STATE OF ALASKA

THE REGULATORY COMMISSION OF ALASKA

Before Commissioners:

Robert Mr. Pickett, Chair
Kate Giard
Paul F. Lisanke
T.W. Patch
Janis W. Wilson

In the matter of the Tariff Revision, Designated as)
TA381-1, Filed ALASKA ELECTRIC LIGHT)
AND POWER COMPANY For Interim and)
Permanent Rate Increases)

TA 381-1
U-10-___

PREFILED DIRECT TESTIMONY OF THOMAS M. ZEPP

I. INTRODUCTION AND SUMMARY

Q1. Please state your name and business address.

A1. My name is Thomas M. Zepp. My business address is Utility Resources, Inc, Suite 250, 1500 Liberty Street, S.E., Salem, Oregon 97302.

Q2. What is your profession and background?

A2. I am an economist and Vice President of Utility Resources, Inc., a consulting firm. I received my Ph.D. in Economics from the University of Florida. Prior to jointly establishing our consulting firm in 1985, I was a consultant at Zinder Companies from 1982 to 1985 and a senior economist on the staff of the Oregon Public Utility Commissioner (now Commission) between 1976 and 1982. Prior to 1976, I taught business and economics courses at the graduate and undergraduate levels.

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I have been deposed or testified on various topics before regulatory commissions, courts and legislative committees in twenty-two states, before two Canadian regulatory authorities and before four Federal agencies. In addition to cost of capital studies, I have testified as to incremental costs of energy and telecommunications services and values of utilities' assets.

Q3. What cost of capital studies have you prepared before?

A3. I have submitted studies or testified on cost of capital and other financial issues before the Interstate Commerce Commission, Bonneville Power Administration, and courts or regulatory agencies in Alaska, Arizona, California, Hawaii, Idaho, Illinois, Kentucky, Montana, Nevada, New Mexico, Oregon, Tennessee, Utah, Washington and Wyoming.

My studies and testimony have included consideration of the financial health and fair rates of return for General Telephone of the Northwest, Illinois Bell Telephone, Nevada Bell Telephone, Pacific Northwest Bell, U S WEST, Alaska Power Company, Anchorage Municipal Light & Power, Black Bear Lake Hydro, Inc., Commonwealth Edison, Idaho Power, Iowa-Illinois Gas and Electric, Pacific Power & Light, Portland General Electric, Puget Sound Power & Light, Cascade Natural Gas, Mountain Fuel Supply, Northern Illinois Gas, Northwest Natural Gas, Anchorage Water Utility, Anchorage Wastewater Utility, Arizona Water Company, Arizona-American Water Company, California-American Water Company, California Water Service, Chaparral City Water Company, Dominguez Water Company, Golden State Water Company, Hawaii-American Water Company, Kentucky-American Water Company, Mountain Water Company, New

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Mexico-American Water Company, New Mexico Utilities, Inc., Oregon Water Company, Paradise Valley Water Company, Park Water Company, San Gabriel Valley Water Company, Southern California Water, Suburban Water System, Tennessee-American Water Company and Valencia Water Company. I also prepared estimates of the appropriate rates of return for a number of hospitals in Washington, a large insurance company, and U.S. railroads.

Q4. Do you have other professional experience related to cost of capital issues?

A4. Yes. My article, "Utility Stocks and the Size Effect - Revisited," was published in the *Quarterly Review of Economics and Finance*, Vol. 43, Issue 3, Autumn 2003, pp. 578-582. Also, I published an article "Water Utilities and Risk," *Water the Magazine of the National Association of Water Companies* Vol. 40, No. 1 Winter 1999 and was an invited speaker on the topic of risk of water utilities at the 57th Annual Western Conference of Public Utility Commissioners in June 1998. I presented a paper "Application of the Capital Asset Pricing Model in the Regulatory Setting" at the 47th Annual Southern Economic Association Conference and published an article "On the Use of the CAPM in Public Utility Rate Cases: Comment," *Financial Management* Autumn 1978, pp. 52-56. I have been a journal referee for the *International Review of Economics and Finance* and *Financial Management*. While on the staff of the Oregon PUC, I also established a sample of over 500,000 observations of common stock returns and measures of risk and conducted a number of studies related to the use of various methods to estimate costs of equity for utilities. I was invited to Stanford University to discuss that research. Exhibit TMZ-1 provides a more complete description of my past

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experience.

