BEFORE THE WASHINGTON

UTILITIES & TRANSPORTATION COMMISSION

WASHINGTON UTILITIES AND TRANSPORTATION COMMISSION,

Complainant,

v.

PACIFIC POWER & LIGHT COMPANY

Respondent.

DOCKET UE-140762 ET AL.

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

(RED-LINED)

ON BEHALF OF

PUBLIC COUNSEL

December 1, 2014

REDACTED VERSION

REVISED DIRECT TESTIMONY OF STEPEHN G. HILL (SGH-1CTr)
DOCKET UE-140762 ET AL.

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I. INTRODUCTION / SUMMARY

Q: Please state your name and business address.

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

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

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

Q: On behalf of whom are you testifying?

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

Q: Briefly, what is your educational background?

A: After graduating with a Bachelor of Science degree in Chemical Engineering from Auburn University in Auburn, Alabama, I was awarded a scholarship to attend Tulane Graduate School of Business Administration at Tulane University in New Orleans, Louisiana. There I received a Master's Degree in Business Administration. Subsequently, I was awarded the professional designation of "Certified Rate of Return Analyst," by the Society of Utility and Regulatory Financial Analysts. This designation is based upon education, experience, and the successful completion of a comprehensive examination. I have also served on the Board of Directors and am currently Vice President of that national organization. A more detailed account of my educational background and occupational experience appears in Exhibit No. SGH-2.

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

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

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

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

A: Pacific Power & Light Company (Pacific Power, the Company) is seeking approval from the Washington Utilities and Transportation Commission (UTC) for a rate increase for its Washington electric utility operations. Pacific Power is a subsidiary of PacifiCorp, which serves customers in six Western states. PacifiCorp, in turn, is a subsidiary of Berkshire Hathaway Energy Company (BHE, formerly Mid-American Energy Holdings Company), a utility holding company that serves utility customers in 11 states and has unregulated operations as well (about 24% of revenues in the first half of 2014 were from unregulated operations).[1]

As part of the rate increase sought by Pacific Power, the Company is requesting recovery of a return on common equity of 10.0%, a current embedded cost of debt of 5.19%, and an after-tax overall rate of return of 7.67%, based on a capital structure consisting of 51.73% common equity and 48.06% long-term debt.[2] Public Counsel has requested that I review the rate of return evidence submitted by the Company and undertake my own analysis of the current market-based cost of common equity, and an appropriate ratemaking capital structure.

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

[1] Berkshire Hathaway Energy Company, S.E.C. form 10-Q, June 30, 2014, p. 29.
[2] The Company also presents an "alternative" cost of capital request of 7.99%, based on a 49.10% common equity ratio, a 50.69% long-term debt ratio, a common equity cost rate of 10.28% and a long-term debt cost rate of 5.80%.

A: Yes. Attached to this testimony are fifteen Exhibits, Exhibit No. SGH-2 through Exhibit No. SGH-16, which provide the analytical support for the conclusions reached regarding the forward-looking overall cost of capital for Pacific Power's utility operations, which are discussed in the body of this testimony. These Exhibits were prepared by me and are correct to the best of my knowledge and belief.

Q: Please summarize your findings.

A: My testimony is organized into four sections. First, I discuss the cost of capital standard as a measure of the return to be allowed for regulated industries, and review the current economic environment in which the equity return estimate is made. Second, I review the Company's requested capital structure in comparison to capital structures employed by the utility industry in general. Further, I discuss the financial risk differences and cost of capital implications of the capital structure employed by Pacific Power's electric operating division, paying particular attention to the Company's alternative capital structure proposal and the difference in risk and return that exists in today's market between a utility common equity ratio of 51% and 49% (an issue raised by the Company).

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

Fourth, I discuss the shortcomings contained in the cost of capital analysis presented by Company witness, Mr. Kurt G. Strunk. Mr. Strunk's cost of capital analysis is flawed and results in an equity cost estimate that exceeds the actual

market-based cost of equity capital, and, ultimately, does not support the Company's equity return request of 10% to 10.28%.

I have estimated the equity capital cost of utility operations similar in operating (business) risk to the Washington operations of Pacific Power to be in the range of 8.50% to 9.50%, with a mid-point of 9.00%. Because the Company, with a slightly higher bond rating and a higher common equity ratio than the electric utility sample group, has lower-than-average financial risk, an equity return below the mid-point of the current cost of equity range is appropriate for ratemaking purposes. To account for the reduced financial risk, a reduction of 10 basis points in the allowed return is reasonable, and I recommend a return on equity for Pacific Power of 8.90%.

Exhibit No. SGH-15 shows that, if Pacific Power is allowed a return on common equity of 8.90%, a ratemaking capital structure consisting of 49.10% common equity, and 50.90% fixed-income capital (preferred stock, long-term debt, and short-term debt), the after-tax overall return would be 7.01%~~7.32%~~. With that overall return, the Company would be provided the opportunity to achieve a pre-tax interest coverage of 3.56~~3.28~~ times, which is ~~similar to, but~~ in excess of, the pre-tax interest coverage earned by the PacifiCorp, on average, over the past five years (3.09x).[3] Therefore, the return I recommend appropriately balances the interests of the Company and its ratepayers, and provides the Company an opportunity to earn a return sufficient to support its financial well-being.

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

A: The Supreme Court of the United States has established, as a guide to assessing an appropriate level of profitability for regulated operations, that investors in such firms are to be given an opportunity to earn returns that are sufficient to attract capital and are comparable to returns investors would expect in the unregulated sector for assuming the same degree of risk. The *Bluefield Waterworks v. PSC* (Bluefield) and *FPC v. Hope Natural Gas* (Hope) cases provide the seminal decisions.[4] These criteria were restated in the *Permian Basin Area Rate Cases* (Permian Basin).[5] However, the Court also makes quite clear in Hope that regulation does not guarantee profitability and, in Permian Basin, that while investor interests (profitability) are certainly pertinent to setting adequate rates, those interests do not exhaust the relevant considerations.

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

[3] PacifiCorp, S.E.C. Form 10-K, 2013, Schedule 12.2-"Statements of Computation of Ratio of Earnings to Combined Fixed Charges and Preferred Stock Dividends." 2009 (2.99), 2010 (3.01x), 2011 (2.96x), 2012 (2.93x), and 2013 (3.58x); average = 3.09x.
[4] *Bluefield Water Works v. PSC*, 262 US 679 (1923); *FPC v. Hope Natural Gas Company*, 320 US 591 (1944).
[5] Permian Basin Area Rate Cases, 390 US 747 (1968).

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

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

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

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

Q: Are there independent indications that the return investors expect to earn on their equity investments is similar to the 9.00% cost of equity you estimate for Pacific Power in this proceeding?

A: Yes. Pacific Power's parent, PacifiCorp, like most large corporations has a substantial investment portfolio and, at year-end 2013, had hundreds of millions of dollars invested in common equities.[6] When asked in Public Counsel Data Request No.12 to provide the long-term expected return on their common equity investment as published publicly in their U.S. Securities and Exchange Commission (S.E.C.) filings related to their expected pension fund returns, the Company provided that information under confidential seal. The Company's response indicates that in building their long-term return expectations, the Company uses a return expectation for common equity investments ranging from approximately [**BEGIN CONFIDENTIAL**] [redacted] [**END CONFIDENTIAL**]. Therefore, the return I recommend that this Commission use to determine the rates for the Company's electric service in Washington are similar to or higher than those used by the Company itself in determining its own equity return expectations. The equity return I recommend is reasonable by those comparative standards.

[6] PacifiCorp 2013, S.E.C. Form 10-K, p. 84.

It is important to note that the pension fund expense the Company requested to be included in rates in this case is based on the relatively modest expected equity returns cited above. If the pension fund expenses were based on the much higher equity return expectations estimated by Mr. Strunk (10.0% - 10.28%), the equity return expectation for PacifCorp's pension fund would be much higher, and the required annual contribution needed to meet that pension return requirement would be lower than that requested in this rate proceeding. The Company should not be able to have it both ways in the same marketplace for common equity investments—i.e, a high pension fund expense (based on a low equity return expectation) and a high return on equity based on a high equity return expectation. It is reasonable to believe that the pension fund return expectations, which follow the Company's professional advisor's guidelines, are accurate and Mr. Strunk's cost of equity is overstated as an estimate of investors' equity return expectations in today's capital markets. As my review of Mr. Strunk's equity cost analyses in Section IV of this testimony will show, his equity cost estimates are overstated. When adjusted to remove those overstatements, these analyses produce results that are similar to the equity return estimates on which the Company's pension fund returns are based.

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II. ECONOMIC ENVIRONMENT

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

A: The cost of equity capital is an expectational, or *ex ante*, concept. In seeking to estimate the cost of equity capital of a firm, it is necessary to gauge investor expectations with regard to the relative risk and return of that firm, as well as that for the particular risk-class of investments in which that firm resides. Because this exercise is, necessarily, based on understanding and accurately assessing investor expectations, a review of the larger economic environment within which the investor makes his or her decision is most important. Investor expectations regarding the strength of the U.S. economy, the direction of interest rates, and the level of inflation (factors that are determinative of capital costs) are key building blocks in the investment decision. The analyst and the regulatory body should review those factors in order to assess accurately investors' required return—the cost of equity capital to the regulated firm.

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

A: The changes in U.S. government interest rates over the past decade provide a useful description of the state of the economy because those interest rates have a fundamental impact on economic activity. The Federal Reserve (Fed) acts to exert control on the economy through its ability to withhold or inject money into the economy and, in so doing, control short-term Treasury yields. When the economy is "overheated" and inflation is above acceptable levels due to a rapidly growing economy and commodity shortages, the Fed will raise short-term rates,

which acts to retard economic growth. As shown in Chart I below, during the 2004-2007 period, the Fed raised short-term interest rates to levels equivalent to long-term Treasury rates (long-term Treasury yields are usually 2% higher than short-term debt yields). That action worked to reduce economic growth and alleviate inflation concerns and, as a result, the Fed began to lower short-term interest rates.

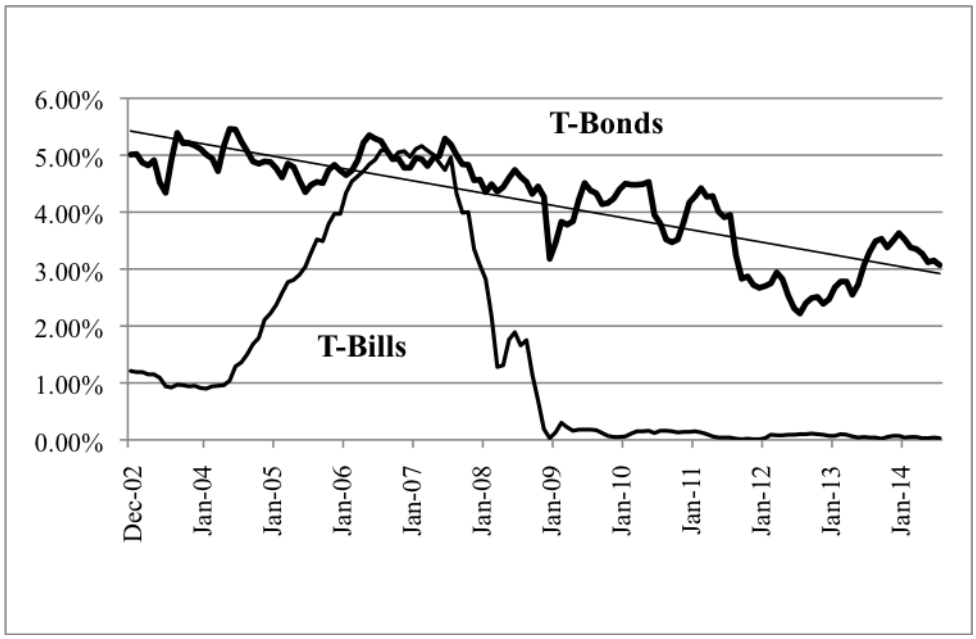
The financial crisis, initiated by a collapse in the real estate market in 2008, required the Fed to reduce short-term debt rates in order to attempt to keep the U.S. economy from falling into a severe recession. The financial crisis did cause a recession in the U.S., but the Fed's actions to inject money into the economy, through lowering short-term rates and buying back outstanding long-term U.S. debt (propping up prices and keeping yields relatively low), mitigated the economic downturn.

