EXHIBIT NO. T-_____(JBL-1)
DOCKET NO. UE-92-1262
WITNESS: J.B. LEGLER

BEFORE THE
WASHINGTON UTILITIES & TRANSPORTATION
COMMISSION

COMPLAINANT

VS.

PUGET SOUND POWER & LIGHT COMPANY

RESPONDENT

TESTIMONY

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Testimony of John B. Legler

For the Department of the Navy

On Behalf of the Department of Defense

An All Other Federal Executive Agencies

Before The

Washington Utilities & Transportation Commission

Docket Nos. UE-920433, 920499 and 921262

Q. PLEASE STATE YOUR NAME AND ADDRESS.

A. John B. Legler, 375 Sandstone Drive, Athens, Georgia 30605.

Q. WHAT IS YOUR OCCUPATION?

A. I am a professor of Banking and Finance in the Terry College of Business at the University of Georgia, Athens, Georgia. This testimony represents the opinion of the author. It carries no official endorsement by the University of Georgia.

Q. ON WHOSE BEHALF ARE YOU APPEARING?

A. I am under contract with the Rate Intervention of the U.S. Department of the Navy to perform utility cost of capital studies. The Navy represents the Department of Defense and all other Federal Executive Agencies (DOD) in certain assigned geographical areas.

Q. WHAT IS YOUR EDUCATIONAL BACKGROUND AND EXPERIENCE?

A. I received my B. A. with Honors in Economics from Allegheny

College in 1962, and my M.S. and Ph.D. degrees in Economics from Purdue University in 1965 and 1967, respectively. I was an assistant professor of economics at Washington University, St. Louis, Missouri, where I also served as the Assistant Director of the Institute for Urban and Regional Studies from 1966-1971. I joined the University of Georgia faculty in the Fall of 1971 as an associate professor of banking and finance. From 1971 to 1974, I served as administrator of the Research Division in the Institute of Government in addition to my teaching duties in the Department of Banking and Finance. I became Director of the Georgia Economic Forecasting Project on July 1, 1974 and served in that capacity until September 15, 1982. I was promoted to full professor in 1977. I have been a consultant to federal, state and local government agencies and businesses in Alabama, Arizona, California, Connecticut, Florida, Georgia, Hawaii, Illinois, Kentucky, Louisiana, Maine, Massachusetts, Michigan, Mississippi, Missouri, New Mexico, New York, North Carolina, Ohio, Rhode Island, South Carolina, Texas, Virginia and Washington. My consulting has been mainly in areas of economic forecasting, governmental finance, and the cost of capital. I have testified before the House Utilities Study Committee of the Georgia Legislature, the State Board of Equalization in Georgia, the Chatham County (Savannah) Superior Court, and the National Association of Security Dealers.

My publications include many articles in professional journals,

books and monographs. I am a member of the American Economics Association, the National Tax Association--Tax Institute of America, the Economic History Association, and Beta Gamma Sigma, a business honorary. I currently hold a research grant from the National Science Foundation and I am a research associate of the National Bureau of Economic Research, Inc. I have served on the Executive Committee of the annual Georgia Public Utilities Conference.

Q. HAVE YOU SUBMITTED TESTIMONY IN OTHER HEARINGS BEFORE PUBLIC SERVICE COMMISSIONS OR OTHER REGULATORY AGENCIES?

A. Yes, I have testified extensively before Commissions on the cost of capital. My participation in hearings before regulatory agencies is indicated in Exhibit___(JBL-1), Schedule 1. I have appeared before this Commission on previous occasions.

Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY?

A. I was retained to review the Company's rate of return testimony and to prepare a study on which to base an independent estimate of the Company's cost of capital to be presented to the Commission.

Q. HAVE YOU REVIEWED THE TESTIMONY ON THE COST OF CAPITAL SUBMITTED BY PUGET SOUND POWER AND LIGHT COMPANY IN THIS CASE?

A. Yes, I have. I have reviewed the testimony of Dr. Charles E. Olson, Mr. William A. Abrams, Mr. T.A. Terran Miller, and Mr. R.E. Olson presented on behalf of the Company.

Q. DO YOU HAVE ANY GENERAL COMMENTS ON THE APPLICATION OF FINANCE THEORY TO THE REGULATORY PROCESS BEFORE DEVELOPING YOUR ESTIMATE OF THE COST OF CAPITAL?

A. It is my opinion that the application of finance theory can provide help and guidance in the decision process, but that the issue of the fair rate of return is still largely judgmental. This is particularly true with respect to the return on equity component of the overall rate of return. Each finance theory suffers from the necessity of making crucial assumptions requiring judgment in the process of its application. Although proponents of any particular theory tend to minimize or even overlook the importance of the necessary assumptions, often the assumptions that are necessarily made are crucial to their results. It is for this reason that I use several methods to estimate the cost of equity capital, using one method to check on the reasonableness of another. In addition, using several methods enables me to estimate a range rather than a single value for the rate of return on equity. I believe that providing the Commission with a zone of reasonableness with respect to the cost of equity capital permits the Commission the flexibility of weighing other factors such as the rate base and capital structure in its decision, with the assurance that the estimate of the cost of capital is within a reasonable range. I believe that should this Commission adopt my recommendation, the Company would be afforded the opportunity to earn a fair rate of return consistent with the Hope and Bluefield decisions.

It is also my opinion that reasoned judgment is important at this time because of the volatility in the markets. The results of mechanical approaches to estimating the cost of equity are likely to change even on a daily basis. While these changes in the calculated cost of equity may be relevant for market investment decisions, I believe that estimating the cost of equity for ratemaking purposes must take a longer term view.

Q. HOW DO YOU PROPOSE TO ORGANIZE YOUR TESTIMONY?

A. My testimony is divided into the specific tasks necessary to arrive at the overall cost of capital. First, I develop an appropriate capital structure. In this section I also discuss the effect of purchased power on the capital structure. Next, I develop cost rates for the capital components: debt, preferred stock, and common equity. Last, I calculate the overall cost of capital by applying the component cost rates to my adopted capital structure.

Q. PLEASE SUMMARIZE YOUR RECOMMENDATIONS.

A. I recommend that Puget Sound Power & Light Company be provided an opportunity to earn an overall rate of return of 9.37%, including an allowed return on common equity of 11.25%. The rate of return on common equity recommendation is the midpoint of my recommended range of 11.0% to 11.5%.

CAPITAL STRUCTURE

Q. WHAT CAPITAL STRUCTURE DO YOU RECOMMEND TO THE COMMISSION FOR PURPOSES OF CALCULATING AN AVERAGE COST OF CAPITAL?

A. The Company proposes to use a capital structure consisting of 47.00% total debt, 8.00% preferred stock, and 45.00% common equity. According to Mr. R. Olson's testimony, this is an average capital structure projected for the thirteen month period from September 1993 to September 1994. The actual capital structure as of December 31, 1992 consisted of 50.0% total debt, 10.0% preferred stock, and 40.1% common equity according to the Company's response to Data Request No. 1306. The Company's proposed capital structure necessarily involves estimates since it is a projected capital structure. Despite this, I have some difficulty accepting the Company's projections.

The common equity balance as of December 31, 1992 shown in the Company's response to Data Request No. 1306 is greater than the projected balance as of September 1993. Furthermore, total capitalization as of December 31, 1992 is greater than total capitalization as of September 1993 and September 1994. In fact, it is greater than total capitalization for any month during the forecast period. If the Company intends to issue common equity as stated on page 40 of Dr. C. Olson's testimony, and supported by Mr. R. Olson's Exhibit No. 520, page 23, the next major equity sales would not take place until October of 1993. According to the Company's data, between December 31, 1992 and

September 1993, total debt and preferred stock must be reduced by $173,863,000 and common equity will be reduced by over $18 million in order for the Company's projected capital structure for September 1993 to materialize.

Between September 30, 1992 and December 31, 1992 the Company had an offering of common equity of approximately $60 million which was used to pay down short-term debt. Despite this common offering, the common equity ratio declined from 40.2% to 40.1%. Since the Company is basing its request on a projected capital structure, that capital structure must be judged on the basis of its reasonableness and attainability. For the reasons cited, I have difficulty supporting its attainability.

The other question is its reasonability. Judged by the projected common equity ratios of single-A rated electrics shown in my Schedule 7, a common equity ratio of 45% would be reasonable. Very few of the single-A rated electrics have equity ratios as low as Puget's based on the December 31, 1992 capitalization ratios.

