibbotson, whose firm (Ibbotson Associates) is

13   probably the largest purveyor of historical market return data, recently published a paper

14   confirming that risk premium expectations for the future are now below what they were

15   in the past. [11] While Ibbotson's projected risk premium of 4% to 6% for investors, is

16   lower than historical return averages indicate, his estimates are at the upper end of the

17   spectrum produced by the current research. With a current T-Bond yield of about 5%, the

18   new information regarding expected equity risk premiums confirms that investor's stock

19   market return expectations range from approximately 8% to 10%—i.e., single digit equity

20   returns.

21   The information available to investors in the capital markets confirms that my

---

[9] Ibbotson Associates is a investor service firm that publishes historical data related to the stock and bond markets from 1926 through the most recent year. The publications are updated each year.

[10] Fama, E., French, K., "The Equity Premium," *The Journal of Finance*, Vol. LVII, No. 2, April 2003, pp. 637-659.

[11] Ibbotson, R, Chen, P., "Long-Run Stock Returns: Participating in the Real Economy," *Financial Analysts Journal*, January/February 2003, pp. 88-89.

1   8.75%-9.50% equity return range for the electric utility operations under consideration

2   here is reasonable, if not overly conservative (i.e., too high). In addition, those data

3   represent information to which investors are exposed in the equity marketplace for rate-

4   regulated companies and underscore the fact that, currently, investor return requirements

5   for that type of equity investment are low by historical standards.

6 **Q. Are there other indications that capital costs are at historically low levels?**

7 A. Yes. Another indication of the reason investors are willing to buy and hold stocks that

8   offer what seem to be "low" returns is shown in Exhibit No.__(SGH-6), page 1. It depicts

9   Moody's Baa-rated bond yields from 1984 through August 2005. Page 1 of Exhibit

10   No.__(SGH-6) shows that interest rates and capital costs remain very low relative to the

11   interest rate levels that existed in the mid-1980s, and have continued a general downward

12   trend begun in 2000.

13   Also, page 2 of Exhibit No.__(SGH-6), which presents the year-average Moody's

14   Baa-rated bond yields for each year over the past 37 years (1968-2005), shows that Baa-

15   rated bond yields thus far in 2005 have averaged 5.97%—below the bond yield levels

16   seen in the U.S. in the late 1960s. Also, the most recent average Baa-rated utility bond

17   yield, 5.67%[12], falls below the lower end of the range of interest rates that have existed

18   over the past 40 years. (See Exhibit No.__(SGH-6), page 2) Simply put, a fundamental

19   reason that the current cost of common equity capital for electric utility operations of

20   8.75% to 9.50% is reasonable is that capital cost rates are lower than they have been in

21   more than thirty years.

22   The above data indicate that capital costs, even with the recent short-term credit

23   tightening by the Federal Reserve Bank (the Fed), remain at low levels and generally

24   support the efficacy of my range of equity capital costs. However, it is important to note

___

[12] Value Line *Selection & Opinion*, most recent six weekly editions (6/28/194/05-9/23/05, inclusive),
20/30-year Baa-rated utility bond yield averages.

1   here that equity capital cost rates and bond yields do not move in lock-step fashion over

2   time. In fact, the variability of that return differential is a fundamental reason why risk

3   premium type analyses—which attempt to quantify the additional return over bond yields

4   required by equity investors—are not reliable as primary indicators of equity capital cost.

5   Therefore, it is necessary to perform an independent cost of equity capital analysis, rather

6   than to simply "index" the cost of capital to current interest rates.

7   **Q. Please briefly describe the interest rate changes that have occurred in the U.S.**

8   **economy over the past few years and how they impact capital cost rate expectations**

9   **for the future.**

10   A. The substantial interest rate decline that occurred following the historically high interest

11   rates in the early 1980s spurred increased economic activity in the U.S. The rate of

12   growth in the U.S. Gross Domestic Product (GDP) began to increase rapidly by the end

13   of 1987 and showed signs of continuing to gain strength. That increased economic

14   activity, in turn, led to increased inflation expectations (a rapid rate of economic growth

15   creates shortages in labor and materials, driving up the price of those factors of

16   production, which ultimately results in higher prices in all sectors of the economy). The

17   expectation of increased inflation, in turn, caused the Fed to act aggressively to slow

18   down what was widely believed to be an overheating economy. The very sharp interest

19   rate rise that followed in late 1987 and 1988, shown on page 1 of Exhibit No.__(SGH-6),

20   succeeded in damping down the economy, reducing inflationary pressures, and allowing

21   interest rates to fall again.

22   Since that time, the interaction between the Federal Reserve's moves to expand or

23   restrain the money supply and burgeoning inflation has been a primary influence in the

24   U.S. macro-economy and the level of interest rates. Overall, as inflation has remained

25   calm and economic activity has been moderate, interest rates have trended downward, but

1   that general downward direction has been interrupted when investors (and/or the Fed)

2   believed that falling interest rates would spur too-rapid economic growth. Rapid

3   economic growth can create unwanted inflation. Anticipating that higher inflation and

4   interest rates might be the result of rapid economic expansion, investors have reacted to

5   positive economic news (e.g., increasing GDP growth rates, lower unemployment) or

6   negative inflation news (e.g., increasing commodity prices, factory capacity or labor

7   shortages) by bidding down debt prices and driving up interest rates.

8   That dynamic between the strength of the U.S. economy, inflation and interest

9   rates continues to be a prime determinant of the cost of capital. As shown on page 2 of

10   Exhibit No.__(SGH-6), Baa-rated debt yielded 7.87%, on average, in 1999, while, in

11   2000, equivalently rated debt was priced to yield 8.36%, on average. That cost rate

12   increase was due to investors' concerns regarding the continued strength of the U.S.

13   economic expansion and the potential for increased inflation caused by what was

14   perceived to be a rapid level of growth. However, that rapid rate of economic growth did

15   not come to pass, and the interest rate increases engineered by the Federal Reserve in

16   2000 to slow down a rapidly growing economy worked a little too well, resulting in

17   declining economic growth.

18   Then, in response to an economy that was slowing down, the Fed elected to

19   increase the supply of money by dramatically lowering the Federal Funds rate. The

20   Federal Funds rate is the rate at which money center banks can lend funds on an

21   overnight basis—a fundamental building block of capital costs in the U.S. In order to

22   revive what became a slowing economy, the Fed lowered short-term interest rates eleven

23   times in 2001 (and again in early November 2002 as well as at mid-year 2003). By 2003,

24   Baa-rated debt was trading at prices that produced yields averaging 6.76% and in 2004

25   that average fell further to 6.39%.

1   More recently, in response to a recovering economy, the Fed has reversed course

2   and has begun raising short-term interest rates. Over the past year, the Federal Funds rate

3   has moved upward from about 1% to 3.5% currently. However, as shown previously,

4   long-term rates have not followed suit and have actually declined over the last year.

5   As Value Line notes in its most recent Quarterly Review (published prior to the

6   arrival of Hurricanes Katrina and Rita) the current expectation is that the economy will

7   continue to expand at a slower pace during 2006, and inflation and interest rates will

8   continue to be moderate. Importantly, with regard to the estimation of capital costs, the

9   interest rates projected by Value Line through 2008, even with anticipated increases, will

10 remain below the levels that existed in 1999 and 2000. The following excerpts from

11 Value Line explain how a relatively low interest rate environment will be preserved:

13   **Economic Growth**: As noted, the business expansion
14   proceeded rather strongly during the first quarter of 2005,
15   with GDP growth coming in a 3.8% [chart omitted]. This
16   fairly vigorous pace of activity was underpinned by
17   strength in housing [Chart omitted], some firming in
18   manufacturing activity [Chart omitted], and continuing
19   increases in the non-manufacturing or service sector [Chart
20   omitted]. Even the rate of job growth started to pick up,
21   albeit selectively [Chart omitted]. Then, as the second
22   quarter unfolded, the pattern of improvement became less
23   uniform, with spottiness evident within the retail,
24   manufacturing, and service sectors. Predictably, aggregate
25   GDP growth slowed to a moderate 3.4% in the period.

27   **Inflation**: Inflation has been rather subdued so far this
28   decade, with most pricing categories showing little more
29   that incidental strength. The notable exception has been oil.
30   Here, prices for a barrel of crude have more than doubled in
31   the last two years on the strength of rising global demand
32   (in particular from a rapidly industrializing China), higher
33   consumption levels in more established economies, and the
34   impact of political and military strife in the Middle East,
35   especially in Iraq. Even with the runup in oil prices, the
36   average increase in the Producer and Consumer Price Index

1   is likely to hold in the area of just 2% to 3% both this year
2   and next. Such relative stability, general wage containment,
3   and rising productivity (or labor cost efficiency) have been
4   instrumental in helping to keep inflation at bay this far this
5   decade [Chart omitted].

6

7   **Interest Rates**: The Federal Funds Rate—the rate that is
8   controlled by the Fed—has been increasing at an
9   unrelenting pace, with that rate going from 1.00% to 3.50%
10   since June of 2004. The latest Fed Funds increase, which
11   was announced on August 9th, was accompanied by a
12   statement in which the Fed voiced its intent to continue
13   raising rates in order to prevent a pickup in inflation as the
14   economy gets its second wind. Accordingly. We now see
15   the Fed Funds Rate rising to 4.00% to 4.50% over the next
16   12 months. By then GDP growth should have slowed
17   enough to bring the up cycle in rates to a close [Chart
18   omitted].

19
20 (The Value Line Investment Survey, *Selection & Opinion*, August 26, 2005, pp. 1559-
21 60).

22 In that most recent Quarterly Economic Review, Value Line projects long-term Treasury

23 bond rates will average 4.7% in 2005 and 5.3% through 2006. The recent six-week

24 average 30-year T-bond yield is 4.41% (data from Value Line, *Selection & Opinion*, six

25 weekly editions, August 19 through September 23, 2005, inclusive).

26   Also, while Value Line projects that short-term Treasury Bill rates will rise from

27 1.4% in 2004 to 4.7% in 2009, that investor service publication projects a much smaller

28 increase in corporate bond yields: 5.6% in 2004 to 6.8% in 2009. Finally, those projected

29 interest rate levels (4.7% for T-Bills and 6.8% for AAA-rated Corporate Bonds) are well

30 below the average levels for those securities in 2000 [5.8% for T-Bills and 7.6% for

31 Corporate Bonds]. Therefore, the indicated expectation is that interest rates are likely to

32 move somewhat higher in coming years (as long as the economic recovery stays on

33 track), but will remain at relatively low levels for some time to come.

34   Finally, as I noted above, Value Line's most recent Quarterly Economic Review

1   was published prior to the recent storm damage on the U.S. Gulf coast. Value Line's

2   expectations with regard to increasing interest rates are based on an expanding economy,

3   which, following the recent hurricanes, will be more subdued than Value Line expected.