Therefore, as shown in Chart I below, over the past decade there have been wide fluctuations in *short-term* interest rate levels as the Fed raised and lowered the Federal Funds rate to slow down and encourage (respectively) economic growth. However, *long-term* interest rates (20-year T-bonds) have ranged from 3.5% to 5% over most of that time period, with a slow and relatively steady downward trend. As a result of the 2008/2009 economic downturn and the Fed's open-market purchase of long-term Treasury bonds, those yields dipped, for a time, below the lower end of that historical range. As the economic downturn moderated and a modest recovery began to appear, the Fed began to taper its bond

buy-back program and long-term T-bond yields have returned to their historical trend.

Chart I

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



Although the economy, after faltering in 2008 and early 2009, has shown positive growth with the Fed's accommodative monetary policy, that growth has been modest. Gross Domestic Product (GDP) growth has been in the range of about 3%--substantially below the 5% to 6% common during a recession "recovery." Also, that rate of growth, while it has added jobs to the economy and lowered the unemployment rate, has done so slowly. Over the five years since the economic crisis of 2008/2009, the jobless rate has fallen from more than 8% nation-wide to approximately 6.7% today, according to the Bureau of Labor Statistics.[7]

[7] www.bls.gov/cps/.

As a result of the moderate economic growth and relatively high unemployment, the Fed is continuing its accommodative monetary policy by keeping short-term Treasury rates near zero, as it begins to "taper" or ramp down its open-market purchases of long-term U.S. Treasury bonds. Although there have been predictions of increasing Treasury bond yields ever since the recession, those yield increases have not occurred because economic growth remains moderate. Those predictions of higher Treasury yields were not unreasonable because bond yields do often increase following a recovery from a recession. However, as shown in Chart I, those predictions of higher bond yields have not come to pass, and long-term Treasury yields are lower now than they were in 2010 and 2011. According to the most recent Federal Reserve Statistical Release H.15, the average 30-year T-Bond yield in July 2014 was 3.33%.[8]

The Fed has also announced its intention to keep short-term rates low until unemployment declines significantly and, as noted with the moderate economic growth in the U.S. economy, unemployment remains stubbornly high. Therefore, fundamental long-term capital costs have not increased as a result of the financial crisis in 2008/2009. They are currently in line with the long-term downward trend in capital costs that began prior to the financial crisis, and are likely to continue to remain low.

It is reasonable to believe that the recent yields (approximately 3.3%) on long-term (30-year) Treasuries are representative of investors' current long-term

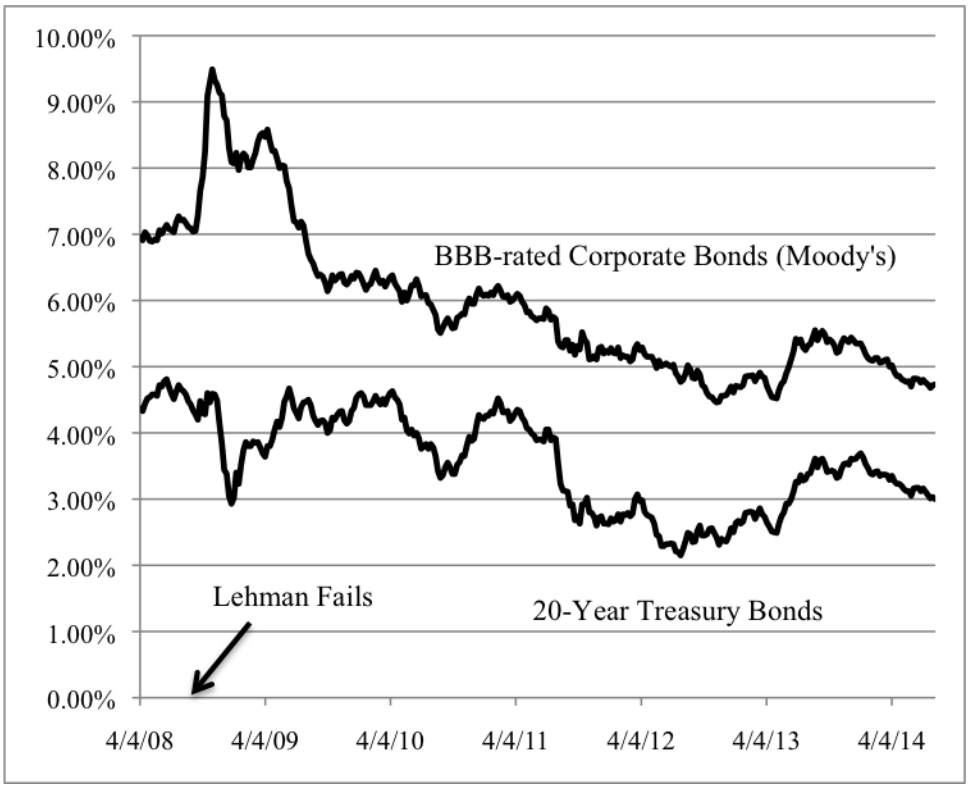
[8] http://www.federalreserve.gov/Releases/H15/Current/, August 11, 2014.

risk-free return expectations. Therefore, that fundamental building block of capital costs (long-term T-bond yields) provides a reliable indication that, in the current economic environment, capital costs continue to be lower than they were prior to the economic troubles of late-2008 and early-2009.

A review of corporate bond yield history, however, indicates that during the financial crisis, corporate bonds did not experience declining yields. The relative movement of BBB-rated corporate bond yields and U.S. Treasury yields is shown in Chart II, below.

Chart II

Corporate Bonds v. U.S. Treasury Interest Rates



Following the failure of Lehman Brothers, and as the full extent of the debt/derivative risk overhang in the financial industry became known, BBB-rated

corporate bond yields began to increase, even as long-term Treasury yields remained relatively steady at about 4.5%. According to the database of the Federal Reserve, BBB-rated corporate bond yields rose dramatically by 250 basis points as the risk of default and the nervousness of investors increased.

As liquidity has been restored to the corporate bond markets, corporate bond yields have declined substantially from the highs established in the fall of 2008. Investors' concerns have eased and corporate bond yield have declined well below pre-crisis levels. As a result, the yield-spread differential between corporate bonds and long-term Treasury securities have declined to a more normal level and corporate bond yields are once again closely tracking Treasury yields, as shown in Chart II. Therefore, because both the absolute level of the risk-free rate and the yield spread between Treasury bonds and corporate bonds have declined since the financial crisis, any concerns that utilities will experience continuing financial difficulty in the U.S. capital markets as a result of the 2008/2009 financial crisis would not be well-founded.

On balance, then, the fixed-income data available in the financial marketplace indicate that, while there were technical difficulties in the corporate bond market that drove up yields for a period of time during the 2008/2009 financial crisis, those difficulties have not proven to be a long-term phenomenon. Those data also indicate that investors' required return for a risk-free investment and for corporate debt remain low by historical standards.

Simply put, the cost of capital continues to be low. As shown in Chart III below, even with the recent small increase in bond yields that occurred in

mid-year 2013 due to investors' expectations regarding Fed "tapering" (i.e., reducing a bond-buying program that held down long-term Treasury yields), current corporate interest rates remain at levels not seen since the 1960s—more than 45 years ago.

Chart III[9]

BBB-rated Corporate Bond Yields

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

A: As noted, interest rates remain low following the financial crisis, despite the predictions that a recovering economy would bring interest rate increases. While that expectation for interest rate increases continues, it is contingent on an improving economy. Although the U.S. economy has shown positive growth since the recession, that growth has been modest and not rapid enough to create the capital or commodity shortages that would drive up inflation and interest

[9] Data from Federal Reserve Statistical Release H.15.

rates. Yet, as shown in Value Line's most recent quarterly forecast, the expectations for increased interest rates in the future continue.

> **Economic Growth:** As noted, after a weather-impacted start, in which the nation's gross domestic product contracted by a recession-like 2.1% in the opening period, things turned around nicely in the spring. On point, notable gains in nonresidential fixed investment, consumer expenditures, exports and inventory investment all helped push GDP forward by a much better-than-expected 4.0% during the second quarter….Our sense is that growth will average 3.0%-3.5% over the next four to six quarters.
>
> Our outlook for the following few years is less well defined. Much of the outcome then could be predicated on the course of global events, the level of success attained by the Fed in concluding its unprecedented monetary easing….Our sense is that occasional pricing pressures will evolve later in the decade, but, for now, continuing inflation stability seems a good bet.
>
> **Inflation**: As indicated, inflation may start to trend selectively higher over the next several years, but our sense is that such increases will be modest and come in fits and starts rather than all at once.
>
> **Interest Rates:** The question here is not whether the Fed will opt to raise interest rates, but rather when it will do so. The consensus is that the lead bank will take that step in 2015—the unknown being if it will do so early in the year, as some now maintain, or wait until midyear, as others suggest. Our view is that the Fed has followed a cautions path all along and that it will likely not veer from that course under the stewardship of the dovish Janet Yellen.[10]

In that most recent *Quarterly Economic Review* cited above, Value Line projects long-term Treasury bond rates will average 3.5% through 2014, and 3.9% in 2015. As noted previously, the Fed's current Statistical Release H.15 indicates that the average 30-year Treasury bond yield in July 2014 was 3.33%.

It is important to note that, since the economic recession in 2008/2009, Value Line has continually predicted interest rate increases based on a more rapidly growing economy and rising inflation (as have most of the interest rate

[10] The Value Line Investment Survey, *Selection & Opinion*, August 22, 2014, p. 4680.

prognosticators), however, none of those predicted increases have materialized. For example, in February 2009 Value Line projected that long-term Treasury yields would average 6.3% in 2013.[11] The actual average yield on long-term Treasury bonds in 2013 ranged from 3.12% (20-year T-bonds) to 3.45% (30-year T-bonds), according to the Fed's Statistical Release H.15. In 2010, Value Line projected long-term T-bonds would yield 6.30% in 2014.[12] Thus far in 2014, the average long-term Treasury bonds yield has ranged from 3.27% (20-year T-bonds) to 3.53% (30-year T-bonds). On average, Value Line's T-Bond interest rate projections were roughly 250 to 300 basis points too high.

Therefore, the current expectation with regard to long-term interest rates is the same as it has been for some time, i.e., that they are expected to move slightly higher in the future, provided the economic recovery continues at a steady pace and inflation, not deflation, prevails. Simply put, due to the pace of the economy and relatively low core inflation, capital costs are low and are expected to remain low until the economy shows more rapid growth, which Value Line cautiously expects to occur over the next few years. As noted, Value Line's projections of increased economic growth and rising interest rates have been off the mark for a few years. If and when the long-awaited and often-predicted robust economy does eventually appear, interest rates and capital costs are expected to increase moderately.

[11] Value Line, *Selection & Opinion*, February 2, 2009, p. 3,679.
[12] Value Line, *Selection & Opinion*, February 26, 2010, p. 3,019.

III. CAPITAL STRUCTURE

Q: How are the Company's operations capitalized?

A: Pacific Power is an operating division of PacifiCorp, not a separate corporation, and, thus, does not have a stand-alone balance sheet or capital structure. Also, the Washington jurisdictional operations of Pacific Power are a small part (approximately 7%) of PacifiCorp.

PacifiCorp has two other operating divisions—Rocky Mountain Power (electric utility operations in Utah, Wyoming, and Idaho) and PacifiCorp Energy (electric generation, commercial and trading, and coal mining operations). Those divisions, likewise, are not incorporated and do not have stand-alone balance sheets or discernable capital structures. Therefore, the "company" capital structure we review in this proceeding is that of the immediate parent PacifiCorp, not Pacific Power (the division that has electric utility operations in Utah, Oregon, Wyoming, Washington, and California).

The capital structure requested by the Company in these proceedings is found on page 2 of the Direct Testimony of Company witness, Mr. Bruce N. Williams and consists of 51.73% common equity, 0.02% preferred stock, 48.05% long-term debt, and 0.19% short-term debt. As shown in Exhibit No. SGH-3, page 1, the Company's requested capital structure is similar to the mix of capital that has appeared on PacifiCorp's balance sheet over the past five quarters.

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

A: The amount of equity capital included in PacifiCorp's capital structure is substantially greater than that used, on average, in the electric industry today. Because, on a pre-tax basis, common equity capital is roughly three times more costly than debt, the capital structure selected by PacifiCorp is more costly to consumers than that of the electric industry in general.