Dr. C. Olson argued, and I agree, that the reasonablenss of a return must be judged in the context of the capital structure, embedded cost rates, and the return on equity. One variable should not be isolated from the others in this evaluation. As he states on page 42 of his testimony, he decreased his recommended return on equity from his DCF results to reflect the fact that

the Company is requesting a higher equity ratio than its actual ratios indicate. He characterized the higher equity ratio as "slightly higher". I would characterize a move from approximately 40% to 45% as more than slight. In my judgment, basing the return to common equity on a higher than actual equity ratio, would result in an excessive return to common equity.

Both Mr. Abrams and Mr. Miller support the use of the 45% common equity ratio. Their concern is primarily with protecting the interests of debtholders and bond ratings. Their argument for supporting the higher equity ratio is based primarily on the added risk associated with purchased power contracts and the potential for a downgrading. Purchased power risk is not a new issue. Mr. Abrams acknowledged that it has been factored into Puget's ratings for a long time, and Puget's rating has remained the same since 1986. (Transcript, page 1017) Puget's purchased power is regularly reported under generating sources by Value Line. In estimating the cost of equity, we must assume that investors have taken this risk into account in setting the price for the Company's stock. Further, Dr. C. Olson made no adjustment for purchased power in his estimate of Puget's cost of equity.

The effect of the higher equity ratio is to provide the protection to debtholders by providing equity holders with higher returns. Mr. Miller agreed under cross examination, that if the Commission did raise the equity ratio, the market would expect the Company

to actually raise the equity ratio to that level or the Commission's action would not be viewed favorably. (Transcript, page 687) Similarly, Mr. Abrams agreed that his position was that this Commission should support the Company's own move towards achieving a higher equity ratio. (Transcript, page 1028)

Mr. Abrams' and my recollection of what went on in the recent cases in California are somewhat different. This is the proceeding to which Mr. Abrams refers in his explanation for the downgrading of Southern California Edison. My recollection is that the companies, including Southern California Edison, requested increases in their equity ratios for ratemaking purposes. However, it was only at the hearing stage that the issue of actually raising the equity ratios in response to the regulatory treatment became an issue. Mr. Abrams did not attend the entire hearing. I believe that he is in error when, in this proceeding, he stated that "the companies had committed in consideration of their higher credit rating that they would be increasing their common equity ratio and then that projected test year would be including that proforma higher common equity ratio as it always has for many years in California." (Transcript, page 1026) He also acknowledged that Southern California Edison has not increased its equity ratio. (Transcript, page 1026)

In my opinion, a utility company should manage its own capital structure. It should not be the job of the regulatory commission

to manage the capital structure for a company. A company's actual capital structure should be used unless it is judged to be inappropriate or imprudent. In contrast to the Southern California Edison situation, in this case Puget has recently issued and has come forward with a plan for issuing more equity. Mr. Abrams acknowledged during his cross examination in this case that we don't have a similar situation between Southern California Edison and Puget. (Transcript page 1027) Further, while Mr. Abrams may highlight the Commission's action as the reason for Duff & Phelps' downgrading of Southern California Edison, that Company had maintained a double-A rating for years with, at best, marginal financial ratios. Based strictly on the financial ratios, Edison could have suffered a downgrading much sooner.

The California regulatory framework is quite different than any state with which I am familiar. In California, the cost of capital, including the capital structure, embedded cost rates, and the cost of equity, is reviewed each year for all the major energy utilities. The lag between an actual increase in the equity ratio and regulatory recognition would be one year or less.

In my opinion, an increase in Puget's common equity ratio could be supported even in the absence of an adjustment for purchased power. I have, in fact, supported higher equity ratios than Puget's 40% ratio for other single-A rated electrics where purchased power was not an issue. On the other hand, besides the

problems with the Company's forecasted capital structure I identified earlier, the projected capital structure is based on the full acceptance of the Company's proposed cost of common equity of 12.5%. The Company confirmed this assumption in its response to Data Request No. 3058. Although this is beyond the scope of my testimony, I also assume that it is based on all of the Company's accounting treatments. If the Commission sets the cost of equity below the Company's proposed 12.5% for any reason, the 45% common equity ratio will not materialize even if the other aspects of the Company's projections are somehow accurate. I recommend that the equity ratio be set below 45%. Unfortunately, I do not have access to the Company's financial planning model and cannot precisely estimate what the capital structure would be using my recommended cost of equity. I will base my weighted average cost of capital on a capital structure consisting of 47.85% debt, 8.15% preferred stock, and 44% common equity. The total debt component is divided into 2.04% short-term debt and 45.81% long-term debt. Essentially, I have reduced the equity ratio by one percentage point and reallocated that one percentage point on the same basis as the Company's proposal.

Cost of Debt

Q. WHAT IS THE BASIS FOR DETERMINING THE COST OF DEBT?

A. The cost incurred by a company for debt is determined in the capital market at the time the debt is issued. Once issued, the debt becomes, in effect, a contractual arrangement between the company and the investor. The cost will remain constant during the term of the investment and will not be altered by changes in the company's financial integrity or general economic conditions. Thus, the cost of debt is the weighted average cost of the company's embedded debt.

Q. HAVE YOU REVIEWED PUGET'S PROPOSED EMBEDDED COST OF LONG-TERM DEBT?

A. Puget proposes a cost rate for long-term debt of 7.91% as shown on page 2 of Mr. R.E. Olson's prefiled testimony. That schedule included three proposed issues taking place in November and December of 1992 and in November of 1993. In its response to Data Request No. 1307, the Company provided the actual embedded cost of long-term debt as of December 31, 1992. Instead of issuing the proposed $140,000,000 of long-term debt in 1992, the Company actually issued $195,000,000. Also the cost rates were slightly different than those the Company assumed in its prefiled testimony.

If the timing of the proposed issues has changed, and the total amount of debt to be issued has remained the same, the 1993

projected issue of $113,750,00 will be reduced to $58,750,000. Under this assumption the embedded cost rate for long-term debt may be updated. The Company assumed a cost rate of 8.39% for the 1993 issue. That rate was based on a DRI projected rate of 7.55% for 10-year Treasury Bonds plus a spread of 73 basis points. The resulting rate of 8.28% was adjusted by a cost factor of 101.32%. The March 1993 DRI forecasted rate for the 10-year Treasury Bonds is now 7.26%. Using the same spread and cost factors results in a forecasted rate of 8.10%. Substituting the actual issue costs for 1992 and the revised 1993 issue at 8.10%, results in an embedded cost for long-term debt of 7.99%. This calculation also adjusts the redemption figures for the short-term 4.00% issue of November 1992.

Q. HAVE YOU REVIEWED THE COMPANY'S PROJECTED COST RATE FOR SHORT-TERM DEBT?

Yes, I have. The Company projected the short-term rate on the basis of the average of the DRI forecasted 3-month commercial paper rates through the third quarter of 1993. The average forecasted rate was 5.19%. The Company added a 20 basis points spread and estimated the cost of short-term debt to be 5.39%. Substituting the March 1993 DRI forecast figures results in an average 3-month commercial paper rate of 4.43%, and adding 20 basis points results in a short-term debt rate of 4.63%.

Q. WHAT IS YOUR RECOMMEND COST OF TOTAL DEBT?

A. The Company acknowledges that if the Commission follows the procedure of applying the end of the test year short-term debt balance, that balance would be $46,000,000 rather than the $42,062,000 shown in Mr. R. Olson's testimony. Following this practice, the embedded cost of total debt becomes 7.86%. I will use a rate of 7.86% in making my weighted average cost of capital calculations.

Cost of Preferred Stock

Q. WHAT COST RATE HAVE YOU ASSIGNED TO PREFERRED STOCK?

A. Mr. R.E. Olson's prefiled testimony indicates a projected embedded cost rate for preferred stock of 8.10%. This rate was based on the June 30, 1992 actual embedded cost rate and an adjustment for the projected retirement of the FLEX DARTS SERIES B in July of 1993. In response to Data Request No. 1307, the Company provided the actual embedded cost rate as of December 31, 1992. This rate was 7.29%. Between June 30, 1992 and December 31, 1992, the outstanding balances changed slightly, and rate on the FLEX DARTS B declined from 4.52% to 3.66%. In the Company's prefiled testimony the Adjustable Rate Preferred was projected at 7.20% compared to the actual rate of 7.37% as of December 31, 1992 shown in the Data Response. Based on the method of calculating the adjustable rate, the 7.20% is the mimimum rate. Thus, despite the fact that interest rate forecasts have declined since the Company made its calculations, the 7.20% rate is still the appropriate rate to use in updating the calculations.

