EXHIBIT NO. ___(CEO-1T)
DOCKET NO. UE-11___/UG-11___
2011 PSE GENERAL RATE CASE
WITNESS: DR. CHARLES E. OLSON

BEFORE THE
WASHINGTON UTILITIES AND TRANSPORTATION COMMISSION

WASHINGTON UTILITIES AND TRANSPORTATION COMMISSION, **Complainant,** **v.** **PUGET SOUND ENERGY, INC.,** **Respondent.**	**Docket No. UE-11____** **Docket No. UG-11____**

PREFILED DIRECT TESTIMONY (NONCONFIDENTIAL) OF DR. CHARLES E. OLSON ON BEHALF OF PUGET SOUND ENERGY, INC.

JUNE 13, 2011

PUGET SOUND ENERGY, INC.

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PUGET SOUND ENERGY, INC.

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I. INTRODUCTION

Q. Please state your name and address.

A. My name is Charles E. Olson. My address is 10822 Alloway Drive, Potomac, Maryland 20854.

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

A. I am a Professor of the Practice at the University of Maryland, Robert H. Smith School of Business, where I teach courses in economics, strategy and international business. I am also self-employed as a consulting economist.

Q. Have you prepared an exhibit describing your education, relevant employment experience and other professional qualifications?

A. Yes, I have. It is Exhibit No. ___(CEO-2).

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

A. The purpose of my testimony in this proceeding is to present an analysis of an appropriate rate of return on PSE's utility operations in Washington State.

Q. Please summarize your finding concerning an appropriate return on equity for PSE.

A. Based on the analyses that I have done, I recommend that PSE be authorized a return on common equity capital in the range of 11.0 to 13.0 percent. My opinion is based on a discounted cash flow (DCF) study of a group of comparable electric and combination companies. My testimony also includes risk premium and CAPM studies. In my view, PSE requires a return on common equity of 11.0 to 13.0 percent if it is to attract capital on reasonable terms.

II. OVERVIEW OF COST OF CAPITAL

Q. Will you please explain the meaning of the fair rate of return?

A. Any business, whether regulated or unregulated, must earn enough dollars of profit to compensate present investors if new capital is to be attracted on reasonable terms. If new capital cannot be attracted on reasonable terms, a business will have difficulty providing reliable and adequate service. The fair rate of return is a percentage figure, which, when applied to the appropriate rate base, will yield the earnings required to attract capital on reasonable terms. This amount, known as the earnings requirement, must be added to reasonable operating expenses, depreciation and taxes to determine the total revenue requirement that must be collected from the rates charged.

Q. How should the rate of return be determined under public utility regulation?

A. The prevention of monopoly profits, i.e., a competitive result, suggests that the purpose of public utility regulation with respect to rate of return is to permit the regulated company to earn its cost of capital. By permitting a regulated company to earn its cost of capital, regulation should prevent inadequate earnings as well. Earnings levels above the cost of capital in the long-run imply excessive profits; likewise, long-run earnings levels below the cost of capital indicate inability to attract capital on reasonable terms.

Under competition a firm cannot expect to earn more on a project it is about to undertake than its cost of capital. If more were expected, the project would be undertaken by the firm's competitors and the actual rate of return would be driven down. While more than the cost of capital may be hoped for, the rational firm operating in a competitive market cannot expect more than the competitive rate of return or cost of capital from a given project. In a similar fashion, there is no reason to expect any non-regulated firm to undertake a project that will produce a rate of return that is below the cost of capital.

Presumably, a utility could earn more than its cost on at least some of its projects; otherwise, there would be no reason for its being regulated. If the rate level objective of utility regulation is to approximate what would happen in competitive markets, then it follows that the average expected return on new investment is held to the cost of capital. This does not mean that all new investments should be expected to earn the cost of capital; the regulatory agency may have public

policy-dictated, non-rate level objectives that call for cross-subsidy between investments. The point is that the average expected rate of return on new investment in total should be equal to the cost of capital if the competitive norm is taken as the standard.