Exhibit No. SGH-3, page 2 shows the average common equity ratio of the electric companies in the electric utility industry today is 46.9%. For the combination electric companies, the average common equity ratio is 46.5%, and for the entire electric industry (electric companies as well as electric combination companies) is 46.7%.[13] The average common equity ratio of the sample group of companies selected by Company witness, Mr. Strunk to estimate the cost of equity for Pacific Power's Washington operations is 46.4%.[14]

Therefore, the Company's requested capital structure contains more common equity than average as well as more common equity than the sample group their witness uses to estimate the cost of equity. That higher amount of common equity, if incorporated in rates, would be more costly for ratepayers because equity capital, on a pre-tax ratemaking basis, is substantially more costly than long-term debt capital.

Q: How has PacifiCorp's parent holding company, Berkshire Hathaway Energy (BHE) been capitalized over the past five quarters?

[13] Data from July 2014 edition of AUS Utility Reports, pp. 5 and 6.
[14] *Op. cit.*. *See also*, Exhibit No. SGH-3, p. 5.

A: Page 3 of Exhibit No. SGH-3 shows that the average common equity ratio supporting the operations of PacifiCorp's parent from March 2013 through March 2014 is 40.95%, and, most recently in March 2014, BHE's common equity ratio was below that average, at 37.62%. That common equity ratio is substantially below that of both PacifiCorp and the electric utility industry in general. Again, because common equity is three times more costly than debt, BHE's capital structure (if employed in a rate-setting environment) would be substantially less costly than the equity-heavy capital structure requested by Pacific Power in this proceeding.

Q. Isn't BHE's bond rating substantially lower than that of PacifiCorp because of the large difference in the common equity ratio and the amount of leverage in the capital structure of the two entities?

A. No, it is not. Table I, below, shows the current corporate credit ratings for BHE and for PacifiCorp, as published by the three major rating agencies.

Table I: Current Credit Ratings

Rating Agency	BHE	PacifiCorp
S&P	BBB+	A-
Moody's	A3	A3
Fitch	BBB+	BBB

Moody's corporate credit rating is the same for both companies, Fitch has BHE one notch higher than PacifiCorp, and S&P has PacifiCorp one notch higher than BHE. Therefore the difference between PacifiCorp's common equity ratio of approximately 52% and BHE's common equity ratio of about 40% has not caused substantial differences in the corporate credit rating of those two companies. Moreover, the two companies are generally similar, comprised primarily of

regulated integrated electric utilities. BHE, the parent holding company, obtains more revenue from unregulated operations than does PacifiCorp and, therefore, should be considered to have somewhat higher business risk, and, as the average common equity ratios show, BHE has more financial risk than PacifiCorp. Nevertheless, as shown by the current bond ratings, those risk differences and capital structure differences do not result in substantially different credit ratings.

Q: Doesn't Company witness, Mr. Williams testify that if this Commission sets rates for the Washington operations of Pacific Power with a 49.10% equity ratio rather than the Company's requested 51.73%, PacifiCorp's credit rating will be lowered?

A: Yes, that is his testimony. However, the evidence cited above regarding the differences in the capital structures of BHE and PacifiCorp and the similarities of their corporate credit rating indicate that Mr. Williams' testimony on that point is not fact-based. Moreover, over the past eight years, PacifiCorp's common equity ratio has migrated from about 49% to about 52% as the Company has not paid dividends to its parent and has retained earnings to raise the common equity ratio. However, there has been no change in credit rating over that time period, as shown in Table II below.[15]

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[15] Early in 2014, Moody's raised the credit rating of almost all of the electric utilities in the U.S. citing very low default rates and regulatory credit support. PacifiCorp's credit rating was raised to A3 at that time—the same credit rating as BHE.

Table II: PacifiCorp's Corporate Credit Rating

	Dec-13	Dec-12	Dec-11	Dec-10	Dec-09	Dec-08	Dec-07	Dec-06
% Common Equity	53.2%	52.5%	51.3%	53.0%	50.8%	51.3%	49.4%	49.2%
Issuer/Corp. Rating								
S&P	A-	A-	A-	A-	A-	A-	A-	A-
Moody's	Baa1	Baa1	Baa1	Baa1	Baa1	Baa1	Baa1	Baa1
Fitch	BBB	BBB	BBB	BBB	BBB	BBB	BBB	BBB

Source: Pacific Power Response to Public Counsel Data Request No. 33.

Finally, it is important to recall that Pacific Power's Washington operations represent approximately 7% of PacifiCorp's overall revenues. Therefore, it is most unlikely that a small change in the allowed common equity ratio of a small portion of PacifiCorp would have any impact on PacifiCorp's credit rating. When asked in Public Counsel Data Request No. 47, to provide any examples in the electric industry of a credit rating downgrade due to a 2% reduction in the allowed common equity ratio for a regulated electric company that comprises less that 10% of a utility holding company, Mr. Williams provided none.

Q: How much would Pacific Power's Washington electric rates be increased annually if the allowed common equity ratio were raised from 49.10% (allowed in the Company's last rate proceedings) to the Company's requested 51.73%?

A: Page 4 of Exhibit No. SGH-3 shows that, based on the Company's requested capital structure and capital cost rates (i.e., a 51.73% equity ratio and a 10.0% cost of equity), and assuming a tax rate of 35%, the pre-tax overall cost of capital would be 10.46%. Page 4 also shows that if the allowed common equity ratio were lowered to 49.10% and the cost of common equity were increased by 11

basis points to account for that lower common equity ratio, the pre-tax overall cost of capital would be 10.27%. The difference between the pre-tax overall return with a 51.73% common equity ratio (10.46%) and the pre-tax overall return with a 49.10% common equity ratio (10.27%) is 0.19%. That reduction in pre-tax overall return multiplied by the Company's requested rate base ($850 million)[16] would produce a $1.6 million annual reduction in the Company's Washington revenue requirement. Therefore, setting rates with a common equity ratio of 49.10% rather than the Company's requested 51.73% common equity ratio will save the Company's Washington ratepayers approximately $1.6 million every year rates are in effect.

Q: In your analysis, you note that the cost of equity would increase by 11 basis points with a 2% decrease in the common equity ratio. How did you calculate that cost of equity differential?

A: The analysis is based on the sample group of electric companies utilized by Company witness, Mr. Strunk and is shown in page 5 of Exhibit No. SGH-3. The average book value common equity ratio of Mr. Strunk's sample companies is 46.42%, according to the July 2014 edition of AUS Utility Reports.

The impact of debt leverage on the cost of equity capital can be estimated through an examination of the changes in beta, which occurs when leverage is increased or decreased. The average beta coefficient of Mr. Strunk's sample group of electric companies can be "un-levered." That is, the beta-risk related to the level of debt capital used by the firms, on average, can be removed.

[16] Pacific Power witness, Natasha C. Siores Exhibit No. NCS-2.

"Un-levering the betas" amounts to estimating what the average beta would be if the electric companies were financed entirely with equity capital. Equation (1), below, is used to estimate the un-levered beta for a firm or a group of similar-risk firms.[17]

$$\beta_U = \frac{\beta_{Measured}}{(1+(1-t)D/E)} \qquad (1)$$

Equation (1) indicates that an estimate of the un-levered beta (β_U) of a firm can be calculated by dividing the measured beta ($\beta_{Measured}$, e.g., the beta coefficient reported by investor services such as Value Line) by one plus the average debt-to-equity ratio, adjusted to account for taxes. In this de-leveraging analysis, the debt-to-equity ratio is measured using the average market value of the sample companies' common equity capital. The market value of the sample group's common equity is determined by multiplying the book value common equity ratio, reported in the July 2014 edition of AUS Utility Reports, by the current market-to-book ratio, also reported in the same publication.[18]

Once the un-levered beta for the sample group of utility companies is calculated, the beta coefficient is "re-levered" to conform to the target capital structures, which, in this case are the book-value capital structures of 49.10% and

[17] Equation (1) is based on the Hamada equation which combines the Miller-Modigliani theories regarding capital structure and the logic of the CAPM: Hamada, R.S., "Portfolio Analysis, Market Equilibrium and Corporation Finance," *Journal of Finance*, March 1969, pp. 13-31.

[18] It is important to note that the average book-value common equity ratio of Mr. Strunk's sample companies is 46.42% (*see* Exhibit No. SGH-2, p. 5). Therefore, either of the target common equity ratios (49.10% or 51.73%) represents a substantial *increase* in the common equity ratio, and, therefore, a substantial *reduction* in financial risk and lower estimated beta coefficients for the Company if rates are to be set on either of those target common equity ratios.

52.73% proffered by the Company. The formula used to "re-lever" the utility betas is shown below.

$$\beta_{Relevered} = \beta_U (1+ (1-t)D/E) \qquad (2)$$

Equation (2) states that the re-levered beta equals the un-levered beta (β_U) multiplied times one plus the target debt-to-equity ratios. The market value capital ratios for the target capital structures are determined using the average market-to-book ratio for the similar-risk sample group. The average beta for Mr. Strunk's sample group is 0.71, and with the target equity ratios being higher than the average equity ratio of the sample group, the average re-levered betas for the 51.73% and 49.10% target equity ratios would be lower: 0.659 and 0.677, respectively.[19]

Page 5 of Exhibit No. SGH-3 shows, therefore, that the financial risk difference in a capital structure reduction from a common equity ratio of 51.73% to 49.10% indicates an increase in beta from 0.659 to 0.677, or 0.018. That increase in beta, multiplied by a 6% market risk premium—the average differential between the return on stocks and the return on bonds over the past 87 years[20]—indicates an increase in the cost of equity of 0.11% [0.018 x 6.00%], or about four basis points for every 1% change in common equity ratio.

Q: Doesn't Company witness, Mr. Williams testify that if the common equity ratio is reduced from what the Company requests (51.73%) to the level

[19] The target book value equity ratios (49.10% and 51.73%) are higher than the actual average book value equity ratio of Mr. Strunk's sample group (46.42%); for that reason the financial risk is lower and the beta coefficient is lower.
[20] Arithmetic market risk premium from 2011 Ibbotson SBBI Valuation Yearbook, at 23.

granted by the Commission in its most recent rate case (49.10%) the overall cost of capital and, thus, rates would increase, not decrease.

A: Yes, that is his testimony, however his analysis (shown on page 3 of Exhibit No. BNW-1T, Table 2) is flawed, based on inaccurate assumptions and is not reliable for ratemaking purposes.

First, in determining the cost of debt for the capital structure with less common equity, Mr. Williams estimates the increase in the embedded debt cost to be 61 basis points higher than the Company's current embedded cost of debt. In order to reach that conclusion, Mr. Williams assumes that because of the difference in common equity ratio that could be ordered in this proceeding (49.10% v 51.73%), PacifiCorp's credit rating fell in 2006 from single-A to triple-B—a three notch rating reduction. That is, Mr. Williams' analysis assumes hypothetically that PacifiCorp's bond rating fell in 2006 as a result of a Washington regulatory action that has yet to occur in 2014. Moreover, Mr. Williams assumes every debt issue that occurred between 2006 and 2014 occurred at an increased cost associated with that lower credit rating.[21]

Mr. Williams' debt cost analysis is not reliable for several reasons. First, as shown in Table I, the much greater common equity ratio differential between PacifiCorp and BHE (52% and 40%, respectively, a 12% equity ratio differential) has not caused any significant difference in the credit rating of those two entities. Therefore, it is not reasonable to assume that a roughly 2% equity ratio difference would cause any bond rating action.

[21] *See*, Pacific Power Response to Public Counsel Data Request No. 38b.

Second, as shown in Table II, PacifiCorp's common equity ratio *did* change from 49% to 52% between 2006 and 2014, and there was *no change* in the credit rating. Third, both the 49% and 52% equity ratios are well above average for the electric industry, indicating that a regulatory move between the two is unlikely to change the relative risk of the Company to a degree substantial enough to warrant any credit rating action.

Fourth, the Washington operations of Pacific Power represent approximately only 7% of PacifiCorp, and Mr. Williams is unable to identify any instance in which a 2% change in the common equity ratio of a small subsidiary of an electric holding company has had any impact on its credit rating. Fifth, it is simply not reasonable to believe that investors or bond rating agencies would react in 2006 to an event unknown to them that would not occur until 2014. Therefore, Mr. Williams analysis estimating a 61 basis point increase in PacifiCorp's embedded debt cost if this Commission were to set rates with a 49.10% common equity ratio rather than a 51.73% is not reliable and should be ignored.