4   For example, in its Quarterly Economic Review cited above, Value Line projected GDP

5   growth in the fourth quarter of 2005 of 3.5% to 4.0%. In its September 16, 2005 edition

6   of *Selection & Opinion* (p. 1523), Value Line lowered its GDP growth expectations to

7   3.0% from 3.5% for the fourth quarter of this year and noted also that "the moderate pace

8   of economic growth should help keep inflation at bay."

9   **Q. Is it reasonable to conclude that utility investors are aware of the expectations for**

10   **somewhat higher interest rates in the future, and have reacted to that news?**

11   A. Yes. A widely accepted tenet of modern finance is that U.S. capital markets are efficient

12   in quickly assimilating into stock prices news that impacts stock valuation. Higher

13   interest rates have been forecast for some time and, it is reasonable to believe, utility

14   investors have incorporated that expectation into the stock prices they are willing to

15   provide for utility stocks. Therefore, when estimating the cost of equity capital it is

16   necessary to consider current interest rate levels, not projected levels, because current

17   interest rates best represent investors' current expectations for the future.

18   **Q. Do all investor advisory services project higher interest rates in the near-term**

19   **future?**

20   A. No. As I noted above, even Value Line's projections for higher interest rates are based on

21   the assumption that the economy continues to expand at a steady rate. Some investor

22   advisory services indicate that there are signs that the current economic recovery will not

23   last and, more importantly, that when the economy slows down, interest rates will

24   decline.

25   In the August 16, 2005 edition of its *Market Commentary*, Kessler Investment

1   Advisors, expressed concern that the current economic recovery is based largely on

2   borrowing for real estate investment and other consumer durables, notably automobiles.

3   In other words, they claim that the current rate of GDP growth, which appears to be

4   moderate, is due to borrowing (at both the consumer and government level) and not to

5   any underlying strength in the core economy. Moreover, that investor service notes that

6   when borrowing capacity is constrained, as they believe it will be, the economy will

7   falter, requiring the Federal Reserve to assume a more accommodative monetary stance.

8   Expecting yields to fall and bond prices to rise, they are advising their clients to buy

9   Treasury securities:

10
11   "We recommend holding duration equivalent positions in
12   U.S. Treasuries, particularly the two-year maturity. We are
13   buyers across the entire yield curve."
14
15   (*Market Commentary*, Kessler Investment Advisors, Inc., August 16, 2005, p. 11).

16 **Q. Are there additional reasons to believe that common equity capital costs for utilities**

17   **are generally lower today than they have been in the past?**

18 A. Yes. The recently enacted change in the Federal tax law lowered the tax rate on

19   dividends. Under the old law, dividends were taxed at rates that typically were

20   approximately 30%[13]; now dividends are taxed at no more than 15%. The result of this

21   tax cut is that investors are keeping a greater percentage of dividends, and dividend-

22   paying stocks such as utilities have become more valuable than they were before the

23   change in the tax law. In other words, because investors can now keep more of their

24   dividends from their utility investment, they are willing to pay more for those same

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[13] Prior to the tax law change, federal personal income tax rates were 10%,15%,27%,30%,35%,or 38.6% depending upon the relevant income bracket, and dividends were taxed at that rate. Under the newly passed law, the 27% drops to 25%, the 30% to 28%, the 35% to 33% and the 38.6% to 35%. Since the old 27% tax bracket applied to married couples with a combined income of no more than $47,450, it is reasonable to say that the dollar weighted dividends paid to most individual investors were in brackets of between 27% and 38.6%.

1   stocks, resulting in a lower cost of equity capital.

2   The impact of the tax change on the stock prices of utilities has been recognized

3   by an investor advisory service, in the context of the gas utility industry:

4
5   **"Tax reform has resulted in a fundamental shift in the**
6   **group's trading range.** We estimate that the reduction in
7   dividend and capital gains taxes should result in a 10%
8   increase in the average gas utility stock price. Prior to tax
9   reform, the median gas utility P/E [price/earnings ratio]
10   traded in a range of 11.5X to 14.5X. With the tax reduction,
11   we believe the new trading range in now 12.5X to 16.0X."

12   A. G. Edwards, *Gas Utilities Quarterly Review*, July 6, 2004, p. 5.

13   A simple example will facilitate understanding how the tax law change has

14   lowered the cost of equity. Assume a utility with a dividend of $0.50, a stock price of

15   $10, and a long-term investor-expected growth rate of 5.5%. A simple DCF estimate of

16   the cost of equity for that utility would be 10.5%, comprised of a dividend yield of 5.0%

17   ($0.50/$10) and a growth rate of 5.5%. When the tax law changes, investors increase the

18   price they are willing to provide for that stock by 10%, to $11 per share [10$/share x 1.10

19   = $11/share]. Due to the re-valuation of the stock to $11/share, the dividend yield now

20   becomes 4.5% [$0.50/$11 = 4.545%, rounded to 4.5%]. Because the tax law does not

21   affect the Company or its utility operations, its anticipated long-term growth does not

22   change; it remains at 5.5%. The new cost of equity, however is 10% (4.5% dividend yield

23   + 5.5% growth rate), roughly 50 basis points below the pre-tax change cost of equity

24   capital. In sum, another factor contributing to the relatively low cost of common equity

25   capital for utilities in the current capital markets is the recent dividend tax law change.

26   **Q. Is there information relevant to the level of equity capital costs to be gleaned from**

27   **the relationship between market prices, book values and expected returns of utility**

28   **stocks?**

29   A. Yes. It is a long-held and widely-understood tenet of regulatory finance that when

1   investors are providing market prices above the book value of utility stocks, the return

2   investors expect (the cost of capital) is below the return the utility will earn on that book

3   value. In other words, when market prices are above book value, investors expect utilities

4   to earn accounting returns (ROEs, returns on book value) that are greater than the market-

5   based cost of equity capital for those companies.

6   In the current market environment, the market price of electric utility stocks is

7   78% higher than their book value (i.e., M/B = 1.78).[14] Moreover, Value Line reports that

8   electric utilities are expected to earn returns on the book value of their equity capital over

9   the next three to five years of 10.5% to 11.0%.[15] Those data indicate that it is

10   unreasonable to believe the cost of equity capital for electric utilities is even near, much

11   less above 11% (e.g. 11.125%, as Dr. Hadaway indicates), and that the lower cost of

12   equity that I recommend is more representative of investor expectations.

13   **Q. Why does an expected return on equity of 11% and a market-to-book ratio well in**

14   **excess of 1.0 mean that the cost of equity capital must be below 11%?**

15   A. I provide the answer to that question in detail below. However, it is important to first

16   understand the difference between the expected return (the return on equity, ROE), i.e.,

17   the 11% to 11.5% figures cited above, and the cost of common equity capital, which we

18   must estimate using the DCF and other econometric models.

19   **Q. What is the difference between the expected return and the cost of capital?**

20   A. The expected return is commonly referred to as the "ROE" and is the return on equity

21   that investors expect the utility to earn. That return is an accounting return. For example

22   if a company has $100 of common equity on its books of account (its balance sheet), and

23   it earns a $9 profit (net income), its ROE (return on book equity) is 9% [$9/$100].

24   The ROE is based, in part, on the return allowed by the regulator, the Company's

---

[14] AUS Utility Reports (formerly CA Turner), September 2005, p. 6.
[15] The Value Line Investment Survey, *Ratings & Reports*, September 2, 2005, p. 156.

1   operating efficiency and on other income available to the firm (if the firm has unregulated

2   operations). The cost of equity capital is the return investors require to commit equity

3   capital to a particular enterprise. That is the cost of equity capital to the firm—the

4   minimum return investors require in order to invest in a particular type of company. That

5   return is a market-based return, because whatever returns the investor receives (yield +

6   dividend growth) will be measured against the market price the investor provided to

7   purchase the stock.

8   Regulators seek to set the allowed return equal to the cost of equity capital for the

9   same reason they set the return allowed on utility debt equal to the cost of that type of

10   capital. Utility rates should be cost-based. That includes the cost of money—equity and

11   debt. Investors understand that utility returns are allowed and earned on the book value

12   (original cost less depreciation) of the utility's plant investment. That long-standing

13   regulatory paradigm has been in existence for many, many years and, through

14   informationally efficient markets, utility investors are aware of that fact.

15   **Q. Please explain in more detail why a utility's market-to-book ratio is indicative of the**

16   **relationship between the expected return and the cost of equity capital.**

17   A. A simple example will illustrate this important point. Assume that a utility has a book

18   value of equity capital equal to $10 per share. Let's also assume, for simplicity of

19   exposition, this utility pays out all its earnings in dividends. If regulators allow the utility

20   a 12% return on that equity, investors will expect the Company to earn (and pay out)

21   $1.20 per share. If investors require a 12% return on this investment, they will be willing

22   to provide a market price of $10 per share for this stock ($1.20 dividends/$10 market

23   price = 12% required return). In that case, the allowed/expected return (12%) is equal to

24   the cost of capital (investors' required return, 12%), and the per-share market price is

25   equal to the book value (M=B, or M/B=1.0).

1   To conform our example to the market situation that presently exists with electric

2 utilities, let's assume that investors' required return (the utility's cost of equity capital)

3 falls to 10%, but the utility continues to be allowed a 12% return on the equity portion of

4 its rate base investment. Investors would be drawn to a utility stock in a risk class for

5 which they require a 10% return but which was expected to pay out a 12% return. This

6 increased demand by investors would result in an increase in the market price of the stock

7 until the total share yield equaled the investors' required return. In our example, that

8 point would be $12 per share ($1.20 dividends/$12 market price = 10% required return).

9 In that case, the allowed/expected return (12%) is greater than the required return (10% -

10 the cost of equity capital) *and* the per-share market price ($12/share) exceeds the book

11 value ($10/share), producing a market-to-book ratio greater than one ($12/$10 = 1.20).

12   Therefore, the market-to-book / expected return relationship that actually exists

13 today in the market for utility stocks indicates that investors expect that those Companies

14 will earn a return on the book value of their equity (ROE) which exceeds the cost of

15 equity capital.

16 **Q. How can electric utilities have projected book equity return of 11% and a cost of**

17 **equity of 8.75% to 9.50%?**

18 A. It's really very simple. Investors currently expect that utilities will earn accounting

19 returns (ROEs) that are greater than the cost of equity capital (investors' <u>required</u> return).

20 Because of that fact, investors are willing to provide market prices for those utility stocks

21 that are greater than their book value.

22   If investors were providing stock prices (market prices) that approximated the

23 book value of electric utilities (if M/B ≈ 1.0), then it would be reasonable to believe that

24 the cost of capital (investors' market-required return) would approximate 11%—the

25 expected return on the book value of common equity. However, investors are willing to

1   provide a stock price that is considerably *more* than book value for a group of stocks that

2   is expected to earn an 11% return on book value. Therefore, investors' expected return on

3   that stock price (the cost of equity capital to the firm) must be <u>less</u> than the expected

4   return on book value—i.e., less than 11%. Currently, investors are paying about 178% of

5   book value for their electric utility investments. Therefore, they require a return

6   substantially below the 11% expected to be earned on book value. In that regard, the cost

7   of equity estimates in this proceeding between 8.75% and 9.5% are most reasonable.