A rate of return based on the cost of capital approach is consistent with the guidelines set forth by the U.S. Supreme Court in *Bluefield Water Works & Improvement Co. v. Public Service Commission of West Virginia*, 262 U.S. 679 (1923) and *Federal Power Commission v. Hope Natural Gas Company*, 320 U.S. 591 (1944), as affirmed by the Court in *Duquesne Light Co. v. Barasch*, 488 U.S. 299 (1989). Essentially these cases require that utilities be authorized returns that: (1) are comparable to alternative investment opportunities of corresponding risk; (2) permit capital attraction on reasonable terms; and (3) maintain financial integrity. A rate of return based on the cost of capital of the company whose rates are at issue is consistent with these standards.

The Supreme Court did not quantify what it meant by capital attraction on reasonable terms and financial integrity. In the *Hope* case financial integrity and capital attraction were not tied directly to bond ratings, common equity ratios or financial ratios. However, the financial condition of the utility was discussed. It was noted that Hope Natural Gas Company ("Hope") was 100 percent common equity financed and that the yields on better issues of bonds of natural gas companies were close to 3 percent. Hope had protected, established markets and an adequate gas supply. The regulatory agency (Federal Power Commission) had concluded that Hope was in "… a strong position to attract capital upon favorable

terms when it is required." The authorized return was 6.5 percent, or more than double the going rate on better gas company bond issues.

Viewed in this historical perspective, it is difficult to read *Hope* or the earlier *Federal Power Commission v. Natural Gas Pipeline Co.,* 315 U.S. 575 (1942) without concluding that a utility's common stock should have a market-to-book ratio of at least 1.1. There are simply too many references to sound financial parameters and not even a suggestion that there might be difficulty attracting capital on reasonable terms.

Q. How is the fair rate of return determined for a regulated enterprise?

A. The fair rate of return is determined through the use of the cost of capital approach. Under the cost of capital approach, separate determinations are made of the cost of each type of capital utilized by the utility. If, for example, a utility is financed with long-term debt, preferred stock and common equity, the cost of each of these components is estimated individually. Then the cost rate of each component is weighted by the appropriate percentage that it bears to the overall capitalization. The sum of the weighted cost rates is the overall cost of capital and is used as the basis of the fair rate of return.

III. DESCRIPTION OF METHODOLOGY

Q. Please explain the steps you followed in developing your recommended rate of return for PSE.

A. I began by examining the proposed capital structure. Next I developed an estimate of the return that investors would require to invest in the common stock of PSE if it were a traded company. Toward this end, I prepared a DCF study of the cost of common equity to PSE, using a group of electric and combination companies. During this process I also derived risk premium and CAPM estimates of the cost of common equity capital to PSE.

Q. What materials did you utilize in the preparation of your testimony and exhibits?

A. Most of the information I utilized was from standard financial sources, such as annual reports and financial reports. In addition, I have testified in previous PSE rate cases and did other consulting work for the Company. I believe that I am familiar with the regulatory, economic and financial problems that have and will have an impact on the ability of PSE to attract capital in the future.

Q. Earlier you referred to an "earnings requirement" that must be added to expenses, depreciation and taxes to determine the revenue requirement. Is the earnings requirement the same thing as the return on common equity?

A. No, it is not. Essentially the return on common equity is derived from the DCF approach and is the authorized return on equity. However this authorized return must be earned if the ratemaking process is to work. In other words, within reasonable limits the authorized return must be earned at least during the first 24 months that rates are in place. If the authorized return on common equity cannot be earned then the regulatory ratemaking model needs modification or replacement.

Q. Is the regulatory ratemaking model in the state of Washington in need of modification?

A. Yes, I believe it is. While Mr. Gaines will testify about the earnings shortfall in more detail than I will, I have seen the data that indicate a significant gap between the authorized return and the earned return. The gap has gone from less than two hundred basis points in 2007 to more than 500 basis points currently. A gap of this magnitude requires regulators to take a hard look at the ratemaking model and make appropriate modifications.

Q. What, in your opinion, is the problem?

A. I believe that the problem lies primarily with the historical test year approach that has long been utilized by the WUTC. This model, which is set forth in previous

PSE and other WUTC rate orders, relies on accounting data and audits to verify data and data relationships for prior periods. It does not work during periods of significant inflation or significant plant replacement because plant that is not complete cannot be put into rate base.

The specific problem for PSE centers on the replacement of distribution plant. When old vintage plant is replaced rate base goes up significantly but revenue does not. As a consequence there is more rate base during the rate effective period than there was during the test period and the realized rate of return falls short of the authorized return.