Q: Mr. Williams also includes an increase in the cost of equity. Is that portion of his analysis accurate?

A: No. Mr. Williams' reported increase in the cost of equity was provided by Company witness, Mr. Strunk. Mr. Strunk's estimate of the increase in common equity cost rate due to a decrease in the common equity ratio from 51.73% to 49.10% is overstated and based on error. As I noted above, using Mr. Strunk's sample group, the difference in common equity ratio at issue here, i.e., moving

from the Company's requested 51.73% to the equity ratio awarded in the last rate case, 49.10%, would cause the cost of equity to increase approximately 11 basis points or about four basis points per percent of equity difference.[22] Mr. Strunk's analysis shows a 28 basis point increase, but Mr. Strunk's analysis is based, incorrectly, on the difference between the book value common equity ratio and the market value common equity ratio—a true "apples to oranges" comparison. Mr. Strunk also exaggerates the overstatement by using a market risk premium that is substantially higher than that which has existed historically in the U.S. and beyond the range considered reasonable by authoritative sources—an issue I will discuss in more detail subsequently in the cost of capital portion of my testimony.

According to his workpapers, Mr. Strunk calculated a CAPM-based cost of equity capital with the average beta coefficient of his sample group. He then un-levers the beta based on the *market-value* equity ratio of his sample group (58.5% equity) and re-levers the beta using the *book value* target ratios (49.10% and 51.73%). This comparison of market value and book value capital structures is an incorrect procedure that results in *higher betas* for the target capital structures when the target capital structures actually contain *more* common equity than the sample group, on average. That condition should result in *lower* betas for the target equity ratios (as shown on page 5 of my Exhibit No. SGH-3).

[22] The selection of the market risk premium has an impact on this analysis. For example, if the market risk premium used in the analysis were 6.5% rather than 6.0%, the equity cost impact would be approximately 4.4 basis points per percentage point of equity ratio difference.

Mr. Strunk's higher beta for firms with a higher equity ratio is theoretically incorrect and underscores his error in this analysis.

One can compare book value common equity ratios to other book value common equity ratios in order to evaluate the differences in financial leverage and risk, or one can perform the same analysis using market value ratios. But the comparison has to be on the same basis—book value to book value or market value to market value. Mr. Strunk incorrectly compares the market value common equity ratio of his sample group to the book value ratemaking common equity ratios for Pacific Power.

Book value and market value capital structures are simply two different ways to measure the financial risk of a corporation, just as feet and inches are two ways to measure the length of an object. But an object that is 12 inches long is not longer than an object that is one foot long simply because 12 is larger than 1. Yet, that is, effectively, the logic on which Mr. Strunk's improper risk comparison of book value and market value capital structures is based.

Whether Pacific Power is regulated with a 49.10% book value equity ratio or a 51.73% book value equity ratio, both of those book value equity ratios are higher than the average book value equity ratio of Mr. Strunk's sample group, which is 46.42%. So, using either of those target equity ratios would impart *lower* financial risk to the Company, not the higher risk assessed by Mr. Strunk's improper comparison of book value to market value capital structures.

While there would be an increase in the cost of equity for the Company if the allowed capital structure declined from 51.73% to 49.10%, Mr. Strunk's

estimate of that increase is overstated and based on an incorrect analysis and, like Mr. Williams' overstatement of a debt cost increase, should be ignored. A more accurate estimate of that equity cost increase related to the difference between the target equity ratios would be approximately 11 basis points, as shown on page 5 of Exhibit No. SGH-3.

Q: What capital structure do you recommend for setting rates in this proceeding?

A: While I believe that the common equity ratio allowed by this Commission in Pacific Power's last rate case, 49.10% is expensive for consumers (costing consumers more than would an industry-average common equity ratio of 46% to 47%), that cost difference can be addressed and the balance between ratepayers and stockholders restored through the allowed return on equity. As we have seen, each percentage point in common equity ratio difference equals about four to five basis points difference in the cost of equity capital.

Therefore, if rates are set using a 49% common equity ratio and the average equity ratio of the sample group used to estimate the cost of equity is, say, 47%, then, whatever the cost of equity estimate, it would be appropriate to reduce that estimate by 8 to 10 basis points to account for the 2% difference in the financial risk caused by the common equity ratio. That adjustment would serve to balance the interests of ratepayers and stockholders. Importantly, if the allowed return on equity is not adjusted to account for the higher common equity ratio, then the interests of ratepayers and stockholders would not be balanced and ratepayers would be unnecessarily disadvantaged by providing a return that is too

high to be commensurate with the lower financial risk of a high common equity ratio.

Because this Commission has previously approved the 49.10% common equity ratio and because that lower-than-average financial risk can be addressed in determining the appropriate return on common equity, I recommend using the capital structure that was approved in the Company's most recent rate proceeding for setting rates in the instant proceeding. That ratemaking capital structure consists of 49.10% common equity, 0.02% preferred stock, 50.69% long-term debt, and 0.19% short-term debt.

Q: Have you reviewed the Company's requested embedded costs rates for long-term debt, preferred stock and short-term debt?

A: Yes. Largely because the amounts of preferred stock and short-term debt in the ratemaking capital structure are very small, the cost rates are not consequential in the overall return. As shown in the Company's requested capital structure on page 2 of Mr. Williams' testimony, when reported to two decimal places, neither of those forms of capital have any impact on the overall cost of capital, except perhaps in rounding the last digit up or down. Therefore, the cost rates proposed by the Company for preferred stock and short-term debt are reasonable.

With regard to the Company's requested embedded cost rate of long-term debt, 5.19%, I believe that is also reasonable for ratemaking purposes. However, I believe that it is important for the Commission to understand that in the current market environment of low interest rates, that cost rate is likely to overstate the

Company's long-term debt costs going forward and, therefore, if included in rates, should be viewed as a conservative ratemaking adjustment.

As shown in Table III below, because the Company's marginal cost of debt capital is below its embedded cost (which is an average rate of all the Company's current outstanding debt), the trend in the embedded cost of debt has been downward over the last year.

Table III: PacifiCorp's Embedded Debt Cost Trend

Dec-12	Mar-13	Jun-13	Sep-13	Dec-13	Mar-14
5.36%	5.39%	5.29%	5.27%	5.27%	5.18%

Source: Pacific Power Response to Public Counsel Data Request No. 3b.

According to the Company's response to Public Counsel Data Request No. 3b, the most recent long-term debt issued by PacifiCorp ($300 million, issued June 1, 2012) had a coupon rate of 4.10%, and an all-in embedded cost of 4.173%. Current interest rates are roughly equal to what they were in 2012 and, as long as the Company continues to issue debt at rates that are below its average embedded cost, its embedded cost of debt will continue to decline. For that reason, while the Company's most recent embedded cost of debt is reasonable for ratemaking, the Commission should view that cost rate as conservative and one that is likely to overstate the Company's actual debt costs going forward in the rate-effective period.

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IV. METHODS OF EQUITY COST EVALUATION

A. Discounted Cash Flow.

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

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

The theory is represented by the equation,

$$k = D/P + g, \qquad (3)$$

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

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

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

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

While that assumption appears to be somewhat unrealistic because, in the short term, growth rates in dividends, earnings, and book value can be quite different, over the long term it has proven to be true. For example, according to Value Line's published year-by-year retrospective of the Dow Jones Industrials Index (DJI) from 1920 through 2005, the average earnings, dividends, and book value growth rates for the companies in the DJI over that time period were 5.3%, 4.9%, and 5.2%.[23] For utility companies, over the long term, average growth rates in earnings, dividends, and book value are even closer. Moody's Public Utility Manual reports that, between 1947 and 1999, average growth in earnings, dividend and book value growth of Moody's Electric Utilities was 3.34%, 3.22%, and 3.66%, respectively.[24] Therefore, the fundamental DCF assumption that earnings, dividends, and book value are expected to grow, over the long term, at the same sustainable rate of growth is reasonable and is an accurate representation of how firms actually grow over time.

However, even though over the long term the fundamental assumptions of the DCF have proven to be sound, as with all mathematical models of real-world

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

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

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

A: Yes, in Exhibit No. SGH-4, I provide an example of the determinants of a sustainable growth rate on which to base a reliable DCF estimate. In addition, in Exhibit No. SGH-4, I show how reliance on earnings or dividend growth rates alone, absent an examination of the underlying determinants of long-run dividend growth, can produce inaccurate DCF results.

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

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

investors' long-term growth rate expectations. To that long-term growth rate estimate, I add any additional growth that is attributable to investors' expectations regarding the on-going sale of stock for each of the companies under review.

Q: Why have you analyzed the market data of several companies that are similar in risk to Pacific Power?

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

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

A: For the similar-risk sample for Pacific Power's Washington electric utility operations, all of the electric utility firms followed by Value Line were screened. Companies were selected from that group that had a continuous financial history, a bond rating between "BBB" and "A", and had 70% or more of revenues generated by electric utility operations. Companies that did not have generation assets, or were in the process of merging or being acquired, or companies that had recently omitted dividends or had unstable book values were omitted from the sample. The data for the electric utility sample group were obtained from the most recent editions of Value Line Investment Survey, *Ratings and Reports*, available at the time of this analysis (June 20, August 1, and August 22, 2014), and a U.S. Utility Reports (July 2014).

The integrated electric companies included in the similar-risk sample group for purposes of estimating the current cost of equity capital are: NextEra Energy (NEE), Southern Company (SO), TECO Energy (TE), ALLETE (ALE), Alliant Energy (LNT), OGE Energy Corp. (OGE), Westar Energy (WR), Edison International (EIX), IDACORP, Inc. (IDA), Northwestern Corp. (NWE), Pinnacle West Capital (PNW), Portland General (POR), and Xcel Energy (XEL). The statistical data for each of the Value Line electrics, the selection criteria, and the companies selected are shown in Exhibit No. SGH-5.[25]

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

[25] In the Exhibits accompanying this Testimony, the sample group companies are referenced by their stock ticker symbols, which are shown here in parenthesis after the company name.

A: Exhibit No. SGH-6, pages 1 through 5, shows the retention ratios, equity returns, sustainable growth rates, book values per share, and number of shares outstanding for the comparable sample companies for the past five years. Also included in the information presented in Exhibit No. SGH-6 are Value Line's projected 2014, 2015, and 2017-2019 values for equity return, retention ratio, book value growth rates, and number of shares outstanding.

In evaluating these data, we first review the five-year average sustainable growth rate, which is the product of the earned return on equity (r) and the ratio of earnings retained within the firm (b). For example, Exhibit No. SGH-6, page 1, shows that the five-year average sustainable growth rate for Southern Company (SO) is 3.22%. The simple five-year average sustainable growth value is used as a benchmark against which we measure the company's most recent growth rate trends. Recent growth rate trends are more investor influencing than are simple historical averages. Continuing to focus on SO, sustainable growth in 2013 was 3.19%—very similar to the average growth for the five-year period. Those recent historical data then indicate general growth stability. By the 2017-2019 period, Value Line projects SO's sustainable growth will reach a level just above the recent five-year average—3.42%. These forward-looking data indicate that investors expect SO to grow at a rate in the future slightly higher than the growth rate that has existed, on average, over the past five years.

While the five-year projections are given consideration in estimating a proper growth rate because they are available to and are used by investors, they are not given sole consideration. Without reviewing all the data available to

investors, both projected and historic, sole reliance on projected information may be misleading. Value Line readily acknowledges to its subscribers the subjectivity necessarily present in estimates of the future:

> We have greater confidence in our year-ahead ranking system, which is based on proven price and earnings momentum, than in 3- to 5-year projections.[26]

Another factor to consider is that SO's book value growth is expected to increase at a 4.0% rate over the next five years, after increasing at a 5.5% rate historically. That signals slightly moderating growth for SO. Also, as shown on Exhibit SGH-7, page 2, that company's dividend growth rate, which was 4.0% historically, is expected to increase at a 3.5% rate of growth in the future—approximately equal to the sustainable growth rate projections, but below historical dividend growth levels. That information would tend to moderate investor expectations regarding growth in the future. Earnings growth rate data available from Value Line indicate that investors can expect an increase in the earnings growth rate in the future (3.5%), a growth rate equal to that which has existed historically. Also, Zacks and IBES (investor advisory services that poll institutional analysts for growth earnings rate projections) projects earnings growth rate for SO of approximately 3.35% and 3.5%, respectively, over the next five years. Those projections generally corroborate the sustainable growth projections.

