BEFORE THE WASHINGTON STATE

UTILITIES AND TRANSPORTATION COMMISSION

WASHINGTON UTILITIES AND	)	
TRANSPORTATION COMMISSION	)	
	)	
Complainant,	)	
	)	**DOCKET NO. UE-032065**
v.	)	
	)	
PACIFICORP d/b/a Pacific Power &	)	
Light Company,	)	
	)	
Respondent	)	
_____	)	

TESTIMONY OF
STEPHEN G. HILL

July 2, 2004

TABLE OF CONTENTS

I. INTRODUCTION AND SUMMARY

1

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

2

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

3

principal of Hill Associates, a consulting firm specializing in financial and

4

economic issues in regulated industries. My business address is P.O. Box 587,

5

Hurricane, West Virginia, 25526 (e-mail: sghill@compuserve.com).

6

7

Q. **Briefly, what is your educational background?**

8

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

9

from Auburn University in Auburn, Alabama, I was awarded a scholarship to

10

attend Tulane Graduate School of Business Administration at Tulane University

11

in New Orleans, Louisiana. There I received a Master's Degree in Business

12

Administration. More recently, I have been awarded the professional designation

13

"Certified Rate of Return Analyst" by the Society of Utility and Regulatory

14

Financial Analysts. This designation is based upon education, experience and

15

the successful completion of a comprehensive examination. I have also recently

16

been asked to be on the Board of Directors of that national organization. A more

17

detailed account of my educational background and occupational experience

18

appears in Exhibit ___(SGH-2).

19

1

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

A. Yes, I have appeared previously before this Commission. In addition, I have

testified on cost of capital, corporate finance and capital market issues in more

than 210 regulatory proceedings before the following regulatory bodies: the

West Virginia Public Service Commission, the Arizona Corporation Commission,

the Oklahoma State Corporation Commission, the Public Utilities Commission of

the State of California, the Public Service Commission of the State of Maine, the

Maryland Public Service Commission, the Public Utilities Commission of the

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

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

the Rhode Island Public Utilities Commission, the City Council of Austin, Texas,

the Missouri Public Service Commission, the South Carolina Public Service

Commission, the Public Utilities Commission of the State of Hawaii, the New

Mexico Corporation Commission, the Texas Railroad Commission, the Texas

Public Utilities Commission, the Georgia Public Service Commission, the Public

Service Commission of Utah, the Illinois Commerce Commission, the Kansas

Corporation Commission, the Indiana Utility Regulatory Commission, the

Virginia Corporation Commission, the Montana Public Service Commission, the

1   Pennsylvania Public Utilities Commission, the Public Service Commission of

2   Wisconsin, the Vermont Public Service Board, the Federal Communications

3   Commission and the Federal Energy Regulatory Commission. I have also

4   testified before the West Virginia Air Pollution Control Commission regarding

5   appropriate pollution control technology and its financial impact on the

6   company under review and have been an advisor to the Arizona Corporation

7   Commission on matters of utility finance.

8

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

10   A.   I am testifying on behalf of the Commission Staff (Staff) and the Attorney

11   General of Washington, Public Counsel (PC).

12

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

14   A.   I recommend an appropriate return on equity and overall cost of capital for the

15   electric utility operations of PacifiCorp, d/b/a Pacific Power & Light (PacifiCorp,

16   the Company), a subsidiary of Scottish Power, Inc. (SP, the Parent). In the body

17   of my testimony, I explain the studies I have performed in support of my

18   recommendation. In addition, I respond to the cost of capital testimony

19   provided by Dr. Sam Hadaway and discuss the shortcomings of his testimony.

1

2   **Q.   Have you prepared an exhibit in support of your testimony?**

3   A.   Yes, Exhibits SGH-6 through SGH-18 provide the analytical support for my

4   conclusions regarding the overall cost of capital for PacifiCorp's Washington

5   jurisdictional utility operations. It is correct to the best of my knowledge and

6   belief. Also, I have provided four Exhibits (SGH-2 through SGH-5), which

7   contain additional detail regarding certain aspects of my testimony.

8

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

10   **that the Commission should use in setting rates for PacifiCorp's Washington**

11   **electric utility operations in this proceeding.**

12 A.   I've organized my testimony into four sections. First, I discuss the cost of capital

13   standard as a measure of the return to be allowed for regulated industries, and

14   review the current economic environment in which the equity return estimate is

15   made.

16   Second, I review the capital structure requested by PacifiCorp for

17   ratemaking purposes in comparison to capital structures employed by the

18   Company historically as well as those existing in the utility industry today. From

19   that review, I develop a capital structure appropriate for ratemaking purposes.

1   Third, I evaluate the cost of equity capital for similar-risk utility

2   operations using Discounted Cash Flow (DCF), Capital Asset Pricing Model

3   (CAPM), Modified Earnings-Price Ratio (MEPR), and Market-to-Book Ratio

4   (MTB) analyses.

5   Fourth, I respond to the pre-filed cost of capital testimony submitted by

6   Company witness, Dr. Sam Hadaway.

7   I have estimated the equity capital cost of electric utility companies to fall

8   in a range of 9.00% to 9.75%. Within that range, I estimate the equity cost of the

9   Company's Washington utility operations to be 9.375%, which is the mid-point

10 of a reasonable range of equity costs for electric utilities.

11   Applying that 9.375% equity capital cost to a capital structure that is

12 reasonable for ratemaking purposes produces an overall cost of capital of 7.72%

13 (Exhibit___(SGH-17)). That overall cost of capital affords the Company an

14 opportunity to achieve a pre-tax interest coverage level of 2.87 times. According

15 to Standard & Poor's, that level of pre-tax interest coverage falls at the mid-point

16 of a range of pre-tax interest coverages that will support an investment-grade

17 bond rating for a utility with a business position of "4" (PacifiCorp's current S&P

18 business position).[1] Also, my recommended return for PacifiCorp provides an

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[1] Standard & Poor's Utilities & Perspectives, Utility Financial Targets Are Revised, June 1999.

1   interest coverage level that approximates the interest coverage achieved by the

2   Company over the nine months ended December 31, 2003 (2.66x) and is higher

3   than the average interest coverage level achieved in the Company's fiscal 2002

4   and 2003 reporting periods (2.47x).[2] Therefore, my recommended equity return

5   is sufficient to support the Company's financial position and satisfies the legal

6   requirement to provide the Company with the opportunity to earn a return that

7   is commensurate with the risk of the operation and serves to support and

8   maintain the Company's ability to attract capital.

9

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

11   **return for a regulated firm?**

12   A.   The Supreme Court of the United States has held that regulators must set rates

13   for regulated firms that are sufficient to allow those firms to attract capital and

14   provide their investors with returns they would expect in the unregulated sector

15   for assuming the same degree of risk. *See* Bluefield Water Works v. PSC, 262 U.S.

16   679 (1923); FPC v. Hope Natural Gas Company, 320 U.S. 591 (1944). The Court

17   reaffirmed these criteria in the Permian Basin Area Rate Cases, 390 U.S. 747

18   (1968). However, the Court also made clear in Hope that regulation does not

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[2] Data from PacifiCorp's Statements of Computation of Ratio of Earnings to Fixed Charges,
Exhibit 12.1 to SEC form 10-Q, for the period ending December 31, 2003.

1 guarantee profitability and, likewise, in <u>Permian Basin,</u> the Court held that, while

2 investor interests (profitability) are certainly pertinent to setting adequate rates,

3 those interests do not exhaust the relevant considerations.

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

5 regulated firm represents the return investors could expect from other

6 investments, while assuming no more and no less risk. Because financial theory

7 holds that investors will not provide capital for a particular investment unless

8 that investment is expected to yield their opportunity cost of capital, the cost of

9 capital necessarily corresponds with the Court's guidelines for appropriate

10 earnings.

11

12 **II. ECONOMIC ENVIRONMENT**

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

14 **cost estimate is made?**

15 A. The cost of equity capital is an expectational, or *ex ante*, concept. In estimating

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

17 with regard to the relative risk and return of that firm, as well as that for the

18 particular risk-class of investments in which that firm resides. Because this

19 exercise necessarily is based on understanding and accurately assessing investor

1   expectations, it is very important to review the larger economic environment

2   within which the investor makes his or her decision. Investor expectations

3   regarding the strength of the U.S. economy, the direction of interest rates and the

4   level of inflation (factors that are determinative of capital costs) are key building

5   blocks in the investment decision. Analysts and regulators should review these

6   factors in order to assess accurately investors' required return—the cost of equity

7   capital to the regulated firm.

8

9   **Q.   Why do you believe an equity return in the range of 9.00% to 9.75% is**

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

11   A.   Although there was an upward movement in interest rate levels during 1999 and

12   2000, that movement reversed course during 2001 and continued declining to

13   much lower levels in 2002 and 2003. The overall level of fixed-income capital

14   costs has been relatively low by historical standards for several years, and is

15   especially low at present. Also, there are examples in the marketplace for

16   equities indicating that investor return requirements are low by historical

17   standards.

1 A recent A.G. Edwards report on the gas utility industry[3] shows that

2 market return expectations for gas utility stocks are below historical earned

3 returns. The report states that, for a sample of 20 large and small gas

4 distributors, the median total return expectation (dividend yield plus expected

5 growth—a DCF-type calculation) is 8.45%.

6 Those data confirm that my 9.00%-9.75% equity return range for the

7 electric utility operations under consideration here is reasonable. In addition,

8 those data represent information to which investors are exposed in the equity

9 marketplace for rate-regulated companies and underscore the fact that investor

10 return requirements for that type of equity investment currently are low by

11 historical standards.

12

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

14 A. Yes. Another indication of the reason investors are willing to buy and hold

15 stocks that offer what seem to be "low" returns is shown in Exhibit ___(SGH-6),

16 page 1. It depicts Moody's A-rated utility bond yields from 1984 through

17 December 2003. Page 1 of Exhibit ___(SGH-6) shows that interest rates and

18 capital costs remain very low relative to the interest rate levels that existed in the

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[3] A.G. Edwards, "Gas Utilities Quarterly Review," April 4, 2004.

1   mid-1980s, and have continued a strong downward trend begun in 2000.

2   Also, page 2 of Exhibit___ (SGH-6), which presents the year-average

3   Moody's A-rated bond yields for each year over the past 34 years (1969-2003),

4   shows that A-rated bond yields thus far in 2003 are below the bond yield levels

5   seen in the U.S. in the late 1960s. Also, the most recent average A-rated utility

6   bond yield, 5.71%,[4] falls well below the lower range of interest rates that have

7   existed over the past 30 years. (See Exhibit ___(SGH-6), page 2). Simply put, a

8   fundamental reason that the current cost of common equity capital for electric

9   utility operations of 9.00% to 9.75% is reasonable is that capital cost rates are

10   lower than they have been in more than thirty years.

11   The above data indicate that capital costs, with the recent credit loosening

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

13   support the efficacy of my range of equity capital costs. However, it is important

14   to note here that equity capital cost rates and bond yields do not move in lock-

15   step fashion over time. In fact, the variability of that return differential is a

16   fundamental reason why risk premium type analyses—which attempt to

17   quantify the additional return over bond yields required by equity investors—

18   are not reliable as primary indicators of equity capital cost. Therefore, it is

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[4] Value Line *Selection & Opinion*, most recent six weekly editions (3/26/04-4/30/04, inclusive), 20/30-year A-rated utility bond yield averages.