Q. Are there other causes of a return shortfall or attrition that are applicable to PSE?

A. Yes, there are. PSE's current electric rates are based on a 2008 level of expenses and natural gas rates are based on twelve months ended June 2010 level of expenses. The Company requested a higher level of expenses be recognized in rates in its last general rate case but this was rejected. PSE and other WUTC jurisdictional utilities have requested a variety of ratemaking treatments to offset attrition over the years. They include year-end rate base, pro forma adjustments, trackers, and future test years. For the most part these requests have been rejected. The obvious and predictable result is an earnings shortfall and a new rate case.

Q. What are the consequences of a large earnings shortfall?

A. There are three consequences that I am aware of. First, it becomes difficult to attract capital and keep its plant up-to-date. Second, by setting rates below current costs, the Commission is under pricing electricity and natural gas in PSE's service territory. This encourages uneconomic consumption of electricity and requires unnecessary capacity expansion. Finally, regulatory expenses are higher than necessary because constant earnings shortfalls mean frequent and hard fought rate cases.

Q. Why do you say that PSE's electricity and natural gas is underpriced?

A. PSE's rates do not produce an earned ratemaking return equal to its authorized return. This means its rates fall short of its costs. In turn, consumers use more than they otherwise would. Sending proper price signals is an important regulatory function. Unfortunately that goal is subordinate to that of following the historical test year approach. Accounting appears to be more important than economics. In my view there should be more emphasis on proper price signals.

Q. What should be done?

A. In my opinion ratemaking needs to be reoriented. The goal should be to implement a ratemaking process that results in an earned ratemaking return that is equal to the authorized return for the first 24 – 36 months of the newly authorized rates. A minimum of 24 months of future costs should be built into rates to allow them to be effective for a full year and to facilitate the lag between a new filing

and the adjudication of such a case. This would also mean fewer rate cases. This could be done in a variety of ways including a more forward test period, forward rate base and expense adjustments without audit requirements, interim rates subject to refund, CWIP in rate base or a combination of such mechanisms. The recently-filed pipeline integrity program (PIP) is an example of such an approach. A demand elasticity or lost revenue mechanism could also be appropriate in certain circumstances. The goal should be an opportunity to have an earned return equal to the authorized return and the Commission should be prepared to be pragmatic to achieve it. I would also note that this has been done in numerous jurisdictions, in some instances decades ago.

Q. What capital structure is proposed by PSE in its filing in this case?

A. The proposed capital structure consists of 4 percent short-term debt, 48 percent long term debt and 48 percent common equity.

Q. Is the capital structure proposed by PSE a reasonable one to utilize for ratemaking purposes in this case?

A. Yes, it is. The overall rate of return that is applied to the rate base is the product of three variables: capital structure, embedded cost of debt capital and the appropriate return on common equity. In that the objective of ratemaking with respect to return is a reasonable "end-result," it is not appropriate to view one of the variables that impacts on the total return dollars in isolation. The common

equity ratio proposed in this case is reasonable relative to the debt ratio with which it is combined and the recommended return on common equity capital.

Ultimately, a reasonable "end-result" can only be judged in terms of whether it will permit capital attraction on reasonable terms. At the most basic level, the equity ratio must be high enough to permit additional debt capital to be issued at any time without an adverse effect on PSE's financial health. If the capital structure does not permit some margin for additional debt financing at all times, PSE is subject to the potential adverse impact of unanticipated tight credit conditions. Current credit market conditions illustrate the need for financial flexibility. Companies in good financial health have access at low spreads while the others only have access on unfavorable terms. PSE, with a corporate credit rating of Triple B, is a marginal credit.

Q. Please discuss the relationship between credit conditions and capital structure for a regulated utility.

A. The Federal Reserve Board influences control over the supply of money in the United States. Because it is widely believed that there is a close relationship between growth in the money supply and inflation, the concern exists that the growth in money supply will be slowed or even halted by the Federal Reserve Board. Thus, when inflationary pressures exist, a natural policy reaction is to slow monetary growth. This in turn produces tight credit conditions, difficulty in borrowing and a depressed stock market.

Credit conditions during 1974 and 1975 provide an example of the risk associated with a low equity ratio and substantial external financing requirements. After a sharp increase in the world price of oil in early 1974, combined with a phase-out of domestic price controls, the inflation rate accelerated to the double-digit level. Public utility debt financing became very difficult to obtain and stock prices plunged. As a result, the construction programs of many utilities had to be reduced (often at great cost) and common stock had to be issued at prices well below book value.