SO's projected sustainable growth indicates that investors can expect only slightly more rapid growth in the future, similar to that which has occurred on

[26] Value Line Investment Survey, Selection and Opinion, June 7, 1991, p. 854.

average in the past—about 3.5%. Those projections are countered by an expectation of lower dividend and earnings growth, but are confirmed by analysts' earnings growth rate projections. A long-term sustainable growth rate of 3.5% is a reasonable expectation for SO.

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

A: No. An investor's sustainable growth rate analysis does not end upon the determination of an internal growth rate from earnings retention. Investor expectations regarding growth from external sources (sales of stock) must also be considered and examined. For SO, page 1 of Exhibit No. SGH-6 shows that the number of outstanding shares increased at about a 2% rate over the most recent five-year period. Value Line expects the number of shares outstanding to increase more slowly through the 2017-2019 period, bringing the share growth rate to 1.17% rate by that time. Therefore, an expectation of share growth of 1.5% per year is reasonable for this company.

As shown on page 1 of Exhibit No. SGH-7, because SO is currently trading at a market price that is much greater than its book value, a long-term expectation of increasing the number of shares outstanding will also increase investors' growth expectations for that company. Multiplying the expected growth rate in shares outstanding by [1-(Book Value/Market Value)] increases the long-term DCF growth rate for SO by 74 basis points.[27]

[27] According to Gordon's original DCF formula the factor that accounts for additional growth due to sales of stock is "s" the rate of increase in shares outstanding, times "v" the equity accretion rate, defined as (1-M/B). For the utilities under study here, the "sv" term adds an additional 45 basis points to the DCF cost of equity capital.

The details of the sustainable growth rate analyses for SO are discussed here as an example of the methodology used in determining the DCF growth rate for each company in the utility sample group. Exhibit No. SGH-7, page 1, attached to this testimony shows the internal, external, and resultant overall DCF growth rates for all the electric utility companies analyzed. A narrative description of the growth rate analyses for each of the companies included in the similar-risk sample group is set out in Exhibit No. SGH-8.

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

A: The reasonableness of the growth rate estimates for each company are checked against other publicly available sources in Exhibit No. SGH-7, page 2, which shows the DCF growth rates used in this analysis as well as five-year historic and projected earnings, dividends, and book value growth rates from Value Line, earnings growth rate projections from Zacks or IBES, the average of Value Line and Zacks or IBES growth rates, and the five-year historical compound growth rates for earnings, dividends, and book value for each company under study.

For the electric utility sample group, Exhibit No. SGH-7, page 2, shows that my DCF growth rate estimate for those companies is 5.09%. That long-term growth rate estimate is considerably higher than Value Line's projected average earnings, dividends, and book value growth rate (4.69%) and above the historical average of those same parameters (4.24%). In addition, my DCF growth rate estimate for the similar-risk electric utilities is slightly below IBES and Zacks' earnings growth rate projections: 5.35% and 5.11%, respectively. Therefore, the

average DCF growth rate for the electric utility sample companies is reasonable when compared to other publicly-available growth rate information.

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

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

First, it is important to realize that, as I discuss in Exhibit SGH-4, projected earnings growth rates may over or understate the growth that can be sustained over time by the companies under review. This is important because long-term sustainable growth is required in an accurate DCF assessment of the cost of equity capital. The efficacy of projected earnings growth rates in any specific DCF analysis can only be determined through a study of the underlying fundamentals of growth—something that those who rely exclusively on analysts' earnings growth rate projections fail to do.

Second, the studies that support the use of analysts' earnings projections measure the ability of analysts' estimates to predict stock prices versus simple historical averages of other parameters. In that sort of simplistic comparison,

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

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

> Estimates of this kind are only as good as the long-term forecasts on which they are based. For example, several studies have observed that security analysts are subject to behavioral biases and their forecasts tend to be over-optimistic. [Footnote omitted]. If so, such DCF estimates of the cost of equity should be regarded as upper estimates of the true figure. [Footnote omitted]. *See, for example,* A. Dugar and S. Nathan, "The Effect of Investment Banking Relationships on Financial Analysts' Earnings Investment Recommendations."[28]

As Chan and Lakonishok note in "The Level and Persistence of Growth Rates," published in the *Journal of Finance,* "[t]here is no persistence in long-

term earnings growth beyond chance, and there is low predictability even with a wide variety of predictor variables. Specifically, IBES growth forecasts are overly optimistic and add little predictive power."[29] This concern regarding investors' use of analysts' growth estimates is also underscored by an investor service sponsored by the *Wall Street Journal*:

> You should be careful when looking at analyst recommendations for several reasons. First of all, many analysts suffer from a conflict of interest between the firm that employs them and the company whose stock they track. Often times, an analyst will be responsible for issuing reports on a company that is a current or potential client of their employer (usually an investment bank). Since they know that their employer would like to keep the client's business, the analyst may be tempted to issue a rosier outlook for the stock than what it really deserves.[30]

Also, as reported in an April 2010 article in McKinsey Quarterly, entitled "Equity Analysts: Still Too Bullish," over the past 25 years the equity analysts polled by IBES have projected long-term earnings growth of 10% to 12% for unregulated companies, whereas actual (realized) growth has been about 6.0%.[31]

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

> Data are the bedrock of empirical research in finance. When there are questions about the accuracy or completeness of a data source,

[28] *Contemporary Accounting Research* 12 (1995), pp. 131-160. Brealey, Meyers, Allen, Principles of Corporate Finance, 8th Ed., McGraw-Hill Irwin, Boston, MA, (2006), p. 67.
[29] *Journal of Finance*, Vol. LVIII, No. 2, April 2003, p. 643.
[30] Investorguide.com, "University," Analysts and Earnings Estimates, www.investorguide.com/igustockanalyst.html.
[31] McKinsey & Company is a global management-consulting firm.

> researchers routinely go to great lengths to investigate measurement error, selection bias, or reliability. But what if the very contents of a historical database were to change, in error, over time? Such changes to the historical record would have important implications for empirical research. They could undermine the principle of replicability, which in the absence of controlled experiments is the foundation of empirical research in finance. They could result in over- or underestimates of the magnitude of empirical effects, leading researchers down blind alleys. Also to the extent that financial-market participants use academic research for trading purposes, they could lead to resource allocation…. We document that the historical contents of the I/B/E/S recommendations database have been quite unstable over time.[32]

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

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

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

A: Yes.

Q: How have you calculated the DCF dividend yields?

A: The current dividend yields for each of the sample group companies are shown in Exhibit No. SGH-9. The per share dividend is that projected over the next year by Value Line, and the stock price is the daily closing average stock price for each company over the most recent six-week period. Exhibit No. SGH-9 shows that the average dividend yield of the similar-risk sample group of integrated electric

[32] Lungqvist, Malloy, Marston, "Rewriting History," *The Journal of Finance*, Vol. 64, No. 4, August 2009, pp. 1935-1936.

companies is 3.80%.

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

A: Exhibit No. SGH-10 combines the long-term sustainable growth rate for each of the companies in the sample group with the expected dividend yield. The result is an average DCF equity cost estimate of 8.89%.

B. Capital Asset Pricing Model.

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

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

$$k = r_f + \beta(r_m - r_f), \quad (4)$$

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

"r_m" is the average market return and "$r_m - r_f$" is the market risk premium.

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

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

As noted in the previous discussion of the macro-economy, in an attempt to fend off a recession and to inject liquidity into the financial system, the Fed acted vigorously over the past four years to lower short-term interest rates. Recently, T-Bills have produced an average yield just above zero. Also, as noted in my discussion of the current economic environment, the average yield in July 2014 for long-term T-Bonds was 3.33%. In addition, Value Line reports that the average yield on 30-year Treasury bonds over the most recent six-week period

(July 11, 2014 through August 14, 2014) is also 3.33%. Therefore, for purposes of a forward-looking CAPM analysis in this proceeding, 3.33% will serve as a reasonable estimate of investors' current long-term, risk-free rate.

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

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

As noted previously, immediately following the 2008/2009 financial crisis and again last year, investors' worries regarding the international financial system caused investors to be more concerned about default risk and seek the safety of risk-free investments. Because of that fact, the yields on long-term U.S. Treasury bonds declined more rapidly than the yields on corporate debt (*see* Chart II). For that reason, it is reasonable to rely on the upper end of the historical risk premium range (6.0%), published by Morningstar/Ibbotson, in calculating a current cost of equity capital.

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

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

electric utility companies is 0.74.

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

A: Exhibit No. SGH-11 shows that the combination of a 3.33% risk-free rate, with an average beta of 0.74 and a market risk premium of 6.0% is 7.77%. That result is considerably lower than the DCF results previously presented.

C. Modified Earnings-Price Ratio.

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

A: The earnings-price ratio is the expected earnings per share divided by the current market price. In cost of capital analysis, the earnings-price ratio alone (which is only one portion of this MEPR analysis) can be useful in a corroborative sense, since it can be a good indicator of the proper range of equity costs when the market price of a stock is near its book value. When the market price of a stock is *above* its book value, the earnings-price ratio *understates* the cost of equity capital. Exhibit No. SGH-12 contains mathematical proof for this concept. The opposite is also true, i.e., the earnings-price ratio *overstates* the cost of equity capital when the market price of a stock is *below* book value.

Under current market conditions, the electric utilities under study have an average market-to-book ratio of 1.69 and, therefore, the average earnings-price ratio, alone, will understate the cost of equity for the sample group. However, the earnings-price ratio is not used alone as an indicator of equity capital cost rates. Because of the relationship among the earnings-price ratio, the market-to-book

ratio and the investor-expected return on equity, described mathematically in Exhibit No. SGH-12, the earnings-price ratio is modified by averaging projected equity returns with the current earnings-price ratio for the companies under study. It is that modified analysis that will assist in estimating an appropriate range of equity capital costs in this proceeding.

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

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

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

These relationships represent general rather than precisely quantifiable

tendencies but are useful in corroborating other cost of capital methodologies. The Federal Energy Regulatory Commission, in its generic rate of return hearings, found this technique useful and indicated that under the circumstances of market-to-book ratios exceeding unity, the cost of equity is bounded above by the expected equity return and below by the earnings-price ratio.[33] The mid-point of these two parameters, therefore, produces an estimate of the cost of equity capital which, when market-to-book ratios are different from unity, is considerably more accurate than the earnings-price ratio alone.

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

A: Yes. Elton and Gruber provide support for reliance on the modified earnings price ratio analysis.[34]

The Elton and Gruber text posits the following formula,

$$k = (1-b)E/(1-cb)P, \quad (5)$$

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

[33] *e.g.*, 50 Fed Reg, 1985, p. 21822; 51 Fed Reg, 1986, pp. 361, 362; 37 FERC ¶ 61,287.
[34] Modern Portfolio Theory and Investment Analysis, New York University, Wiley & Sons, New York, 1995, pp. 401-404.

that ROE exceeds "k," the more the earnings price ratio will understate "k." In other words, those two parameters, the earnings-price ratio and the expected return on equity (ROE), orbit around the cost of equity capital, with the cost of equity as the locus, and fluctuate so that their mid-point approximates the cost of equity capital.

Assuming an industry average retention ratio of about 30% (i.e., 70% of earnings are paid out as dividends), the stochastic relationship between the expected return (ROE) and the earnings price ratio can be determined from Equation (5), above, as shown in Table IV below. Most importantly, Equation (5) shows that the average of the earnings price ratio (EPR) and ROE (which is my MEPR analysis) will approximate "k," the cost of equity capital.

Table IV: Support For The Modified Earnings Price Ratio Analysis

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

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

how I use the model in my testimony.

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

A: Exhibit No. SGH-13 shows the IBES projected 2015 per share earnings for each of the firms in the sample groups. Recent average market prices (the same market prices cited in the DCF analysis), and Value Line's projected return on equity for 2015 and 2017-2019 for each of the water companies are also shown.

The average earnings-price ratio for the electric utility sample group, 6.44%, is below the cost of equity for those companies due to the fact that their average market-to-book ratio is currently well above unity (average M/B = 1.69). The sample electric companies' 2015 expected book equity returns average 9.96%. For the entire sample group, then, the mid-point of the earnings-price ratio and the current equity return is 8.20%.