1 necessary to perform an independent cost of equity capital analysis, rather than

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

3

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

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

6 **expectations for the future.**

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

8 interest rates in the early 1980s spurred increased economic activity in the U.S.

9 The rate of growth in the U.S. Gross Domestic Product (GDP) began to increase

10 at a rapid rate by the end of 1987 and showed signs of continuing to gain

11 strength. That increased economic activity, in turn, led to increased inflation

12 expectations (a rapid rate of economic growth creates shortages in labor and

13 materials, driving up the price of those factors of production, which ultimately

14 results in higher prices in all sectors of the economy). The expectation of

15 increased inflation, in turn, caused the Fed to act aggressively to slow down

16 what was widely believed to be an overheating economy. The very sharp

17 interest rate rise that followed in late 1987 and 1988, shown on

18 Exhibit ___(SGH-6), page 1, succeeded in damping down the economy, reducing

19 inflationary pressures, and allowing interest rates to fall again.

1   Since that time, the interaction between the Federal Reserve's moves to

2   expand or restrain the money supply and burgeoning inflation has been a

3   primary influence in the U.S. macro-economy and the level of interest rates.

4   Overall, as inflation has remained calm and economic activity has been

5   moderate, interest rates have trended downward, but that general downward

6   direction has been interrupted when investors (and/or the Fed) believed that

7   falling interest rates would spur too-rapid economic growth. Historically, rapid

8   economic growth has created unwanted inflation. Investors, anticipating that

9   higher inflation and interest rates might be the result of rapid economic

10   expansion, have reacted to positive economic news (e.g., increasing GDP growth

11   rates, lower unemployment) or negative inflation news (e.g., increasing

12   commodity prices, factory capacity or labor shortages) by bidding down debt

13   prices and driving up interest rates.

14   As shown on page 2 of Exhibit ___(SGH-6), single-A rated utility debt

15   yielded about 7.6%, on average, in 1999, while, in 2000, equivalently rated debt

16   was priced to yield approximately 8.2%, on average. That cost rate increase

17   primarily was due to investors' concerns regarding the continued strength of the

18   recent U.S. economic expansion and the potential for increased inflation caused

19   by what was perceived to be a rapid (inflationary) level of growth. However,

1   that rapid rate of economic growth did not come to pass, and the interest rate

2   increases engineered by the Federal Reserve in 2000 to slow down a rapidly

3   growing economy worked a little too well, resulting in declining economic

4   growth. Then, in response to an economy that was slowing down, the Fed

5   elected to increase the supply of money by dramatically lowering the Federal

6   Funds rate (the rate at which money center banks can lend funds on an overnight

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

8   revive what became a slowing economy, the Fed lowered short-term interest

9   rates eleven times in 2001 (and again in early November 2002 as well as at mid-

10   year 2003).

11   As Value Line notes in its most recent Quarterly Review regarding

12   economic growth, inflation and the interest rate environment, the current

13   expectation is that the Federal Reserve's recent monetary loosening will begin to

14   revive the economy during 2004 and 2005. Importantly, with regard to the

15   estimation of capital costs, inflation is expected to be moderate and interest rates,

16   even with anticipated increases, will continue in the future at moderate levels

17   preserving a favorable capital cost environment:

18   **Economic Growth**: As noted, the economy picked up a nice
19   head of steam during last year's second half. True, the
20   confluence of factors that yielded the 8.2% rate of third-
21   quarter GDP growth (including the retroactive effects of the

1   Administration's tax cut package) probably won't recur.
2   Still, a more recent, and respectable, 4% pace of economic
3   improvement may well be sustainable as we got through
4   2004 and into 2005. The main drivers of this projected
5   growth will probably be low taxes, relatively stable interest
6   rates, comparatively healthy levels of consumer confidence
7   [Chart omitted], a resilient housing market [chart omitted], a
8   brightening jobs picture [chart omitted], and further gains in
9   industrial production and factory use [chart omitted].
10
11 Overall, our expectation is that the industrial sector, a
12 notable laggard in the early stages of the current uneven
13 business upturn, is now positioned to take on a more
14 decisive role, and that along with a comparatively resilient
15 consumer, should help to sustain an economic expansion
16 that we project will last, with minor deviations along the
17 way, through at least the closing years of this decade.
18 . . . .
19 **Inflation**: Here, the news is getting better too. Three or six
20 months ago, deflation, or falling prices—a troubling
21 phenomenon last seen in this country during the 1930s and
22 in Japan much more recently—seemed to be at least a
23 modest possibility. Now, after months of healthy economic
24 growth, further upticks in commodity prices, and successes
25 by corporations in raising selling prices, the prospect of
26 deflation is more remote, in our view. Instead, prices now
27 seem more likely to increase than decline over the next
28 several years. Indeed, with steadily rising costs for medical
29 care, housing, and education likely to persist, with the price
30 of oil still stubbornly high, and with a resilient economy
31 likely to gradually lift wage and employment costs, it is very
32 hard to make a case that deflation is on the horizon. Our
33 expectation is that consumer inflation will remain in the
34 benign 2% range through 2005, kept low by solid gains in
35 productivity (or worker efficiency) and high levels of excess
36 capacity, and then average a non-threatening 2.0%-2.5% over
37 the final years of this decade, with these likely modest price

1   increases being consistent with a maturing business
2   expansion [chart omitted].
3
4   **Interest Rates**: With the economy now moving ahead at a
5   satisfactory pace, with the sustainability of that upturn looking
6   more and more likely, and with deflation now a decreasing threat,
7   the Federal Reserve may soon be forced to ponder the issue of
8   when and by how much to raise interest rates. Our sense is that the
9   Fed may start to lift rates by late this year or the first part of 2005.
10   One of more of the following would have to happen for the Fed to
11   move up its timetable, in our view. First, GDP growth would need
12   to accelerate sharply; we would have to see an unexpected surge in
13   job growth; or price inflation would have to increase measurably.
14   None of these possibilities seem likely. We expect rates to start
15   moving gradually and modestly higher and for that uptrend in rates
16   to extend over the next several years [chart omitted]. Even with
17   such projected rate hikes, borrowing costs are likely to remain near
18   their current historically low levels for some time to come.   *(The*
19   *Value Line Investment Survey, Selection & Opinion, 2462-64*
20   *(Feb. 27, 2004)).*
21   In that most recent Quarterly Economic Review, Value Line projects long-

22   term Treasury bond rates will average 5.2% through 2004 and 5.9% through 2005.

23   The recent six-week average 30-year T-bond yield is 4.93% (data from Value

24   Line, *Selection & Opinion*, six weekly editions, March 26, through April 30, 2004,

25   inclusive). Therefore, the indicated expectation is that interest rates are likely to

26   move somewhat higher in coming years but will, as Value Line notes, "remain

27   near their current historically low levels for some time to come."

28

1 **Q.** **Are there other reasons to believe that common equity capital costs for utilities**

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

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

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

5 approximately 30%;[5] now dividends are taxed at no more than 15%. The result

6 of this tax cut is that investors are keeping a greater percentage of dividends, and

7 dividend-paying stocks such as utilities have become more valuable than they

8 were before the change in the tax law. In other words, because investors can

9 now keep more of their dividends from their utility investment, they are willing

10 to pay more for those same stocks, resulting in a lower cost of equity capital.

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

12 recognized by investor advisory services:

13 **Tax reform has resulted in a fundamental shift in the**
14 **group's trading range.** We estimate that the reduction in
15 dividend and capital gains taxes should result in a 10%
16 increase in the average gas utility stock price. Prior to tax
17 reform, the median gas utility P/E [price/earnings ratio]
18 traded in a range of 11.5X to 14.5X. With the tax reduction,
19 we believe the new trading range in now 12.5X to 16.0X. *(A.*
20 *G. Edwards, Gas Utilities Quarterly Review, at 5 (Oct. 3, 2003)).*

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[5] Prior to the tax law change, federal income tax rates were 10%, 15%, 27%, 30%, 35%, or 38.6% depending upon the relevant income bracket. 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

2   A simple example will facilitate understanding how the tax law change

3   has lowered the cost of equity. Assume a utility with a dividend of $0.50, a stock

4   price of $10, and a long-term investor-expected growth rate of 5.5%. A simple

5   DCF estimate of the cost of equity for that utility would be 10.5%, comprised of a

6   dividend yield of 5.0% ($0.50/$10) and a growth rate of 5.5%. When the tax law

7   changes, investors increase the price they are willing to provide for that stock by

8   10%, to $11 per share [10$/share x 1.10 = $11/share]. Due to the re-valuation of

9   the stock to $11/share, the dividend yield now becomes 4.5% [$0.50/$11 = 4.545%,

10   rounded to 4.5%]. Because the tax law does not affect the company or its utility

11   operations, its anticipated long-term growth does not change; it remains at 5.5%.

12   The new cost of equity, however is 10% (4.5% dividend yield + 5.5% growth rate),

13   roughly 50 basis points below the pre-tax change cost of equity capital. In sum,

14   another factor contributing to the relatively low cost of common equity capital

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

16

17 **Q.   Does the current level of market-to-book ratios existing in the electric**

18 **industry, along with investors' expectations regarding the return on equity**

19 **that electric utilities are expected to earn, support your equity cost estimate in**

20 **this proceeding?**

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

2 when investors are providing market prices above book value of utility stocks

3 the return investors expect (the cost of capital) is below the return the utility will

4 earn on its book value. In other words, when market prices are above book

5 value, investors expect utilities to earn equity returns that are greater than the

6 market-based cost of equity capital for those companies.

7 In the current market environment, the market prices of electric utility

8 stocks are approximately 61% higher than their book value (i.e., M/B = 1.61).[6]

9 Moreover, Value Line reports that electric utilities are expected to earn returns on

10 the book value of their equity capital over the next three to five years of

11 approximately 11%.[7] Those data indicate that it is unreasonable to believe the

12 cost of equity capital for electric utilities is at or even above 11% (as Dr. Hadaway

13 indicates) and that the lower cost of equity that I recommend, is reasonable.

14

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

16 A. The expected return is the return on equity (ROE) that investors expect the utility

17 to earn. ROE is an accounting return calculated by dividing a company's

---

[6] CA Turner Utility Reports, at 5 (April 2004).

[7] The Value Line Investment Survey, *Ratings & Reports,* at 695 (April 2, 2004).

1   earnings by its book equity (the amount of common equity appearing on its

2   balance sheet). The expected return is based, in part, on the return allowed by

3   the regulator, the company's operating efficiency and on other income available

4   to the firm (if the firm has unregulated operations).

5   The cost of equity capital is the return investors require to commit equity

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

7   the minimum return investors require to invest in a particular type of company.

8   That required return is a market-based return, because whatever return the

9   investor receives (yield + dividend growth) will be measured against the market

10 price the investor provided to purchase the stock. As I discuss below, the return

11 investors require (the cost of capital) can be higher or lower than the accounting

12 return investors expect the firm to earn, and those differences have implications

13 with regard to differences in the market price and the book value of the firm's

14 common equity capital.

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

16 for the same reason they set the return allowed on utility debt equal to the cost of

17 that type of capital. Utility rates should be cost-based. That includes the cost of

18 capital—equity and debt.