Subsituting the 7.20% projected rate on the adjustable rate series, and taking into account the projected retirement of the FLEX DARTS B issue in July 1993, the projected embedded cost rate for preferred stock is 8.12%. The fact that the rate actually increased compared to the Company's original testimony is due to the retirement of an issue with a cost rate substantially below the average rate.

COST OF EQUITY

Q. PLEASE DESCRIBE THE METHODS YOU USE IN ESTIMATING THE COST OF EQUITY CAPITAL FOR PUGET SOUND POWER & LIGHT COMPANY.

A. I have used two methods to estimate the cost of equity capital: (1) applications of finance theory, and (2) the comparable earnings approach. There are several applications of finance theory that may be considered: (1) the Capital Asset Pricing Model (CAPM), (2) the bond yield plus risk premium method (RP), and (3) the dividend yield plus growth method commonly known as the Discounted Cash Flow (DCF). The traditional comparable earnings method estimates the rate of return directly by analyzing rates of return on book equity earned by other companies with similar risks. The applications of finance theory rely on data on stock market returns and are considered indirect measures. The ultimate task requires that these returns on market be translated into return on book for regulatory purposes.

Q. ARE THESE THE SAME METHODS YOU HAVE USED IN COST OF CAPITAL TESTIMONY BEFORE REGULATORY COMMISSIONS?

A. Yes, they are. Over the years I have made certain refinements in my testimony, but the basic methods remain the same. In recent years the Capital Asset Pricing Model has gained in popularity among cost of capital witnesses. For reasons stated later in my testimony, I usually have not relied on this model in the past. Based on its popularity, I do not believe it can simply be ignored, and I have commented upon it and applied it in this case.

DISCOUNTED CASH FLOW METHOD

Q. DID YOU USE THE DIVIDEND YIELD PLUS GROWTH RATE METHOD IN ESTIMATING THE COST OF EQUITY FOR PUGET SOUND?

A. Yes, I did.

Q. PLEASE EXPLAIN THE METHOD AND HOW YOU USED IT IN THIS CASE.

A. This method recognizes that investors in stocks expect to receive total returns consisting of dividends and capital gains. Although investors may in fact suffer capital losses, it is reasonable to assume that most investors would not buy a company's stock unless there were reasonably good prospects that the value of the stock would increase over time.

The basic equation used to describe the DCF method, which is widely used in rate of return testimony, is:

$$k = D_1/P_0 + g$$

where,

k = the cost of equity

D_1 = the dividend for the coming year

P_0 = the current market price of the stock

g = the expected growth rate.

This is a "constant growth model"; and in its simplest form, it is assumed that a company has a constant payout ratio and its earnings are expected to grow at a constant rate. Thus, if a stock has a market price of $30 a share and an expected annual dividend in the coming year of $3 a share, and if its earnings

were expected to grow at 5% a year, then the cost of equity for the company is the 10% dividend yield plus the growth rate of 5% or a total of 15%.

I have applied this method first to Puget Sound Power & Light Company. The method was also applied to a group of reasonably comparable single-A rated electrics.

Q. DO YOU BELIEVE THAT THE ANNUAL VERSION OF THE DCF MODEL IS ADEQUATE FOR MEASURING A UTILITY'S COST OF EQUITY?

A. Yes, I do. The annual version of the DCF model typically is criticized for its failure to recognize that dividends are paid on a quarterly basis. In my opinion, it is important to remember the context in which the DCF model is being used. Essentially, the purpose of estimating the cost of equity is to enable the calculation of the revenues required to meet investors' return requirements. The ultimate question is with respect to the adequacy of the revenue dollars to meet those requirements.

While it may be argued that reinvestment of quarterly dividends during the year has the effect of raising investors' expected returns compared to the returns produced by the annual version of the model, the reinvestment of earnings during the year also will provide additional compensation to investors. Clearly, dividends are not paid at the end of the year, but neither do ratepayers pay their bills at the end of the year. The irrelevance of the

quarterly adjustment was considered in the professional literature in an article by Charles M. Linke and J. Kenton Zumwalt, "The Irrelevance of Compounding Frequency in Determining a Utility's Cost of Equity," which appeared in Financial Management, Volume 16, Number 3 (Autumn 1987), pages 65-69.

As a practical consideration, the accuracy of a quarterly dividend version of the DCF model depends on the validity of the assumptions made regarding the pattern of dividends and the timing of dividend increases. Obviously, it is invalid to assume that the quarterly dividend is increased each and every quarter. The computationally easy version of the quarterly model makes this assumption. A more rigorous version of the quarterly dividend model assumes that the dividend will be increased once a year. If this is the assumption, the quarter in which the dividend is increased relative to the point in time the DCF estimate is calculated is relevant. In this regard, although I have used the annual version of the model, my annual dividend for the groups of comparable electrics assumes an increase based on a full year's growth. That is, the current dividend, which in some cases may have just been increased, is assumed to increase by a full year's growth [$D_1 = D_0 (1 + g)$]. This in fact might create an upward bias in my estimates. The Company's witness, Dr. Olson, adjusts the dividend yield by one-half the growth rate in his application of the DCF model.

Marvin Rosenberg and Ronald N. Lafferty in an article, "The FERC's Discounted Cash Flow: The Right Direction Without Compromise," Public Utilities Fortnightly, February 4, 1988, pages 46-48, demonstrate that the quarterly dividend DCF model equates to the annual version of the DCF model with an adjustment of half the annual dividend growth. That is:

$$k = D_0 (1 + .5g)/P_0 + g$$

Thus, if a stock has a market price of $30 a share and if the last annual dividend paid was $3 a share, and if its earnings were expected to grow at 5% a year, then the cost of equity for the company is an adjusted dividend yield of 10.25% plus the growth rate of 5% or a total of 15.25% [$3.075/$30 + .05 = .1525].

Based on these considerations I believe that the annual version of the DCF model is adequate for its purposes and the context in which it is used. I also note that in the Company's witness, Dr. Olson, used the annual version of the DCF model.

Q. DO YOU BELIEVE THAT THE CONSTANT GROWTH VERSION OF THE DCF MODEL IS ADEQUATE FOR PURPOSE OF ESTIMATING THE COST OF EQUITY?

A. Yes, I do, but certainly the results must be combined with informed judgment in setting the cost of equity. Dividends, earnings, and stock prices are not likely to grow at the same rate as required by the constant growth version of the model. Indeed, the model can be modified to incorporate more than one growth rate. This certainly adds to the mathematical complexity of the model and

further complicates an already complicated process of selecting the growth rate.

I believe that it is important to consider what version of the model is likely to be used by the investors themselves, not what analysts believe to be more acceptable. In this regard, I doubt that the average investor has the inclination to attempt the mathematics required by the multiple growth version of the model. I should note that services such as Salomon Brothers provide DCF-type equity return estimates using the standard constant growth version of the model in much the same manner as I use it.

Q. PLEASE CONTINUE WITH YOUR DISCUSSION OF THE DCF METHOD.

A. The most difficult aspect of implementing the DCF method is estimating the future growth rate. If a company's past trend in growth has been erratic, it is difficult to project future growth on the basis of past trends. Based on my experience, historical growth rates in dividends and earnings for electric utilities generally have not been smooth. Dividends growth rates generally have been more stable than earnings growth rates. Also, it is important to remember that the DCF model is forward looking, and the proper growth rate is a forward looking growth rate.

From the earnings per share data and the dividends per share data for Puget shown in Schedule 2, I have developed growth rates for selected time periods from 1976 to 1992 which are shown in

Schedule 3. The historical data suggest that the Company's growth in earnings has not been smooth. This is particularly true of earnings where growth rates have been quite volatile in recent years. Historical dividend growth rates also provide little help in projecting future growth. The dividend increase in 1992 was the first in several years.

Since the DCF method requires a constant, or sustainable, growth rate, it is apparent that historical dividend and earnings growth rates are too volatile to provide a basis for future projections.

Q. ARE THERE OTHER METHODS OF FORECASTING GROWTH RATES?

A. Another method used by security analysts is to estimate future growth based on the percentage of retained earnings and the rate of return on book equity. In equation format, if we call the percentage of earnings retained (b), and multiply it by the earned rate of return on equity (R), the resulting estimate of future growth (g) is: $g = b \times R$. For example, if a company earns 10% on equity, but pays all the earnings out in dividends, the "plowback" factor will be zero and earnings per share will not grow. Conversely, if the company retains all of its earnings and pays no dividend, it would grow at an annual rate of 10%.