The period between 1980 and 1982 was also characterized by difficult credit conditions. Inflation accelerated to double-digit levels in 1979, partly as a result of sharp increases in oil prices. The money supply was increasing at a rapid rate; interest rates increased significantly. The Federal Reserve Board reacted by announcing that it would act to directly control the money supply, instead of attempting to control interest rates as had been done previously. As a result, interest rates reached very high levels during the 1980 to 1982 period. The prime rate exceeded 20 percent during this period and interest rates on utility bonds exceeded 15 percent. Credit was available but exceedingly costly.

Currently, (May 2011), financial markets are affected by uncertainty relative to the Federal budget, the foreign trade deficit, monetary policy, potential inflation, banking uncertainty and a slow recovery from recession. Relative to the inflation rate of approximately 2 percent, the cost of credit is on the high side because of nervousness about the banks and credit markets. The average interest rate on seasoned Baa rated bonds, is about 6.0 percent currently. In my view, the

Commission should set PSE's rates at a level that provide an opportunity to attract capital without dilution. At a minimum, this means that the rates authorized in this case should allow PSE to strengthen its current bond and corporate credit rating.

Q. Please explain the DCF methodology you will use to estimate the rate of return on common equity capital in this case.

A. Equity owners share in the residual that remains from revenues after expenses, including interest, are paid. Thus, there is no contractual relationship as to required earnings between the common stockholder and the corporate entity. Earnings on equity can only be judged in terms of whether they produce market prices for the common shares that permit capital attraction on terms that are considered fair and reasonable.

From an investor's viewpoint the cost of common equity of a given company is the minimum expected return that will induce him to buy stock at the going market price. Thus, the focus must be on what a reasonable investor – and not the analyst – would consider is a reasonable return. In the case of PSE, the Company is a privately held corporation. PSE's cost of equity can only be determined by using cost of equity measurements from companies whose shares trend on public markets. This result would then be imputed to PSE. For example, if an investor will buy a stock that is selling at $20.00 per share but will not buy it at a higher price, and expects to receive $1.20 in dividends and to sell it in exactly one year at $21.20, the cost of capital is 12 percent, as shown below:

Dividend Yield = ($1.20 ÷ $20.00)	= 6%
Growth = ($21.20 ÷ $20.00)-1	= 6%
Cost of common equity (k)	= 12%

Unfortunately, the task is not this easy because we do not know what investors really expect when they decide to buy a given stock.

In my opinion, the most reasonable way to go about estimating the cost of common equity is to utilize the DCF approach. The DCF approach to estimating the cost of equity capital is based on the premise that the investor is buying two things when he purchases common stock – dividends and growth. Investors in American businesses have come to expect growth in earnings and dividends per share of common stock because of a public policy that is committed to increasing Gross Domestic Product ("GDP"). In addition, the experience of most U.S. enterprises since the end of World War II has been one of increased dividends and earnings per share. The cost of equity capital using the discounted cash flow method is that discount rate which equates a given market price of a stock with the expected future flow of dividends.

The discounted cash flow method is frequently expressed as a formula in which "k", the cost of capital, is equal to D/MP (dividends divided by market price), the dividend yield, plus "g", expected growth in dividends. Thus:

$$k = D/MP + g$$

In utilizing this formula it must be assumed that "g" can not exceed "k" because that implies negative dividends. It must also be assumed that a growth rate, "g",

that is equivalent to a constant rate of growth to infinity can be estimated. Mathematically this is true, but it is not important for purposes of application.

Implementation of the DCF approach requires the exercise of considerable judgment concerning the views of investors. The real question is what affects investor expectations. Estimating investor expectations is a difficult task because of the many factors that affect capital markets in general and common stocks in particular. The current high rate of unemployment, huge Federal budget deficits, the trade deficit, credit markets, potential inflation, foreign exchange rates and Federal Reserve Board policy all impact significantly on investor judgments. In addition to these factors, the appropriate return on equity for PSE is governed by all of the specific factors that influence its particular situation. This includes PSE's inability to earn its rate of return under current ratemaking policy.