1   Investors understand that utility returns are allowed and earned on the

2   book value (original cost less depreciation) of the utility's plant investment. That

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

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

5

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

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

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

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

10   simplicity of exposition, that this utility pays out all its earnings in dividends. If

11   regulators allow the utility a 12% return on that equity, investors will expect the

12   company to earn (and pay out) $1.20 per share. If investors require a 12% return

13   on this investment, they will be willing to provide a market price of $10 per share

14   for this stock ($1.20 dividends/$10 market price = 12% required return). In that

15   case, the allowed/expected return (12%) is equal to the cost of capital (investors'

16   required return, 12%), and the per share market price is equal to the book value

17   (M=B, or M/B=1.0).

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

19   electric utilities, let's assume that investors' required return (the utility's cost of

1 equity capital) falls to 10%, but the utility continues to be allowed a 12% return

2 on the equity portion of its rate base investment. Investors would be drawn to a

3 utility stock in a risk class for which they require a 10% return but which was

4 expected to pay out a 12% return. This increased demand by investors would

5 result in an increase in the market price of the stock until the total share yield

6 equaled the investors' required return. In our example, that point would be $12

7 per share ($1.20 dividends/$12 market price = 10% required return). In that case,

8 the allowed/expected return (12%) is greater than the required return (10% - the

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

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

11 1.20).

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

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

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

15 exceeds their cost of equity capital.

16

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

2 **of equity of 9.0 to 9.75%?**

3 A. If stock prices (market prices) that approximate the book value of electric

4   utilities, that is if M/B 1.0, then it would be reasonable to believe that investor's

5   cost of capital (investors' market-required return) would approximate 11%.

6   However, since investors are willing to bid up the price of electric common

7   stocks considerably above book value it is axiomatic that investor's required rate

8   of return is less than the 11% return on book value.   In the instant case investors

9   are paying about 150% of book value for their electric utility investments. The

10   cost of equity estimate in this proceeding between 9% and 10% is most

11   reasonable.

12   Finally, the market data cited above provides dramatic evidence that Dr.

13   Hadaway's equity return recommendation of 11.25% cannot represent investor's

14   market-based expectations. If an investor required an 11.25% return on a stock

15   and expected to earn 11% on book value, that investor would pay no <u>more</u> than

16   book value for that stock. Therefore, Dr. Hadaway's 11.25% cost of equity

17   estimate cannot be accurate.

18

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

2   **and the cost of capital hold for unregulated firms?**

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

4   unregulated firm and its earnings. Therefore, a market price above book value is

5   not indicative of whether or not an unregulated firm is earning its cost of capital.

6   For a utility firm however, a market price well above book value indicates that

7   investors expect that firm to earn a return above the return they require to invest

8   in that type of firm (the cost of equity capital). Similarly, a utility market price

9   below book value connotes an investor expectation that that firm will earn an

10   ROE which is below that which investors require (the firm's cost of equity

11   capital).

12

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

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

15   **in the financial literature?**

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

17   definitive work Myron Gordon has done regarding the DCF model and the cost

18   of equity capital of utilities. Professor Gordon has explained that the market-to-

19   book value ratio is greater than (equal to, less than) one when the ratio of the

1   allowed (or expected) rate of return to the cost of capital is greater than (equal to,

2   less than) one. (Gordon, M.J., The Cost of Capital to a Public Utility, 63-64

3   (1974)). There is additional support in the financial literature for the value of

4   market-to-book ratios in regulation.[8]

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

6   book value for a utility operation is not a linear or one-for-one relationship. That

7   is, just because the stock price of a particular utility is, say, 50% above its book

8   value does not indicate that its cost of equity is 50% below the utility's expected

9   book return. Also, there are differences between book value and rate base, which

10   mean that, even if a utility is allowed and expected to earn its cost of equity

11   capital, the market price may not exactly equal book value. For utility

12   operations, it will approximate book value, however, as supported in the

13   financial literature noted above. Therefore, market-to-book ratios, when

14   reviewed in conjunction with expected returns on book equity, provide a

15   valuable indication of a reasonable range of equity capital costs for utilities.

16

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[8] 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, at 415-16 (Winter 1997).

III. CAPITAL STRUCTURE

Q. **With what capital structure does PacifiCorp request rates be set in this proceeding?**

A. Company witness Donald Furman, at page 2 of his Direct Testimony in this proceeding presents the Company's requested ratemaking capital structure. The Company has filed its rate request based a pro forma capital structure consisting of 47.08% common equity, 1.41% preferred stock and 51.51% long-term debt.

Q. **Is the Company's requested capital structure an actual, booked capital structure?**

A. No, it is a pro-forma capital structure based on the assumptions regarding refinancing and replacement of some of the Company's long-term debt issues and additions to common equity through retained earnings.

Q. **Is the Company's requested capital structure similar to the manner in which it has recently been capitalized?**

A. No. The Company's requested ratemaking capital structure is different from how it has been capitalized recently. Over the five quarters from December 2003, through December 2004, PacifiCorp has been capitalized, on average, with

1   44.09% common equity 1.42% preferred stock, and 54.48% total debt (long- and

2   short-term). (Page 1 of Exhibit ___(SGH-7), attached).

3

4 **Q.   In Exhibit ___(SGH-7), page 1, you show that the Company has been**

5   **capitalized historically with considerably more debt and less equity than that**

6   **reported by Mr. Furman. What is the difference?**

7 A.   The capital structure data shown on page 1 of Exhibit ___(SGH-7) is drawn from

8   the Company's filings with the Securities and Exchange Commission and

9   represents the actual booked capital structure. Moreover, it is the capital

10   structure that is presented to the investment community. The capital structure

11   presented by Mr. Furman is adjusted, 1) to remove certain debt issues and 2) to

12   add certain amounts to the Company's common equity, which are related to an

13   expected level of earnings retention in the future.

14

15 **Q.   How has the Company's parent, Scottish Power, been capitalized over the past**

16   **five quarters?**

17 A.   As shown on page 2 of Exhibit ___(SGH-7), Scottish Power's capital structure

18   over the past five quarters has consisted of 47.49% common equity, 48.84% long-

19   term and 3.67% short-term debt. Scottish Power has been capitalized with

1   approximately the same capital structure requested by PacifiCorp in its

2   ratemaking capital structure. That capital structure inter-relationship is

3   significant because Scottish Power, with its unregulated competitive operations,

4   has a higher risk profile than its regulated utility subsidiary, PacifiCorp.

5   Companies with higher business risk are optimally capitalized with more equity

6   and less debt than less risky companies, according to long-accepted tenets of

7   modern corporate finance. However, in this proceeding PacifiCorp, the regulated

8   firm with *lower* operating risk, is requesting that its rates be set with a common

9   equity ratio which is equal to that utilized by its operationally riskier parent. If

10   this Commission were to utilize the Company's requested equity-heavy

11   ratemaking capital structure, it would allow financial cross-subsidization of

12   Scottish Power's unregulated operations by PacifiCorp's regulated ratepayers.

13

14 **Q.   Please explain what you mean by financial cross-subsidization and why**

15 **should the Commission be aware of it.**

16 A.   Cross-subsidization of a company's unregulated operations by its regulated

17   operations can occur in many forms. For example, the unregulated firm could

18   provide services to the utility at above-market rates or, conversely, the utility

1   could provide services to its unregulated affiliates at rates below those that

2   would prevail in an arms-length transaction.

3   Financial cross-subsidization occurs when the capital structure of the

4   utility operation provides financial strength to the holding company, which, in

5   turn, allows the parent to capitalize its unregulated operations with more debt

6   and less equity (i.e., more cheaply) than they would otherwise be able to do. In

7   other words, the utility (and, thereby, utility ratepayers) shoulders some of the

8   financial risk of the unregulated affiliates by allowing the latter to be capitalized

9   in a manner that would not prevail in a stand-alone situation.

10   Scottish Power's unregulated operations are riskier operations than its

11   regulated electric utility operations. One way that Scottish Power can maintain a

12   stronger financial profile and offset the increased risks of its unregulated

13   operations, is to set rates with a high common equity ratio for its regulated utility

14   operation while simultaneously financing its unregulated operations with a

15   higher percentage of debt capital than would otherwise be possible. That is the

16   essence of financial cross-subsidization. The tangible result of that action is a

17   common equity ratio for Scottish Power similar to that of PacifiCorp. It would

18   not be reasonable, therefore, for this Commission to set rates for PacifiCorp using

1   the Company's requested common equity ratio which is effectively equivalent to

2   that of its riskier parent.

3

4 **Q.** **PacifiCorp's President and CFO, Judith Johansen, at page 7 of her direct**

5   **testimony, discusses Scottish Power's contribution of a $150 million common**

6   **equity investment to PacifiCorp to shore up its finances. How can that be**

7   **considered cross-subsidization of the parent's unregulated operations?**

8 A.   Ms. Johansen discusses the fact that PacifiCorp temporarily suspended its

9   dividend payment to Scottish Power in 2003 and that the parent invested $150

10   million additional common equity in PacifiCorp. Notably, what the witness does

11   not say is that, according to the Company's 2003 SEC Form 10-K, PacifiCorp paid

12   dividends to Scottish Power in 2002 and 2001, in the amounts of $310.3 and

13    $347.7 million, far in excess of the investment returned by the parent in 2003.[9]

14   Also, the suspension of a dividend was temporary. PacifiCorp's December 31,

15   2003 SEC Form 10-Q indicates that at that time the Company had paid dividends

16   to its parent of $124.4 million.

---

[9] The immediate parent of PacifiCorp is PHI (PacifiCorp Holdings. Inc.), which also holds Pacific Klamath Energy, Inc., PPM Energy, Inc., and PacifiCorp Group Holdings Company. The ultimate parent, and the entity that pays dividends to shareholders, however, is Scottish Power.

1   The simple point with regard to financial cross-subsidization is that

2   Scottish Power an entity having unregulated generation and marketing

3   operations is currently capitalized with about 47% common equity. The

4   ratemaking capital structure of PacifiCorp, a vertically integrated electric utility

5   operation with lower business risk, should not have an equivalent common

6   equity ratio as that of its riskier parent. Setting rates for PacifiCorp with

7   effectively the same capital structure with which Scottish Power capitalizes its

8   consolidated operations would amount to financial cross-subsidization by

9   PacifiCorp's regulated ratepayers of its parent's unregulated operations.

10

11 **Q.**   **Is the Company's requested common equity ratio of 47% similar to the average**

12   **equity ratio existing in the electric utility industry today?**

13 A.   No. Both the ratemaking capitalization requested by PacifiCorp Company for

14   ratemaking purposes and the Company's most recent capital structure contain

15   more common equity and less debt capital than that utilized by the electric

16   industry, on average. Because common equity capital, from a ratepayers'

17   perspective (i.e., pre-tax), is twice as costly as debt capital, the capital structure

18   requested by PacifiCorp would be far more expensive than the capital structure

19   used, on average, in the electric utility industry.

1   As shown on page 3 of Exhibit ___(SGH-7), the average common equity

2   ratio of the electric industry, as reported in the January 2004 edition of C.A.

3   Turner's Utility Reports is 42%. For investment grade electrics (i.e., those with

4   bond ratings of "BBB-" or above), the average common equity ratio is also 42%.

5   Most of those firms have generation investments and, therefore, have similar

6   levels of business risk than PacifiCorp. C.A. Turner's also indicates that for

7   combination utilities—electric and gas—the average common equity ratio is 37%

8   of total capital. For investment grade combination utilities the average common

9   equity ratio is slightly higher at 38%.