Q5. What is the subject of your testimony in this proceeding?

A5. Alaska Electric Light and Power ("AELP" or the "Company") asked me to estimate its cost of equity. My study is based on data available to investors in January 2010.

Q6. How is your testimony organized?

A6. In this Section I, I provide a brief statement of my credentials, present the concept of a fair rate of return and a summary of my analysis.

In Section II, I discuss the risks of the electric utilities sample I rely upon to determine benchmark discounted cash flow ("DCF") equity cost estimates and compare the risks of the sample to risks faced by AELP. Based on a consideration of AELP's small size and other factors, I determine AELP requires a return on equity ("ROE") that is at least 350 basis points higher than the fair ROE for the sample of publicly-traded electric utilities I used to determine benchmark DCF equity cost estimates.

Section III develops my DCF equity cost estimates for a benchmark sample of 31 electric utilities based on three alternative DCF approaches. To each of the benchmark equity cost estimates I add 350 basis points to account for AELP's above-average risk.

Section IV presents my risk premium ("RP") analyses. Initially, I explain why it is reasonable to expect equity cost risk premiums to vary inversely with interest rates and present different types of evidence that support such a conclusion. Subsequently, I present equity cost estimates based on four different risk premium approaches. The fourth RP analysis is based on the capital asset pricing model ("CAPM"). I explain why the CAPM is difficult to apply at this time.

Section V provides a summary of my analysis, an estimated range in which AELP's cost of equity falls, and my recommended return on equity ("ROE") for AELP of 14.75%.

Q7. What are the results of your analysis?

A7. The results of my analysis are summarized below and in Summary Table 16 (tables are contained in Exhibit TMZ-2):

Basis for Estimate	Estimated Cost of Equity for AELP
First DCF Analysis	14.9%
Second DCF Analysis	14.9%
Third DCF Analysis	14.6%
First Risk Premium Analysis	14.6% to 15.0%
Second Risk Premium Analysis	14.3% to 15.4%
Third Risk premium Analysis	14.5%
CAPM Risk Premium Analysis	14.5%
Estimated Range of Equity Costs	14.7% to 14.8%
Recommended ROE	14.75%

Each of the estimates of AELP's cost of equity includes a risk premium to reflect AELP is more risky than the sample I use to determine benchmark cost of equity estimates.

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Q8. Have you prepared any exhibits to accompany your testimony?

A8. Yes. I prepared Exhibit TMZ-1 which is my resume and Exhibit TMZ-2 which contains 16 tables that support my testimony.

Q9. Please discuss what is meant by a fair rate of return.

A9. A fair rate of return is achieved when a utility is authorized rates and rate adjustment mechanisms at levels where the expected return provides common stock investors a reasonable opportunity to earn the cost of common equity. Because operating expenses and interest on debt take precedence over payments to common stock holders, it is the common equity shareholder of the company who bears the greatest risk of receiving expected returns. In 1923, the U.S. Supreme Court set forth the following standards in the *Bluefield Waterworks* decision:

> A public utility is entitled to such rates as will permit it to earn a return on the value of the property which it employs for the convenience of the public equal to that generally being made at the same time and in the same general part of the country on investments in other business undertakings which are attended by corresponding risks and uncertainties; but it has no constitutional right to profits such as are realized or anticipated in highly profitable enterprises or speculative ventures. The return should be reasonably sufficient to assure confidence in the financial soundness of the utility, and should be adequate, under efficient and economic management, to maintain and support its credit and enable it to raise the money necessary for the proper discharge of its public duties. A rate of return may be reasonable at one time and become too high or too low by changes affecting opportunities for investment, the money market, and business conditions generally. 262 U.S. 679, 692-93 (1923).

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In the *Hope Natural Gas Company* decision, issued in 1944, the U.S. Supreme Court stated the following regarding the return to owners of a company:

> [T]he return to the equity owner should be commensurate with returns on investments in other enterprises having corresponding risks. That return, moreover, should be sufficient to assure confidence in the financial integrity of the enterprise, so as to maintain its credit and to attract capital. 320 U.S. 591, 603.

These decisions require that rates for AELP be set so that its expected ROE is commensurate with returns on investments in enterprises having the same risks, is sufficient to assure confidence in the financial integrity of the enterprise and enables the Company to attract capital.