Q. What information is available and useful for purposes of making a DCF estimate of the cost of equity capital for PSE?

A. Investors are aware of current conditions in the economy, as just discussed. Significant factors affecting the decisions of investors include the situation in capital markets, current budget and trade deficits, the potential for higher inflation, high unemployment and the ongoing slow recovery from recession. This type of information is available in detail, particularly in this age of the internet. Presumably, investors utilize it, understand the state of the economy and have their own expectations about GDP growth, interest rates and other factors. These opinions influence their return expectations and thereby determine the

maximum price they will pay for various types of securities. Thus, because investors take the economic situation into account in their decision-making, information concerning the economy is reflected in the prices of stocks and bonds at any given time.

Q. Please explain the Risk Premium approach to estimating the cost of common equity capital.

A. The risk premium approach is based on the premise that common stocks are riskier than bonds. Consider the case of a given business enterprise. The bondholder has a prior claim on the assets of the company in the event of bankruptcy as well as on the earnings of the company while it is in operation. Common shareholders receive the residual earnings from operations. Thus, the bonds of a corporation are less risky than the common shares.

In The Stock Market: Theories and Evidence (published in 1973), Lorie and Hamilton have made the following observation at page 214:

> It is perfectly clear that bonds are less risky than stocks when both classes of securities are issued by the same corporation. Since bondholders have a prior claim to the earnings and assets of the corporation the rates of return on bonds are less variable and more confidently predicted than rates of return on the common stock. This fact is so obvious that it has not been studied and does not require study.

This same point has been made by Myers:

> Interest rates on corporate bonds and other debt instruments can be readily observed to provide a floor for the estimate. Changes in the basic level of interest rates normally correspond in direction to changes in the cost of equity capital.

Stewart C. Myers, Bell Journal of Economics, Spring 1972, p. 65.

There are two general problems associated with applying the risk premium approach. First, because of the difficulty in measuring an expected risk premium, this approach can produce a wide range of results. Second, it is difficult to apply the risk premium approach in a way that differentiates the return requirement for different companies in an industry. In other words, all electric utilities have the same or almost the same cost of capital under this methodology.

Q. Has the Risk Premium method ever had the standing of the DCF method in rate cases?

A. To my knowledge it has not. Witnesses have frequently used it as a check but not as a primary method of determining the return on equity. The risk premium approach to the cost of equity determination is a very judgmental standard. In the early 1980s when interest rates on utility bonds were near 15 percent a risk premium check was useful because it was obvious that required return on equity must be at least 15 percent. During more normal times it is of little value because authorized equity returns are generally above long-term interest rates.

My experience has been that most regulatory commissions give this method very little or no consideration. For decades, for example, the WUTC gave it no weight. The reason was that it was not as precise as the DCF approach. Instead of providing useful information it simply added controversy. FERC has considered this method and generally has rejected it as a stand-alone methodology.

Q. Are there particular problems in applying the Risk Premium approach in the current environment?

A. Yes. The Federal Reserve has flooded the economy with liquidity to combat the recession and the slow recovery. Once this causes inflation the Fed will pull back and interest rates will rise, perhaps sharply. In such an environment the risk premium will be even more difficult to measure. Currently the interest rate on a 30-year U.S. Treasury bond is approximately 4.3 percent. Moody's is currently forecasting the 30-year Treasury will yield 5.75 percent by December 2011. Thus there is good reason to be very concerned about the reasonableness of interest rate based estimates of capital costs in the current environment.

Q. What is the CAPM?

A. The CAPM is a variant of the risk premium method and is sometimes used to estimate the cost of common equity capital in rate cases. CAPM is short for Capital Asset Pricing Model. This model estimates the cost of equity by adding a risk premium to a risk-free interest rate or a long-term bond rate. Thus the cost of common equity under the CAPM is equal to an interest rate plus an equity risk premium that is a function of a company's stock price volatility as measured by beta. Beta is a coefficient that shows the percentage change in the return on a stock associated with a one percentage point change in the market return.

The model can be stated as follows: Expected return = an appropriate interest rate + a risk premium derived used beta.

Using an example, if the expected return on a diversified portfolio of common stocks is 13 percent, the interest rate on long-term government bonds is 5 percent and the utility's beta is 0.75, then the cost of equity is 11.0 percent calculated as follows: 5% (interest rate) + 8% (13% - 5%) times 0.75 = 11.0%.