10   The evidence available in the market indicates that PacifiCorp has

11   requested a capital structure for setting rates that contains an excessive level of

12   equity capital above that used, on average, in the electric utility industry. Those

13   data show that PacifiCorp is requesting the Commission to set its rates with a

14   capital structure that is far more expensive than that which exists, on average, for

15   fully-integrated electric utility operations.

16

| 1 | **Q.** | **What capital structure do you recommend for ratemaking purposes in this** |
| | | **proceeding?** |

1 **Q.** **What capital structure do you recommend for ratemaking purposes in this**

2 **proceeding?**

3 A. I recommend that rates be set for PacifiCorp using the Company's recent average

4 capital structure. That capital structure contains 44.09% common equity, 1.42%

5 preferred stock, 52.94% long-term debt and 1.54% short-term debt.

6 Page 5 of Exhibit ___(SGH-7) shows my recommended ratemaking capital

7 structure along with the associated embedded cost rates of preferred stock and

8 long-term debt. Those cost rates for preferred stock and long-term debt are from

9 page 2 of the Direct Testimony of Company witness Furman.

10

11 **Q.** **Does this conclude your discussion of capital structure?**

12 A. Yes, it does.

13

14 **IV. METHODS OF EQUITY COST EVALUATION**

15 <u>Discounted Cash Flow Model</u>

16 **Q.** **Please describe the discounted cash flow (DCF) model you used to arrive at an**

17 **estimate of the cost rate of common equity capital for PacifiCorp in this**

18 **proceeding.**

19 A. The DCF model relies on the equivalence of the market price of the stock (P) with

1   the present value of the cash flows investors expect from the stock, providing the

2   discount rate equals the cost of capital. The total return to the investor, which

3   equals the required return according to this theory, is the sum of the dividend

4   yield and the expected growth rate in the dividend.

5   The theory is represented by the equation,

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

7   where "k" is the equity capitalization rate (cost of equity, required return), "D/P"

8   is the dividend yield (dividend divided by the stock price), and "g" is the

9   expected sustainable growth rate.

10

11   **Q.   What growth rate (g) did you adopt in developing your DCF cost of common**

12   **equity for the company in this proceeding?**

13   A.   The growth rate variable in the traditional DCF model is quantified theoretically

14   as the dividend growth rate investors expect will continue into the indefinite

15   future. The DCF model is actually derived by 1) considering the dividend a

16   growing perpetuity, that is, a payment to the stockholder that grows at a

17   constant rate indefinitely, and 2) calculating the present value (the current stock

18   price) of that perpetuity. The model also assumes that the company whose

19   equity cost is to be measured exists in a "steady state" environment (i.e., where

1   the payout ratio and the expected return are constant and the earnings,

2   dividends, book value and stock price all grow at the same rate, forever). As

3   with all mathematical models of real-world phenomena, the DCF theory does not

4   exactly "track" reality. Payout ratios and expected equity returns do change over

5   time. Therefore, in order to properly apply the DCF model to any real-world

6   situation and, in this case, to find the long-term sustainable growth rate called for

7   in the DCF theory, it is essential to understand the determinants of long-run

8   expected dividend growth.

9

10 **Q.   Can you provide an example to illustrate the determinants of long-run**

11   **expected dividend growth?**

12 A.   Yes, in Exhibit ___(SGH-3), I provide an example of the determinants of a

13   sustainable growth rate on which to base a reliable DCF estimate. In addition, in

14   Exhibit ___(SGH-3), I show how reliance on earnings or dividend growth rates

15   alone, absent an examination of the underlying determinants of long-run

16   dividend growth, can produce inaccurate DCF results.

17

1 **Q. Did you use a sustainable growth rate approach as well as other methods to**

2 **develop an estimate of the expected growth rate for the DCF model?**

3 A. Yes. I have calculated both the historical and projected sustainable growth rates

4 for a sample of electric utility firms with similar-risk operations. In addition to

5 the sustainable growth rate analysis, I have also analyzed published data

6 regarding both historical and projected growth rates in earnings, dividends, and

7 book value for a sample group of companies.

8

9 **Q. Why have you used the technique of analyzing the market data of several**

10 **companies?**

11 A. I have used the "similar sample group" approach to cost of capital analysis

12 because it yields a more accurate determination of the cost of equity capital than

13 does the analysis of the data of one individual company. Any form of analysis

14 that produces an estimate, such as growth in the DCF model, is subject to

15 measurement error (i.e., error induced by the measurement of a particular

16 parameter or by variations in the estimate of the technique chosen.) When the

17 technique is applied to only one observation (e.g., estimating the DCF growth

18 rate for a single company) the estimate is referred to, statistically, as having "zero

19 degrees of freedom." This means, simply, that there is no way of knowing if any

1 observed change in the growth rate estimate is due to measurement error or to

2 an actual change in the cost of capital. The degrees of freedom can be increased

3 and exposure to measurement error reduced by applying any given estimation

4 technique to a sample of companies rather than a single company. Therefore, by

5 analyzing a group of firms with similar characteristics, the estimated value (the

6 growth rate and the resultant cost of capital) is more likely to equal the "true"

7 value for that type of operation.

8

9 **Q.   How did you select the firms for your analysis?**

10 A.   In selecting a sample of electric firms to analyze, I screened all the electric utility

11 firms followed by Value Line. I selected companies from that group that had a

12 continuous financial history and had at least 70% of operating revenues

13 generated by electric utility operations. In addition, I eliminated companies that

14 were in the process of merging or being acquired <u>and</u> had realized an upward

15 stock price shift due to that activity or companies that had omitted dividends.

16 Also, the companies in the selected sample had to have a bond rating ranging

17 from "BBB-" to "A+", a stable book value and not have experienced a recent

18 dividend reduction. The sample group selection screening process I utilized in

19 shown in detail on Exhibit ___(SGH-8) attached to this testimony.

1   Eleven electric utilities passed the screening process. The companies

2   included in the sample group are: Central Vermont Public Service (CV),

3   FirstEnergy Corp. (FE), Progress Energy (PGN), Southern Company (SO),

4   Ameren Corp. (AEE), Cinergy Corp. (CIN), Cleco Corp. (CNL), Empire District

5   Electric (EDE), Entergy Corp. (ETR), Hawaiian Electric (HE), and Pinnacle West

6   Capital Corp. (PNW).[10]

7

8   **Q.   How have you calculated the DCF growth rates for the sample of comparable**

9   **companies?**

10   A.   Exhibit ___(SGH-9), pages 1 through 4, shows the retention ratios, equity returns,

11   sustainable growth rates, book values per share and number of shares

12   outstanding for the comparable companies for the past five years. Also included

13   in the information presented in Exhibit ___(SGH-9), are Value Line's projected

14   2004, 2005 and 2007-2009 values for equity return, retention ratio, book value

15   growth rates and number of shares outstanding.[11]

---

[10] In the Exhibits accompanying this testimony, the sample group companies are referred to by their stock ticker symbols, designated above in parentheses.

[11] Due to the nature of Value Line's reporting on the electric utility industry—i.e., electric utilities are segmented into three regions of the U.S. (East, Central and West) and are reported in three different editions of *Ratings & Reports*—the data for two of the companies in the West region (HE and PNW) were projected through 2006-2008 rather than 2007-2009.

1   In evaluating these data, I first calculate the five-year average sustainable

2   growth rate, which is the product of the earned return on equity (r) and the ratio

3   of earnings retained within the firm (b). For example, Exhibit ___(SGH-9), page

4   2, shows that the five-year average sustainable growth rate for Southern

5   Company (SO) is 3.70%. The simple five-year average sustainable growth value

6   is used as a benchmark against which I measure the company's most recent

7   growth rate trends. Recent growth rate trends are more investor-influencing

8   than are simple historical averages. Continuing to focus on SO, we see that

9   sustainable growth in 2003 was 4.4%—above the average growth for the five-

10   year period, indicating an increasing trend in growth. By the 2007-2009 period,

11   Value Line projects SO's sustainable growth will reach a level above the recent

12   five-year average—about 4.6%. These data would indicate that investors expect

13   SO to grow at a rate in the future above the growth rate that has existed, on

14   average, over the past five years.[12]

15   It is important to note that, while the five-year projections are given

16   consideration in estimating a proper growth rate because they are available to

---

[12] I have included the details of my growth rate analyses for SO 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 ___(SGH-10), page 1, shows the internal, external, and resultant overall growth rates for all the companies analyzed.

1   and are used by investors, they are not given sole consideration. Without

2   reviewing all the growth rate data available to investors, both projected and

3   historic, sole reliance on projected information may be misleading. Value Line

4   readily acknowledges to its subscribers the subjectivity necessarily present in

5   estimates of the future:

6   We have greater confidence in our year-ahead ranking
7   system, which is based on proven price and earnings
8   momentum, than in 3- to 5-year projections. *(The Value Line*
9   *Investment Survey, Selection and Opinion, at 854 (June 7, 1991)).*
10
11   Another factor to consider is that SO's book value growth is expected to

12   increase substantially, increasing at a 6% level over the next five years, after

13   decreasing at a 1% rate historically (Southern Company divested its unregulated

14   generation operation two years ago). Also, as shown on Exhibit ___(SGH-10),

15   page 2, Southern Company's dividend growth rate, which was only 1.5%

16   historically, is expected to increase to 3% in the future. While this confirms that

17   future growth is likely to be greater than historical growth, the projected

18   dividend growth is below the sustainable growth rate projections. Earnings

19   growth rate data available from Value Line indicate that investors can expect a

20   higher growth rate in the future (5.0%) than has existed over the past five years

21   (2.0%). However, First Call financial and Zack's (investor advisory services that

22   poll institutional analysts for growth earnings rate projections) project somewhat

1   lower earnings growth rate for SO over the next five years—4.0% and 4.5%,

2   respectively.

3   SO's projected sustainable growth, book value, dividend, and projected

4   earnings growth indicates that investors can expect higher growth than has

5   occurred, on average, in the past. Those projections are moderated somewhat by

6   an expectation of dividend growth below the level of earnings growth

7   projections. A long-term sustainable growth rate of 4.5% is a reasonable

8   expectation for SO.

9

10 **Q.   Is the internal (b x r) growth rate the final growth rate you use in your DCF**

11 **analysis?**

12 A.   No. An investor's sustainable growth rate analysis does not end upon the

13   determination of an internal growth rate from earnings retention. Investor

14   expectations regarding growth from external sources (sales of stock) must also be

15   considered and examined. For SO, page 2 of Exhibit (SGH-9) shows that the

16   number of outstanding shares increased at a rate of 2.5% over the most recent

17   five-year period. Value Line expects the number of shares outstanding to

18   increase more rapidly through the 2007-2009 period, bringing the share growth

1   rate to about 1.3% by that time. An expectation of annual share growth of 1.5% is

2   reasonable for this company.

3   Because a goal of regulation, in duplicating the strictures of the

4   competitive marketplace, is to allow a utility to recover no more than its cost of

5   capital, it is reasonable to assume that the market price/book value ratio would,

6   over the long-term horizon of the DCF model, have a tendency toward unity.

7   However, the market price/book value ratio is unlikely to reach 1.0 overnight

8   and, on average, utilities will continue to issue stock at prices above book value.

9   Also, although I have selected for analysis electric utility firms that derive the

10   majority of their revenues from electric utility operations, those firms are not

11   "pure play" utilities—they do have some other operations. Those other

12   operations, therefore, are likely to have an upward impact on the market price

13   and the market-to-book ratio of those companies.