In 1989, the U. S. Supreme Court reaffirmed those standards in *Duquesne Light Co. v Barasch* [488 U. S. 310] and acknowledged an important economic concept: it found that regulatory commissions may need to adjust the risk premium element of the rate of return on equity to provide a fair return. It said:

> [W]hether a particular rate is "unjust" or "unreasonable" will depend to some extent on what is a fair rate of return given the risks under a particular rate setting system . . . . 488 U.S. 299, 310.

Therefore, in determining an appropriate return, consideration must be given to the specific risks created by the nature and degree of regulation to which the utility is subject, in addition to examining general economic and financial data for utilities.

Additional risk faced by AELP should be recognized when setting the fair rate of return for the Company. I explain unique additional risks of AELP and why the Company

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requires a higher ROE than the electric utilities in the sample I use to determine guideline cost of equity estimates.

Q10. What is the crucial implication of the principles set out by the U. S. Supreme Court in the determination of a fair rate of return for AELP?

A10. The crucial implication is the rates and rate adjustment mechanisms authorized for AELP by the Regulatory Commission of Alaska should give the Company a reasonable opportunity to earn the rate of return investors could expect to earn if they invested in another utility of comparable risk.

Q11. What is the primary implication for customers of AELP?

A11. The primary implication for customers is the cost of equity is another cost of service required by AELP so it can provide safe, reliable and adequate service now and in the future. Thus, the rates customers pay should provide a reasonable opportunity for AELP to earn that cost of equity. The fair rate of return on common equity is the cost of common equity.

Q12. Please summarize your testimony?

A12. My findings and recommendations are the following:

1. The cost of common equity faced by AELP is at least 350 basis points greater than the cost of common equity that faces a typical publicly-traded electric utility used to determine guideline equity costs.

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2. The cost of common equity for the electric utilities samples I use to determine guideline equity costs falls in a broad range of 10.8% to 11.9% at this time:

- Three DCF estimates for the electric utilities sample indicate the cost of equity falls in a range of 11.1% to 11.4%;
- Costs of equity derived from four risk premium analyses indicate the cost of equity for the benchmark electric utility sample falls in the range of 10.8% to 11.9%.
- An average of the DCF estimates provides a reasonable top of the range of 11.3%.
- An average of the RP estimates provides a reasonable bottom of the range of 11.2%.

3. The cost of common equity for AELP falls in a range of 14.7% to 14.8% at this time.

4. I recommend AELP be authorized an ROE of 14.75%, the mid-point of my estimated equity cost range. *See* Summary Table 16.

II. RISKS OF AELP COMPARED TO THE ELECTRIC UTILITIES SAMPLE

Q13. Please provide an overview of your discussion of risk.

A13. Investors can choose to invest in many different types of assets with varying degrees of risk. Those investments might be in real estate, gold, collections of fine art, or financial assets. The financial assets run the gamut from relatively low risk assets such as Treasury securities and somewhat higher risk investment grade corporate bonds to relatively high-risk shares of common stocks. As the level of risk increases, investors

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require higher expected returns. Common stocks of utilities are generally more risky than investment grade bonds and thus require higher returns than investment grade bonds, which are secured debt instruments with fixed repayment terms. Operating expenses, interest on debt and repayment of principal take precedence over payments to common stock holders, and thus it is the common equity shareholder of the utility who bears the greatest risk of receiving expected returns. Conceptually,

Required return for common stock	=	Expected Return on a Baa bond	+	risk premium

Baa bonds are the lowest category of investment grade bonds.

Regulators should attempt to set rates which give a utility a reasonable opportunity to recover its costs of service. One of those costs of service is the cost of common equity, the required return for the utility's common stock. The cost of equity is the expected return that is fair to both investors and customers. The return is fair to investors because it is equal to returns which investors could expect to earn if they invested in companies of comparable risk, is high enough to attract capital, and allows the utility to maintain its financial integrity. It is fair to customers because it is a cost of service and supports safe, reliable and adequate service.

Q14. Please begin with a discussion of the sample of electric utilities you present in Table 1.

A14. The sample of electric utilities presented in Table 1 is the sample of 31 electric utilities I have used to make DCF estimates in section III. These electric utilities are all utilities

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listed by AUS Utility Reports in categories AUS calls "Electric Companies" and "Combination Electric & Gas Companies" which had investment grade bonds, had more than 50% of their revenues derived from regulated electric revenues, were not T&D companies, paid a dividend, and had all of the data required to make the DCF estimates. Table 1 lists percentages of revenues from electric operations, Value Line estimates of betas, and three indicators of size for the 31 utilities. Table 1 also displays averages of that information for the sample and comparable data for AELP if available.