8   The market data cited above provides evidence that Dr. Hadaway's equity return

9   recommendation of 11.125% cannot represent investor's expectations. If an investor

10   required an 11.125% return on a stock, and that stock was expected to earn an 11% on

11   book value, would they provide a market price that was <u>more</u> than book value for that

12   stock? Clearly, the answer is no because, if the investor paid more than book value for the

13   stock, it would not be possible to earn their required return. The only way an investor can

14   earn more than the expected return on book value (in this case, 11%) is to pay less than

15   book value for the stock. However, investors are not currently paying less than book

16   value for electric utility stocks that will earn an 11% ROE, they are paying more than

17   book value for those stocks. Therefore, Dr. Hadaway's 11.125% cost of equity estimate

18   cannot be an accurate measure of investor market return requirements and investors must

19   require a market-based return on their equity capital investment well below 11%.

20   **Q. Does this relationship between market price, book value, the earned return and the**

21   **cost of capital hold for unregulated firms?**

22   A. No. Unlike regulated firms, there is no nexus between the book value of an unregulated

23   firm and its earnings. Therefore, a market price above book value is not indicative of

24   whether or not an unregulated firm is earning its cost of capital. For a utility firm

25   however, there is a direct connection between its book value (effectively, the value of its

1   rate base) and the return it will earn. This has been the manner in which utilities have

2   been regulated and their earnings determined for many years. Investors are aware of that

3   fact. Therefore, a market price well above book value indicates that investors expect that

4   firm to earn a return above the return they require to invest in that type of firm (the cost

5   of equity capital). Similarly, a utility market price below book value connotes an investor

6   expectation that that firm will earn an ROE that is below that which investors require (the

7   firm's cost of equity capital).

8 Q. **Is the relationship between a utility's market-to-book ratio, the expected book**

9   **return, and the cost of equity capital you have just outlined, well documented in the**

10   **regulatory financial literature?**

11 A. Yes. The DCF model is often referred to as the "Gordon model" because of the definitive

12   work Professor Myron Gordon has done regarding the DCF model and the cost of equity

13   capital of utilities. Professor Gordon has explained that the market-to-book value ratio is

14   greater than (equal to, less than) one when the ratio of the allowed (or expected) rate of

15   return to the cost of capital is greater than (equal to, less than) one. Gordon, M.J., *The*

16   *Cost of Capital to a Public Utility*, 63-64 (1974). There is additional support in the

17   financial literature for the value of market-to-book ratios in regulation.[16]

18   Dr. Hadaway has, himself, recognized the fundamental relationship between

19   market price and book value of utilities in his published work cited in his vitae (Exhibit

20   No.__(SCH-2). While director of economic research at the Texas Public Utility

21   Commission, Dr. Hadaway co-authored a paper entitled "Financial Integrity and Market

22   to Book Ratios in an Efficient Market." That paper suggests that utility financial integrity

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[16] Kolbe, Read, Hall, *The Cost of Capital, Estimating the Rate of Return for Public Utilities*, 25-33
(1986); Lawrence Booth, ("The Importance of Market-to-Book Ratios in Regulation," NRRI Quarterly
Bulletin, Vol. 18, No. 4, at 415-16 (Winter 1997).

1   would be protected and capital costs minimized with a regulatory policy that causes

2   market prices to closely approximate book value. (see Company response to WPC-21).

3   It is important to realize that the relationship between market price and book

4   value for a utility operation is not a linear or one-for-one relationship. That is, just

5   because the stock price of a particular utility is, say, 50% above its book value does not

6   indicate that its cost of equity is 50% below the utility's expected book return. Also, there

7   are differences between book value and rate base, which means that, even if a utility is

8   allowed and expected to earn its cost of equity capital, the market price may not <u>exactly</u>

9   equal book value. For utility operations, it will approximate book value, however, as

10   supported in the financial literature noted above. Therefore, while market-to-book ratios

11   do not provide a definitive answer with regard to a utility's cost of equity capital, when

12   they are reviewed in conjunction with expected returns on book equity, market-to-book

13   ratios provide valuable information regarding the proper range of equity capital costs for

14   utilities.

15 **Q. Mr. Hill, are you indicating that utility stock prices should equal their book value?**

16 A. No. Regulation is not designed to be a stock price setting mechanism, and regulators

17   should not target any particular stock price in the ratesetting process. Investors set the

18   market price, depending on the risk/return matrix presented to them in the current and

19   expected market environment. However, the relationship among utility market price,

20   book value, expected ROE and the cost of capital is well known and offers valuable

21   information regarding the reasonableness of a cost of equity estimate. Without making

22   any determination of what electric utility stock prices ought to be, we can observe these

23   facts: utility market prices are about 80% higher than book value. Utilities are projected

24   to earn a return on book value of 10.5% to 11%. Because utility investors are paying

25   substantially <u>more</u> than book value for a share of utility stock, their required market

1   return (the cost of equity capital to the utility) must be well below that expected 10.5% to

2   11% return on book value.

3   Q. **Please summarize the information you have presented with regard to the economic**

4   **environment and the cost of common equity for PacifiCorp.**

5   A. I have estimated the cost of common equity for electric utilities like PacifiCorp to be in

6   the range of 8.75% to 9.50%. That range of equity costs is supported by many objective

7   factors in the capital market place today.

8   First, the general level of capital costs, as evidenced by current interest rate levels,

9   remains near 40-year lows. Even with the modest interest rate increases expected over the

10   next few years, capital costs will continue to be at relatively low levels. Second, investor

11   services and investment analysts are advising clients to expect utility returns well below

12   10%, and below the equity cost estimates I recommend. Third, changes in the tax law

13   with respect to dividends have made utilities more valuable to investors and, thus, have

14   reduced investor return requirements. Fourth, long-standing and widely-understood

15   relationships between utility market price, book value and expected equity return indicate

16   that equity returns below 10% are reasonable. Fifth, the most recent research in the field

17   of financial economics regarding the market risk premium and investor-required returns,

18   supports forward-looking investor expectations for common equity returns in the 8% to

19   10% range. In sum, the objective evidence available to investors in the capital

20   marketplace today confirms the reasonableness of the 8.75% to 9.50% range of equity

21   capital costs for integrated electric utilities presented in this testimony.

22

23   **III.   CAPITAL STRUCTURE**

24 Q. **What is the capital structure requested by the Company in this proceeding?**

25 A. The Company's requested capital structure is shown in the Direct Testimony of Company

26   witness Bruce Williams. Mr. Williams is PacifiCorp's Treasurer. The capital structure

1   requested for ratemaking purposes by the Company is projected at March 31, 2006 and

2   consists of 49.40% common equity, 1.10% preferred stock and 49.50% long-term debt

3   (Williams direct, page 3.)

4 **Q. Is that capital structure similar to the manner in which PacifiCorp has been**

5   **capitalized recently?**

6 A. No. The Company's requested capital structure contains a higher percentage of common

7   equity and a lower percentage of debt capital than the Company has actually utilized over

8   the past five quarters. First of all, the Company has not included short-term debt in their

9   requested ratemaking capital structure even though that least-expensive type of investor-

10   supplied capital has been a consistent and growing part of the Company's capital

11   structure. If the most recent five-quarter average amount of short-term debt ($287.5

12   Million) is added to the Company's requested capital structure (shown on page 3 of

13   PacifiCorp Exhibit No.__(BNW-1T)), the common equity ratio would decline to 47.85%

14   of total capital. That is almost two full percentage points below the level of common

15   equity requested by the Company.

16   However, even that reduced level of common equity including short-term debt is

17   substantially in excess of the amount of equity capital the Company has actually employs

18   to fund its utility investment. As shown on page 1 of Exhibit No.__(SGH-7) attached to

19   my testimony, the equity capital portion of PacifiCorp's capital structure over the most

20   recent five quarters has ranged from about 43% to 45% of total capital, but at no time was

21   the Company's common equity ratio as high as the level it requests in this proceeding. On

22   average, over the most recent five quarters, PacifiCorp Corporation has been capitalized

23   with 43.85% common equity, 1.27% preferred stock, 51.05% long-term debt and 3.83%

24   short-term debt.

1   Also, over a longer historical period—the most recent ten quarters (December

2   2002 through March 2005)—the average capital structure of PacifiCorp was virtually

3   identical, consisting of 43.98% common equity, 1.35% preferred stock, 52.01% long-

4   term debt and 2.67% short-term debt. Over that longer period as well, the Company's

5   common equity ratio fluctuated in a relatively narrow range between 43% and 45% of

6   total capital.

7 **Q. Doesn't the Company claim that its parent company (Scottish Power) has made a**

8   **commitment to infuse common equity into PacifiCorp capital in the future?**

9 A. Yes. PacifiCorp's parent company has committed to increasing its equity investment in

10   the Company by $500 Million over the next year in $125 Million quarterly installments.

11   Moreover, in the pending sale of PacifiCorp to Mid-American Energy, that pledge of

12   increased common equity capital is explicitly protected so that Mid-American cannot

13   block that increased common equity investment in PacifiCorp. Therefore, it is reasonable

14   to believe that PacifiCorp will receive the additional common equity infusion over the

15   next year.

16 **Q. Based on that commitment of additional equity capital, would it be reasonable, then,**

17   **to set rates for PacifiCorp using the higher common equity ratio requested?**

18 A. No.

19 **Q. Why not?**

20 A. There are two fundamental reasons. First, simply because there is a commitment by the

21   parent company to add a certain amount of common equity capital to PacifiCorp's

22   balance sheet, which does not mean that, the common equity ratio will increase. For

23   example, in the most recent quarter PacifiCorp did, indeed, receive its promised $125

24   Million equity infusion by Scottish Power. The Company's cash flow statement at page 5

25   of its June 2005 S.E.C. Form 10-Q shows "Proceeds from equity contribution" of $125

26   Million.

1   However, that same cash flow statement also shows "Proceeds from long-term

2   debt, net of issuance costs" of $296.2 Million. In other words, during the last quarter,

3   PacifiCorp added more debt to the capital structure than it did equity. As a result the

4   common equity portion of the capital structure at June 30, 2005 was 43.96%—virtually

5   the same as the average common equity ratio over the previous five quarters (43.85%).

6   Also, the Company has projected equity ratio increases in prior proceedings

7   before this Commission that have not come to pass. In the Company's prior rate case in

8   this jurisdiction (Docket No. UE-032065), PacifiCorp requested its rates be set using a

9   forecast capital structure with a common equity ratio of 47%. That common equity ratio

10   projection also accounted for equity infusions by the parent as well as a one-time

11   dividend reduction by PacifiCorp. However, as can be seen on page 1 of Exhibit

12   No.__(SGH-7), the Company's common equity remained in the 43% to 45% range and

13   did not approach the rate case forecast of 47%. Accordingly, even though the Company

14   forecasts increases in common equity capital, which does not mean that the proportion of

15   common equity used to finance operations will actually increase.