14   Also, as I noted previously when utility market prices are well above 1.0,

15   this signifies that the utility is earning a return exceeding its cost of capital. The

16   average market-to-book ratio of the electric utilities under review in my analysis

17   is 1.55 (*See* Exhibit ___ (SGH-10), at 1). The high M/B ratio implies that these

18   companies are earnings returns that exceed their cost of capital either from

19   regulatory returns that are too high or from unregulated operations. Basing the

1 external growth rate portion of a retention growth analysis on a market-to-book

2 ratio inflated by over-earning would tend to overstate the cost of equity capital.

3 It would effectively include the company's over-earnings in the cost of capital

4 estimate, causing that estimate to be overstated.

5 I believe, therefore, that a reasonable estimate of investors' expectations

6 for utility price/book ratios is that it will range between current levels and 1.0.

7 I have used the average as an estimate of investors' expectations for the future.

8 For the example company, Southern Company, the result of combining expected

9 internal (b x r = 4.5%) and external growth rates (1.5%) yields an investor-

10 expected long-term growth rate of 5.37%. (*See* Exhibit ___ (SGH-10), at 1).

11

12 Q. **Have you checked the reasonableness of your growth rate estimates against**

13 **other, publicly available, growth rate data?**

14 A. Yes. Page 2 of Exhibit ___(SGH-10) shows the results of my DCF sustainable

15 growth rate analysis as well as 5-year historic and projected earnings, dividends

16 and book value growth rates from Value Line, earnings growth rate projections

17 from First Call (and Zack's), the average of Value Line and First Call growth

18 rates and the 5-year historical compound growth rates for earnings, dividends

19 and book value for each company under study.

1   For the electric utility sample group, Exhibit ___(SGH-10), page 2, shows

2   that my DCF growth rate estimate for those companies is 4.58%. That long-term

3   growth rate estimate is more than 125 basis points higher than Value Line's

4   average projected earnings, dividend and book value growth rate (3.23%) and

5   much higher than the historical average of those same parameters (2.47%). In

6   addition, my DCF growth rate estimate for the electric companies is also

7   somewhat lower than Zack's projected earnings growth rate estimate (5.05%),

8   but above both Value Line's projected earnings growth rate estimate (3.00%) and

9   First Call's projected earnings growth rate (3.64%).[13] My DCF growth rates for

10   these companies is quite conservative (i.e., on the high side), when compared to

11   available published information.

12

13 **Q.   Does this conclude the growth rate portion of your DCF analysis?**

14 A.   Yes, it does.

15

---

[13] One reason Zack's average earnings growth rate projection is so much higher than the others is that it's earnings growth projection for Empire District Electric (EDE) is very high—10%. In my experience, that growth rate would not provide a reliable indication of investor-expected long-term growth for an electric utility operation. Absent that estimate, Zack's average earnings growth projection is 4.4%--below my estimate of 4.58%.

1　**Q.　How have you calculated the dividend yields?**

2　A.　For each firm analyzed, I estimated the next quarterly dividend payment and

3　　annualized them for use in determining the dividend yield. If any company

4　　expected to raise its quarterly dividend in the quarter following that in which the

5　　most recent dividend was declared, I increased the current quarterly dividend by

6　　(1+g). For the electric companies in the sample group, a dividend adjustment

7　　was unnecessary for most of the companies under study because they either

8　　recently raised their dividend or were not projected to raise the dividend in 2004.

9　　I made a dividend adjustment for to companies in the sample, Southern

10　　Company (SO) and Entergy (ETR).

11　　　The next quarter annualized dividends were divided by a recent daily

12　　closing average stock price to obtain the DCF dividend yields. I use the most

13　　recent six-week period to determine an average stock price in a DCF cost of

14　　equity determination because I believe that period of time is long enough to

15　　avoid daily fluctuations and recent enough so that the stock price captured

16　　during the study period is representative of current investor expectations.

17　　　Exhibit ___(SGH-11) indicates that the average dividend yield for the

18　　sample group of electric utility companies is 4.76%. Value Line's most recent

19　　year-ahead dividend yield projection for the companies in my sample group

1   averaged 4.91%—slightly higher than the dividend yield I used in my analysis

2   (Value Line, *Summary & Index,* April 30, 2004). That indicates that the dividend

3   yield used in my DCF analysis is reasonable, but may be slightly understated

4   according to information widely available to investors.

5

6   **Q.   What is your cost of equity capital estimate for the electric utility companies,**

7   **using the DCF model?**

8   A.   Exhibit ___(SGH-12) shows that the average DCF cost of equity capital for the

9   entire group of electric utilities studied is 9.33%.

10

11   <u>Corroborative Equity Cost Estimation Methods</u>

12 **Q.   In addition to the DCF, what other methods have you used to estimate the cost**

13   **of equity capital for PacifiCorp?**

14 A.   To corroborate the results of my DCF analysis, I have used three additional

15   econometric methods to estimate the cost of equity capital for a group of firms

16   similar in investment risk to PacifiCorp. The three methodologies are: 1) the

17   Capital Asset Pricing Model (CAPM), 2) the Modified Earnings-Price Ratio

18   (MEPR) analysis, and 3) the Market-to-Book Ratio (MTB) analysis. I used the

19   same group of similar risk electric firms I used in my DCF analysis.

1   Exhibit ___(SGH-5) attached to my testimony contains the theoretical details of

2   each of those analyses. The actual calculations and data supporting the results of

3   each of these models are shown in the attached Exhibits.

4   Exhibit ___(SGH-13) shows the detail regarding the CAPM analysis,

5   which indicates a cost of capital for electric companies ranging from 8.44% to

6   9.48%. Exhibit ___(SGH-15) shows the data and calculations regarding the

7   Modified Earnings Price Ratio (MEPR) analysis, which indicates a current cost of

8   equity capital for companies like PacifiCorp ranging from 8.58% to 8.51%.

9   Exhibit ___(SGH-16) attached to this testimony contains the supporting detail for

10   the Market-to-Book Ratio (MTB) analysis, which indicates a current cost of equity

11   capital of 9.32% (near-term) to 9.00% (long-term).

12

13   <u>Summary</u>

14   **Q.   Please summarize the results of your equity capital cost analyses for the**

15   **sample group of similar-risk electric companies.**

16   A.   My analysis of the cost of common equity capital for the sample group of electric

17   utility companies is summarized in the table below:

18

METHOD	COST OF EQUITY
DCF	9.33%
CAPM	8.44%/9.48%
MEPR	8.58%/8.51%
MTB	9.32%/9.00%

1 The DCF result noted above, which is my primary indication of the cost of

2 equity capital, is 9.33%. Adding 15 additional basis points to account for the

3 higher year-ahead dividend yield published by Value Line for the companies

4 under study would produce a DCF result of 9.48%. Averaging the lowest and

5 the highest results of the corroborative analyses (CAPM, MEPR, and MTB)

6 produces an equity cost rate range of 8.65% to 9.13%—a range that is entirely

7 below the DCF result. In fact, only the upper end of the CAPM results are

8 similar to the DCF result; all of the other corroborative analyses indicate that my

9 DCF results may overstate the actual cost of common equity of electric utilities.

10 Given the results shown above, it would be reasonable to construct a current

11 range of equity capital costs with the DCF result at the uppermost end of that

12 range. However, over the next year or two capital costs are anticipated to

13 increase to some degree as the U.S. economy begins to operate more normally.

14 Therefore, weighing all the evidence presented herein, I believe it is reasonable to

15 construct a current cost of equity range around the DCF estimate, and my best

16 estimate of the cost of equity capital for a company facing similar risks as that

1   group of electric utility companies ranges from 9.00% to 9.75%. The mid-point of

2   that range is 9.375%.

3

4 **Q. Does your equity cost estimate include an increment for flotation costs?**

5 A.   No, it does not.

6

7 **Q. Can you please explain why an explicit adjustment to the cost of equity capital**

8   **for flotation costs is unnecessary?**

9 A.   An explicit adjustment to "account for" flotation costs is unnecessary for several

10   reasons. First, there is no information in the evidence presented by the Company

11   that indicates it anticipates a public stock offering in the near-term. Absent such

12   an offering, the Company will not incur flotation costs going forward and should

13   not be reimbursed for a cost it will not incur. Moreover, any attempt to collect

14   equity financing costs incurred in prior periods would amount to retroactive

15   ratemaking.

16   Second, flotation cost adjustments are designed to prevent the dilution of

17   stockholder investment. However, the reduction of the book value of

18   stockholder investment due to issuance expenses can occur only when the

19   utility's stock is selling at a market price at to or below its book value.

1   In the current market environment for electric utility common stock,

2   Scottish Power stock is selling at roughly a 54% premium to its book value.[14]

3   Therefore, even if we assume, that 3% of the stock price is an out-of-pocket

4   expense for the Company, every time a new share of Scottish Power stock is sold,

5   existing shareholders realize an *increase* in the per share book value of their

6   investment. No dilution occurs, even without any flotation cost allowance.

7   For example, assume that Scottish Power had one share of stock

8   outstanding with a market price of $1.54 and a book value of $1.00. Assume also

9   the parent company issued another share of stock at the current market price of

10    $1.54 and actually paid out-of-pocket flotation costs of 5¢ (assuming, again, that

11   flotation costs are 3% of the selling price). The monies received from the stock

12   issuance, $1.49 (the $1.54 market price less the 5¢ flotation cost), would be added

13   to the Company's common equity. That $1.49 added to the original $1.00 of

14   common equity on the books, indicates a total common equity balance for

15   Scottish Power after the stock issuance of $2.49. That book balance of common

16   equity divided by the two outstanding shares produces a per share book value of

17    $1.24 [$2.49 ÷ 2]. In other words, the book value of stockholders' investment

18   value is increased (in this example from $1 to $1.24/share) when new stock is

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[14] www.moneycentral.msn.com, Key Ratios, May 6, 2004.

1   issued, not decreased. That is because the amount by which market value

2   exceeds book value is substantially more than any anticipated flotation costs.

3   Therefore, there is no need to "compensate" stockholders for a hypothetical

4   dilution of book value that will not occur.

5   Third, the vast majority of the issuance expenses incurred in any public

6   stock offering are "underwriter's fees" or "discounts." Underwriter's discounts

7   are not actual out-of-pocket expenses for the issuing company. On a per share

8   basis, they represent only the difference between the price the underwriter

9   receives from the public and the price the utility receives from the underwriter

10   for its stock. As a result, underwriter's fees are not an expense incurred by the

11   issuing utility and recovery of such "costs" should not be included in rates.

12   In addition, the amount of the underwriter's fees are prominently

13   displayed on the front page of every stock offering prospectus and, as a result,

14   the investors who participate in those offerings (e.g., brokerage firms) are quite

15   aware that a portion of the price they pay does not go to the company but goes,

16   instead, to the underwriters. By electing to buy the stock with that knowledge,

17   those investors have effectively accounted for those issuance costs in their risk-

18   return framework by paying the offering price. Therefore, they do not need any

1   additional adjustments to the allowed return of the regulated firm to "account"

2   for those costs.

3   Fourth, research has shown that a specific adjustment for issuance

4   expenses is unnecessary.[15] There are other transaction costs which, when

5   properly considered, eliminate the need for an explicit issuance expense

6   adjustment to equity capital costs. The transaction cost that is improperly

7   ignored by the advocates of issuance expense adjustments is brokerage fees.