Q15. Have the risks of electric utility stocks increased in recent years?

A15. Yes. Professor Roger Morin is generally acknowledged to be an authority on issues related to electric utilities' costs of equity. His prior book, *Regulatory Finance: Utilities' Cost of Capital*, Public Utilities Reports, Inc. 1994, was often quoted in testimonies before regulatory commissions. In his new book, *New Regulatory Finance*, Public Utilities Reports, Inc., 2006, Dr. Morin provides the following table that shows the equity risk premiums required by electric utilities have increased during the period 1987-2005.

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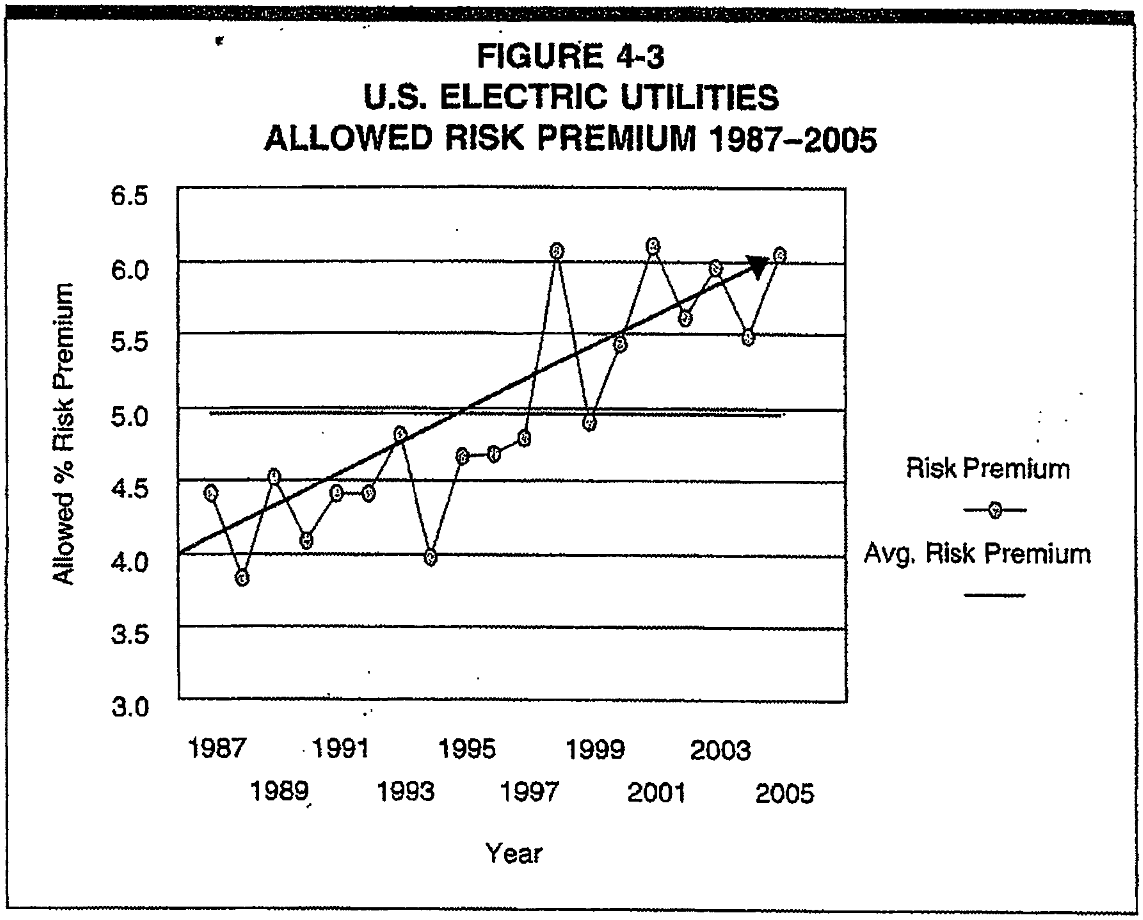

Q16. Dr. Morin's table shows electric utilities now require higher risk premiums than in the past. Is there other evidence that indicates risks of electric utilities have increased?