The problem with CAPM is that beta does not measure risk. Eugene Fama and Kenneth French showed that there was no link between returns and beta in the Journal of Finance in 1992 in an article titled "The Cross-Section of Expected Stock Returns". French was quoted in Fortune magazine as follows concerning the study: "What we are saying is that over the last 50 years, knowing the volatility of an equity doesn't tell you much about the stock's return". In other words, beta and hence CAPM are questionable.

I am not aware of whether the WUTC was aware of the Fama and French study when the PacifiCorp order was issued on May 12, 2011. There it was indicated that the CAPM was used as a check. With this in mind, I will present a brief CAPM estimate of the cost of equity. However, my doubt concerning CAPM is considerable and I believe the Commission should be concerned as well.

IV. APPLICATION OF DCF

Q. You have explained that you utilize the DCF approach for purposes of determining the return on common equity capital. You have also indicated the kinds of economic information that investors consider in analyzing potential investments and how this information is "embedded" in the prices

paid by investors for common stock and other securities. Would you explain how you will apply the DCF approach in this case?

A. PSE is privately held and does not have publicly traded common shares. For this reason, a proxy or proxies must be employed in DCF analysis. To estimate the cost of equity to PSE, I will perform a DCF proxy analysis for a group of comparable electric and combination companies. This is a common technique for experts to use to estimate the cost of capital.

Q. What market information is available to investors regarding the companies in your group of comparable companies?

A. Investors are likely to have the following information:

(1) Market price data for common shares;

(2) Past and present dividends;

(3) Past and present earnings;

(4) Past, present and forecasted capital expenditure data;

(5) Yields on bonds and preferred stock;

(6) Short and long-term forecasts by security analysts for earnings and dividends; and

(7) Regulatory commission rulings.

Q. How is this information utilized by investors?

A. It is reasonable to assume that such information is utilized in investment decision-making. In all likelihood, the more recent the information, the more weight it is given. However, it is not reasonable to expect that past trends are ignored. In

addition to the above market information, investors are aware of statements made by management and know that regulated companies are involved in regulatory proceedings about rates and other issues.

Q. Please explain how you selected your comparable utilities for the purpose of estimating the cost of common equity using the DCF approach.

A. Certainly. I began with the group of electric and combination utilities that is covered by The Value Line Investment Survey. This group includes all of the major electric utilities whose common shares trade on public markets. Many of these utilities also distribute natural gas. This list can be viewed as the universe of utilities that are available for comparative analysis. The next step was to eliminate companies that are not comparable to PSE. I began by eliminating distribution only electric and combination companies. These companies are less capital intensive than vertically-integrated utilities and also have no generation risk. I also eliminated companies that reduced their dividend rate during the last two years. My companies had to have an S&P bond rating of BB to BBB+; Puget Energy's corporate credit rating is BB+ and PSE's corporate credit rating is BBB. I also eliminated companies with significant merchant generation assets because of the unregulated nature of this activity. Finally, I utilized a revenue screen to eliminate those utilities that are much larger or smaller than PSE. PSE's 2009 revenues were $3.3 billion; utilities with less than half or more than twice that number were eliminated.

The remaining group of utilities is as follows:

- Alliant Energy
- CMS Energy
- Great Plains Energy
- NV Energy
- OGE Energy
- Pinnacle West Capital
- TECO Energy
- Western Energy
- Wisconsin Energy

In my view a group of nine utilities is more than adequate for purposes of obtaining a reasonable DCF estimate of the cost of common equity capital.

Q. Why does a group of nine companies provide a sufficient proxy group for purposes of cost of capital estimates in this case?

A. There are about 50 electric utilities and combination gas and electric utilities with common shares that track on public markets that are followed by Value Line. This group should be considered as the universe of companies available for analysis. Quite clearly if a cost of equity estimate was made for the group and applied to an individual utility, all companies in the industry would have the same cost of capital.

I applied the screens I did to eliminate companies that have different risk characteristics than PSE. The nine companies in my group are comparable risk-wise to PSE and constitute the universe of such utilities. This group is not a sample but rather all of the utilities that are comparable to PSE. Thus it would be

inaccurate to say that this group of nine is too small a sample. It is not a sample at all; rather it is a universe of comparable companies.