8   Issuance expenses occur with an initial issue of stock in a primary market

9   offering. Brokerage fees occur in the much larger secondary market where pre-

10   existing shares are traded daily. Brokerage fees tend to increase the price the

11   investor must pay the stock to levels above those reported in the Wall Street

12   Journal, which is the market price analysts use in their DCF analysis. Therefore,

13   if brokerage fees were included in a DCF cost of capital estimate they would

14   raise the effective market price, lower the dividend yield and lower the investors'

15   required return. If one considers transaction costs that, supposedly, raise the

16   required return (issuance expenses), then a symmetrical treatment would require

17   that costs which lower the required return (brokerage fees) should also be

18   considered. As shown by the research noted above, those transaction costs

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[15] Habr, D., "A Note on Transaction Costs and the Cost of Common Equity for a Public Utility," National Regulatory Research Institute Quarterly Bulletin, at 95-103 (January 1988).

1   essentially offset each other and no specific equity capital cost adjustment is

2   warranted.

3

4 **Q.** **Your equity return recommendation seems rather low by historical standards.**

5   **Have other regulatory bodies determined single-digit equity returns to be**

6   **appropriate over the last year?**

7 A. Yes, capital costs have been low and several regulatory bodies have set the

8   allowed equity return in the single-digits. The regulatory jurisdictions of New

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

10   and Wyoming have set equity returns below 10% during 2003 and thus far in

11   2004.[16] In addition, the West Virginia Public Service Commission recently set the

12   equity return of a water utility company at 7.0%.[17]

13

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[16] 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.

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

1   **Q.   What is the overall cost of capital for PacifiCorp's electric utility operations,**

2   **based on an allowed equity return of 9.375%?**

3   A.   Exhibit ___(SGH-17) attached to my testimony shows that an equity return of

4   9.375%, operating through an appropriate ratemaking capital structure and the

5   Company's requested embedded capital cost rates, produces an overall return of

6   7.72% for PacifiCorp. Exhibit (SGH-17) also shows that a 7.72% overall cost of

7   capital affords the Company an opportunity to achieve a pre-tax interest

8   coverage level of 2.87 times.

9   According to Standard & Poor's published bond rating benchmarks the

10   pre-tax interest coverage afforded by the equity return I recommend will support

11   an investment-grade bond rating. The equity return I recommend satisfies Hope

12   and Bluefield because it provides the Company with the opportunity to earn a

13   return commensurate with the risk of the operation and allows the Company to

14   attract capital.

15

16   **V. COMPANY COST OF CAPITAL TESTIMONY**

17   **Q.   How has Dr. Hadaway estimated the cost of equity capital in this proceeding?**

18   A.   Dr. Hadaway has analyzed the cost of equity capital for electric utilities using a

19   standard DCF analysis, two multi-stage DCF models and a risk premium

1   analysis. Dr. Hadaway's median single-stage DCF results in a cost of equity

2   capital for electric utilities of 9.8%. (Exhibit ___(SCH-5) at 2).

3   While there are some implementation problems with Dr. Hadaway's

4   single-stage DCF, which I explain below, the primary problem with his analysis

5   is that it is out of date. Dr. Hadaway performed his cost of equity analysis in the

6   Fall of 2003. Using the very same standard DCF methodology proposed by Dr.

7   Hadaway and current data, his analysis produces a median DCF for electric

8   utilities of 8.9%, which is 90 basis points below the median results of his original

9   DCF analysis. Also, as I will explain in detail below, Dr. Hadaway's reliance on

10   multi-stage DCF analyses is, in my view, misplaced and his DCF and risk

11   premium analyses produce equity cost estimates that are biased upward.

12

13   **Q.   Have you reviewed the details of Dr. Hadaway's single-stage DCF analysis?**

14   A.   Yes, I have.

15

16   **Q.   Do you have any comments regarding that analysis?**

17   A.   Yes. Dr. Hadaway's standard DCF analysis relies on a three-month average

18   stock price and the projected dividend for the current year for the dividend yield

19   portion of that analysis. Other than the fact that his data are now stale, I have no

1   concerns with that portion of his analysis. The growth rate portion of his

2   standard DCF analysis is more problematic.

3   First, Dr. Hadaway's growth rate analysis is mechanistic in that it simply

4   plugs selected projected data into a formula to produce a growth rate with no

5   underlying analysis of either the historical or projected growth rate

6   fundamentals. For example, Value Line's three to five-year projections are used

7   to create a projected "b times r" growth rate, but the trends in that type of

8   growth are not analyzed.

9   Second, Dr. Hadaway elects to include the average GDP growth rate for

10   the past twenty years as one of the growth rates included in his standard DCF

11   calculation. There is little, if any, support in his testimony for the use of that

12   growth rate as a proxy for investors' expectations with regard to electric utility

13   growth. Dr. Hadaway has not provided any evidence that electric utility growth

14   rates have mirrored GDP growth in the past, or that investors expect that

15   condition to exist in the future. Moreover, Dr. Hadaway and I previously have

16   appeared together in rate proceedings,[18] and in his prior testimony he did not

17   include historical GDP growth to proxy forward-looking DCF growth rates in his

---

[18] 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   "standard" or constant growth DCF analysis. It is not clear why he elected to do

2   it in this proceeding. It is clear, however, that if Dr. Hadaway had not included

3   that historical GDP growth rate in his standard DCF calculation, his result would

4   have been lower. Finally on this point, Dr. Hadaway testifies in this docket that

5   the current projected GDP growth rate is "over 4% per year." (Hadaway Direct,

6   at 19, l. 12). The historical GDP growth used in his constant growth DCF analysis

7   is substantially higher—6%. Again, if Dr. Hadaway has used the forward-

8   looking GDP growth in his initial DCF analysis instead of the historical growth,

9   his DCF results would have been lower by about 50 basis points.

10   Third, Dr. Hadaway's growth rate analysis relies heavily on earnings

11   growth rate projections. Half of his DCF growth rate estimate is based on

12   projected earnings growth. As I discuss in more detail in Exhibit ___(SGH-__),

13   heavy reliance on earnings growth can lead to inaccurate equity cost estimates.

14   For example, Dr. Hadaway's Exhibit___ (SCH-5), page 2, shows that for

15   one of his sample companies, Northeast Utilities, Value Line projects an equity

16   return of approximately 9.46% by 2007—a seemingly modest return. The Value

17   Line report on DPL, Inc., however, indicates that that company's average equity

18   return for 2001, 2002 and 2003 was 7.23%. Therefore, Value Line's earnings

19   growth rate projections anticipate a 30% increase in earned equity return for that

1   company. As I explain in Exhibit ___(SGH-3), reliance on projected earnings

2   growth in that situation would include, in any DCF result for that company, the

3   assumption that equity returns will increase 30% every five years into the

4   indefinite future. That, of course, is not a reasonable expectation, and any DCF

5   analysis based on a mechanistic analysis that automatically includes such data,

6   such as that offered here by Dr. Hadaway, would not produce a reliable equity

7   cost estimate. Therefore, while I have no problem with the consideration of

8   earnings growth rate projections in determining DCF growth, they should not be

9   weighted as heavily as Dr. Hadaway proposes, especially absent consideration of

10   the underlying factors of long-term sustainable growth.

11

12   **Q.   Are there additional reasons why excessive reliance on analysts' projected**

13   **earnings growth rates in a DCF equity cost estimate can produce unreliable**

14   **results?**

15   A.   Yes. There is often associated with the use of analysts' projected earnings growth

16   rates an erroneous notion of "consensus" (i.e., that projected earnings growth

17   rates are <u>the</u> growth factor investors are using to estimate return requirements

18   and that those estimates are in close agreement). As shown in the table below,

19   which shows detailed statistics from the earnings growth rates estimates for the

1   electric utilities in Dr. Hadaway's sample group that are also included in my

2   sample, what is often called "consensus" earnings growth expectations are, in

3   reality, quite divergent.

4   **TABLE I.**

Company	5-year Earnings Est.	No. of Estimates	High Estimate	Low Estimate
Ameren	3.00%	7	6.0%	2.0%
Cinergy	4.00%	10	5.0%	2.0%
Pinnacle West	4.00%	4	6.0%	2.0%
Southern Co.	4.00%	11	6.0%	1.0%
Averages	4.64%		5.75%	1.75%

(Data from First Call/Thomson Financial.)

5   From Table I, we see that the "consensus" earnings growth rate estimates for

6   some of Dr. Hadaway's sample firms are based on projected earnings growth

7   rates that show, overall, a divergence rather than a consensus of investor

8   opinion. For example, the analysts surveyed who follow Southern Company

9   project earnings growth rates for that company that range from 1% to 6%. That

10   difference in growth rates would produce a 500 basis point swing in DCF results.

11   It is important to remember, then, that the average earnings projection, even

12   though it is called a "consensus" earnings growth estimate, is based on what may

13   be a very wide range of growth rate expectations among the professional

1   analysts. Therefore, those earnings growth estimates should be used with

2   caution in any DCF analysis and they should not be used as a primary growth

3   rate measure as Dr. Hadaway has done.

4   Finally, as evidenced in financial news headlines, the sell-side institutional

5   analysts that are polled by Zack's, Thomson Financial, and similar services

6   sometimes offer relatively "rosy" expectations for the stock they follow—even

7   when the analyst's actual expectations for the stock are not so sanguine. Simply

8   put, some analysts are overstating growth expectations to make the stocks look

9   better. Although claims are often made that the opinions of sell-side analysts are

10   not affected by the profits made by the other parts of the business that actually

11   trade those securities, the recent event in the marketplace underscore that

12   concern. Therefore, while what is known as the "Cinderella effect" (analysts'

13   overstating stock expectations) is not a new phenomenon, the recent concern in

14   the financial markets regarding this issue highlights the need for caution in the

15   use of earnings growth expectations in estimating the cost of equity capital.

16   This concern regarding analysts' growth estimates is underscored by an

17   investor's advisory service sponsored by the *Wall Street Journal*:

18   You should be careful when looking at analyst
19   recommendations for several reasons. First of all, many
20   analysts suffer from a conflict of interest between the firm that
21   employs them and the company whose stock they track. Often

1   times, an analyst will be responsible for issuing reports on a

2   company that is a current or potential client of their employer

3   (usually an investment bank). Since they know that their

4   employer would like to keep the client's business, the analyst

5   may be tempted to issue a rosier outlook for the stock than

6   what it really deserves. *(Analysts and Earnings Estimates,*

7   *www.investorguide.com/igustockanalyst.html (May 2004)).*

8

9 Q. Don't analysts who rely exclusively on earnings growth projections refer to

10   academic studies that show analysts' earnings growth estimates to be

11   "superior" to other growth rate estimation methods?

12 A. Yes, however, while such studies do show that projected growth rates are

13   superior to simple, mechanical averages of historical growth rates, they do not

14   suggest that projected earnings growth rates are singularly determinative of

15   investor expectations. What those studies actually do is make a good case for the

16   consideration of analysts' growth rate forecasts in a reasoned examination of

17   investor growth rate expectations. With that premise, I quite agree, and that is

18   how I have elected to use analysts' forecasts in my DCF analysis (i.e., as part of

19   an analysis of growth rate expectations). Those studies do not provide a

20   rationale for an *exclusive* reliance on earnings growth rate projections. Certainly

21   analysts' growth rate projections can influence investor expectations, but it is

22   unreasonable to conclude that they determine those expectations exclusively.