A16. Yes. Beta is a measure of risk in the capital asset pricing model. While it is difficult to apply the CAPM to determine costs of equity at this time, it is generally agreed that betas provide a measure of market risk. An average risk stock has a beta of 1.0 and lower risk companies have betas less than 1.0. Table 1 provides evidence about beta risk estimated

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by *Value Line* in 2001 and in 2010 that indicates this market measure of risk for the electric utilities sample has increased by over 30% during the last nine years. As risk increases, the cost of equity increases. All else the same, higher betas for the electric utilities sample indicate these utilities now require higher equity returns than in 2001.

Q17. How does the risk faced by AELP compare to the risks of the electric utilities sample?

A17. AELP is more risky than the sample for a number of reasons. First, it is much smaller. Table 1 shows AELP is less than 1% as large as the average electric utility in the benchmark sample. It is also smaller than every one of the publicly traded electric utilities used to determine benchmark DCF equity costs. AELP is more risky because it has a take-or-pay contract for the power it receives from Snettisham, is not interconnected with other electric utilities, has requirements for significant amounts of new capital, has liquidity risk, has limited financing flexibility and has an unavoidable exposure to losses due to avalanches and mud slides not faced by utilities in the lower 48 states. I also note there is a perception that investors take on added risks when investing in a utility located in Alaska instead of the lower 48 states.

Q18. Why does AELP's size matter?

A18. Academic studies have addressed the issue of company size and risk and found that smaller firms are more risky than larger firms. The seminal version of CAPM, developed in the mid-1960's, relied upon only beta as the measure of risk. Eugene Fama and Kenneth French ("The Capital Asset Pricing Model: Theory and Evidence," *Journal of*

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Economic Perspectives, Volume 18, No. 3, Summer 2004 pp. 25-46) provide evidence that questions the usefulness of the simple CAPM and explain that other variables such as company size and various price ratios add to the explanation of stock returns.

Morningstar—formerly Ibbotson Associates—also examined this issue for a number of years and found that smaller firms require higher and higher returns as size becomes smaller and smaller (most recently, Morningstar, *Ibbotson SBBI 2010 Valuation Yearbook*, Chapter 7).

I published an article, "Utility Stocks and the Size Effect - Revisited," *The Quarterly Review of Economics and Finance*, Vol. 43, Issue 3, Autumn 2003, pp. 578-582, which showed smaller utilities are more risky than larger utilities.

The California PUC Staff also studied this issue and found smaller utilities to be more risky than larger ones. They studied 58 water utilities and found that smaller water utilities (Class C and Class D) required equity returns higher than the larger Class A water utilities, even though those small water utilities were financed with 100% common equity. Business risk increases as the size of a firm decreases. This increase in business risk more than offsets the lower financial risk that would accompany 100% common equity. (*Staff Report on Issues Related to Small Water Utilities*, June 10, 1991 and CPUC Decision 92-03-093).

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Combined, this quantitative evidence shows there is no "bright line" that separates smaller, higher risk utilities from larger, lower risk utilities, but that risk and required ROEs increase more and more as utilities are smaller and smaller.

Q19. Does AELP require a risk premium due to it being smaller than the sample you rely upon in Table 1 to conduct your DCF analyses?

A19. Yes. Initially, I compared AELP's size to the size of companies studied by Morningstar. Morningstar's study of the impact of size on required ROEs partitions publicly traded companies traded on the NYSE, AMEX and NASDAQ into ten portfolios (deciles). The portfolios used by Morningstar are those originally constructed by the Center for Research in Security Prices (CRSP) at the University of Chicago's Graduate School of Business. CRSP has refined the method of creating size-based portfolios and applied this method to the NYSE/AMEX/NASDAQ-listed securities going back to 1926. At the time Morningstar conducted its 2009 study, portfolio 1 (decile 1) contained the largest companies with market values in excess of $18.5 billion and portfolio 10 (decile 10) contained the smallest companies, those with market valuations less than $218 million.

Table 1 shows all of the electric utilities in the benchmark sample have market capitalizations greater than $218 million and, on average, have a market capitalization which is 18% larger than annual revenues. AELP has annual revenues of approximately $31 million. If AELP were publicly traded and also had a market value capitalization 18% higher than its annual revenues, it would be much smaller than $218 million. Thus,

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AELP's size makes it much smaller than the benchmark electric utilities and places it near the bottom of the smallest portfolio being studied by Morningstar.