16   Second, the Company has not established any clear need for the substantial

17   increase in common equity ratio requested in this proceeding. There is no discussion in

18   the Company's testimony regarding any substantial increase in purchased power

19   obligation, a change in the nature of the Company's power supply portfolio, its customer

20   base, operational profile or other factors that would impart significantly greater

21   operational risk.

22   There is discussion of the need to build additional infrastructure, which will

23   require considerable amounts of capital. However, the Company has successfully

24   capitalized its utility operations with 43% to 45% common equity since year-end 2002

25   and has maintained its current investment-grade (A-/BBB+) bond rating during that time.

36

1   Absent any substantial shift in operational risk it is not reasonable to believe that it is

2   necessary to finance new infrastructure additions with substantially more common equity

3   than debt capital. Yet, in order to move PacifiCorp's capital structure from the current

4   44% common equity ratio to the 49% common equity ratio requested by the Company,

5   substantially more common equity that debt would have to be used for financing utility

6   operations. That would be unnecessarily expensive for the Company's Washington

7   ratepayers.

8   Finally on this point, it is important to understand that financing utility plant

9   additions is a discrete, not a continuous process. By that, I mean that financing is

10   obtained in large "bundles" not small increments. For that reason, during a construction   .

11   period, the capital structure at any one point may be out of balance with debt or equity

12   capital unduly influencing capital balances at any one point in time. This could well be

13   the case in the Company's projection of a 49% common equity ratio for March 2006. In

14   other words, following the promised infusion of common equity, which could cause a

15   temporary run-up in the Company's common equity ratio, PacifiCorp would be in a

16   position to borrow substantial amounts of capital from investors in the form of long-term

17   debt—bringing the common equity ratio back down near a long-term operational average

18   level. That would not be an unusual course of events, and underscores the danger in

19   setting rates on a capital structure that is shifted too far away from the levels with which

20   the Company has, in the past, successfully operated. That, I believe, is the case here, and

21   is why this Commission should not rely on the Company's forecast equity-heavy capital

22   structure to set rates in this proceeding.

1   **Q. You noted that it could be expensive for Washington ratepayers if the Commission**

2   **set rates for PacifiCorp using an equity-heavy capital structure, and the Company,**

3   **over the long-term actually used less common equity. How expensive?**

4   A. Yes. Because common equity, on a pre-tax ratemaking basis is about twice as costly as

5   debt capital, the Company's requested capital structure will be substantially more costly

6   than the capital structure with which it has actually been capitalized.

7   Page 2 of Exhibit No.__(SGH-7) shows that the pre-tax (ratemaking) overall cost

8   of capital based on the Company's requested capital structure and the capital cost rates

9   requested by the Company (including the requested 11.125% equity return) is 12.16%.

10   The pre-tax overall cost of capital based on PacifiCorp's actual average capital structure

11   (which includes short-term debt) and the Company's requested capital cost rates is

12   11.40%. That overall capital cost difference between what PacifiCorp is requesting and

13   its recent actual capital structure (0.76%), multiplied by the Company's requested rate

14   base for its electric operations ($615.154) indicates an annual capital cost to Washington

15   ratepayers of $4.7 Million. Therefore, setting rates with the Company's requested capital

16   structure and capital cost rates, rather than its actual capital structure would cost

17   PacifiCorp's Washington ratepayers an additional $4.7 Million annually.

18   **Q. Is the capital structure containing 49% common equity requested by the Company**

19   **in this proceeding similar to the average capital structure in the electric industry**

20   **today?**

21   A. The PacifiCorp capital structure projected to be in place in 2006 has an equity capital

22   ratio that is higher than the average for the industry. Exhibit No.__(SGH-7), page 3

23   shows common equity ratio as a percent of total capital (i.e., including short-term debt)

24   for the electric industry as published in the September 2005 edition of AUS (formerly

25   C.A. Turner's) Utility Reports. The average common equity ratio in the entire electric

1   industry is 41%, (46% for electric companies and 40% for combination gas and electric

2   companies). The average common equity ratio of the companies included in my similar-

3   risk sample group is 46%.

4 **Q. Do you believe it would be reasonable to set rates for PacifiCorp's electric utility**

5   **operations using the Company's requested 49% common equity ratio?**

6 A. No, I do not. First, the Company has not included short-term debt in its projected capital

7   structure, even though it consistently uses substantial amounts of that type of investor-

8   supplied capital. Also, given the fact that PacifiCorp management has successfully

9   capitalized its utility operations and maintained an A-/BBB+ bond rating with

10   substantially less common equity and more debt than requested, it would be unreasonable

11   to set rates for that entity using *more* common equity and less debt than that with which

12   its has been capitalized in the recent past. The Company's actual known-and-measurable

13   capital structure, then, provides the best measure of an appropriate ratemaking capital

14   structure going forward.

15 **Q. What has been the pattern of short-term debt use by PacifiCorp?**

16 A. Page 4 of Exhibit No.__(SGH-7) shows PacifiCorp's short-term debt usage over the past

17   three years. Over the past three-year period, PacifiCorp's monthly short-term debt

18   averaged $227 Million. The Exhibit also shows the Company's use of short-term debt has

19   been increasing. Over the most recent twelve-month period, PacifiCorp's monthly short-

20   term debt averaged $333 Million. Short-term debt of $227 to $333 Million represents

21   approximately 2.7% to 3.4% of the Company's projected March 2006 capital base.

22 **Q. What is your recommendation for a ratemaking capital structure?**

23 A. I recommend that rates be set in this proceeding with a capital structure that contains less

24   common equity than that requested by the Company and approximates the Company's

25   recent actual capital structure. That capital structure is shown on page 5 of Exhibit

1   No.__(SGH-7) and consists of 44% common equity, 1.00% preferred stock, and 52.00%

2   long-term debt and 3.00% short-term debt. The 44% common equity is above industry

3   averages, similar to PacifiCorp's actual recent average common equity ratio and similar

4   to the average common equity ratio of the sample group of electric companies used to

5   estimate the cost of equity capital. The percentage amounts of preferred stock, long-term

6   and short-term debt approximate the amounts utilized by PacifiCorp during the most

7   recent five quarters (shown on page 1 of Exhibit No.__(SGH-7)). The cost rates of

8   preferred stock and long-term debt are those requested by the Company. The cost rate of

9   short-term debt, 3.00%, approximates the most recent available short-term debt cost rate

10   (2.99%—April 2005, Exhibit No.__(SGH-7), p. 4).

11

12   **IV. METHODS OF EQUITY COST EVALUATION**

13   A. DISCOUNTED CASH FLOW MODEL

14

15   **Q. Please describe the discounted cash flow (DCF) model you used to arrive at an**

16   **estimate of the cost rate of common equity capital for PacifiCorp in this proceeding.**

17   A. The DCF model relies on the equivalence of the market price of the stock (P) with the

18   present value of the cash flows investors expect from the stock, providing the discount

19   rate equals the cost of capital. The total return to the investor, which equals the required

20   return according to the DCF theory, is the sum of the dividend yield and the expected

21   growth rate in the dividend.

22   The theory is represented by the equation,

23                              $$k = D/P + g, \qquad\qquad (3)$$

24   where "k" is the equity capitalization rate (cost of equity, or investors' required return),

25   "D/P" is the dividend yield (dividend divided by the stock price) and "g" is the expected

26   sustainable growth rate.

1   **Q. What growth rate (g) did you adopt in developing your DCF cost of common equity**

2   **for the Company in this proceeding?**

3   A. The growth rate variable in the traditional DCF model is quantified theoretically as the

4   dividend growth rate investors expect to continue into the indefinite future. The DCF

5   model is actually derived by 1) considering the dividend a growing perpetuity, that is, a

6   payment to the stockholder which grows at a constant rate indefinitely, and 2) calculating

7   the present value (the current stock price) of that perpetuity. The model also assumes that

8   the Company whose equity cost is to be measured exists in a steady state environment,

9   i.e., the payout ratio and the expected return are constant and the earnings, dividends,

10   book value and stock price all grow at the same rate, forever. As with all mathematical

11   models of real-world phenomena, the DCF theory does not exactly "track" reality. Payout

12   ratios and expected equity returns do change over time. Therefore, in order to properly

13   apply the DCF model to any real-world situation and, in this case, to find the long-term

14   sustainable growth rate called for in the DCF theory, it is essential to understand the

15   determinants of long-run expected dividend growth.

16   **Q. Can you provide an example to illustrate the determinants of long-run expected**

17   **dividend growth?**

18   A. Yes, in Exhibit No.___(SGH-3), I provide an example of the determinants of a sustainable

19   growth rate on which to base a reliable DCF estimate. In addition, in Exhibit

20   No.___(SGH-3), I show how reliance on earnings or dividend growth rates alone, i.e.,

21   absent an examination of the underlying determinants of long-run dividend growth, can

22   produce inaccurate DCF results.

23   **Q. Did you use a sustainable growth rate approach, in addition to other methods, to**

24   **develop an estimate of the expected growth rate for the DCF model?**

25   A. Yes. I have calculated both the historical and projected sustainable growth rate for a

1   sample of electric utility firms with similar-risk operations to PacifiCorp. However, I

2   have not relied exclusively on that type of growth rate analysis. In addition to the

3   sustainable growth rate analysis, I have also analyzed published data regarding both

4   historical and projected growth rates in earnings, dividends, and book value for the

5   sample group of electric utility companies. Through an examination of those data, which

6   are available to and used by investors, I am able to estimate investors' long-term growth

7   rate expectations. To that long-term growth rate estimate, I add any additional growth

8   that is attributable to investors' expectations regarding the on-going sale of stock for each

9   of the companies under review.

10   **Q. Why have you used the technique of analyzing the market data of several**

11   **companies?**

12   A. I have used the "similar sample group" approach to cost of capital analysis because it

13   yields a more accurate determination of the cost of equity capital than does the analysis

14   of the data of one individual company. Any form of analysis in which the result is an

15   estimate, such as growth in the DCF model, is subject to measurement error, i.e., error

16   induced by the measurement of a particular parameter or by variations in the estimate of

17   the technique chosen. When the technique is applied to only one observation (e.g.,

18   estimating the DCF growth rate for a single company) the estimate is referred to,

19   statistically, as having "zero degrees of freedom." This means, simply, that there is no

20   way of knowing if any observed change in the growth rate estimate is due to

21   measurement error or to an actual change in the cost of capital. The degrees of freedom

22   can be increased and exposure to measurement error reduced by applying any given

23   estimation technique to a sample of companies rather than one single company.

24   Therefore, by analyzing a group of firms with similar characteristics, the estimated value

25   (the growth rate and the resultant cost of capital) is more likely to equal the "true" value

26   for that type of operation.