23

1 **Q.   Have you recalculated Dr. Hadaway's standard DCF result using current data**

2 **for each company?**

3 A.   Yes. In Exhibit ___(SGH-18), page 1, I replicate Dr. Hadaway's standard (or

4 constant growth) DCF analysis that appears on his Exhibit SCH-5, page 2. All

5 the parameters are exactly as they appear in Dr. Hadaway's Direct Testimony

6 and use the most recent data available from Value Line. With no methodological

7 changes whatsoever, the median result of Dr. Hadaway's standard DCF analysis

8 falls from the 9.8% value he reports in his Direct Testimony to 8.9%, based on his

9 single-stage DCF methodology using current data.

10 Including a forward-looking GDP growth rate of 4% rather than the

11 historical 6% used in Dr. Hadaway's DCF analysis produces a median result of

12 8.4%, using current data. Eliminating Dr. Hadaway's inclusion of GDP growth

13 in that analysis, so that his analysis is consistent with that presented in his prior

14 testimony, the median DCF result declines to 8.3%—fully 150 basis points below

15 the analysis he presents in his Direct Testimony in this proceeding. The Table

16 below shows the impact of updating the data used in the Dr. Hadaway's

17 constant growth DCF as well as the impact of making his current analysis

18 consistent with prior testimony and the use of more reasonable growth rate

19 assumptions.

TABLE II.

Dr. Hadaway's Constant Growth DCF Analysis—Updated

	Median	Average
Original Analysis	9.80%	10.20%
Updated Data-Same Analysis	8.90%	8.80%
Updated Data-4% GDP Growth	8.40%	8.30%
Updated Data-No GDP Growth	8.30%	8.10%

3

4 **Q. What are your comments on Dr. Hadaway's multi-stage DCF analysis?**

5 A. At page 13 of his Direct Testimony, Dr. Hadaway shows the general periodic

6 discounted cash flow formula from which the standard DCF is derived. He

7 correctly notes that, mathematically, in order to produce the familiar

8 "$k = D/P + g$" formula that we know as the DCF, certain assumptions must be

9 made. Primary among them, as I noted previously, is that the model assumes

10 the company whose equity cost is to be measured exists in a steady state

11 environment, i.e., the payout ratio and the expected return are constant and the

12 earnings, dividends, book value, and stock price all grow at the same rate,

13 forever. This type of "steady state" assumption is common in mathematical

14 modeling, and, as I also explained previously, those assumptions must be taken

15 into account in order to be able to produce an accurate equity cost estimate using

16 the DCF.

1   The Company witness also indicates that the "nonconstant growth" form

2   of the DCF (i.e., the multi-stage model) "requires more explicit data inputs"[19] and

3   is "less convenient"[20] than the standard DCF. According to his own testimony

4   then, Dr. Hadaway has elected to use a DCF model that increases the number of

5   explicit assumptions that must be made as well as the computational difficulty.

6   In other words, instead of using a model in which data are reviewed to enable

7   the investor/analyst to estimate a long-term sustainable growth rate, Dr.

8   Hadaway elects to use the more complicated multi-stage DCF model which

9   makes several very specific assumptions that need to occur at specific points in

10   the future in order for his equity cost estimates to be accurate. In my view, Dr.

11   Hadaway has elected to shift his reliance from a model that requires general

12   assumptions relative to investor expectations about the future (the standard

13   DCF), to one that requires very time-specific assumptions (the multi-stage DCF)

14   and which produces less reliable results because of that fact.

15

16 **Q.   How has Dr. Hadaway elected to calculate the multi-stage DCF growth rate in**

17 **this proceeding?**

---

[19] Hadaway Direct, at 15, ll. 16.17.
[20] Hadaway Direct, at 15, l. 14.

1 A. The company witness uses two multi-stage DCF models in this proceeding. The

2   first multi-stage DCF model, Dr. Hadaway calls the "Market Price Approach,"

3   and the second multi-stage DCF model, he terms the "Low Near-Term, Two-

4   Stage Growth Approach."

5   In the first model (the Market Price Approach), Dr. Hadaway projects the

6   cash flow (dividends) in every year through 2007 for each company in his sample

7   as well as a stock price for each company in 2007. He then finds, through trial-

8   and-error, the discount rate that equates those cash flows to the current stock

9   price. In order to do that, Dr. Hadaway uses Value Line published data for each

10   company. At the time he did his analysis, Value Line published projected

11   dividend and earnings per share data for Dr. Hadaway's companies for 2003,

12   2004, and the 2006-2008 period. He assumes the 2006-2008 projections will occur

13   in 2007.

14   Interestingly, in attempting to predict a stock price in 2007 for each

15   company in his sample group, Dr. Hadaway elects to multiply the current

16   price/earnings ratio by Value Line's projected earnings per share in 2007.

17   However, along with the earnings per share projected in the 2006-2008 period,

18   Value Line also projects the price-earnings ratio it expect to exist in the future for

19   the companies it follows. If investors rely on Value Line projections, as Dr.

1   Hadaway assumes, it is reasonable to believe that they would estimate the stock

2   price in 2007 using a projected price-earnings ratio, rather than the one that exists

3   currently.

4

5 **Q.   What would be the results of Dr. Hadaway's analysis if he had simply used**

6   **Value Line's projected price-earnings ratio, rather than the current p/e ratio?**

7 A.   As shown in Exhibit ___(SGH-17), page 2, based on the most recent Value Line

8   data, the resulting median cost of equity would be 5.6%, as opposed to the 9.8%

9   produced in Dr. Hadaway's "Market Price Approach" non-constant growth DCF

10   analysis (Exhibit No. ___ (SCH-5) at 3).

11   That 420 basis point difference in the results of Dr. Hadaway's "Market

12   Price Approach" is the result of a different, but reasonable, assumption

13   regarding the estimate of stock prices in the future, and indicates how sensitive

14   that type of analysis is to the stock price projections on which it is based. Also,

15   there is a very wide variation in results—the standard deviation of the DCF

16   results shown on page 2 of Exhibit ___(SGH-18) is approximately 2.5%. Those

17   data mean that we can be 95% confident that the true cost of equity for the firms

18   in Dr. Hadaway's analysis falls between two standard deviation units on either

1   side of the average, or a range of 0.6% to 10.6% [5.6% ± (2 x 2.5%)]. Those are not

2   reliable results.

3

4 **Q.**   **Can you explain Dr. Hadaway's second multi-stage DCF analysis—the low**

5   **near-term, two-stage growth DCF model?**

6 A.   Yes. The fact that the model contains two growth stages, the first of which is

7   termed "low" growth, should be a clue that Dr. Hadaway's second stage growth

8   (which obtains in most of the years studied) is "high." In this model, Dr.

9   Hadaway assumes that "first stage" or four-year growth will equal the growth

10   rate he uses for his Market Price non-constant DCF analysis. The average growth

11   rate in dividends for his sample group over that initial period, according to

12   Value Line is 3.7% (i.e., the "low growth" near-term rate).

13   Next, for determining the dividends for every company for each year from

14   year 5 through year 150 (i.e., through the year 2153), Dr. Hadaway assumes that

15   the growth in the dividends for each of those companies will change from the

16   average of 3.7% during the first four years to 6% (i.e., the "high growth" second

17   stage growth rate).[21] That 6% dividend growth assumption is drawn from the

_____

[21] It is interesting to note that in the year 2153, the end of Dr. Hadaway's study period, the average annual dividend for each of the companies in his sample will be $8,871/share, according to his model.

1   average GDP growth over the past 20 years. Again, Dr. Hadaway provides no

2   explanation why it is reasonable to believe that the dividends for this group of

3   companies will grow for the next 145 years at the same rate as did the GDP over

4   the past 20 years. Finally, the indicated cost of equity is derived by solving an

5   algebraic puzzle through an iterative process in which Dr. Hadaway selects an

6   equity cost rate and compares the calculated present value of the 150-year stream

7   of dividends to the current stock price, narrowing the difference by re-selecting

8   the cost rate until the difference between the present value of the future cash

9   flows of each company equals the current stock price, producing his multi-stage

10   DCF equity cost estimate.

11   I have taken care to explain Dr. Hadaway's multi-stage DCF calculations

12   (which he neglects to do in his testimony) in order to underscore the detailed,

13   time-specific assumptions that are necessary to reach a result in that process. If

14   any of the assumptions made in that analysis are not realized the results would

15   not be accurate.

16   As I noted above, the single-stage DCF was derived from the "general" or

17   multi-stage DCF in order to *reduce the number of required assumptions* and

18   minimize the computational difficulties. In my view, Dr. Hadaway's multi-stage

19   DCF models take a step backward in that regard and add considerably more

1   uncertainty to the process of estimating the cost of equity. In so doing, Dr.

2   Hadaway has diminished the reliability of those results.

3

4 **Q.   Regardless of your reservations about the accuracy of the model, have you**

5   **applied Dr. Hadaway's two-stage DCF analysis using currently available**

6   **market data?**

7 A.   Yes. The results of using Dr. Hadaway's two-stage DCF model with current data

8   available in the most recent edition of Value Line, and including the high 6%

9   dividend growth beginning simultaneously in the fifth year for all companies,

10   are shown on page 3 of Exhibit ___(SGH-17) attached to my testimony. Using

11   current data, the median result of Dr. Hadaway's two-stage low/high growth

12   DCF is 10.2%.

13

14 **Q.   Is there evidence in the financial literature that multi-stage DCF analyses may**

15   **not provide reliable equity cost estimates?**

16 A.   Yes. At page 25 of his Direct Testimony in this proceeding, Dr. Hadaway refers

17   to a paper by Harris and Marston (H&M) on the subject of risk premiums.[22] In

18   determining the risk premium of the companies studied, they used a single-stage

_____

[22] Harris, R. & Marston, F., "Estimating Shareholder Risk Premia Using Analyst's Growth Forecasts," <u>Financial Management</u>, at 63-69 (Summer 1992).

1   DCF model to estimate the cost of equity and commented about multi-stage DCF

2   models as follows:

3   One could alternatively estimate a nonconstant growth
4   model, although the proxies for multistage growth rates are
5   even more difficult to obtain that single stage growth
6   estimates. Marston, Harris and Crawford [cite omitted]
7   examine publicly available data from 1982-1985 and find
8   that plausible measures of risk are more closely related to
9   expected returns derived from a constant growth model than
10   to those derived from multistage growth models. These
11   findings illustrate empirical difficulties in finding empirical
12   proxies for multistage growth models for large samples.
13   *(Harris, R. & Marston, F. "Estimating Shareholder Risk Premia*
14   *Using Analyst's Growth Forecasts," Financial Management, at n.*
15   *4 (Summer 1992) (citations omitted)).*
16

17   **Q.   Does this conclude your comments on the company's multi-stage DCF**

18   **analyses?**

19   A.   Yes.

20

21   **Q.   What other equity cost estimation analyses does Dr. Hadaway present in his**

22   **testimony in this proceeding?**

23   A.   Dr. Hadaway utilizes a risk premium analysis in his direct testimony in this case,

24   which compares historical allowed equity returns to annual average bond yields.

25   That study indicates that the average risk premium between allowed returns for

26   electric utilities and bond yields over the past 23 years is 2.95%. (Hadaway

1   Direct, Exhibit ___(SCH-6), at 1). However, Dr. Hadaway concludes that a

2   negative correlation exists between current bond yields and risk premiums and,

3   due to that relationship, imputes a larger risk premium to reach an equity cost

4   estimate of 10.9%.

5   It is important to understand at the outset that the annual cost rate

6   differences between the allowed returns and utility bond yields shown in Dr.