Q. DOES THIS PROCEDURE FOR ESTIMATING FUTURE GROWTH REQUIRE ANY ASSUMPTIONS?

A. Three assumptions must hold for the procedure to produce an

accurate (exactly correct) estimate:

1. The rate of return on equity is constant over time.
2. The percentage of retained earnings is constant over time.
3. The company sells no new common stock or sells it only at book value.

While these assumptions have not held in the past for utilities in general, it is the future, not the past, that is relevant. Also, while year to year fluctuations in the variables may be expected, the average return on equity and retention rate over time may be expected to be reasonably stable.

Q. HAVE YOU APPLIED THIS TECHNIQUE IN THIS CASE?

A. Despite its limitations, it is still useful and I have applied it in this case. To apply it, we need two numbers for a company, the expected retention rate and an estimate of its future return on common equity. In Schedule 2, retention rates for Puget are shown by year since 1976. Thus, the retention rate has ranged from -2.5% to 39.5%; averaging 16.4% for the entire period, 11.5% during the last ten years, and 18.2% during the last five years. Value Line projects a retention rate of 12.9% for 1993, and a longer term (1995-1997) average of 22.0%. Value Line also forecasts a longer term (1995-1997) return on common equity of 12.0%. Thus, applying the formula assuming a retention ratio of 22.0% and a return on common equity of 12.5% (Value Line's return increased by 0.5% to reflect conversion from a year-end to average year basis), the implied growth rate is 2.8%. Value

Line's own projected growth rate for dividends is 1.5%. The March 1993 issue of Salomon Brothers Electric Utility Monthly puts the five-year normalized dividend growth rate at 1.3%.

Q. WHAT GROWTH RATE DO YOU ADOPT FOR PURPOSES OF YOUR DCF ESTIMATES?

Based on historical growth rates, the retention growth rate and analysts' forecasts, I believe a growth rate of 3.0% to 4.0% is reasonable. It is higher than the forecasted growth rates, recent historical growth rates and projected retention growth. It is consistent with historical growth for the longer-term period ending in 1986. While I do not believe that the projected growth rates can be ignored, they generally represent 5-year growth rates and the DCF model calls for a long-term growth rate. I view my adopted range as a reasonable average of lower short-term growth and more normal growth. While slower near term growth may be discounted somewhat, it cannot simply be excluded from the analysis.

Q. WHAT PRICE WILL YOU ADOPT FOR PURPOSES OF YOUR DCF ESTIMATES?

A. The price of a stock is likely to fluctuate from day to day because of market conditions and factors such as dividend payments. In applying the DCF method to a single company it would be appropriate, in my opinion, to use the average price of its stock over a period of time rather than the price on a particular day. The time period is admittedly judgmental, but it is my opinion that it is still more appropriate than a spot

price. The use of a spot price in a situation where there are wide swings in the stock market over relatively short periods of time makes the resulting DCF calculations very much dependent upon the particular day chosen to perform the analysis. While the most recent stock price may be quite relevant for market investment decisions based on DCF calculations, I believe the use of the DCF method for ratemaking purposes must take a longer term view.

Data on Puget's stock prices are shown in Schedule 4. I have consistently used a three month average price in testimony for the last several years. For the three month period, December 1992 through February 1993, the high price was $28.375 and the low price was $26.00 resulting in an average price of $27.19. I will use this average price in making my calculations. The closing price of Puget's stock in February 1993 was $28.375. I will also use this price in making my calculations.

Q. WHAT DIVIDEND DO YOU ADOPT FOR PURPOSES OF THE DCF CALCULATION?

A. Conceptually, the appropriate dividend is the expected dividend for the coming year. Defined as D_1, it is equal to the current dividend times 1 plus the growth rate [$D_1 = D_0 (1+g)$]. Applying the annualized dividend of $1.80 and a growth rate of 3% to 4% results in a projected dividend of $1.85 to $1.87. Puget increased the dividend in the second quarter of last year, and it is anticipated that it will increase the dividend again this year.

Assuming the same $.01 a share increase this year would place the projected dividend at $1.84. I believe that $1.85 is a reasonable expectation of the dividend to be received during the next year consistent with the timing of the stock prices I am using. I will use a dividend of $1.85 in making my DCF calculations.

Q. WHAT COST OF EQUITY DID YOUR DCF CALCULATIONS PRODUCE?

A. Applying a price of $27.19 and a dividend of $1.85 results in a projected dividend yield of 6.8%. Combining the dividend yield with a growth rate of 3% to 4% results in a cost of equity of 9.8% to 10.8%. Based on a price of $28.375, the calculations result in an estimated cost of equity in a range from 9.5% to 10.5%.

Q. HAVE YOU EXTENDED YOUR DCF ANALYSIS IN THIS CASE BY APPLYING THE DCF METHOD TO OTHER ELECTRIC UTILITIES?

A. The DCF method considered to this point is Company specific and, quite obviously, involves judgment in the development of the necessary assumptions. As one check on the reasonableness of the results, I have applied the DCF method to a group of single-A rated electrics. A DCF estimate of the cost of equity was developed for each of these electric companies (provided it was also tracked by Value Line). The data are shown in Schedule 5. The projected dividend was based on the current annualized dividend times (1 + the expected growth rate). The expected growth rate was estimated as Value Line's projected longer term

retention rate times Value Line's projected return on equity (adjusted by 0.5% for conversion from year-end to year-average common equity). Additional calculations were made using Value Line's direct dividend growth rate projection for each company. Companies for which Value Line is forecasting either zero or "negative" dividend growth were dropped from the sample. IES Industries, Pacificorp, Sierra Pacific annd Washington Water Power were dropped on the basis of this criteria.

In making these calculations, I have used the same three month period in calculating average prices and the same day for the spot or current stock price as was used in my analysis for Puget.

After the first estimates were made, those companies for which the resulting estimate fell below the recent bond yield of Moody's public utility single-A rated debt of approximately 7.9% were dropped from the sample. The following companies were dropped on the basis of this criteria: Atlantic Energy, Delmarva Power, Houston Industries and Idaho Power.

The results of my DCF analyses are shown below for the group of eighteen surviving single-A rate electrics.

	Growth Based on: Retention Growth	Forecasted Growth
Based on Average Prices:	9.36%	9.65%
Based on Spot Prices:	9.02%	9.31%

While I have eliminated unrealistically low estimates, there remains a few unrealistically high estimates. Value Line's forecasted growth in dividends for General Public Utilities of 7.0% is not sustainable on a long-term basis as required by the model. Accordingly, the estimated cost for General Public Utilities of over 13% causes, in my opinion, an upward bias to the average estimates where it is included.

Q. HAVE YOU PERFORMED A DCF ANALYSIS FOR THE SINGLE-A ELECTRICS BASED ON HISTORICAL GROWTH?

A. Yes, I have, based on the average historical growth rates for the entire group of single-A rated electrics. Historical growth rates are shown in Schedule 6. I have calculated the average growth rates excluding the nonpositive growth rates on the basis that investors would not expect growth to be nonpositive in the long run. The average ten year dividend growth rate is 4.1%, and the average five-year growth rate is 3.8%. The current dividend yield based on average prices for the three month period ending in February 1993 is 5.9% for the somewhat smaller group of single-A electrics used in my DCF analysis, and the average yield based on prices as of February 26, 1993 is 5.6%. The historical 10-year and 5-year earnings growth rates are 3.9% and 4.7%, respectively. The resulting DCF estimates based on average prices and dividend growth are in a range of 9.9% to 10.2%, and the estimates based on February 26, 1993 prices are in a range of 9.6% to 9.9% as shown below.

$5.9\%(1.038) + 3.8\% = 9.9\%$
$5.9\%(1.041) + 4.1\% = 10.2\%$

$5.6\%(1.038) + 3.8\% = 9.6\%$
$5.6\%(1.041) + 4.1\% = 9.9\%$

Q. DO YOU BELIEVE THAT THESE AVERAGE EXPECTED RETURNS ON COMMON EQUITY ARE APPROPRIATE FOR PUGET SOUND POWER & LIGHT?

A. I would not recommend this approach for estimating the expected return on equity to any individual company without examining the factors influencing the particular company. I do believe, however, that the averages are useful in helping form a judgment regarding Puget's cost of equity.

Although the companies are similar in certain respects, we would expect there to be some differences in perceived riskiness of the individual companies, and accordingly, would expect some variation in the estimated cost of equity by company.