1 **Q. How were the firms selected for your analysis?**

2 A. In selecting a sample of electric firms to analyze, I screened all the electric and

3 combination electric and gas utility firms followed by Value Line. I selected companies

4 from that group that had a continuous financial history and had at least 70% of operating

5 revenues generated by electric utility operations. In addition, I eliminated companies that

6 were in the process of merging or being acquired <u>and</u> had realized an upward stock price

7 shift due to that activity or companies that had recently cut or omitted dividends. Also,

8 the companies in the selected sample had to have a bond rating from one major rating

9 agency ranging from "BBB" to "A+"[17], generation assets, and a stable book value. I have

10 eliminated from consideration companies that are only "wires" companies, which have

11 less operational risk than fully-integrated electrics, in order to properly match the risk of

12 the sample group with PacifiCorp. The sample group selection screening process I

13 utilized is shown in detail in Exhibit No.__(SGH-8) attached to this testimony.

14 Thirteen electric utilities passed the screening process. The Companies included

15 in the sample group are: Central Vermont Public Service (CV), FPL Group (FPL),

16 FirstEnergy Corp. (FE), Green Mountain Power (GMP), Progress Energy (PGN),

17 Southern Company (SO), Ameren Corp. (AEE), Cleco Corp. (CNL), Empire District

18 Electric (EDE), Entergy Corp. (ETR), Hawaiian Electric Industries (HE), PNM

19 Resources (PNM), and Pinnacle West Capital Corporation (PNW). [Note: In the Exhibits

20 accompanying this testimony, the sample group companies are referred to by their stock

21 ticker symbols, designated above in parentheses.]

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[17] PacifiCorp's Bonds are rated "A-" by Standard & Poor's.

1   **Q. Has your selection process produced a sample group that is similar in risk to**

2   **PacifiCorp?**

3   A. Yes, according to objective measures of investment risk, the risk of the sample group is

4   similar to that of PacifiCorp and, thus, will provide a reliable estimate of the Company's

5   cost of common equity capital. For example, Standard & Poor's recently revised its

6   published bond rating benchmarks and its business position (business risk) rankings[18].

7   PacifiCorp's business position is 5 on a scale of 1 through 10 (1 being lowest risk and 10

8   being the highest). The average business position of my sample group of electric utilities

9   is 5.7. PacifiCorp, then, has slightly lower business risk that the companies in my sample

10 group.

11   The average common equity ratio of the companies in my sample group is 46%,

12 and the common equity ratio of the ratemaking capital structure I recommend is 44%.

13 From that perspective PacifiCorp's financial risk is similar to but slightly higher than that

14 of the sample group of companies used to estimate the cost of equity capital.

15   PacifiCorp's overall investment risk is in the middle of the spectrum of companies

16 analyzed. In sum, objective indicators imply that the investment risk of the sample group

17 is similar to that of PacifiCorp.

18 **Q. How have you calculated the DCF growth rates for the sample of comparable**

19 **companies?**

20 A. Exhibit No.__(SGH-9) pages 1 through 5, shows the retention ratios, equity returns,

21 sustainable growth rates, book values per share and number of shares outstanding for the

22 comparable companies for the past five years. Also included in the information presented

23 in Exhibit No.__(SGH-9), are Value Line's projected 2005, 2006 and 2008-2010 values

24 for equity return, retention ratio, book value growth rates and number of shares

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[18] Standard & Poor's Ratings Direct, "New Business Profile Scores Assigned for US Utility and Power Companies; *Financial Guidelines Revised*," June 2, 2004.

1   outstanding.

2   In evaluating these data, I first calculate the five-year average sustainable growth

3   rate, which is the product of the earned return on equity (r) and the ratio of earnings

4   retained within the firm (b). For example, Exhibit No.__(SGH-9), page 2, shows that the

5   five-year average sustainable growth rate for Southern Company (SO) is about 3.9%. The

6   simple five-year average sustainable growth value is used as a benchmark against which I

7   measure the Company's most recent growth rate trends. Recent growth rate trends are

8   more investor-influencing than are simple historical averages. Continuing to focus on SO,

9   we see that sustainable growth in 2001 was below the average growth for the five-year

10   period, but recovered to an above-average rate in more recent years, indicating an

11   increasing historical trend in growth. Over the next three- to five-year period, Value Line

12   projects SO's sustainable growth will rise above the recent five-year average to about

13   4.08%—similar to historical average growth. These data would indicate that investors

14   expect SO to grow at a rate in the future similar to the growth rate that has existed, on

15   average, over the past five years[19]. It is important to note that, while the five-year

16   projections are given consideration in estimating a proper growth rate because they are

17   available to and are used by investors, they are not given sole consideration. Without

18   reviewing all the growth rate data available to investors, both projected and historic, sole

19   reliance on projected information may be misleading. Value Line readily acknowledges

20   to its subscribers the subjectivity necessarily present in estimates of the future:

21
22   We have greater confidence in our year-ahead ranking
23   system, which is based on proven price and earnings
24   momentum, than in 3- to 5-year projections.
25   (Value Line Investment Survey, *Selection and Opinion*, June 7, 1991, p.854).

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[19] I have included the details of my growth rate analyses for Avista Corporation as an example of the
methodology I use in determining the DCF growth rate for each company in the industry sample. A
description of the growth rate analyses of each of the companies included in my sample group is set out in
Exhibit No.__(SGH-4). Exhibit No.__(SGH-10), page 1, attached to this testimony shows the internal,
external and resultant overall growth rates for all the companies analyzed.

1   Another factor investors consider is that SO's book value growth is expected to be

2   substantially higher in the future. Growing at a –1.5% level over the past five years, book

3   value is projected to increase at a 5.5% rate in the future. The negative historical book

4   value growth rate was due to Southern's divestiture of Mirant, an unregulated generation

5   subsidiary. The book value growth indicates that investors expect SO to grow at a higher

6   rate in the future than the past, also that projected growth rate is higher than the

7   sustainable growth rate projection.

8   Also, as shown on Exhibit No.__(SGH-10), page 2, SO's dividend growth rate,

9   which was only 1% historically, is expected to increase at a 3.5% rate in the future. This

10   confirms that future growth is likely to be higher than historical growth, however, that

11   growth rate projection would tend to raise long-term growth rate expectations. Earnings

12   growth rate data available from Value Line also indicates that investors can expect a far

13   higher growth rate in the future (4%) than has existed over the past five years (2.5%).

14   Also, First Call and Zack's (investor advisory services that poll institutional

15   analysts for growth earnings rate projections) project earnings growth rate for SO over

16   the next five years at a rate somewhat above Value Line's sustainable growth forecasts—

17   5% to 4.5%, respectively.

18   SO's projected sustainable growth indicates steady growth in the future, while

19   dividend and projected earnings growth indicate that investors can expect higher growth

20   than has occurred, on average, in the past. A long-term sustainable growth rate of 4.25%

21   is a reasonable expectation for SO.

22   **Q. Is the internal (b x r) growth rate the final growth rate you use in your DCF**

23   **analysis?**

24   A. No. An investor's sustainable growth rate analysis does not end upon the determination

25   of an internal growth rate from earnings retention. Investor expectations regarding growth

26   from external sources (sales of stock) must also be considered and examined. For SO,

1   page 2 of Exhibit No.__(SGH-9) shows that the number of outstanding shares increased

2   at a 2.1% rate over the most recent five-year period. Value Line expects the number of

3   shares outstanding to increase at a 1.2% rate through the 2008-2010 periods. An

4   expectation of annual share growth of 1.5% is reasonable for this Company.

5   In addition, the current market price of SO is above its book value. As I noted

6   previously a utility market price above book value indicates that the utility is expected to

7   earn a return in excess of its cost of capital. If the external ("sv") portion of the

8   sustainable growth rate is estimated using a market-to-book ratio that is indicative of

9   over-earnings, then the growth rate will be effectively based on an expectation of

10   perpetual over-earnings and, thus, overstated. If that expected DCF growth rate,

11   predicated on the expectation of over-earning the cost of capital, is used to set the

12   allowed return the process becomes cyclical, leading to higher and higher allowed

13   returns.

14   Also, because a goal of regulation is to duplicate the strictures of the competitive

15   marketplace and, in so doing, to allow a utility to recover no more than its cost of capital,

16   it is reasonable to assume that the market price/book value ratio would have a tendency

17   toward unity over the long-term in order to mitigate the impact of over-earning on the

18   projected external growth rate.

19   Finally, although I have selected firms for analysis which derive at least 70% of

20   their revenues from electric operations, those firms are not "pure play" utilities—they do

21   have some other unregulated operations. Those other operations, therefore, are likely to

22   have an upward impact on the market price and the market-to-book ratio of those

23   companies. Accordingly, a reasonable estimate of investors' expectations for utility

24   price/book ratios is that it will range between current levels and 1.0. For the companies in

25   the sample group that have growth expectations related to the increase in the number of

1   shares outstanding, I have used the average as an estimate of investors' expectations for

2   the future.

3   At the time of this analysis, SO's market price is 241% of its book value (M/B =

4   2.41). The result of combining expected long-term growth for that Company (4.25%) and

5   external growth due to increase in the number of shares outstanding (1.5%), yields an

6   investor-expected long-term growth rate of 5.31% (see Exhibit No.__(SGH-10), page 1

7   of 2).

8 **Q. Have you checked the reasonableness of your growth rate estimates against other,**

9   **publicly available, growth rate data?**

10 A. Yes. Page 2 of Exhibit No.__(SGH-10) shows the results of my DCF growth rate analysis

11   as well as 5-year historic and projected earnings, dividends and book value growth rates

12   from Value Line, earnings growth rate projections from First Call (and Zack's), the

13   average of Value Line and First Call growth rates and the 5-year historical compound

14   growth rates for earnings, dividends and book value for each company under study.

15   Exhibit No.__(SGH-10), page 2, shows that my DCF growth rate estimate for the

16   electric utility sample group is 5.09%. That long-term growth rate estimate is higher than

17   Value Line's average projected earnings, dividend, and book value growth rate (4.24%)

18   for those same companies and also much higher than the historical growth rate average of

19   those same fundamental parameters (3.46%). In addition, my DCF growth rate estimate

20   for the electric companies is higher than First Call's, and Zack's projected earnings

21   growth rate estimate (4.98% and 5.05%, respectively). Given the weight of the evidence

22   available to investors, my DCF growth rates for these companies may be conservative

23   (i.e., on the high side), when compared to that published information available to

24   investors.

48

1 **Q. Does this conclude the growth rate portion of your DCF analysis?**

2 A. Yes, it does.

3 **Q. How have you calculated the dividend yields?**

4 A. I have estimated the next quarterly dividend payment of each firm analyzed and

5 annualized them for use in determining the dividend yield. If the quarterly dividend of

6 any company was expected to be raised in the quarter following that in which the most

7 recent dividend was declared, I increased the current quarterly dividend by (1+g). For

8 most of the utility companies in the sample group, a dividend adjustment was

9 unnecessary because they either recently raised their dividend or were not projected to

10 raise the dividend in 2005 or 2006. A dividend adjustment of (1+g) was necessary for

11 First Energy, Progress Energy, and Pinnacle West.

12 The next quarter annualized dividends were divided by a recent daily closing

13 average stock price to obtain the DCF dividend yields. I use the most recent six-week

14 period to determine an average stock price in a DCF cost of equity determination because

15 I believe that period of time is long enough to avoid daily fluctuations and recent enough

16 so that the stock price captured during the study period is representative of current

17 investor expectations.