Q20. What is shown in Table 3?

A20. Table 3 applies the results of the Morningstar study to data for the electric utilities sample. Table 7-11 of the Morningstar study reports betas and size risk premiums for each of the 10 portfolios (deciles). The study shows that as firms become smaller and smaller, both betas for the portfolios and size risk premiums increase. Table 7-2 of the Morningstar study shows the maximum size of firms in each of the ten portfolios. Based on that information about the size of the companies in each decile and the market capitalizations for each of the electric utilities reported in Table 1, I determined a size risk premium to associate with companies the size of each of the 31 electric utilities. This information is reported in Table 3 as well as an average beta of 1.14 and an average size risk premium of 88 basis points for all companies in the portfolios containing the electric utilities sample[1].

Q21. What else is shown in Table 3?

A21. Table 3 also reports an average beta of 1.62 for decile 10, average size risk premium of 443 basis points for decile 10 and my estimate of the additional size risk premium of 355 basis points—443 basis points less 88 basis points—required by companies the size of AELP compared to companies the size of companies in the 31 utility sample. The size

[1] Morningstar, *Ibbotson SBBI 2009 Valuation Yearbook* ,Chapter 7 and Tables 7-2, 7-10 and 7-11.

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of the average company in decile 10 is $96 million. If the unknowable market value of AELP were approximately 18% larger than its annual revenues—a result consistent with the data in Table 1 for the average of sample companies—AELP would be less than one-half the size of the average company in decile 10. This result indicates AELP is expected to be much more risky than the electric utilities sample.

Q22. Does Morningstar provide other data that shows a 355 basis point size risk premium may understate the size risk premium required by AELP?

A22. Yes. In Table 7-7 of its 2010 study, Morningstar breaks out the size risk premiums required by larger and smaller companies in decile 10. It found the smaller companies in decile 10 require a risk premium that is more than double the size risk premium required by the larger companies in decile 10. *See* Table 4. This result is consistent with the observation that as companies become smaller and smaller they require higher and higher risk premiums to account for their smaller size. This Morningstar analysis supports a value of 350 basis points being a conservative estimate of the size risk premium for AELP.

Q23. Please discuss other differences in business risks. Does AELP's reliance on the Snettisham hydro electric project increase risk?

A23. Yes. The power sales agreement between AELP and the state of Alaska is a take-or-pay contract and represents about 70% of the Company's power under normal circumstance. As a result, AELP is responsible for all of the Snettisham costs and those costs become a fixed obligation regardless of whether AELP takes the power or not. Such fixed cost

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obligations are treated by some ratings agencies as the equivalent of additional debt and thus impact credit ratings. All else being equal, such a fixed cost obligation increases AELP risk and its required ROE.

Q24. Is AELP more risky due to it not having transmission lines that connect with other electric utilities?

A24. Yes, it is. AELP is more risky because it does not have transmission lines that allow it to purchase power from other electric utilities if the need arises. Normally Snettisham provides a benefit to AELP's ratepayers because it provides a low cost source of power. During the last two years, however, avalanches severed AELP's transmission line to the Snettisham hydroelectric project and thus the Company had to rely on much more expensive diesel-fired units to provide service to its customers. Electric utilities in the sample used to determine benchmark cost of equity estimates may have to pay somewhat higher costs to replace lost generation when they buy power over transmission lines interconnected to other utilities. AELP, however, is not connected to other utilities and thus has much higher alternative costs for replacement power. While the high costs of the fuel to run the internal combustion units was passed through to ratepayers, customer rates increased substantially and AELP net revenues dropped as customers conserved. These lost sales, the requirement to continue paying Snettisham costs even though it could not receive the power from the project, and any added costs when power is lost but which are not flowed through to customers create risks faced by AELP that are not generally faced by utilities in the electric utilities sample I rely upon to determine benchmark equity costs.

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Q25. Putting aside consideration of the Lake Dorothy addition, does AELP have significantly higher capital budget requirements in the future than in the past?

A25. Yes. In his testimony, Mr. Timothy D. McLeod discusses the need for strong financial indicators to obtain low-cost capital for capital additions. During the last eight years, AELP had a T&D budget that averaged $1.6 million per year. In the next eight years, it projects it will have an average T&D budget of $3.4 million per year, an amount more than double its requirements in the past. These additions are required to meet growth, improve reliability and replace existing plant.