Exhibit No. SGH-13 also shows that the average expected book equity return for the sample of electric utilities over the next three-to-five year period is 10.35%. The mid-point of that long-term projected return on book equity (10.35%) and the current earnings-price ratio (6.544%) is 8.39%. Both of those results are below the cost of equity estimate provided by the DCF, indicating the DCF result may be somewhat overstated.

D. Market-To-Book Ratio Analysis.

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

A: The market-to-book ratio (MTB) technique of cost of equity analysis is a derivative of the DCF model that adjusts the capital cost derived for inequalities

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

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

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

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

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

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

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

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

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

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

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

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

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

Equation (11) indicates that the cost of equity capital equals the expected return on equity multiplied by the payout ratio, divided by the market-to-book ratio plus growth. Exhibit No. SGH-14 shows the results of applying Equation (11) to the defined parameters for the similar-risk electric utility firms in the comparable sample group. Page 1 of Exhibit No. SGH-14 utilizes current year (2014) data for the MTB analysis, while page 2 utilizes Value Line's 2017-2019 projections. The MTB cost of equity for the sample of electric utility firms, recognizing a current average market-to-book ratio of 1.69, is 8.57% using the current year data and 8.76% using projected three-to-five year data. Those point-in-time estimates are also below the DCF equity cost estimates derived previously.

E. Summary.

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

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

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Table V: Cost of Equity Results

Method	Cost of Equity
Discounted Cash Flow	8.89%
Capital Asset Pricing Model	7.77%
Modified Earnings Price Ratio	8.20%/8.39%
Market-to-Book Ratio	8.57%/8.76%

The DCF, which is the most reliable indicator of the current cost of equity, indicates a cost of equity capital of 8.89%. The average of the corroborating analyses (CAPM, MEPR, and MTB) indicates a cost of equity ranging from 8.18% to 8.31%. That information indicates that the 8.89% traditional DCF result may be somewhat overstated as an estimate of the current cost of common equity capital.

Given the results described and rounding to the nearest quarter percent, a reasonable point-estimate for the current cost of common equity capital for an electric utility with risk characteristics similar to the sample group analyzed is 8.75%. As noted in the discussion of the economic environment, the expectation with regard to the economy and interest rates is that with a continued economic expansion, interest rates will increase over the next two years. Therefore, a reasonable range for setting equity capital cost rates ranges from 8.50% to 9.50%. The mid-point of that range is 9.00%.

The average bond rating of the sample group of companies used to estimate the cost of common equity is BBB+/A- (Standard & Poor's) and A3 (Moody's). PacifiCorp's bond rating is "A-" from S&P and "A3" from Moody's. Therefore,

PacifiCorp's bond rating is slightly higher than that of the sample group, but generally similar. In addition, the Company's ratemaking common equity ratio (49.10%) is approximately 2% higher than the average common equity ratio of the sample group of companies (47.2%). As I noted in Section II of this testimony a 2% higher common equity ratio for Pacific Power requires a reduction in the allowed return of about eight basis points. For these reasons, a return on common equity 10 basis points below the mid-point established by the sample group would be appropriate. An allowed return on common equity of 8.90% is reasonable for Pacific Power's electric utility operations.

As shown on Exhibit No. SGH-15, if Pacific Power is allowed a return on common equity of 8.9%, and a ratemaking capital structure consisting of 49.10% common equity, 0.023% preferred stock, 50.69% long-term debt, and 0.19% short-term debt, the after-tax overall return would be 7.01%~~7.32%~~. With that overall return, the Company would be provided the opportunity to achieve a pre-tax interest coverage of 3.56~~3.28~~ times, which is higher than the pre-tax interest coverage earned by PacifiCorp, on average, over the past five years (3.09x).[35] Therefore the return I recommend appropriately balances the interests of the Company and its ratepayers and provides the Company an opportunity to earn a return sufficient to support its financial position.

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[35] PacifiCorp, S.E.C. Form 10-K, 2013, Schedule 12.2, "Statements of Computation of Ratio of Earnings to Combined Fixed Charges and Preferred Stock Dividends." 2009 (2.99), 2010 (3.01x), 2011 (2.96x), 2012 (2.93x), and 2013 (3.58x); average = 3.09x.

V. COMPANY COST OF CAPITAL ANALYSIS

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

A. Mr. Strunk has based his equity return recommendation for Pacific Power's Washington operations on a DCF analysis of a sample group of BBB and A-rated electric utilities with positive earnings growth rate projections. Mr. Strunk also performs an electric industry-wide DCF analysis using aggregate dividend and growth rate data.

In addition, Mr. Strunk has relied on a CAPM analysis that utilizes a DCF estimate of the cost of equity of the companies in a market index as a basis for determining the market risk premium, along with a Risk Premium analysis based on allowed returns. For corroboration purposes, Mr. Strunk has prepared a Comparable Earnings analysis of the earned returns of utility companies and unregulated companies. With those methods, based on his judgment, Mr. Strunk estimates the current cost of equity for Pacific Power to be 10.0%.

Mr. Strunk's equity cost analyses suffer from flaws that cause his equity cost estimates to be overstated. I will discuss the shortcomings of each of Mr. Strunk's cost of capital methods in the order in which they are presented in his Direct Testimony: DCF, CAPM, Risk Premium, CAPM, and Comparable Earnings analyses.

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A. Mr. Strunk's DCF Analysis.

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

A: Mr. Strunk's DCF analysis of electric utility companies, shown in his Exhibit No. KGS-10 overstates the current cost of utility company common equity for several reasons. First, his DCF results rely to a large extent on projected earnings growth. His traditional DCF utilizes projected earnings growth as one-half of the growth rate, and his "yield plus growth" industry-wide DCF relies solely on projected earnings growth. As I discussed in Section III of my testimony, sell-side analysts' projected earnings growth overstates actual long-term growth. Even though the overstatement with utility companies is less than that with unregulated firms, relying only on projected earnings growth will tend to provide a DCF cost of equity estimate that is overstated.

Second, Mr. Strunk elects to omit companies that have zero or negative earnings growth rate projections published by the one source on which he elects to rely for those data (Thompson/Reuters). However, by eliminating the low earnings growth expectations from his analysis of the cost of equity, Mr. Strunk is skewing upward his ultimate DCF results, analyzing only the data that will produce higher DCF results.

While it is certainly reasonable to believe that investors do not rely on negative earnings growth rate forecast in forming their long-term growth expectations for a utility investment—if they did, the market prices of the firms for which Thompson/Reuters projects zero or negative earnings over the next five years would plummet. In fact, AUS Utility Reports (July 2014) indicate that the

average market-to-book ratio of the seven companies Mr. Strunk leaves out of his DCF analysis (158.8%) is well within one standard deviation of and, thus, very similar to the industry average market-to-book valuation (169.6%).[36] Those data do not support Mr. Strunk's analytical rationale of omitting selected data from his DCF analysis, rather, they show quite clearly that investors do not rely on single earnings growth rate estimates in assessing long-term expected growth and market returns. However, that is the assumption underlying Mr. Strunk's use of projected earnings growth rates. It is clear from these data that investors rely on a great deal more information than the projected earnings growth rates of one investor service in determining their market-based return expectations.

Third, both of Mr. Strunk's growth rate analyses (projected earnings and sustainable growth) contain statistical outliers that are not addressed or accounted for in his results. As shown on Mr. Strunk's Exhibit No. KGS-10, his projected earnings growth rates contain a growth rate estimate of 13.84% for Portland General. The average Thompson/Reuters projected earnings growth rate for the entire sample group is 5.18%, with a standard deviation of 2.35%. Using a two standard deviation threshold (which encompasses 95% of a population) to delineate earnings growth that would be considered a statistical outlier would put the upper bound at 9.88% (5.18% + 2 x 2.35%). The 13.84% earnings growth rate estimate for Portland General should be considered an outlier that would tend to skew Mr. Strunk's DCF results upward.

[36] The seven companies omitted from Mr. Strunk's primary DCF analysis are: Ameren Corp., Edison International, Integrys Energy Group, PG&E Corp., Public Service Enterprise Group, TECO Energy and Empire District Electric. *See* Strunk Exhibit No. KGS-7.

In the case of one data point that is significantly different from the rest of the sample, there are two solutions: (1) that one data point could be eliminated from the sample; or (2) the median, or middle value, of the sample could be used. If Portland General were omitted from the sample, the average projected earnings growth of the sample group would be 4.80%, or if the median were used, the representative earnings growth for Mr. Strunk's sample group would be 4.71%. In either case, the reliable central nature of those projected earnings growth data range from 38 to 40 basis points below the 5.18% projected earnings growth used in Mr. Strunk's DCF analysis, and Mr. Strunk's DCF estimate is overstated by that amount.

Fourth, a similar statistical problem exists with Mr. Strunk's sustainable growth rate. Exhibit No. KGS-10 shows that Mr. Strunk's "br+sv" or sustainable growth rate for Northeast Utilities (10.35%) is more than two standard deviations from the mean, indicating that result is an outlier when compared to all the other companies' sustainable growth rates. Mr. Strunk does not account for that fact in his analysis and simply averages that result in with the rest, overstating his ultimate DCF result.

The reason for that particular overstatement for Northeast Utilities is found on Mr. Strunk's Exhibit No. KGS-9, which shows the calculation of the growth rate in the number of shares outstanding (part of the "br+sv" calculation). The growth rate in shares outstanding for Northeast Utilities is 18% when the average for the sample is only 3%--another statistical outlier that is unlikely to represent investor expectations going forward.

Importantly, the reason for that overstatement is a 77% increase in shares outstanding for Northeast Utilities in the last year of Mr. Strunk's analysis period. That enormous increase in shares outstanding was due to a merger between Northeast Utilities and NSTAR in 2012. Unless investors expect Northeast Utilities to merge and nearly double in size every five years into the indefinite future, they would not rely on an 18% growth rate in shares outstanding as indicative. Nevertheless, that is the assumption implicitly included in Mr. Strunk's DCF growth rate analysis for Northeast Utilities, and that assumption skews upward his DCF equity cost estimate.

Interestingly, Mr. Strunk recognizes the problems with including merger data in a DCF analysis. In his sample selection criteria, he states that he did not include in his sample companies that had recently merged in order to "assure that the DCF results are not biased by idiosyncratic, event-driven stock price movements."[37] Inconsistently, event-driven growth rate inflation, however, is treated as acceptable by Mr. Strunk. However, Mr. Strunk's logic regarding mergers is sound and should be applied to both the calculation of the dividend yield and to the calculation of the growth rate. Unfortunately, he does not do so.

Similar to Mr. Strunk's inclusion of a statistical outlier in his projected earnings growth, his inclusion of a merger-based statistical outlier in his sustainable growth rate analysis causes the average growth rate of the sample group to be overstated. The average sustainable growth of Mr. Strunk's sample without Northeast Utilities is 5.08%--22 basis points below the growth rate he

[37] See Pacific Power Witness, Kurt G. Strunk Exhibit No. KGS-1T, p. 9.

utilized. The median or middle-value of all the sustainable growth rate result is 4.96%--34 basis points below the growth rate used in his DCF analysis.

Q: Are there other aspects of Mr. Strunk's DCF analysis in this proceeding that are overstated?

A: Yes. In calculating his DCF dividend yield, Mr. Strunk used the current dividend divided by the average of last years' stock price and then multiplied that quotient by one plus his DCF growth rate (1+g). There are two problems here. First, the use of the previous year's average stock price with the current dividend when stock prices are rising, as they have been over the past year, results in a dividend yield that is higher than investors expect for the future. The dividend yield Mr. Strunk uses for his sample group of companies is 4.00%, as shown on his Exhibit No. KGS-10. The Value Line Investment Survey (*Summary & Index)* published in the first quarter of 2014 (March 7, 2014), when Mr. Strunk performed his cost of equity analysis, reports the year-ahead expected dividend yield of the companies in Mr. Strunk's sample group to be 3.78%. Therefore, compared to forward-looking dividend yields available at the same time he performed his DCF analysis, Mr. Strunk's dividend yield methodology (relying on last year's average stock price) causes an overstatement of 22 basis points in the DCF result.