18 Exhibit No.__(SGH-11) indicates that the average dividend yield for the sample

19 group of electric utility companies is 4.13%. Value Line's most recent year-ahead

20 dividend yield projection for the companies in my sample group averaged 4.09%—

21 slightly higher than the dividend yield I use in my analysis (Value Line, *Summary &*

22 *Index,* September 23, 2005). That indicates that the dividend yield used in my DCF

23 analysis is representative of investor expectations.

1   **Q. What is your cost of equity capital estimate for the electric utility companies,**

2   **utilizing the DCF model?**

3   A. Exhibit No.__(SGH-12) shows that combining the dividend yield and expected growth

4   rate for each company under review produces an average DCF cost of equity capital for

5   the entire group of electric utilities of 9.23%.

6   B. CORROBORATIVE EQUITY COST ESTIMATION METHODS

7   **Q. In addition to the DCF, what other methods have you used to estimate the cost of**

8   **equity capital of PacifiCorp?**

9   A. I have used three additional econometric methods to estimate the cost of equity capital for

10   the group of firms selected as similar in investment risk to PacifiCorp. The three

11   methodologies are: 1) the Capital Asset Pricing Model (CAPM), 2) the Modified

12   Earnings-Price Ratio (MEPR) analysis, and 3) the Market-to-Book Ratio (MTB) analysis.

13   The similar risk sample group of firms analyzed with these three methods is the same as

14   that selected for the DCF analysis, discussed previously. The theoretical details of each of

15   those analyses are contained in Exhibit No.__(SGH-5), attached to this testimony. The

16   calculations and data supporting the results of each of these models are shown in the

17   attached Exhibits.

18   Exhibit No.__(SGH-13), attached to this testimony, shows the detail regarding the

19   CAPM analysis, which indicates a cost of capital for the electric companies ranging from

20   8.21% to 10.02%. Exhibit No.__(SGH-14) and Exhibit No.__(SGH-15) show the

21   theoretical basis and the data and calculations regarding the Modified Earnings Price

22   Ratio (MEPR) analysis, respectively. The MEPR analysis indicates a current cost of

23   equity capital for companies like PacifiCorp ranging from 8.52% to 8.45%. Exhibit

24   No.__(SGH-16), attached to this testimony, contains the supporting detail for the Market-

25   to-Book Ratio (MTB) analysis. The MTB analysis indicates a current average cost of

50

1   equity capital for the electric utility sample group of 9.30% (near-term) to 9.00% (long-

2   term).

3   C. SUMMARY

4   **Q. Please summarize the results of your equity capital cost analyses for the sample**

5   **group of similar-risk electric companies.**

6   A. My analysis of the cost of common equity capital for the sample group of electric utility

7   companies is summarized in the table below.

8

METHOD	COST OF EQUITY
DCF	9.23%
CAPM	8.21%/10.02%
MEPR	8.45%/8.52%
MTB	9.00%/9.30%

9   The DCF result noted above, which is the most reliable indication of the cost of

10   equity capital, is 9.23%. Averaging the lowest and the highest results of the corroborative

11   analyses (CAPM, MEPR, and MTB) produces an equity cost rate range of 8.55% to

12   9.28%—a range that includes DCF result at the upper end. The other corroborative

13   analyses indicate that my DCF results may overstate an accurate estimate of the cost of

14   common equity of electric utilities.

15   Given the results shown above, it would be reasonable to construct a current range

16   of equity capital costs with the DCF result at the upper end of that range. However, over

17   the next year or two capital costs may increase to some degree if the U.S. economy

18   continues to advance. Therefore, weighing all the evidence presented herein, I believe it

19   is reasonable to construct a current cost of equity range around the DCF estimate, and my

20   best estimate of the cost of equity capital for firms similar in risk to PacifiCorp is 8.75%

1   to 9.50%. The mid-point of that range is 9.125%.

2   **Q. Does your equity cost estimate include an increment for flotation costs?**

3   A. No, it does not.

4   **Q. Can you please explain why an explicit adjustment to the cost of equity capital for**

5   **flotation costs is unnecessary?**

6   A. An explicit adjustment to "account for" flotation costs is unnecessary for several reasons.

7   First, flotation costs associated with common stock issues are often described as similar

8   in nature to flotation costs associated with bonds and, therefore, should be explicitly

9   accounted for in the allowed return. However, as I discuss below any flotation cost

10   "adjustment" to the cost of equity occurs with investors in the marketplace and requires

11   no additional, explicit additions by regulators. Moreover, even if it were correct that

12   flotation costs on stock issuances are like flotation costs on bonds, the current

13   relationship between the electric utility sample group's stock price and its book value

14   would indicate a <u>reduction</u> to the market-based cost of equity, not an increase.

15   When a bond is issued at a price that exceeds its face (book) value, and that

16   difference between market price and the book value is greater than the flotation costs

17   incurred during the issuance, the embedded cost of that debt (the cost to the Company) is

18   *lower* than the coupon rate of that debt. In the current market environment for electric

19   utility common stocks, those stocks are selling at a market price 69% above book value.

20   The difference between the market price of electric utility stock and book value dwarfs

21   any issuance expense the Companies might incur. Therefore, if it were true that common

22   equity flotation costs are like flotation costs with bonds, then, the appropriate adjustment

23   to the cost of common equity should be downward, not upward.

24   Second, flotation cost adjustments are usually predicated on the prevention of the

25   dilution of stockholder investment. However, the reduction of the book value of

52

1   stockholder investment due to issuance expenses can occur only when the utility's stock

2   is selling at a market price at or below its book value. In the current market environment

3   for electric utility common stock, the Companies under review are selling at a 69%

4   premium to book value (Exhibit No.__(SGH-10), p. 1). Therefore, every time a new

5   share of that stock is sold, existing shareholders realize an *increase* in the per share book

6   value of their investment. No dilution occurs, even without any explicit flotation cost

7   allowance.

8   Third, the vast majority of the issuance expenses incurred in any public stock

9   offering are "underwriter's fees" or "discounts." Underwriter's fees or discounts are not

10   out-of-pocket expenses for the issuing company. On a per share basis, they represent only

11   the difference between the price the underwriter receives from the public and the price

12   the utility receives from the underwriter for its stock. As a result, underwriter's fees are

13   not an expense incurred by the issuing utility and recovery of such "costs" should not be

14   included in rates.

15   In addition, the amount of the underwriter's fees are prominently displayed on the

16   front page of every stock offering prospectus and, as a result, the investors who

17   participate in those offerings (e.g., brokerage firms, institutional investors) are quite

18   aware that a portion of the price they pay does not go to the company but goes, instead, to

19   the underwriters. By electing to buy the stock with that knowledge, those savvy investors

20   have effectively accounted for those issuance costs in their risk-return framework by

21   paying the offering price. Therefore, they do not need any additional adjustments to the

22   allowed return of the regulated firm to "account" for those costs.

23   Fourth, my DCF growth rate analysis includes an upward adjustment to equity

24   capital costs which accounts for investor expectations regarding stock sales at market

1   prices in excess of book value, and any further explicit adjustment for issuance expenses

2   related to increases in stock outstanding is unnecessary.

3   Fifth, research has shown that a specific adjustment for issuance expenses is

4   unnecessary[20]. There are other transaction costs which, when properly considered,

5   eliminate the need for an explicit issuance expense adjustment to equity capital costs. The

6   transaction cost that is improperly ignored by the advocates of issuance expense

7   adjustments is brokerage fees. Issuance expenses occur with an initial issue of stock in a

8   primary market offering. Brokerage fees occur in the much larger secondary market

9   where pre-existing shares are traded daily. Brokerage fees tend to increase the price of

10   the stock to the investor to levels above that reported in the Wall Street Journal, i.e., the

11   market price analysts use in a DCF analysis. Therefore, if brokerage fees were included

12   in a DCF cost of capital estimate they would raise the effective market price, lower the

13   dividend yield and lower the investors' required return. If one considers transaction costs

14   that, supposedly, raise the required return (issuance expenses), then a symmetrical

15   treatment would require that costs which lower the required return (brokerage fees)

16   should also be considered. As shown by the research noted above, those transaction costs

17   essentially offset each other and no specific equity capital cost adjustment is warranted.

18 **Q. Within the range of common equity cost you have determined to be appropriate for**

19   **electric utilities, what is the appropriate point-estimate for PacifiCorp's utility**

20   **operations?**

21 A. As I noted in Section II of my testimony, the companies in my sample group have similar

22   business and financial risk to PacifiCorp. Because of that fact, an appropriate return for

23   PacifiCorp should be at the mid-point of that appropriate for the sample group of

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[20] "A Note on Transaction Costs and the Cost of Common Equity for a Public Utility," Habr, D., *National Regulatory Research Institute Quarterly Bulletin,* January 1988, pp. 95-103.

1   companies. The mid-point of my equity cost range for electric utilities similar in risk to

2   PacifiCorp is 9.125%.

3   **Q. What would be the overall cost of capital for PacifiCorp's electric utility operations,**

4   **based on an allowed equity return of 9.125%?**

5   A. Exhibit No.__(SGH-17), attached to my testimony, shows that an equity return of

6   9.125%, operating through a reasonable ratemaking capital structure and the Company's

7   forward-looking capital cost rates, produces an overall return of 7.51% for PacifiCorp.

8   Exhibit No.__(SGH-17) also shows that a 7.51% overall cost of capital affords the

9   Company an opportunity to achieve a pre-tax interest coverage level of 2.83 times.

10   According to PacifiCorp Corporation's June 2005 S.E.C. Form 10-Q (Exhibit

11   12.1), the average pre-tax interest coverage for the consolidated parent company

12   operations over the past three years was 2.2 times. Therefore, the equity return and

13   capital structure I recommend offers the Company an opportunity to exceed its prior pre-

14   tax interest coverage levels and, thereby, maintain or improve its current bond rating. The

15   equity return and capital structure I recommend offers the Company an opportunity to

16   meet that pre-tax interest coverage test and, thereby, maintain or improve its current bond

17   rating. Also, the equity return I recommend fulfills the legal requirement of Hope [21] and

18   Bluefield [22] of providing the Company the opportunity to earn a return which is

19   commensurate with the risk of the operation and serves to support and maintain the

20   Company's ability to attract capital.

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[21] FPC v. Hope Natural Gas Company, 320 US 591 (1944)]. *These criteria were restated in the* Permian Basin Area Rate Cases, 390 US 747 (1968).

[22] [Bluefield Water Works v. PSC, 262 US 679 (1923).