7   Hadaway's Exhibit SCH-6 are not necessarily reliable indicators of investor-

8   required risk premiums. First, the allowed returns are simply averaged over all

9   the available rate case decisions during a calendar year. That means that the

10   capital market data that the regulatory body considered was drawn from a time

11   prior to the decision rendered and the allowed return might not correlate with

12   decision-time-specific macro-economic events. In some cases that period of time

13   between the hearing and the decision can be substantial.

14   Second, the relative risk of the utility for which the equity return was

15   determined is not a factor in the analysis. For example, the allowed return on

16   equity for a "BB"-rated firm would simply be averaged in with the other returns

17   allowed during a calendar. Third, while the inclusion of an outlier may not be

18   problematic in years in which there are many rate case decisions, this would not

19   be the case in years in which the number of decisions is small. Moreover, the

1   data accompanying the publication from which Dr. Hadaway took his allowed

2   return information[23] shows that the number of regulatory decisions has

3   decreased in recent years (e.g., 7 decisions in 2001 versus 45 in 1993). Even the

4   source on which Dr. Hadaway relies discusses that problem:

5   As the number of equity return determinations has declined,
6   the average authorized return now has less of a relationship
7   to the return that the typical electric, gas or
8   telecommunications company has an opportunity to earn.
9   *(Regulatory Research Associates, Major Rate Case Decisions—*
10   *January-September 2003 (Oct. 8, 2003)).*

11

12   **Q.   You noted that Dr. Hadaway emphasizes a negative correlation between**

13   **interest rates and risk premiums in reaching his equity cost estimate. Could**

14   **you please comment on this issue?**

15   A.   In his Exhibit SCH-6, Dr. Hadaway subtracts average bond yields for utilities

16   from the equity returns allowed utility companies over the past 20 years. Then,

17   through a regression analysis, he describes a relationship between bond yields

18   and risk premiums and uses that relationship, with a cost of debt to estimate the

19   Company's cost of equity. Aside from the problems that exist generally with the

20   data used in the analysis, which I noted above, there are additional problems

21   with Dr. Hadaway's particular approach. Those problems further illustrate why

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[23] 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   Dr. Hadaway's adjustments to historically derived risk premiums are not reliable

2   for equity cost estimation purposes.

3   First, because the object of the exercise is to estimate the current cost of

4   equity capital, the risk premium procedure followed by Dr. Hadaway could

5   produce an accurate estimate of that parameter for electric utilities' operations if,

6   and only if, the equity return allowed for each company were equal to the cost of

7   equity, and the risk of the utility sample groups were similar to that of

8   PacifiCorp. Also, as I noted above, returns allowed in any one year could have

9   been based on record evidence in prior years, depending on the particular

10   circumstances, which would reduce the reliability of the comparison of average

11   annual allowed returns and current bond yields as an indicator of the cost of

12   equity capital. Even assuming that the allowed returns were equal to the sample

13   companies' cost of equity, they would be useful as a measure of equity capital

14   costs only if they were contemporaneously compared to bond yields.

15   In addition, utility market prices were below book value in the early

16   1980s, and significantly above book value since the mid-1980s. These data

17   indicate that the equity returns allowed during those periods were not equal to

18   the utilities' cost of capital. For example, the negative 0.4% risk premium noted

19   by Dr. Hadaway in 1981 was probably too low because the allowed returns at

1   that time were resulting in market prices below book value for utility operations.

2   Similarly, the risk premiums shown from 1988 to 2003 in Dr. Hadaway's risk

3   premium study can be said to overstate the actual risk premium because the

4   returns allowed were resulting in market prices for utility operations that were

5   well above book value.

6   Although the above-mentioned factors raise concerns about the

7   applicability of such a historically oriented approach to cost of capital analysis,

8   they are common to all such risk premium-type analyses. The second flaw

9   evidenced in Dr. Hadaway's Exhibit SCH-6 is particular to this analysis.

10   Although Dr. Hadaway's regression analysis shows a strong correlation

11   between risk premium and bond yields ($r^2 = 0.83$), that is not surprising because

12   the resultant risk premium is a direct arithmetic function of the prevailing bond

13   yield. A high correlation coefficient is not meaningful if the dependent and

14   independent variables are said to be "auto-correlated."

15   If regression variables are auto-correlated, the differences between the

16   actual values and the regression equation (the residuals) have a lagged

17   correlation with their own past values (i.e., they are not independent of each

18   other). Therefore, the regression equation will not necessarily serve as an

19   accurate predictor of the relationship between the variables because the residual

1   error will continue to increase over time. This can be especially problematic in

2   time-series studies of the type included in Dr. Hadaway's risk premium analysis.

3   Dr. Hadaway does not offer the Commission any information regarding

4   whether or not his data are auto-correlated. However, because one of the

5   variables, the risk premium, is an arithmetic function of the other (the bond

6   yield) it is reasonable to believe (especially in the absence of any showing

7   otherwise) that those data series are auto-correlated.[24] Therefore, results of

8   Dr. Hadaway's risk premium regression analysis may not be a reliable indicator

9   of the cost of equity capital and should be given little weight by this

10   Commission.

11

12   **Q.   Does Dr. Hadaway reference support in the financial literature for the inverse**

13   **relationship between interest rates and risk premiums?**

14   A.   Yes, at page 27 of his Direct Testimony (footnote 2), Dr. Hadaway refers to the

15   Harris and Marston (H&M) study, a copy of which he provided in response to

16   data requests. While that study does postulate a negative relationship between

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[24] 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, at n.12 (Summer 1992)).

1   interest rates and bond yields, Dr. Hadaway fails to note two aspects of that

2   study.

3   First, the study acknowledges other academic studies, which either show

4   that there is a positive relationship between interest rates and risk premiums or

5   that the relationship changes from time to time:

6   Studying changes in risk premia for utility stocks,
7   Brigham, et al [cite omitted] conclude that, prior to 1980,
8   utility risk premia increased with the level of interest rates,
9   but that this pattern reversed thereafter, resulting in an
10   inverse correlation between risk premia and interest rates.
11   Studying risk premia for both utilities and the equity market
12   generally, Harris [cite omitted] also reports that risk premia
13   appear to change over time. Specifically, he finds that equity
14   risk premia decreased with the level of government interest
15   rates, increased with the increases in the spread between
16   corporate and government bond yields, and increased with
17   increases in the dispersion of analysts' forecasts. *(H&M*
18   *Study, at 68.)*
19
20   Second, H&M postulate that the apparent negative correlation between

21   interest rates and bond yields may have resulted from the unusually high

22   interest rates that existed at the beginning of Dr. Hadaway's study period. They

23   also note that that hypothesis would require further study:

24   Such a negative relationship [between interest rates and risk
25   premia] may result from increases in the perceived riskiness
26   of investment in government debt at high levels of interest
27   rates. A direct measure of uncertainty would be necessary to
28   test this hypothesis.   (*Id.* at 69.)
29

1   Finally, according to his own prior testimony, Dr. Hadaway has recognized that

2   due to the riskiness of debt during the early 1980s, risk premiums were

3   inordinately small:

4   Historically, utility company equity returns have averaged
5   about 300 basis points above comparable risk class bond
6   yields. However, dramatic shifts in capital markets have
7   occurred recently; and more importantly, extreme volatility
8   has characterized the bond markets since the shift in Federal
9   Reserve policy of October 1979. These factors necessitate a
10   reassessment of risk relationships among security categories.
11   . . .
12   This evidence leads to the conclusion that long-term
13   bonds have come to be viewed by the market as being much
14   more risky than has historically been the case. It is difficult,
15   if not impossible, to assess the current spreads between
16   required returns and bond yields, but the evidence indicates
17   that the risk premium is significantly less than was true in
18   the past. The relationship may, in fact, be zero or even
19   negative with respect to the highly volatile long-term bond
20   market. *(Texas Public Utility Commission, Docket No. 4240,*
21   *Texas New Mexico Power Company, Direct Testimony of Sam*
22   *Hadaway, at 29, 30 (March 1982)).*
23
24   Therefore, the authority on which Dr. Hadaway relies to confirm his negative

25   correlation theory postulates that the negative correlation may be due to an

26   abnormal relationship between debt and equity returns in the early 1980s—a

27   condition that Dr. Hadaway has recognized in prior testimony.

28

1   **Q. Are there other, more recent, studies that examine the relationship between**

2   **risk premiums and interest rate levels?**

3   A. Yes. Members of the Virginia Corporation Commission Staff published a study

4   of that relationship in 1995,[25] subsequent to the H&M study. That paper is

5   interesting in that it shows that within certain shorter-term sub-periods an

6   inverse relationship appears to exist, but over the entire 1980 through 1993 study

7   period, as interest rates declined from the very high levels of the early 1980s,

8   absolute risk premium levels also fell. Moreover, this study was based on utility

9   market data and estimated equity cost rather than allowed equity cost rates. The

10 H&M study was based on equity cost estimates for firms in the S&P 500, not

11 utility companies.

12 Also, the cost of capital indications that result from the Virginia

13 Commission Staff study tend to be substantially lower than those presented by

14 Dr. Hadaway. The average risk premium between electric utility cost of equity

15 and long-term Treasury bond yields averaged 3.21% over the 1980-1993 study

16 period and the average T-bond yield was 9.77%. Given that the most recent six-

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[25] Maddox, F., Pippert, D., & Sullivan, R., "An Empirical Study of Ex Ante Risk Premiums for the Electric Utility Industry," Financial Management, at 89-95 (Autumn 1995).

1   week average T-Bond yield is 4.93%,[26] the difference between the current T-Bond

2   yield and the yield that existed, on average, during the study period (9.77%), is

3   4.84%. Multiplying that yield difference by the relationship found in the Virginia

4   Commission Staff study produces a current risk premium of 5.00% (4.84% x 0.37

5   = 1.79% + 3.21% = 5.00%). That "adjusted" risk premium, added to the current T-

6   Bond rate (4.93%) produces a cost of capital indication of 9.93% (4.93% + 5.00%).

7   Therefore, if one elects to believe such data are reliable, there are studies

8   of the relationship between interest rates and risk premiums in the literature that

9   1) show a declining trend in risk premiums over the 1980s and early 1990s; 2) are

10   based on the cost of equity of utilities, not unregulated firms; and 3) produce

11   equity cost estimates which are substantially below those presented by Dr.

12   Hadaway.

13

14 **Q.   Please summarize what you perceive to be the flaws in Dr. Hadaway's risk**

15 **premium analysis.**

16 A.   Dr. Hadaway's risk premium analysis of the cost of equity capital, 1) is based on

17   studies in which the data may be unreliable, 2) ignores more recent studies

18   which indicate much lower risk premiums for electric utility operations, and 3) is

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[26] Data from the six most recent weekly editions of Value Line Selection & Opinion (March 26 through April 30, 2004).

1   based on a relationship between bond yields and risk premiums which Dr.

2   Hadaway has not shown to be statistically reliable. In sum, I do not believe Dr.

3   Hadaway's risk premium analysis provides information that would be useful to

4   this Commission in its task of determining a generic cost of equity capital for

5   PacifiCorp's electric utility operations in Washington.

6

7   **Q.   Does this conclude your discussion of Dr. Hadaway's cost of capital analysis**

8   **in this proceeding?**

9   A.   Yes, it does.

10

11   **Q.   Does this conclude your direct testimony, Mr. Hill?**

12   A.   Yes, it does.