The second problem with Mr. Strunk's DCF dividend yield analysis is his adjustment of the historical dividend by "1+g" to estimate the next period dividend as called for in the DCF theory. The concern with that adjustment is that this methodology assumes that the dividend is increased in the first quarter for all

the sample companies by "1+g" and remains at that level for four quarters. In reality, dividends are increased at different times of the year, and a more standard approach is to assume that a dividend increase would occur one-half year out and the adjustment factor used is (1 + 0.5g), or one plus one-half the dividend growth rate, rather than the (1 + g) adjustment that Mr. Strunk elects to use in this proceeding. In recent prior testimony, Mr. Strunk has used the more standard (1 + 0.5g) dividend yield adjustment.[38] Had he done so in this proceeding, his DCF dividend yield would have been 3.90% rather than the 4.00% he used—a 10 basis point overstatement.

Q: Taking into account the statistical outliers in Mr. Strunk's growth rates and his dividend yield overstatement, what is the outcome of the Company's DCF analysis in this proceeding?

A: The results of Mr. Strunk's DCF analysis using forward-looking dividend yields published contemporaneously with his analysis, along with his projected earnings and sustainable growth rates are shown in Exhibit No. SGH-16.

Using forward-looking rather than backward-looking dividend yields, with Mr. Strunk's own growth rates produces a DCF result of 9.01%. The median of the forward-looking DCF results for Mr. Strunk's sample group, which minimizes the impact of outliers, is 8.76%. Finally, adjusting that result to remove the two growth rate statistical outliers (Northeast Utilities (NU) and Portland General (POR)) produces a DCF result of 8.71%. These data indicate that Mr. Strunk's

[38] FERC Docket No. ER-13-255-000, Testimony of Kurt G. Strunk on behalf of NV Energy Operating Company, May 2013, Exhibit No. NV-6.2.

reported DCF result, 9.23%, overstates the actual cost of equity capital of his sample group of electric utilities and that a more reliable conclusion with regard to the DCF cost of equity for his sample group is approximately 8.75%—similar to my own estimate.

Q: What are your comments regarding Mr. Strunk's second DCF analysis, his "yield plus growth" DCF analysis?

A: Mr. Strunk's second DCF—a generalized estimate of the cost of equity of the electric utility industry in general—is also overstated, but for a different reason than his primary DCF analysis. The fundamental error in Mr. Strunk's industry-wide DCF analysis is that his dividend yield and his growth rate are from different sample groups.

The dividend yield portion of Mr. Strunk's second DCF (4.10%) is from the Value Line publication in January 2014, and is a forward-looking yield for the entire electric industry followed by Value Line.[39] The growth rate portion of Mr. Strunk's second DCF analysis is based on the projected earnings growth for the electric industry as reported by Zacks Investment Research.[40] However, a review of the companies included in Zacks electric industry reveals that they are different than those included in Value Line's electric industry.[41]

Value Line's electric industry includes only companies in the U.S. Zacks Investment Research, however, also includes companies with electric utility

[39] Note: the August 1, 2014 edition of Value Line's Electric Utilities (West)—the same publication from which Mr. Strunk obtained his industry-wide dividend yield—indicates that the current industry-wide dividend yield for electric utilities is 3.7%, 40 basis points below the dividend yield used by Mr. Strunk.
[40] See Strunk Exhibit No. KGS-11.
[41] See Pacific Power Response to Public Counsel Data Request No. 20.

operations in South America and Asia, as well as independent power producers and infrastructure investors. Twenty-two of such companies are included with the U.S. electric utilities to form Zacks "electric industry." The expected earnings growth rate for electric operations and merchant generation in those developing countries is simply not representative of investor expectations of long-term growth for electric utilities in the U.S. Mr. Strunk's combination of a dividend yield for U.S. companies and a growth rate for a mix of U.S. and foreign companies does not produce a reliable DCF result.

Although he does not utilize it in his testimony, Mr. Strunk does provide a projected earnings growth rate for the U.S. electric utility industry in the workpapers he provided to support his testimony. On the tab labeled "Yahoo Growth" in the spreadsheet "StrunkWorkpapers.xlsx," provided with Mr. Strunk's testimony, is the projected earnings growth estimate for all of the U.S. electric utilities as published on the Yahoo Finance website. The earnings growth rate estimates are provided to Yahoo by the Thompson Financial Network, which is one of the sources I use for my projected earnings growth rate data.

According to Mr. Strunk's workpapers, the average projected five-year earnings growth for the U.S. electric utility industry is 4.48%. When that U.S. electric utility growth rate is added to Mr. Strunk's January 2014 U.S. electric utility dividend yield, 4.10%, the result is a DCF equity cost estimate of 8.58%. That 8.58% equity cost estimate, which combines a forward-looking dividend yield and projected growth rate for the *same* group of companies, indicates that Mr. Strunk's "yield plus growth" DCF estimate of 9.90%, based on a dividend

yield and growth rate from *different* company groups, is significantly overstated and does not provide a reliable estimate of the current cost of equity for electric utilities in the United States.

Q: Can you summarize your concerns with Mr. Strunk's DCF analyses?

A: Yes. Both of Mr. Strunk's DCF analyses produce equity cost estimates that overstate the current cost of equity capital for electric utility operations. His primary DCF utilizes a historically-oriented dividend yield methodology that overstates forward-looking investor dividend yield expectations. In addition, Mr. Strunk's primary DCF growth rate analyses include statistical outliers in the results, unnecessarily inflating those results. Correcting both errors, i.e., using forward-looking dividend yields and moderating the impact of the growth rate outliers by relying on the median results from Mr. Strunk's analysis indicate that a more reliable result for his primary DCF analysis is 8.75%.

With his second DCF, Mr. Strunk has utilized a dividend yield from one group of companies and a growth rate from a different group of companies. Utilizing his methodology and his data, along with average dividend yield and growth rate from the same sample group of U.S. electric utilities, produces a more reliable cost of equity estimate—approximately 8.58%.

Therefore, Mr. Strunk's DCF analyses, when adjusted to remove statistical problems and mis-matched data sets, indicate that the current cost of common equity capital for U.S. electric utilities ranges from 8.50% to 8.75%. Those results support the conservative nature of my own DCF analysis.

B. Mr. Strunk's CAPM Analysis.

Q: What are your comments regarding Mr. Strunk's Capital Asset Pricing Model?

A: Mr. Strunk's CAPM cost of equity estimate is overstated because his market risk premium estimate of 8.36% is significantly overstated. As I noted in Section III of my testimony, over the past 85 years, the difference between the return on common stocks and the return on long-term Treasury bonds has ranged from 4% to 6%, depending on the averaging technique used to measure the difference, according to the data published by Morningstar (formerly Ibbotson Associates).

Importantly, much of the market risk premium discussion in the literature of financial economics over the past two decades has supported the notion that investor's market risk premium expectations are likely to be *below* those long-term historical averages (4%-6%) published by Morningstar. That theoretical discussion has, over time, worked its way into modern finance textbooks. In the 2006 edition of their widely-used finance textbook, Brealey and Meyers discuss the findings of many different studies regarding the market risk premium.[42] Importantly, in prior editions of their textbooks Brealey et al., cited the Morningstar historical data, and now they do not. Instead, they cite the risk premium work of Dimson, Staunton, and Marsh, authors of "Triumph of the Optimists," a key publication in the newer review of market risk premiums, in which those authors review a longer-term data set than that used by Morningstar

[42] Brealey, R., Meyers, S., Allen, F. *Principles of Corporate Finance*. 8th Ed. McGraw-Hill, Irwin, Boston, MA, 2006.

and conclude that market risk premiums expected in the future are below the historical averages published by Morningstar.[43]

Brealey and Meyers conclude, based on their review of the recent evidence regarding the market risk premium, that a reasonable range of arithmetic equity premiums above short-term Treasury Bills is 5% to 8%.[44] Because the long-term historical return difference between Treasury Bonds and Treasury Bills has been about 1.5%, Brealey and Meyers' textbook indicates a long-term market risk premium relative to T-Bonds ranging from 3.5% to 6.5% [5% - 1.5% = 3.5%; 8% - 1.5% = 6.5%].[45] The 6.0% market risk premium I use in my CAPM analysis, based on Morningstar data, is near the upper end of that range. Mr. Strunk's 8.36% is well beyond the upper end of that range.

Confirming the fact that investors currently expect the market risk premium to be lower than it has been historically is a quarterly survey of chief finance officers undertaken by Duke University and *CFO Magazine,* under the direction of Professors John Graham and Campbell Harvey—finance professors at Duke and former co-editors of the *Journal of Finance*. The latest (June 2014) publication of that survey indicates that corporate chief financial officers believe that long-term (10-year) returns for the S&P 500 will be approximately 6.5%. With a current T-Bond yield of 3.3%, that expected S&P return implies a market risk premium of 3.2%—near the lower end of historical averages. This recent

[43] Dimson, E., Staunton, M., March, P. Triumph Of The Optimists, 101 Years of Global Investment Returns. Princeton University Press, Princeton, NJ, 2002.
[44] *Op. cit.*, p. 154.
[45] *Op. cit.*, pp. 149, 222.

evidence underscores the overstatement of Mr. Strunk's 8.36% market risk premium.

Finally, Mr. Strunk also cites the Australian Energy Regulator (AER) for authority in his discussion of the market risk premium he uses in his CAPM analysis. The AER has recently published a guide to its findings regarding the appropriate CAPM cost of equity, which is the primary methodology used by that regulatory agency. Mr. Strunk provides a copy of that document in his workpapers and the appendices to that document were obtained in discovery.[46] Here is a summary of what the AER has to say regarding its basis for selecting the market risk premium that should be used in a CAPM analysis:

- Consistent with the discussion in the previous section, we give greatest consideration to historical averages. We consider 6.0 per cent an appropriate estimate of this source of evidence. This represents the starting point for our determination of a point estimate. We note that while a point estimate of 6.0 per cent is common, the choice of the averaging period and judgments in the compilation of the data result in a range for plausible estimates of about 5.0-6.5 percent.
- We also give significant consideration to DGM [dividend growth models – DCF analyses] estimates of the MRP. Using our preferred application of these models, we estimate a range of 6.1-7.5 per cent.
- We give some consideration to survey estimates, which generally support an MRP estimate of about 6.0 per cent.
- We also give limited consideration to conditioning variables, which give mixed results at the time of this decision. Credit spreads and dividend yields are stable, while implied volatility suggests the MRP may be below the historical average of 5.6 per cent.
- Lastly, we give limited consideration to other regulators' estimates of the MRP. These generally suggest an estimate of 6.0 per cent is appropriate. The Tribunal has also affirmed several of these decisions.[47]

[46] See Pacific Power Response to Public Counsel Data Request No. 13.
[47] Australian Energy Regulator, "Better Regulation, Explanatory Statement, Rate of Return Guideline," December 2013, p. 97.

The AER selected a market risk premium (MRP) for its CAPM analysis of 6.5%, again, almost 200 basis points below Mr. Strunk's 8.36%.

Applying Mr. Strunk's CAPM analysis (risk-free rate, average beta coefficients), but using the AER's 6.5% market risk premium, produces a CAPM cost of equity estimate of 8.32%. [3.7% + 0.71(6.5%) = 3.7% + 4.62% = 8.32%] That result, produced by a much more reasonable market risk premium from a source cited by Mr. Strunk himself, indicates a CAPM equity cost estimate roughly than 130 basis points below the 9.67% Mr. Strunk provides, and which is based on his 8.36% market risk premium. Mr. Strunk's CAPM market risk premium is overstated.

Q: Why is Mr. Strunk's estimate of the expected market return in his CAPM based so much higher than long-term historical averages, current market expectations or that used by the AER?

A: Mr. Strunk's market risk premium is based on a single-stage DCF analysis of the S&P 500 Index, and projected earnings growth from one source is the only growth rate considered in that analysis. As I have noted previously, the sell-side analysts' projected earnings growth rates used by Mr. Strunk in his DCF analysis of the S&P 500 have historically overstated the actual growth that investors have realized and would, therefore, overstate Mr. Strunk's estimate of the cost of equity capital based on those growth rates.

Also, as noted above, the Australian Energy Regulator uses a DCF analysis of a market index as one method with which to estimate the cost of equity (not the only method as does Mr. Strunk). In addition, the AER uses a

multi-stage DCF model to estimate the expected market return. In Appendix E to its "Rate of Return Guideline," the AER indicates that the final stage of the two or three-stage DCF used to estimate the market return is the most recent estimate of the growth rate in Gross Domestic Product (GDP). The use of the GDP is based on the reasoning that, over the long term, corporations are not likely to grow faster than the overall economy.