Q. What dividend yield should be utilized for your comparable companies in estimating the DCF cost of equity capital?

A. Exhibit No. ___(CEO-3), shows the dividend yields for the nine selected companies for the period October 2010 through March 2011. I believe this period is long enough to smooth short-term fluctuations and short enough to avoid the use of stale data. FERC has considered this issue very carefully and long ago concluded that six months reasonably reflects a balance between being current and smoothing the markets ups and downs. The dividend yields were calculated monthly and averaged. The range in the dividend yields is from 2.97 to 5.04 percent and the mean is 4.14 percent. The median is 4.38 percent.

Q. What growth rate is expected by investors for the electric and combination companies you have selected?

A. Exhibit No. ___(CEO-4) presents the Yahoo Finance consensus five-year projected earnings growth rates for the group of selected companies. There are a number of organizations, such as Goldman Sachs, that provide individual estimates of expected growth, but there are two organizations that compile these estimates and publish consensus data. Zacks is one of these. The other is Yahoo Finance. The average Yahoo Finance consensus estimate of expected earnings

growth for the comparable companies in April 2011, as shown on Exhibit No. (CEO-4), is 7.81 percent. The median is 6.95 percent.

I have not presented any exhibit that shows historical growth rates. Based on past experience, I know there is substantial variation in these growth rate data and that it is difficult to draw meaningful conclusions from these numbers. It is also known that financial analysts who make earnings forecasts are aware of historical growth rates. These analysts are sophisticated professionals whose careers involve the valuation of utility shares. It would be foolish to assume that historical growth rates are not taken into account in their analyses. This means the historical information is reflected in the forecasts. Further, several academic studies have shown that analyst estimates are superior to historical growth rates in terms of explaining the variation in stock prices. Therefore, it is not necessary to use historical data as a separate information input in deriving an estimated growth rate. Indeed, it amounts to double counting.

Q. What is your conclusion as to the cost of equity for the comparable companies?

A. The cost of equity capital by utility is set forth on Exhibit No. ___(CEO-5). While the results for the individual utilities range from 10.30 to 15.26 percent, it is clear that the central tendency is in the 11 to 13 percent range. Seven of the nine companies have a DCF cost of capital of 10.84 percent or higher. As shown, the mean is 12.03 percent and the median is 11.60 percent. When the two highest and two lowest results are deleted, the modified mean is 11.80 percent.

Q. What is the yield adjustment factor?

A. The yield adjustment factor is used to reflect the future payment of dividends. When an investor buys common shares in a company, it is the future dividends that will be received, not past dividends. If a company increases its dividend every year, the dividend will be higher during the next year than it was during the 6 month measurement period. For example, Walmart paid a dividend at an annual rate of $1.21 during 2011. Its yield during the second half of 2010 was its dividend of $1.21 divided by its average stock price. However, an investor considering the stock in early 2011 would plan for the 2011 dividend, not the 2010 level. Further, as predicted, Walmart increased its dividend later in 2011. I have increased the dividend by one-half the growth rate to reflect this. For example, as shown on Exhibit No. ___(CEO-3), the dividend yield for Pinnacle West Capital is 5.04 percent. When the yield is multiplied by one plus half of the growth rate (1 plus 3.19%) the result is 5.20 percent.

V. APPLICATION OF THE RISK PREMIUM AND CAPM METHODS

Q. Dr. Olson, have you developed a risk premium estimate of the cost of common equity capital to PSE?

A. Yes. However, I believe that a risk premium estimate of the cost of equity is of limited usefulness for purposes of developing a return on common equity in this case. The risk premium test should be limited to showing that the DCF result is sufficiently higher than interest rates to be logical. With Baa bond yields at

approximately 6 percent, I would expect all of my DCF estimates on Exhibit No. ___(CEO-5) to be above 7 percent (the 6 percent bond yield plus a minimum risk premium). As shown on Exhibit No. ___(CEO-5), they are.

I have also done a traditional risk premium study to provide a check for the cost of equity estimate.

Q. How is a traditional risk premium study done?

A. The logic is to determine long-term historical common equity returns and bond returns to establish the risk premium. Investors, through knowledge of the historical risk premium, will apply this long-term premium in estimating future returns.

The average or arithmetic mean return is the best estimate of what investors can expect during the following year (rate effective period). If the time period over which the average returns are calculated is long enough it will include major events such as wars, depressions, natural disasters, etc. Thus everything that the future could bring is reflected in the data. The study I performed is explained in the following paragraph and its results are presented on Exhibit No. ___(CEO-6).