Q. HAVE YOU EXAMINED THE RELATIVE RISKINESS OF PUGET SOUND POWER & LIGHT COMPARED TO THE GROUP OF SINGLE-A ELECTRICS?

A. Yes, I have. Risk differences may be divided into financial risk and business risk. Financial risk, as I am sure this Commission is aware, is concerned with the proportion of debt in a company's capital structure. The higher the proportion of debt, or the lower the proportion of common equity in the capital structure, the greater the financial risk. As shown in Schedule 7, page 2 of 2, the average common equity ratio for the surviving

group of single-A rated electric utilities was estimated at 47.5% in 1992, and is projected by Value Line to be 47.8% in 1993. By comparison, Puget had, according to Value Line, an equity ratio of 44.0% in 1992 and is projected to have an equity ratio of 43.5% in 1993. Thus, in terms of financial risk, Puget would be judged to have somewhat above average risk compared to the surviving group of single-A rated electric used in my DCF analysis.

Business risk in a formal sense is defined as the uncertainty involved in the projections of future operating income. Many things can affect business risk and in the case of a utility, the size and economic base of a company's territory certainly would be one. General risk indicators, specifically Value Line's beta, Safety Rank and Financial Strength rating, and Price Stability for the group of single-A electric companies are shown in Schedule 8. Based on these measures, Puget is very comparable to the surviving group of single-A rated electrics. Its beta is slightly lower, its Safety Ranking slightly better, its Financial Strength Rating is equal to nine of the eighteen and one notch lower than the remaining companies, and its Price Stability Index is very slightly above average. Its Price Stability Index is the highest achievable; reflecting lowest risk.

I recognize that it is almost impossible to select a sample of of utilities which is strictly comparable to the company being

reviewed. I do believe, however, that such calculations are useful and should be given weight by the Commission in its deliberations on the cost of equity. A broad sample of comparably-rated companies does have the advantage of smoothing out the inherent problems of estimating the growth rate for a single company. I also believe in basing equity estimates on a reasonably comparable group of electric utilities based on several objective measures reflecting overall risk.

RISK PREMIUM METHOD

Q. DID YOU USE THE BOND YIELD PLUS RISK PREMIUM METHOD TO ASSIST IN THE PREPARATION OF THE ESTIMATED COST OF EQUITY CAPITAL?

A. In virtually all the cases in which I have testified on the cost of capital, I have done so. Because of the volatile conditions in the bond market, there are problems with this method and its application in the traditional manner often used by analysts. I will discuss this method, the problems associated with it and why, at the present time, I do not believe primary reliance should be placed upon it for estimating the cost of equity.

Q. WHAT CONCLUSIONS HAVE YOU REACHED REGARDING THE RISK PREMIUM APPROACH?

A. I concluded that it should be used with extreme care, be reflective of current conditions, and should not stand on its own but be used, if at all, in conjunction with other estimating techniques. I do believe, however, that it is useful as a check on the results of the DCF method.

Q. WHAT IS THE THEORETICAL BASIS OF THE BOND YIELD PLUS RISK PREMIUM METHOD?

A. Basically the theory suggests that the required rate of return is higher for riskier securities than for less risky securities. Thus, normally we would expect that corporate bonds would carry a higher cost than U.S. Government securities. Similarly, a corporate equity security would have a higher return than its

debt. The theory usually is implemented by adding a risk premium to the yield on a company's long-term debt or utility bonds of the same rating. The yield on the company's long-term debt would be established by market conditions; and relative riskiness of a company's bonds, basically, is assessed by bond ratings. Alternatively, a risk premium may be developed relative to a risk-free U.S. Government security and the cost of equity estimated by applying that risk premium to the currently prevailing rate on the government security.

Circumstances may exist such that a negative risk premium or well below average risk premium may be calculated. The conventional approach states that equity is more risky than debt because the equity holder stands last in line as a claimant on the earnings of a corporation. While bonds represent a long-term commitment at a fixed interest rate, the return on common equity is not fixed at the time of purchase and will change in response to changing financial and economic conditions. Thus, in the case of a regulated industry, the return on common equity may be adjusted to reflect current money cost, more than likely, with some lag. In the case of the bondholder, however, no adjustment in the interest rate takes place after the bond is issued. If the bondholder did not correctly anticipate future rates of inflation at the time of purchase, the purchase may turn out to be a bad decision despite the fact that interest payments continue and the principal is repaid at maturity.

This additional risk is called interest-rate risk. It has nothing to do with the financial condition of the company issuing bonds and can be protected against only by demanding a higher interest rate when the bond is issued. In my opinion, this is one important reason for the high interest rates experienced during the 1980s despite substantial slowing in the rate of inflation. Investors recognize that interest rate risk is important and have demanded higher interest rates as protection against possible future worsening economic conditions and higher interest rates.

In my opinion, the perception that interest rate risk is important has increased the relative riskiness of debt compared to equity. If the relative riskiness of debt compared to equity has changed, the assumption that a very long-term risk premium may be used to estimate the current cost of equity is invalid.

Q. IS THE EXISTENCE OF A NEGATIVE RISK PREMIUM CRUCIAL TO YOUR REJECTION OF THE RISK PREMIUM METHOD AS A PRIMARY METHOD OF ESTIMATING THE COST OF EQUITY IN A RATE CASE?

A. No, it is not. The point of my risk premium discussion and presentation of data is not to establish a negative risk premium. The point I am making is that the method, as conventionally applied in rate cases, produces an unreliable estimate of the cost of equity. The conventional approach adds an average long-term risk premium calculated in a variety of ways to a current

bond yield to arrive at a cost of equity. Implicitly, this assumes that the risk premium is constant. My analysis raises serious doubts about the validity of this assumption, and consequently, the usefulness of the method.

I do not disagree with the basic finance theory which indicates that investors expect higher returns on riskier investments. I do believe, however, that contemporary institutional market factors affecting relative risk should not be ignored for the sake of the simplicity found in historical relationships.

Q. DESPITE YOUR RESERVATIONS ABOUT THIS METHOD, HAVE YOU DONE ANY STUDIES OF RISK PREMIUMS FOR PUGET OR OTHER GROUPS OF ELECTRIC UTILITIES?

A. Yes, I have. I have performed a risk premium study for Puget and a study for Moody's 24 electrics as part of my testimony in this case. I have used this approach in my cost of equity for a number years before this and other commissions. The study for Moody's 24 electrics is a recent addition to my testimony. I have developed risk premiums based on a discounted cash flow approach. For the Puget study, I based the DCF growth rate on Value Line's projected data for earnings per share, dividends per share and return on equity from its published reports on Puget towards the end of each year. The date of the Value Line reports and the necessary data for Puget are shown in Schedule 9. In addition, I performed the same analysis using Value Line's direct

forecasted dividend growth rate from those same reports. Thus, my risk premiums for Puget are based on two concepts of growth, retention or sustainable growth and analysts' forecasted growth.

Q. WHAT RISK PREMIUM AND COST OF EQUITY DOES YOUR ANALYSIS INDICATE FOR PUGET?

A. The results of my study are shown in Schedules 9, 10, and 11. The Schedules may be viewed in the following way: a DCF estimate of the cost of equity for Puget is made for the first of January of each year since 1978. It is then compared to the existing bond yield at the time which I have assumed to be the reported December Moody's public utility bond yield for the appropriate rating class of the previous year. Alternatively, the expected return for Puget is compared with the 30-year Treasury bond rate for December of the previous year. The expected risk premium is the difference between the DCF calculated return on equity and the then-current bond yield, whether it is based on the Treasury bond rate or the utility bond rate. As shown in Schedule 11, the calculated expected risk premium for Puget averaged about 3.53% relative to the utility bond yield and 1.59% relative to the Treasury bond rate for the period from 1978 to 1993 based on the DCF analysis using retention growth. These risk premiums for the last five years (1989-1993) averaged 2.66% and 1.40%, respectively. The risk premiums based on the DCF estimated returns using Value Line projected growth are higher for the longer time period and lower for the last five year period. The average premiums

based on the utility bond rate and the Treasury bond rate for the period 1978 to 1993 were 2.09% and 4.02%, respectively. For the last five years these premiums averaged -.60% and 0.66%, respectively.

The current yield on 30-year U.S. government bonds is 6.71% (as of April 15, 1993). As of the same date, the yield on single-A rated public utility bonds was 7.73%. Moody's Public Utility Bond Yields are shown in Schedule 15. Thus, adding the longer-term average risk premiums for the last fifteen years to current yields produces a required return in a range from 9.32% to 10.73%. Adding the risk premiums for the last five years to the current yields produces a required return in a range from 7.37% to 9.378%

Longer-Term Premiums

6.71% + 3.53% = 10.24%
6.71% + 4.02% = 10.73%

7.73% + 1.59% = 9.32%
7.73% + 2.09% = 9.82%

5-Year Premiums

6.71% + 2.66% = 9.37%
6.71% + 0.66% = 7.37%

7.73% + 1.40% = 9.13%

For the reasons cited earlier in my testimony, I believe such calculations would be inappropriate if not supported by other estimating techniques. In my opinion, the returns using the shorter-term premiums based on Value Line growth rates do not provide meaningful results. Thus, I would put the shorter-term

returns in a range from 9.13% to 9.37%.