For example, Mr. Strunk's CAPM-DCF assumes that the earnings of all stocks in the S&P 500 will grow indefinitely at a rate of 9.74%, but the U.S. Office of Management and Budget reports in its latest economic forecast that, through 2021, GDP is expected to increase at an average rate of only 4.8% over the next 10 years. Mr. Strunk has not explained why he believes it is reasonable for the S&P 500 to grow at more than a 9% rate while the economy in general grows at half that rate. Ultimately, the final stage DCF growth rates used by the Australian Energy Regulator to calculate the expected market return, and then the MRP for their CAPM, were significantly lower than the growth rates used by Mr. Strunk and their resulting market risk premium estimate, similarly, was lower and far more similar to the long-term historical MRP of 6.0%. Again, Mr. Strunk's market risk premium is overstated and a more reliable estimate of the CAPM cost of equity capital based on his analysis using the AER risk premium is 8.32%, not the 9.67% he reports.

C. Mr. Strunk's Risk Premium Analysis.

Q: The third primary methodology used by Mr. Strunk to estimate the cost of equity is a historical risk premium based on allowed returns for electric

utilities and utility bond yields. What are your comments regarding that analysis?

A: Mr. Strunk's Allowed Return Risk Premium compares historical allowed equity returns to three types of bond yields—Treasury bonds, A-rated utility bonds, and BBB-rated corporate bonds. Over the past 16 to 20 years, Mr. Strunk's workpapers show that allowed equity returns have exceeded current bond yields by 3.8%, 5.4%, to 5.7% for BBB-rated bonds, A-rated bonds, and T-Bonds, respectively. Therefore, with current BBB, A, and T-Bond yields at approximately 5.2%, 3.6%, and 3.7%,[48] respectively, Mr. Strunk's historical BBB, A, and T-Bond risk premiums of 3.8%, 5.4%, and 5.7% indicate a cost of equity ranging from 9.0%, to 9.4%.[49] However, Mr. Strunk concludes that a negative correlation exists between current bond yields and risk premiums and, due to that relationship, imputes larger risk premiums to reach an equity cost estimate of 10.22% (based on the same current bond yields cited above).

It is important to understand at the outset that the annual cost rate differences between the allowed returns and utility bond yields are not necessarily reliable indicators of investor-expected risk premiums. First, the allowed returns are simply averaged over all the available rate case decisions during a calendar year. That means that the capital market data that the regulatory body considered was drawn from a time prior to the decision rendered and the allowed return might not correlate with decision-time-specific, macro-economic events. In some

[48] See Pacific Power Witness, Kurt G. Strunk Exhibit No. KGS-14.
[49] BBB-rated bond yield (5.2%) + BBB-rated historical risk premium (3.9%) = 9.0% cost of equity estimate. A-rated bond yield (3.6%) + A-rated historical risk premium (5.4%) = 9.0% cost of equity estimate. T-Bond yield (3.7%) + T-Bond historical risk premium (5.7%) = 9.4% cost of equity estimate.

cases, that period of time between the hearing and the decision can be substantial.

Second, the allowed return can overstate the cost of capital, and given the fact that the market price of electric utilities over the time period studied by Mr. Strunk has been substantially above book value, it is reasonable to believe that allowed returns have overstated the actual cost of equity. Therefore, equity cost estimates based on that history produce results that are similarly overstated.

Third, the relative risk of the utility for which the equity return was determined is not a factor in Mr. Strunk's analysis. His allowed return data is drawn from Regulatory Research Associates (RRA). For example, that publication shows a median allowed return for electric utilities in 2013 of 10.02%.[50] However, RRA notes that that figure includes "several surcharge/rider generation cases in Virginia that incorporate plant-specific ROE premiums," so the allowed returns in those cases were not based solely on the cost of capital.[51] Absent the inclusion of those Virginia ROE premiums, the average allowed return for electric utilities in 2013 was 9.8%. Clearly, an allowed return for a generating facility with legislatively-mandated ROE premiums is not a metric that should be used to determine the cost of capital in this proceeding. Yet, those sorts of data are included in Mr. Strunk's allowed return risk premium.

Fourth, while the inclusion of an outlier may not be problematic in years in which there are many rate case decisions, that would not be the case in years in which the number of decisions is small, which was the case in the early 2000s.

[50] Regulatory Research Associates, "Regulatory Focus, Major Rate Case Decisions—Calendar 2013," provided in response to Public Counsel Data Request No. 25.
[51] *Id.*

Also, it is reasonable to believe that changes in the regulatory structure in some states over the past 35 years have complicated historical data comparability.

Q: You noted that Mr. Strunk places emphasis on a negative correlation between bond yields and risk premiums in reaching his Risk Premium equity cost estimate. Please comment on that issue.

A: Mr. Strunk subtracts average bond yields from the equity returns allowed utility companies over the past 16 to 20 years. Then, through a regression analysis, he posits a relationship between bond yields and risk premiums and uses that relationship, with the current cost of debt, to estimate the Company's cost of equity. Aside from the problems that exist generally with the data used in the analysis, as noted above, there are additional problems with this particular approach.

Although Mr. Strunk's regression analysis shows a relatively strong correlation between risk premium and bond yields (a high r^2 value), that is not surprising because the resultant risk premium is a direct arithmetic function of the prevailing bond yield and a high correlation would be expected. Also, while Mr. Strunk's review of allowed returns for utilities shows a negative correlation with bond yields, in my view, what Mr. Strunk's risk premium regression analysis has actually captured is simply the tendency of regulatory allowed returns to move more slowly than aggregate bond yield changes—regulatory caution, if you will. The downward trend in allowed ROEs has simply been slower than the downward trend in fundamental capital costs (bond yields). The same was true in 1974-1983, when interest rates were rising. There too, regulators' allowed returns

lagged the interest rate changes, just as they have done since the mid-1980s when U.S. interest rates began their long-term decline. Therefore, Mr. Strunk's regression analysis has simply captured regulators' cautionary approach to changing allowed returns rather than any fundamental stochastic relationship between investor-required risk premiums and bond yields.

Q: Is there other, more recent evidence that counters Mr. Strunk's assumption that expected risk premiums vary inversely with interest rates?

A: Yes. In discussing the witness' CAPM analysis, I mentioned an ongoing survey by professors at Duke University. Professors John Graham and Campbell Harvey, in conjunction with *CFO Magazine* have, since 1999, polled corporate financial officers regarding their expectations for the expected market risk premium. In addition to the fact that Graham and Harvey found risk premiums to range from 2.5% to 4.5% (well below the historical risk premiums used by Mr. Strunk), they also found that the expected risk premium varies *directly* with interest rates. That is, as interest rates decline, so too do expected risk premiums. Therefore, there is published evidence in the financial literature that counters Mr. Strunk's regression analysis, which indicates risk premiums increase when interest rates decline.

Finally, in some respects, the notion of risk premiums varying inversely with interest rates is counter-intuitive. Let's assume that investors require a 4% premium to invest in utility stocks in today's capital market environment with utility bonds at 5.0%. Now, suppose some dramatic international event occurred that caused economic turmoil and sent utility bond yields to their 1982 levels of

almost 16%. In that extremely unstable economic environment—in which investors have to be induced to invest in utility bonds by means of a 16% return—it is simply not logical to believe that the risk premium investors require for common stocks in that environment would *decline*. Yet, that is the foundation of Mr. Strunk's thesis here. With the added uncertainty and higher interest rates, it is reasonable to believe that investors would require increased risk premiums. That logic is confirmed in the Graham and Harvey studies cited above.

D. Mr. Strunk's Comparable Earnings Analysis.

Q: Please describe Mr. Strunk's Comparable Earnings Analysis.

A: Mr. Strunk averaged the return on book value for the Dow Jones Utility Index and the Dow Jones Industrial Index over the 12-year period, 2002 through 2013. The average return for the utility index was 9.73% and the average return for the industrial index was 16.31%.

Q: What are your concerns with Mr. Strunk's Comparable Earnings Analysis?

A: With regard to the average return on book value for the utility index, accounting returns do not represent the market-based cost of capital. As I have discussed, when market prices of utility stocks are above book value, as they have been over the entire period studied by Mr. Strunk, the expected return on common equity (the accounting returns that Mr. Strunk has averaged) will *overstate* the cost of common equity. A simple example will explain why that is the case.

Assume a utility has a $10/share book value and is expected to earn $1 in the coming year for a return on book value of 10%. If investors require a 10% return for that type of stock they would be willing to pay a market price of $10 for

that stock. In that case, the accounting return (10% ROE) is equal to the investors' required market return (10% Cost of Equity) and the market price of the stock ($10/share) is equal to the book value ($10/share).

Now assume our utility was expected to earn $2/share in the next year. The book value is still $10/share and the expected accounting return (ROE) is 20%. We assume investors still require a 10% return, and the market price will be bid up through arbitrage until it reaches $20/share, at which point the investors' will earn their required return—10%. At that point, the accounting return (20% ROE) is substantially greater than the required market return (10%, the Cost of Equity) and the market price ($20/share) is twice the book value ($10/share).

This latter case more closely represents the current market conditions for Mr. Strunk's utility index. If investors are providing stock prices for Mr. Strunk's companies that are *higher* than book value, and those companies are expected to earn a 9.7% return on book value, the investor *cannot* expect to earn that 9.7% return on that higher market value. He or she must expect to earn a return on the market price paid for those companies and, if the market price is higher than book value, which it has been over Mr. Strunk's 2002-2013 study period, that market return will be *below* 9.7%. Because the cost of equity capital is the investors' required market-based return, the cost of equity capital must be below the 9.7% projected accounting return. Mr. Strunk's Comparable Earnings Analysis for utilities overstates the current market-based cost of equity for his electric utility sample group, and serves to confirm the reasonableness of the range of the current cost of equity I provide in this testimony—8.50% to 9.50%.

Q: Mr. Strunk's final corroborative method consists of a Comparable Earnings Analysis of unregulated companies (the Dow Jones Industrial Index). Does that analysis provide a useful corroborative estimate of the cost of equity of Pacific Power's Washington utility operations?

A: No. As I noted above in my discussion of Mr. Strunk's Comparable Earnings analysis of the utility index, the average accounting return is not a surrogate for the market-based cost of capital. Moreover, while the average accounting return does have some relationship to expected earnings for utilities (the accounting book value can be considered a surrogate for rate base), that is not the case for unregulated industrial companies, whose earnings are based on the economic value of their assets not the accounting value. Therefore, the average historical earned return of unregulated industrial companies cannot be related to the market-based cost of equity through their market-to-book value, as is the case for utilities.

Also Mr. Strunk elects not to screen the competitive industrial companies with risk criteria that are similar, on average, to utilities (e.g., beta, bond rating), therefore, there is no indication that those companies have a similar investment risk profile to Pacific Power or any of Mr. Strunk's sample of electric companies. One important risk factor left out of Mr. Strunk's comparable earnings process is market share. Pacific Power's Washington operations enjoy very large market shares in their service territories, while the competitive companies in Mr. Strunk's industrial index, like McDonald's do not enjoy such protection. For example, one could buy lunch at McDonald's or, very easily, some other type of food from

many other companies to satisfy one's hunger. However, when one flips on the light in the kitchen in the morning in Walla Walla—one's options as to the source of that electricity are very limited. The point is clear; Mr. Strunk's index of unregulated firms is not comparable in competitive risk and, therefore, not comparable in overall investment risk to Pacific Power or any of the other utilities in Mr. Strunk's similar-risk utility sample group. An analysis of the accounting return on equity of unregulated companies does not offer the Commission any information that would be useful in its determination of the appropriate return to be allowed for rate-setting purposes for Pacific Power's Washington operations in this proceeding.

Q: When Mr. Strunk's cost of capital analyses are modified to utilize more reliable inputs, what results do they produce, generally?

A: Table VI, below shows the results of Mr. Strunk's cost of equity analyses, modified in the manner in which I have described in this portion of my testimony.

Table VI: Mr. Strunk's Modified Cost of Equity Capital Results

Method	Cost of Equity
Discounted Cash Flow	8.50%-8.75%
Yield + Growth DCF	8.58%
Capital Asset Pricing Model	8.32%
Risk Premium	9.0%-9.4%

The average of Mr. Strunk's modified equity cost estimates ranges from 8.60% to 8.76%.

Q: Does that conclude your discussion of Company witness, Strunk's cost of equity analysis, Mr. Hill?

A: Yes, it does.

Q: Does this conclude your testimony?

A: Yes, it does.