During the period from 1926 to 2009 large company stocks provided an average (arithmetic mean) return of 11.8 percent. This type of information is made available every year by Morningstar. This data series was first available in 1926. The arithmetic mean is the average of the yearly returns and is therefore a forward predictor of next year's return. The income return on long-term government

bonds for the 1926 to 2009 period was 5.2 percent. Subtracting the income return on the bonds of 5.2 percent the stock return of 11.8 percent results in risk premium of 6.6 percent. When this is added to the Moody's estimated 30-year Treasury Bond interest rate of 5.75 percent the result is an equity return of 12.35 percent. A forecasted interest rate is better than an actual rate because the rates in this case do not go into effect until mid 2012.

It should be noted that some parties would use the geometric mean return to estimate what investors can expect during the following year or rate year.

Q. What is the geometric mean?

A. Geometric mean estimates reflect compounding of returns and are backward looking indicators of realized returns. The geometric large company stock return for the period from 1926 to 2009 was 9.8 percent while the government bond income return was 5.1 percent. In my view, use of the geometric mean calculation is inappropriate. The geometric mean is backward looking because it measures returns over a very long period of time. The arithmetic mean is a better gauge for annual measurement. In the case of rate of return for public utilities, the single period model better reflects ratemaking realities.

Q. What is the risk premium based on geometric mean returns?

A. The risk premium is the difference between the 9.8 percent return on large company stocks and the 5.1 percent income return on bonds or 4.7 percent.

Adding the 5.75 percent 30-year government bond yield forecast to the 4.7 percent risk premium results in a cost of common equity of 10.45 percent.

Q. Dr. Olson, have you prepared an estimate of the cost of equity for PSE using the CAPM?

A. Yes, I have prepared two estimates. The first one is presented in summary form on Exhibit No. ___(CEO-8) and the second on Exhibit No. ___(CEO-9). I began with a listing of the betas. Value Line betas are used by many analysts and are available to most investors; the publication with this information is available in many public libraries. The betas for my nine comparable utilities are presented on Exhibit No. ___(CEO-7) and range from 0.60 to 0.85 with a mean or average of 0.74.

Exhibit No. ___(CEO-8) presents my traditional CAPM equity cost estimate for Puget. It begins with the market return estimate from Ibbotson/Morningstar that is based on historical data from the 1926 – 2009 period. The market risk premium of 6.6 percent is multiplied by the beta of 0.74 from Exhibit No. ___(CEO-7). This results in a risk premium for the utilities of 4.88 percent. When this market risk premium is added to the forecasted interest rate of 5.75 percent the resulting return in 10.63 percent.

Exhibit No. ___(CEO-9) presents my forward-looking CAPM estimate for PSE using data from the main or large stock Value Line edition. Value Line forecasts a forward dividend yield of 1.9 percent for its dividend paying stocks and an

average rate of price appreciation of 10.7 percent. The resulting market return is 12.6 percent. When the forecasted bond yield of 5.75 percent is subtracted from the market return the result is 6.85 percent, as shown on Exhibit No. ___(CEO-9). Multiplying this by the beta of 0.74 produces a comparable utilities risk premium of 5.07 percent. Adding this to the forecasted bond yield of 5.75 percent results in a CAPM equity cost estimate of 10.82 percent.

VI. CONCLUSIONS

Q. What return on common equity do you recommend in this case?

A. In my view, the cost of common equity should be between 11.0 to 13.0 percent. This recommendation is a judgment based on my DCF study. In my view the risk premium and CAPM results are checks only and should not be used in reaching a judgment concerning the authorized return.

Q. Dr. Olson, PSE is proposing a rate mechanism to address the effects of energy efficiency on its ability to recover costs in this case. Does that alter your proposed cost of common equity in this case?

A. No. Policies that align utility financial incentives with helping their customers use energy more efficiently is a requirement for state sharing of the $3.1 billion under Section 410 of the American Recovery and Renewal Act of 2009. As discussed in the Prefiled Direct Testimony of Tom DeBoer, Exhibit No. ___(TAD-1T), a growing list of states already have mechanisms in place to accomplish this alignment of incentives. Therefore, there is no need to adjust a

DCF return because share prices reflect investor knowledge that these types of mechanisms are increasingly built into utility ratemaking.

Q. Does this conclude your prepared direct testimony?

A. Yes, it does.