1   **V. COMPANY COST OF CAPITAL TESTIMONY**

2   **Q. How has Company Witness Hadaway estimated the cost of equity capital in this**

3   **proceeding?**

4   A. Dr. Hadaway has analyzed the cost of equity capital for electric utilities using a

5   traditional DCF analysis, a multi-stage DCF model, a DCF based on long-term GDP

6   growth, and a risk premium analysis. Dr. Hadaway's average traditional DCF results in a

7   cost of equity capital for electric utilities of 9.3%, (Hadaway Direct, Exhibit No. __SCH-

8   4, p. 1). He elects not to consider those results and has placed reliance, instead, on DCF

9   analyses that are based on projected growth rates for the general economy (rather than

10   individual similar-risk company growth rates) and a risk premium analysis. As I will

11   explain in detail below, Dr. Hadaway's reliance on multi-stage DCF analyses is, in my

12   view, misplaced and his GDP-based DCF and risk premium analyses produce equity cost

13   estimates that are biased upward.

14   **Q. What rationale does Dr. Hadaway offer for ignoring his DCF result?**

15   A. Dr. Hadaway indicates that the investor service growth rates he uses (Zack's and Value

16   Line) are "pessimistic" and, therefore, too low. He does not offer any support for that

17   position, or proof that the investment community shares his view. Dr. Hadaway has

18   utilized those growth rate measures in prior testimony before this Commission and

19   accepted them as representative of investor expectations, and he even dubs this particular

20   DCF analysis (using Zack's and Value Line growth projections) to be his "traditional"

21   DCF. Yet, while the investor services got it right in the past, they are now apparently

22   unable to do so and are publishing growth rate data that is unreliable. That is simply not a

23   logical position and should not be used as a rationale to ignore Dr. Hadaway's DCF

24   results.

25   Dr. Hadaway also testifies that his 9.3% DCF result doesn't pass muster because

1   it doesn't yield a high enough risk premium over utility debt costs. However, Dr.

2   Hadaway's own risk premium analysis provides data that shows that position is

3   unfounded as well.

4   At the time Dr. Hadaway prepared his testimony in this proceeding A-rated utility

5   debt yielded 5.70% (Exhibit No.___(SCH-1T), p 18). More recently A-rated utility debt

6   yields have averaged 5.25%, according to Value Line.[23] Subtracting an A-rated utility

7   bond yield range of 5.25%—5.70% from Dr. Hadaway's traditional DCF result of 9.3%,

8   produces a risk premium of 3.60% to 4.05%. Evidence offered in Dr. Hadaway's own

9   Exhibits indicates that a risk premium of 3.60% to 4.05% is generous when compared to

10   historical differences between utility return allowances and utility bond yields.

11   Dr. Hadaway's Exhibit No. ___(SCH-5) shows the difference between authorized

12   utility returns and utility bond yields over the past 24years. The difference between

13   allowed utility returns and utility bond yields over that period has ranged from –0.04% to

14   4.66%, and has averaged 3.01%. The risk premium between Dr. Hadaway's 9.3%

15   traditional DCF result and current A-rated utility bond yields, 4.05%, is in the upper

16   portion of those historical yield differentials and is well above the average over the

17   period.

18   In sum, the rationale offered by Dr. Hadaway for ignoring the results of his

19   traditional DCF does not provide a credible basis for doing so. A DCF result of 9.3% is,

20   indeed credible and agrees closely with my own 9.23% DCF estimate. It is Dr.

21   Hadaway's other DCF analyses that are suspect.

22   **Q. What are your comments on Dr. Hadaway's other DCF analyses?**

23   A. Dr. Hadaway's other DCF analyses rely fundamentally on historic Gross Domestic

24   Product (GDP) growth as a proxy for electric utility growth in the future. The GDP

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[23] Value Line, *Selection & Opinion*, six most recent weekly editions, (8/19/05-9/23/05).

1   growth rate is a statistical measure of the growth rate of the U. S. economy and is related

2   in only a very general way to the growth of any individual firm. Dr. Hadaway's multi-

3   stage DCF uses Value Line growth projections for the first four years and GDP growth

4   from then on, so that the GDP growth rate essentially controls (substantially increases)

5   the outcome of that analysis. The other DCF analysis simply uses GDP growth as the

6   long-term constant growth that investors expect for electric utilities, and gets an even

7   higher result.

8   There is little, if any, support in Dr. Hadaway's testimony for the use of GDP

9   growth rate as a proxy for investors' expectations with regard to electric utility growth.

10   He simply assumes that investors believe that all electric utilities will grow forever at

11   exactly the same rate as the general economy in the U.S.

12   Dr. Hadaway has not provided any evidence that electric utility growth rates have

13   mirrored GDP growth in the past, or that investors expect that condition to exist in the

14   future. Moreover, Dr. Hadaway and I previously have appeared together in rate

15   proceedings[24], and in his prior testimony he did not include historical GDP growth to

16   proxy forward-looking DCF growth rates in his "standard" or constant growth DCF

17   analysis. It is not clear why he elected to do it in this proceeding. It is clear, however, that

18   if Dr. Hadaway had not substituted a GDP growth rate for analysts projected growth for

19   each of the companies in his similar-risk sample group, his DCF result would have been

20   lower.

21   Finally on this point, it is important to understand that there is a relationship

22   between the investor-expected growth rate of a particular utility and its dividend yield.

23   For similar risk firms (like the sample groups used by Dr. Hadaway and myself to

24   estimate the cost of equity), companies that are expected to have higher growth rates

25   generally have lower dividend yields. That is, investors are willing to accept a lower

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[24] Before the Texas Public Utilities Commission in a Generic ROE proceeding related to that Commission's
hearing on Unbundled Cost of Service for the electric utility industry in Texas. T.P.U.C. Docket No. 22344.

1   dividend yield today for a promise of higher growth in the future. Conversely, if a utility

2   is expected to have lower growth, in order to achieve the required return, investors will

3   bid the price of that stock down in order to produce the dividend yield necessary to

4   achieve their required return. The point here is that there is a stochastic relationship

5   between the dividend yield and the expected growth rate of a utility. That relationship is

6   designed to be captured by the DCF model, but, in doing so, it is assumed that the

7   dividend yield of a particular utility will be analyzed along with the expected growth rate

8   of that same utility. Dr. Hadaway's GDP-based DCF completely ignores that relationship

9   between dividend yield and individual company growth and, thus, produces unreliable

10   estimates of the cost of equity capital.

11   **Q. What are your comments on Dr. Hadaway's multi-stage DCF analysis?**

12   A. At page 12 of his Direct Testimony, Dr. Hadaway shows the general periodic discounted

13   cash flow formula from which the standard DCF is derived. He correctly notes that,

14   mathematically, in order to produce the familiar "$k = D/P + g$" formula that we know as

15   the DCF, certain assumptions must be made. Primary among them is that the model

16   assumes the company whose equity cost is to be measured exists in a steady state

17   environment, i.e., the payout ratio and the expected return are constant and the earnings,

18   dividends, book value, and stock price all grow at the same rate, forever. This type of

19   "steady state" assumption is common in mathematical modeling, and, as I explained

20   previously, those assumptions must be taken into account in order to be able to produce

21   an accurate equity cost estimate using the DCF.

22   The Company witness also indicates that the "nonconstant growth" form of the

23   DCF (i.e., the multi-stage model) "requires more explicit data inputs"[25] and is "less

24   convenient"[26] than the standard DCF. According to his own testimony then, Dr. Hadaway

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[25] Hadaway Direct, p. 15, ll. 1, 2.
[26] Hadaway Direct, p. 14, l. 22.

1   has elected to use a DCF model that increases the number of explicit assumptions that

2   must be made as well as the computational difficulty. In other words, instead of using a

3   model in which data are reviewed to enable the investor/analyst to estimate a long-term

4   sustainable growth rate, Dr. Hadaway elects to use the more complicated multi-stage

5   DCF model which makes several very specific assumptions that need to occur at specific

6   points in the future in order for his equity cost estimates to be accurate. In my view, Dr.

7   Hadaway has elected to shift his reliance from a model that requires general assumptions

8   relative to investor expectations about the future (the standard DCF), to one that requires

9   very time-specific assumptions (the multi-stage DCF) and which produces less reliable

10   results because of that fact.

11   **Q. Is there evidence in the financial literature that multi-stage DCF analyses may not**

12   **provide reliable equity cost estimates?**

13   A. Yes. At page 25 of his Direct Testimony in this proceeding, Dr. Hadaway refers to a

14   paper by Harris and Marston (H&M) on the subject of risk premiums.[27] In determining

15   the risk premium of the companies studied, they used a single-stage DCF model to

16   estimate the cost of equity and commented about multi-stage DCF models as follows:

17
18   One could alternatively estimate a nonconstant growth
19   model, although the proxies for multistage growth rates are
20   even more difficult to obtain that single stage growth
21   estimates. Marston, Harris and Crawford [cite omitted]
22   examine publicly available data from 1982-1985 and find
23   that plausible measures of risk are more closely related to
24   expected returns derived from a constant growth model
25   than to those derived from multistage growth models.
26   These findings illustrate empirical difficulties in finding

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[27] Harris, R., Marston, F., "Estimating Shareholder Risk Premia Using Analyst's Growth Forecasts,"
Financial Management, Summer 1992, pp. 63-69.

1   empirical proxies for multistage growth models for large

2   samples.

3

4   Harris, R., and Marston, F. "Estimating Shareholder Risk Premia Using Analyst's

5   Growth Forecasts," *Financial Management*, at n. 4 (Summer 1992) (citations omitted).

6 **Q. What other equity cost estimation analyses does Dr. Hadaway present in his**

7   **testimony in this proceeding?**

8 A. Dr. Hadaway utilizes a risk premium analysis in his Direct Testimony in this case, which

9   compares historical allowed equity returns to annual average bond yields. That study

10   indicates that the average risk premium between allowed returns for electric utilities and

11   bond yields over the past 24 years is 3.01% (Hadaway Direct, Exhibit No. __(SCH-5),

12   page 1). However, Dr. Hadaway concludes that a negative correlation exists between

13   current bond yields and risk premiums and, due to that relationship, imputes a larger risk

14   premium to reach an equity cost estimate of 10.95%.

15   It is important to understand at the outset that the annual cost rate differences

16   between the allowed returns and utility bond yields shown in Dr. Hadaway's Exhibit No.

17   ___SCH-5 is not necessarily reliable indicators of investor-required risk premiums. First,

18   the allowed returns are simply averaged over all the available rate case decisions during a

19   calendar year. That means that the capital market data that the regulatory body considered

20   was drawn from a time prior to the decision rendered and the allowed return might not

21   correlate with decision-time-specific macro-economic events. In some cases that period

22   of time between the hearing and the decision can be substantial.

23   Second, the relative risk of the utility for which the equity return was determined

24   is not a factor in the analysis. For example, the allowed return on equity for a "BB"-rated

25   firm would simply be averaged in with the other returns allowed during a calendar. Third,

26   while the inclusion of an outlier may not be problematic in years in which there are many

27   rate case decisions, which would not be the case in years in which the number of

28   decisions is small. Moreover, the data accompanying the publication from which Dr.