Q. WHAT RISK PREMIUMS AND COST OF EQUITY DOES YOUR ANALYSIS INDICATE FOR MOODY'S 24 ELECTRICS?

A. The analysis is very similar to that performed using Puget data. The notable exception is the calculation of the growth rate. For Moody's 24 electrics, the growth rate was based on a five year moving average historical retention growth rate and a five year historical dividend growth rate. The results of the study appear in Schedules 12, 13 and 14. As shown in Schedule 14, for the period from 1980 to 1992 the premiums averaged 1.91% relative to the utility rate and 3.64% relative to Treasury rate based on historical retention growth. For the last five years, the premiums averaged 1.62% and 3.06%, respectively.

For the period from 1980 to 1992 the premiums averaged 2.47% relative to the utility rate and 4.20% relative to the Treasury rate based on historical dividend growth. For the last five years, the premium averaged -.07% and 1.37%, respectively.

Adding the longer term premiums to current yields results in a cost of equity in a range from 9.64% to 10.91%. In my opinion the premiums for the last five years do not provide meaningful results.

6.71% + 3.64% = 10.35%
6.71% + 4.20% = 10.91%

7.73% + 1.91% = 9.64%
7.73% + 2.47% = 10.17%

The Capital Asset Pricing Model

Q. YOU STATED THAT THE CAPITAL ASSET PRICING MODEL IS ONE OF THE FINANCE MODELS THAT COULD BE APPLIED. DID YOU USE THIS METHOD?

A. I consider the CAPM to be a subset of the risk premium approach. As with all the methods we use, assumptions are required in its implementation. I believe that there are fairly severe problems with the required data inputs usually employed by analysts using this method which result in internal inconsistencies. For this reason usually I do not use this method in my testimony. My impression is that this method is becoming more popular in regulatory proceedings and for this reason I believe that a discussion of this method would be useful to the Commission. I will also implement this method using what I consider to be reasonable assumptions.

Q. CAN YOU BRIEFLY DESCRIBE THE CAPITAL ASSET PRICING MODEL?

Very briefly, the model states that the cost of equity to a company is equal to a risk-free rate, usually approximated by the yield on a government security, plus a risk adjusted premium for equity compared to the risk-free rate. The adjustment factor is called beta, which is a measure of the relative volatility of the stock in question to the volatility of the market. The equation used to estimate the cost of equity is:

$$k_j = k_{rf} + \beta(k_m - k_{rf})$$

where, k_j is the return on the stock

k_{rf} is the risk-free rate

β is beta

k_m is the return on the market

Q. CAN YOU BE MORE SPECIFIC ABOUT THE INTERNAL INCONSISTENCIES?

A. Yes, I can. Value Line betas are commonly used in the implementation of the capital asset pricing model (CAPM). The Value Line beta is an adjusted beta and the New York Stock Exchange Composite Index is used in its construction as a surrogate for the market. To the extent that the surrogate for the market and the estimating technique affect the beta, the estimated return will be affected. A long-term (1926-1991) historical market premium provided by Ibbotson Associates is often used as the surrogate for the expected market premium. This is the same source for the market premium used by Dr. Olson in his interest premium approach. The surrogate for the market in the Ibbotson study is the S&P 500. Since there is a high correlation between the return on the S&P 500 and the New York Stock Exchange Index, this is not of great concern, but certainly the use of an adjusted beta compared to a raw beta affects the estimated return very significantly.

The Value Line betas "are adjusted for their long-term tendency to converge toward 1.00." (Arnold Bernhard, How To Use The Value Line Investment Survey, page 61) The actual adjustment procedure involves the application of a regression equation which may be closely approximated by averaging the raw beta with 1.0 giving

twice the weight to the raw beta. All stocks are adjusted in the same manner and also note they are rounded to .00 or .05. While the adjustment procedure may be appropriate for the construction of a risk indicator, the theoretical linkage between the adjusted beta and the CAPM model is tenuous, at best. I know of no recent empirical tests which indicate that all stocks converge towards 1.0 or even that utility stocks converge the same as other stocks. The CAPM, unlike the DCF, is a one period model. Thus, even if a forward looking beta is appropriate, the adjustment to the raw beta is too large to be realized in the near term.

Furthermore, I also should point out that beta is estimated relative to a risk-free rate. The estimated beta will vary depending upon whether a short-term or long-term government security rate is used as the proxy for the risk-free rate. There has been growing support for the use of a long-term government security rate as a proxy for the risk-free rate when using the CAPM in regulatory proceedings. However, it is possible that the beta was estimated relative to a different risk-free rate or no risk-free rate at all.

The market premium is often based on the historical spread between realized market returns and risk-free rates. The Ibbotson study covering a very long time period beginning in 1926 often is used in developing this estimate. The beta usually is estimated using the most recent five years of monthly data.

Again, we have a mismatching of time periods. Quite likely the historical market premium for the same time period used to estimate the beta will be different than the very long-term differential provided in the Ibbotson study.

According to the CAPM theory, the return on equity for a company is strictly a function of its beta. Therefore, according to the CAPM model, the only difference in the calculated return for two companies would be attributable to a difference in their betas. To explore the reasonableness of this I have assembled the Value Line betas for all of the electrics followed. These betas are shown in Schedule 16, and are averaged by bond rating class. It is clear that using the historical market premium of 7.4% based on the Ibbotson data, there would be virtually no difference in the estimated return for an average Aa/AA, or Aa/A or A/AA electric. The average A/A electric would have a required return approximately 0.2% lower than the higher rated companies. [(.62 - .65) x 7.4% = -.222%] The average Baa/BBB company with a beta of .69 would require a return of approximately 0.3% higher than a double A company. [(.69 - .65) x 7.4% = .296%] With an average beta of .65, the average below Baa/BBB company would actually require a return equal to the average double-A company. The selection criteria for comparable companies used by both Dr. Olson and me for our DCF analysis is inconsistent with the CAPM results.

Q. DESPITE YOUR RESERVATIONS ABOUT THIS MODEL, HAVE YOU CALCULATED THE COST OF EQUITY FOR PUGET OR THE GROUP OF COMPARABLE ELECTRICS USING THIS MODEL?

A. Yes, I have. All of the financial models we use require assumptions in their application. So despite my reservations, I have applied the CAPM using what I believe are reasonable assumptions. I have applied the model using the 30-year Treasury bond rate as the risk-free rate, the market premium of 7.4% from the Ibbotson study, and both Value Line adjusted betas and Standard & Poor's unadjusted betas.

First, I have assembled the betas for Puget and the group of single-A electrics which are shown in Schedule 17. Based on the current 30-year Treasury bond rate of approximately 7.0% and a market premium of 7.4%, the CAPM estimates for Puget are in a range from 9.9% to 11.1%. The average CAPM estimates for the group of Single-A rated electrics is in a range from 9.7% to 11.3%.

Puget Sound Power & Light:

6.7% + .43(7.4%) = 9.9%
6.7% + .60(7.4%) = 11.1%

Single-A Electrics:

6.7% + .41(7.4%) = 9.7%
6.7% + .62(7.4%) = 11.3%

Comparable Earnings

Q. DR. LEGLER, YOU STATED THAT THE COMPARABLE EARNINGS APPROACH IS ONE METHOD OF ESTIMATING THE COST OF EQUITY CAPITAL. PLEASE EXPLAIN THE BASIS OF THIS APPROACH.

A. The basis of the comparable earnings approach is the often cited case of the Federal Power Commission vs. Hope Natural Gas Company, 320 U.S. 591 (1944). Briefly, two principles are involved in the comparable earnings approach as applied to ratemaking. One states that an investor should be able to earn a return comparable to the returns available to him on alternative investments with similar risks. The other principle states that the return should be sufficient to enable the utility to attract additional equity capital required on a reasonable basis and maintain the financial integrity of the firm. Basically, the comparable earnings test is what economists refer to as the opportunity cost principle.