1   Hadaway took his allowed return information[28] shows that the number of regulatory

2   decisions has decreased in recent years (e.g., 7 decisions in 2001 versus 45 in 1993).

3   Even the source on which Dr. Hadaway relies discusses that problem:

4
5   "As the number of equity return determinations has
6   declined, the average authorized return now has less of a
7   relationship to the return that the typical electric, gas or
8   telecommunications company has an opportunity to earn."
9
10   Regulatory Research Associates, Major Rate Case Decisions—January-September 2003
11   (Oct. 8, 2003).

12 **Q. You noted that Dr. Hadaway emphasizes a negative correlation between interest**

13   **rates and risk premiums in reaching his equity cost estimate. Would you please**

14   **comment on this issue?**

15 A. In his Exhibit No. ___ SCH-5, Dr. Hadaway subtracts average bond yields for utilities

16   from the equity returns allowed utility companies over the past 24 years. Then, through a

17   regression analysis, he describes a relationship between bond yields and risk premiums

18   and uses that relationship, with a cost of debt to estimate the Company's cost of equity.

19   Aside from the problems that exist generally with the data used in the analysis, which I

20   noted above, there are additional problems with Dr. Hadaway's particular approach.

21   Those problems further illustrate why Dr. Hadaway's adjustments to historically-derived

22   risk premiums are not reliable for equity cost estimation purposes.

23   First, because the object of the exercise is to estimate the current cost of equity

24   capital, the risk premium procedure followed by Dr. Hadaway could produce an accurate

25   estimate of that parameter for electric utility operations if, and only if, the equity return

26   allowed for each company were equal to the cost of equity, and the risk of the utility

27   sample groups were similar to that of PacifiCorp. Also, as I noted above, returns allowed

28   in any one year could have been based on record evidence in prior years, depending on

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[28] Regulatory Research Associates, "Major Rate Case Decisions, January – September 2003", as well as other publications from the same source, provided with Dr. Hadaway's workpapers.

1   the particular circumstances, which would reduce the reliability of the comparison of

2   average annual allowed returns and current bond yields as an indicator of the cost of

3   equity capital. Even assuming that the allowed returns were equal to the sample

4   companies' cost of equity, they would be useful as a measure of equity capital costs only

5   if they were contemporaneously compared to bond yields.

6   In addition, utility market prices were below book value in the early 1980s, and

7   significantly above book value since the mid-1980s. These data indicate that the equity

8   returns allowed during those periods were not equal to the utilities' cost of capital. For

9   example, the negative 0.4% risk premium noted by Dr. Hadaway in 1981 was probably

10   too low because the allowed returns at that time were resulting in market prices below

11   book value for utility operations. Similarly, the risk premiums shown from 1988 to 2004

12   in Dr. Hadaway's risk premium study can be said to overstate the actual risk premium

13   because the returns allowed were resulting in market prices for utility operations that

14   were well above book value.

15   Although the above-mentioned factors raise concerns about the applicability of

16   such a historically-oriented approach to cost of capital analysis, they are common to all

17   such risk premium-type analyses. The second flaw evidenced in Dr. Hadaway's Exhibit

18   No. __SCH-6 is particular to this analysis.

19   Although Dr. Hadaway's regression analysis shows a strong correlation between

20   risk premium and bond yields ($r^2 = 0.84$), that is not surprising because the resultant risk

21   premium is a direct arithmetic function of the prevailing bond yield. A high correlation

22   coefficient is not meaningful if the dependent and independent variables are said to be

23   "auto-correlated."

24   If regression variables are auto-correlated, the differences between the actual

25   values and the regression equation (the residuals) have a lagged correlation with their

1   own past values (i.e., they are not independent of each other). Therefore, the regression

2   equation will not necessarily serve as an accurate predictor of the relationship between

3   the variables because the residual error will continue to increase over time. This can be

4   especially problematic in time-series studies of the type included in Dr. Hadaway's risk

5   premium analysis.

6   Dr. Hadaway does not offer the Commission any information regarding whether

7   or not his data are auto-correlated. However, because one of the variables, the risk

8   premium, is an arithmetic function of the other (the bond yield) it is reasonable to believe

9   (especially in the absence of any showing otherwise) that those data series are auto-

10   correlated.[29] Therefore, results of Dr. Hadaway's risk premium regression analysis may

11   not be a reliable indicator of the cost of equity capital and should be given little weight by

12   this Commission.

13 **Q. Does Dr. Hadaway reference support in the financial literature for the inverse**

14   **relationship between interest rates and risk premiums?**

15 A. Yes, at page 27 of his Direct Testimony (footnote 2) Dr. Hadaway refers to the Harris and

16   Marston (H&M) study, a copy of which he provided in response to data requests. While

17   that study does postulate a negative relationship between interest rates and bond yields,

18   Dr. Hadaway fails to note two aspects of that study.

19   First, the study acknowledges other academic studies, which either show that

20   there is a positive relationship between interest rates and risk premiums or that the

21   relationship changes from time to time:

22
23   Studying changes in risk premia for utility stocks,
24   Brigham, et al [cite omitted] conclude that, prior to 1980,

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[29] The Harris and Marston study on which Dr. Hadaway relies recognizes that there is "severe positive autocorrelation" in the historical risk premium/bond yield data. (Harris, R., Marston, F., "Estimating Shareholder Risk Premia Using Analyst's Growth Forecasts," *Financial Management*, Summer 1992, pp. 63-69, footnote 12).

1   utility risk premia increased with the level of interest rates,

2   but that this pattern reversed thereafter, resulting in an

3   inverse correlation between risk premia and interest rates.

4   Studying risk premia for both utilities and the equity

5   market generally, Harris [cite omitted] also reports that risk

6   premia appear to change over time. Specifically, he finds

7   that equity risk premia decreased with the level of

8   government interest rates, increased with the increases in

9   the spread between corporate and government bond yields,

10   and increased with increases in the dispersion of analysts'

11   forecasts.

12

13   (H&M Study, at 68.)

14

15   Second, H&M postulate that the apparent negative correlation between interest

16   rates and bond yields may have resulted from the unusually high interest rates that existed

17   at the beginning of Dr. Hadaway's study period. They also note that that hypothesis

18   would require further study.

19

20   Such a negative relationship [between interest rates and risk

21   premia] may result from increases in the perceived

22   riskiness of investment in government debt at high levels of

23   interest rates. A direct measure of uncertainty would be

24   necessary to test this hypothesis.

25

26   (*Id.* at 69).

27   Finally, according to his own prior testimony, Dr. Hadaway has recognized that due to

28   the riskiness of debt during the early 1980s, risk premiums were inordinately small:

29

30   Historically, utility company equity returns have averaged

31   about 300 basis points above comparable risk class bond

32   yields. However, dramatic shifts in capital markets have

33   occurred recently; and more importantly, extreme volatility

34   has characterized the bond markets since the shift in

35   Federal Reserve policy of October 1979. These factors

36   necessitate a reassessment of risk relationships among

37   security categories....

38   This evidence leads to the conclusion that long-term

39   bonds have come to be viewed by the market as being

1   much more risky than has historically been the case. It is

2   difficult, if not impossible, to assess the current spreads

3   between required returns and bond yields, but the evidence

4   indicates that the risk premium is significantly less than

5   was true in the past. The relationship may, in fact, be zero

6   or even negative with respect to the highly volatile long-

7   term bond market.

8

9 (Texas Public Utility Commission Docket No. 4240, Texas New Mexico Power

10 Company, Direct Testimony of Sam Hadaway, at 29, 30 (March 1982).

11 Therefore, the authority on which Dr. Hadaway relies to confirm his negative correlation

12 theory postulates that the negative correlation may be due to an abnormal relationship

13 between debt and equity returns in the early 1980s—a condition that Dr. Hadaway has

14 recognized in prior testimony.

15 **Q. Are there other, more recent, studies that examine the relationship between risk**

16 **premiums and interest rate levels?**

17 A. Yes. Members of the Virginia Corporation Commission Staff published a study of that

18 relationship in 1995,[30] subsequent to the H&M study. That paper is interesting in that it

19 shows that within certain shorter-term sub-periods an inverse relationship appears to

20 exist, but over the entire 1980 through 1993 study period, as interest rates declined from

21 the very high levels of the early 1980s. Absolute risk premium levels also fell. Moreover,

22 this study was based on utility market data and estimated equity cost rather than allowed

23 equity cost rates. The H&M study was based on equity cost estimates for firms in the

24 S&P 500, not utility companies.

25   Also, the cost of capital indications that result from the Virginia Commission

26 Staff study tend to be substantially lower than those presented by Dr. Hadaway. The

27 average risk premium between electric utility cost of equity and long-term Treasury bond

28 yields averaged 3.21% over the 1980-1993 study periods and the average T-bond yield

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[30] Maddox, F., Pippert, D., and Sullivan, R., "An Empirical Study of Ex Ante Risk Premiums for the Electric Utility Industry," *Financial Management*, Vol. 24, No. 3, Autumn 1995, pp. 89-95.

1   was 9.77%. Given that the most recent six-week average T-Bond yield is 4.41%[31], the

2   difference between the current T-Bond yield and the yield that existed, on average,

3   during the study period (9.77%), is 5.36%. Multiplying that yield difference by the

4   relationship found in the Virginia Commission Staff study produces a current risk

5   premium of 5.19% (5.36% x 0.37 = 1.98% + 3.21% = 5.00%). That "adjusted" risk

6   premium, added to the current T-Bond rate (4.41%) produces a cost of capital indication

7   of 9.60% (4.41% + 5.19%).

8   Therefore, if one elects to believe such data are reliable, there are studies of the

9   relationship between interest rates and risk premiums in the literature that 1) show a

10   declining trend in risk premiums over the 1980s and early 1990s; 2) are based on the cost

11   of equity of utilities, not unregulated firms; and 3) produce equity cost estimates which

12   are substantially below those presented by Dr. Hadaway.

13   **Q. Please summarize what you perceive to be the flaws in Dr. Hadaway's risk premium**

14   **analysis.**

15   A. Dr. Hadaway's risk premium analysis of the cost of equity capital, 1) is based on studies

16   in which the data may be unreliable, 2) ignores more recent studies which indicate much

17   lower risk premiums for electric utility operations, and 3) is based on a relationship

18   between bond yields and risk premiums which Dr. Hadaway has not shown to be

19   statistically reliable. In sum, I do not believe Dr. Hadaway's risk premium analysis

20   provides information that would be useful to this Commission in its task of determining a

21   generic cost of equity capital for PacifiCorp's electric utility operations in Washington.

22   **Q. Does this conclude your discussion of Dr. Hadaway's cost of capital analysis in this**

23   **proceeding?**

24   A. Yes, it does.

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[31] Data from the six most recent weekly editions of Value Line *Selection & Opinion* (August 19 through September 23, 2005).

1 **Q. Does this conclude your direct testimony, Mr. Hill?**

2 A. Yes, it does.