Q. WHAT PROBLEMS ARE INHERENT IN THE COMPARABLE EARNINGS APPROACH?

A. The major problem in applying the comparable earnings approach is the difficulty in determining what companies are comparable to the utility in question. Some analysts suggest that the valid comparison is with a broad sample of unregulated firms such as the S&P 400. Other analysts select groups of specific firms of comparable risk based upon criteria such as similar beta coefficients, and standard deviations of returns. In short, the problem is not so much the concept, but its implementation. In fact, it is these problems and the fact that the method is

backward rather than forward looking which, at least in part, have led to the application of finance theory such as the DCF method in utility rate cases.

Q. DR. LEGLER, DO YOU BELIEVE THAT UTILITIES AND INDUSTRIALS ARE COMPARABLE?

A. In addition to the protection afforded by regulation to utilities, there are accounting differences in the measurement of returns which call into question strict comparability between utilities and industrials.

There is also a problem comparing utilities and industrials when there is a disparity in the market to book values. An illustration should make this point clear. If an industrial stock is selling for two times its book value, and earning 20% per year on book value, it would be erroneous to suggest that a new or prospective investor would receive a return of 20% on his or her investment. The actual return is sensitive to the market to book ratio. Thus, comparing book returns of utilities selling closer to book than the book returns of industrials is an invalid comparison. This is not to suggest, however, that the investor could not receive a market return of 20% on one or both investments.

Q. WHAT CONCLUSION HAVE YOU REACHED REGARDING THE COMPARABLE EARNINGS APPROACH USING INDUSTRIALS AS THE ONLY STANDARD OF COMPARISON?

A. I reject the application of the comparable earnings approach using industrials as the only basis of comparison, in principle, because of the questionable comparability of the measured earnings and differences in risks of regulated and unregulated companies.

Q. DR. LEGLER, HAVE YOU PERFORMED THE COMPARABLE EARNINGS TEST IN THIS CASE?

A. For the reasons stated earlier I have not performed the standard or traditional comparable earnings test in this case.

Q. HAVE YOU PERFORMED ANY OTHER COMPARABLE EARNINGS ANALYSES?

A. Not in a strict sense. My DCF analysis for the group of comparable electric utilities has the attributes of a forward looking comparable earnings analysis since it is a market-based approach. The cost of equity for a group of comparable companies, if authorized for Puget, conforms to the standards established in the Bluefield and Hope cases. Consequently, my DCF analysis parallels the traditional approach and leads to the same conclusion.

Q. BY LIMITING THE STUDY TO OTHER ELECTRIC UTILITIES, AREN'T YOU INVOLVING CIRCULARITY IN YOUR REASONING?

A. Yes, to some extent. If all commissions set allowed returns on what other companies were expected to earn or have earned, circularity of reasoning would be a problem. By using a market based approach such as the DCF, it is assumed that the market accounts for differences in risk among companies and among industries in setting stock prices.

Q. HAVE YOU APPLIED ANY TESTS OF REASONABLENESS OF A COMPARATIVE NATURE TO YOUR FINDINGS?

A. In schedule 18, I have provided the recent earned returns on common equity for the group of comparable electrics from Salomon Brothers, Inc. "Electric Utility Monthly" for March 1993. In addition, I have reported on Schedule 18 the projected 1993 returns on book equity for the group taken from Value Line. The average earned return is 12.1% for the group of comparable electrics and the average projected return is 12.3%. For Puget the earned return is 12.4% and the projected return is 11.5%. I believe these estimates suggest the reasonableness of my own estimates.

MARKET PRESSURE AND FLOTATION COSTS

Q. ESTIMATES DERIVED FROM THE BOND YIELD PLUS RISK PREMIUM APPROACH AND THE DCF METHOD ARE MARKET VALUE ESTIMATES OF THE COST OF EQUITY. SINCE COMMISSIONS REGULATE ON A BOOK VALUE BASIS, IS IT NECESSARY TO ADJUST THESE MARKET ESTIMATES TO PROVIDE A FAIR RATE OF RETURN ON BOOK EQUITY?

A. When a company sells a new issue of stock, certain flotation costs are involved, and in theory, there will be pressure on the price of the stock caused by its increased supply. Thus, in theory, if the allowed rate of return on book is set equal to the market cost of equity, a new stock issue would sell below book value. That is, the equity per share of current shareholders would be diluted. To protect against this dilution of capital, and permit the recovery of issuance expenses, theoretically, the return on book should be set somewhat above the market value cost of equity.

Q. WHAT THEORETICAL ADJUSTMENT IS REQUIRED?

A. In my opinion, the proper relationship is a highly complex problem. Some of the factors to be considered include the current state of the stock market, the volatility of the stock in question, the issuing company's earnings and dividend growth rate, its current market to book ratio, and the capital structure of the company. Further, if one purpose of the adjustment is to protect existing shareholders from dilution when new stock is sold, then the need for capital in the future (i.e., whether or

not the company will be selling new stock) must also be relevant.

Market pressure should be measured by taking into account consideration of the trend in the stock market. The decline in a company's stock at the time of issuance should be measured net of any general market decline. A study by John W. Bowyer, Jr. and Jess B. Yawitz, "The Effect of New Equity Issues on Utility Stock Prices," Public Utility Fortnightly, May 22, 1980, examined 278 public stock issues from 1973 through 1976. They found an average market pressure of 0.72%. Other studies include "Equity Issues and Offering Dilution," by Paul Asquith and David W. Mullins, Jr., in the January/February 1986 issue of the Journal of Financial Economics; and "Impacts of New Equity Sales Upon Electric Utility Share Prices," by Richard H. Pettway and Robert C. Radcliffe in the Spring 1985 issue Financial Management. These studies found market pressure based upon specific concepts of the general term of 0.9 percent and 3 percent, respectively. Other studies for individual utilities may be found in the testimony of rate of return witnesses in utility cases including my own.

Q. DR. LEGLER, WHAT ADJUSTMENT DO YOU BELIEVE IS NECESSARY?

A. I have estimated market pressure during Puget Sound Power & Light stock issues. This analysis is shown in Schedule 19. Specifically, I have compared the change in the price of the Company's stock prior to the announcement of the new stock issue with the closing

price of the Company's stock on the date of issue. The prior price was the closing price the day before the announcement appeared in the Wall Street Journal. The trend in the S&P utility index during the same period was analyzed using the same technique and the net market pressure on the Company'a stock was measured as the difference in its change and the change of the S&P utility index. The market pressure during these issues, on average, was 1.09%. In theory, market pressure always should be positive. The fact that measured market pressure is not always positive questions the necessity of considering such an adjustment. Flotation costs shown in Schedule 20 averaged approximately 4.0% for the issues of Puget stock.

If the Commission determines an adjustment is necessary, I suggest that it separate the two issues of flotation costs and market pressure and distinguish between internal and external financing. Flotation costs should not be applied to all equity. Flotation costs only apply to that portion of equity raised through common stock offerings. Thus, even if market pressure does exist, and if it is measured properly, an adjustment for flotation costs applied to all equity will overstate the cost of internal equity capital.

Q. CAN YOU SUGGEST A SPECIFIC METHODOLOGY FOR MAKING A FLOTATION COST ADJUSTMENT?

A. An approach some analysts use to quantify the relationship is to

include flotation costs in the DCF calculation which would be restated as:

$$k = D_1/P_0 - F + g$$

where F = Flotation Costs. For example, if we allow 4% for flotation costs, the difference between the calculated $D_1/P_0 - F$ and D_1/P_0 using $1.80 as the dividend and $28 as the price is approximately 0.3 percentage points. This example is shown in Schedule 21. This is, of course an illustration and not my recommendation.

However, strict application of this approach would produce inaccurate results in this case for several reasons. First, implicit in the calculation is the invalid assumption that flotation costs should be applied to all equity. As I have previously stated, the Commission should distinguish between internal and external financing which this formula does not. Second, this Commission is not in a position to assure a particular return on Puget's book equity, and accordingly, is not in a position to assure a market to book ratio. The market to book ratio is affected by market conditions which are not under the control of the Commission.

The overall cost of equity may be calculated based on the weighted average of internal and external capital that Puget may reasonably be expected to use in the future. Based on data on shareholders' common equity investment at the end of 1983 and

1991 as shown in Schedule 21, I have calculated the proportions of internal and external equity. A decrease in the relative amount of external financing is indicated by the decrease in the common stock account compared to retained earnings. This decrease was from 82.6% to 80.0% over the time period. Between the end of 1983 and 1991, 72.6% of the change in stockholders' investment was derived from external equity and about 27.4% from retained earnings. If Puget continues to raise equity in these proportions, the weighted cost of equity using an illustrative 10.6% estimated cost of internal equity and flotation costs of 4% would be 10.8%. These illustrative calculations are shown in Section C of Schedule 22 and basically reflect a 20 basis point adjustment.

This method avoids overstating the cost of equity in that it applies the adjustment only to that portion of equity where a problem may exist. I believe this approach is better than applying an arbitrary adjustment to the entire equity component.

Q. ARE THERE ALTERNATIVE APPROACHES TO CALCULATING THE FLOTATION COST ADJUSTMENT?

A. Yes. One approach is contained in an article by Arzac and Marcus, "Flotation Cost Allowance in Rate of Return Regulation: A Note," The Journal of Finance, Vol. XXXVI, No. 5, December 1981, pp. 1199-1202. They state that their approach explicitly takes "account of the fact that underwriting expenses and

underpricing apply only to the portion of equity which is externally financed and not to retained earnings. Finance theory and empirical evidence suggest that underpricing is only a transitory phenomenon which affects pre-issue stockholders only through the lower proceeds of the new issue." They derive the following formula:

$$r = \frac{k}{1 - fh/1-f}$$

where,

r is the utility's allowed return on equity
k is the investor's required return on equity
f is flotation costs, expressed as a fraction of value of the issue
h is the external financing rate, expressed as a fraction of earnings.

In Schedule 23, I have calculated the equity financing rate for Puget. The equity financing rate has averaged 36.0% for nine years ending with 1991. Assuming flotation costs of 4% and an equity financing rate of 36%, the required returns are shown below for investor expected-returns of 11.0% to 12.0%.

k = 11.0%	k = 12.0%
f = .04, h = .36	f = .04, h = .36
r = 11.2%	r = 12.2%

These results suggest an adjustment of about 20 basis points, approximately the same as the former method.

The Company had a public offering of common stock in November 1992, and on the basis of this recent issue, I believe that it would be reasonable to apply a modest issuance cost adjustment in this case. I also note that Dr. Olson has testified that the Company plans to issue a substantial amount of additional common equity.

Cost of Equity Summary

Q. PLEASE SUMMARIZE THE RESULTS OF YOUR STUDIES OF THE COST OF COMMON EQUITY TO PUGET SOUND POWER & LIGHT.

A. I have estimated the cost of equity using the discounted cash flow method, the risk premium method, and the Capital Asset Pricing Model (CAPM). I also reviewed recent earned returns and Value Line projected returns. My results are summarized below. These results are exclusive of a market pressure-flotation cost adjustment which I believe should be no greater than 20 basis points.

DCF Method	Based on: Average Prices	Based on: Current Prices
Puget Sound Power & Light:	9.8% to 10.8%	9.5% to 10.5%
Comparable Electric Utilities:		
-Retention Growth	9.36%	9.02%
-Value Line Growth	9.65%	9.31%
-Historical growth Rate	9.9% to 10.2%	9.6% to 9.9%
Risk Premiums		
Puget Sound Power & Light:		
-Longer-Term Premiums	9.32% to 10.73%	
-Five Year Premiums (adjusted)	9.13% to 9.37%	
Moody's 24 Electrics:		
-Longer-Term Premiums	9.64% to 10.91%	
Capital Asset Pricing Model		
-Puget Sound Power & Light	9.9% to 11.1%	
-Comparable Electrics	9.7% to 11.3%	
Earned Returns from Salomon Brothers		
-Puget Sound Power & Light	12.4%	
-Comparable Electrics	12.1%	
1993 Projected Returns from Value Line		
-Puget Sound Power & Light	11.5%	
-Comparable Electrics	12.3%	

I do not believe that estimates to the second decimal place are really meaningful and tend to claim a degree of precision that is unwarranted. I also believe that a range is more appropriate than a point estimate. I recommend that the cost of equity be set in a range from 11.0% to 11.5% inclusive of an issuance cost adjustment. I have a stated preference for using average prices in the DCF calculations. The lower end of my range is at the upper end of the DCF range based on average prices including an issuance cost adjustment of 20 basis points. The lower end of my range also is at the approximate upper end of the risk premium analysis. The upper end of my range approximates the upper end of the Capital Asset Pricing model results and is consistent with the projected book return for the company. The only support for a higher return must be based on the earned returns, and it should be remembered that these earned returns are generally based on allowed returns granted when capital costs were much higher than they are at present. The direct comparability of the earned returns to the current cost of equity must be questioned.

Given the rather long period of high interest rates, current estimates of the cost of equity are exceptionally low. Indeed, it may be difficult to think of allowed returns below 12%. On the other hand, interest rates on long-term single-A public utility debt has declined by approximately 1.5 percentage points since mid-1991. The Company was awarded a return on common equity in 1991 of 12.65%. Accordingly, I believe that my

recommended range is entirely appropriate, and consistent with returns currently being authorized by other commissions.

My usual recommendation is to set the cost of equity at the midpoint of my range in the absence of reasons to do otherwise. In this case, I will base my weighted average cost of capital on midpoint of my range, 11.25%. We are all aware of the expression rate shock as a reason for not moving rates too quickly. In fairness, the current financial markets may well cause investor shock if the Commission were to set the allowed return strictly on the basis of the financial model results which could be used to support a return of less than 11%. I believe that my recommended return of 11.25% would be reasonable based on investors' experience with declining interest rates.

In reality, there isn't as great a difference between Dr. Olson's recommendation and mine. His bare bones recommendation in his prefiled testimony was 11.75% to 12.25%. He added a flotation cost adjustment of 94 to 98 basis points. We basically agree on the magnitude of the issuance cost adjustment of about 4%. The other 4% of his adjustment is for protection in a down market. With a market to book ratio of nearly 1.6 ($28/$17.65), I find the notion of the probability of having to issue common equity below book value highly problematic. It would require a decline of about 37% in the price of the Company's stock. Dr. Olson is worried about a transfer of capital from the existing

shareholders to the new shareholders. I believe the probability of just the opposite happening is greater at this time. If the marhet to book ratio is greater than 1.0, as is the case now, a sale of common equity will result in a transfer of capital from new to old shareholders. Clearly, his adjustment for flotation costs is excessive.

Without gett ng into the basis of his adopted growth rates in the DCF analysis, I believe that the cost of equity is lower now than when he prepared his testimony in October 1992. Interest rates on single-A utility debt have declined by roughly 60 basis points since then. After updating his testimony, and adjusting his excessive flotation cost adjustment, our recommendations are not that far apart. In fact, during his cross examination, Dr. Olson made a rough calculation of the magnitude of the decline in the dividend yield portion of his DCF. He put the decline at approximately 50 basis points, and suggested that translating this decline in the dividend yield into return on equity would result in an estimate of 12% to 12.5%. (Transcript, page 742) Our major difference would appear to be in the issuance cost adjustment, and I regard his adjustment as excessive. Reducing his bare bones cost of equity of 11.75% to 12.25% by 50 basis points and adding my proposed adjustment of 20 basis points would put his estimate in a range from 11.45% to 11.95%.

Q. HAVE YOU CONSIDERED ANY OTHER RISK FACTORS IN MAKING YOUR RECOMMENDATION ON THE COST OF EQUITY?

A. I am aware that there are other issues in this case which could have an effect on the Company's cost of equity and overall cost of capital. The effect of purchased power on the Company's credit rating and indirectly its cost of equity has been addressed at length. Conservation, customer growth, and regulation are other factors that come to mind. Although I have not made analyses or attempted to quantify the impact of these risk factors on Puget's cost of capital, I believe that they are properly reflected in my estimates. It is investors' perceptions of these risks that matters. To the extent these factors are important to investors they are reflected in the prices they are willing to pay for securities, and accordingly, are taken into account in my estimates. Based on Dr. Olson's discussion of the relationship between PRAM and the cost of equity during his cross examination, I believe that we are in agreement that the DCF model properly reflects all risks. (Transcript, page 761)

WEIGHTED AVERAGE COST OF CAPITAL

Q. HAVING ASSIGNED COST RATES TO THE CAPITAL COMPONENTS AND ADOPTED A CAPITAL STRUCTURE, WHAT WEIGHTED AVERAGE COST OF CAPITAL DO YOU RECOMMEND?

A. I have calculated the weighted average cost of capital based on my adopted capital structure and embedded cost rates for long-term debt and preferred stock, and a return on common equity of 11.25%. I do believe that the Commission could allow a return on common equity within my recommended range and meet the mandates of Bluefield and Hope. The weighted average cost of capital to Puget is 9.37%. The calculations are shown in Schedule 24.

Q. DOES THIS CONCLUDE YOUR TESTIMONY?

A. Yes, it does.