Q26. Do the added future capital requirements increase the Company's risk?

A26. Yes. Additional capital spending generally requires a utility to request rate increases to recover returns on and of new rate base additions. The need for rate increases raise doubts in investors minds that it is politically possible to request the needed rate increases or that regulators will authorize high enough rates or rate adjustment mechanisms to enable a utility to earn a fair rate of return. From the investors' point of view it is uncertainty of <u>potential</u> disallowances or delays in receiving timely rate relief that increase risk.

Several years ago, I conducted a study of expected differences in bond costs and common equity costs that faced electric utilities with different financing requirements. I found that electric utilities with above average financing requirements required higher ROEs than those with lower financing requirements. In like manner, AELP's above average future capital requirements increases its risk.

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Q27. Are AELP's liquidity and financing flexibility also sources of added risk?

A27. Yes. AELP is not publicly traded on any major stock exchange. As a result, it has liquidity risk and a lack of financing flexibility that results from not having access to equity markets available to the publicly traded utilities in the electric utilities sample.

Liquidity risk arises when there is uncertainty with being able to sell or exit an investment. Appraisers typically include such risk when they appraise the value of privately held firms. Investors holding shares of stock of AELP have limited opportunities to sell shares and thus much greater liquidity risk than investors holding shares of utility stocks bought and sold on major exchanges.

The lack of financing flexibility also increases risk because AELP has to rely on fewer sources of new capital to finance the utility plant improvements and additions required to assure quality and reliability of service. By contrast, utilities in the electric utilities sample have access to external capital markets and have the flexibility to raise additional capital from equity issues as well as debt issues.

Q28. Do investors perceive it is more risky to invest in AELP and other utilities providing service in Alaska than to invest in a utility providing service in the lower 48 states?

A28. Yes. It is reasonable to conclude investors have the perception that business risks for utilities in Alaska are higher than they are for utilities in the lower 48 states for at least two reasons.

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Adverse winters in Alaska not experienced by utilities in the lower 48 states can cause damage to facilities that would not be expected by investors owning most stocks operating in the lower 48 states. Avalanches and mud slides which AELP has experienced in recent years are clear examples of this added risk.

Investors may also view investments in Alaska as more risky because of limited information about its regulatory environment. Regulatory Research Associates evaluates the regulatory climates of 49 states, but not Alaska. Investors generally prefer to invest in states that have average or above average regulatory rankings, but would not have such information to consider when evaluating whether to invest in an Alaska utility. Knowledgeable investors would know, however, that Chugach Electric Association, Inc. was down-graded by Standard and Poor's and Fitch and they have attributed those downgrades, in part, to results in its rate case and uncertainty in the regulatory environment. Higher regulatory risk also stems from the *possibility* that adversarial proposals from rate case participants might be accepted, even though AELP expects the Commission will adopt rate and rate adjustment mechanisms that give the Company a reasonable opportunity to earn a fair ROE.

Q29. What is your recommended risk adjustment for AELP?

A29. I recommend the Commission adopt a risk premium of no less than 350 basis points. This risk premium is conservative because companies the size of AELP require higher risk premiums than larger companies, AELP has a take-or-pay contract for its major

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source of generation but that generation may be disrupted (again) as it has been in recent years and the risk premium does not include a specific amount to recognize AELP is not interconnected with other utilities. Also, the risk premium does not include a specific amount to compensate AELP for risks related to its large future capital requirements, its liquidity risks, its lack of financing flexibility, or a specific amount to compensate investors for limited information about AELP's regulatory risks.

III. EQUITY COSTS ESTIMATES BASED ON THE DCF MODEL

Q30. What equity cost estimates do you present in this section of your testimony?

A30. In this section of my testimony, I estimate costs of equity using three versions of the DCF model with data for the electric utilities sample in Table 1. *See* Tables 5, 6, 7, 8, 9 and 10. In Section II, I explained why a risk premium of at least 350 basis points should be added to these benchmark equity cost estimates to account for AELP's utility-specific risks. After adding this risk premium to these equity cost estimates, I find the indicated DCF equity cost for AELP falls in a range of 14.6% to 14.9%.

Q31. Why have you used three different versions of the DCF model?

A31. The underlying principles of the DCF model are useful in estimating costs of equity, but no one knows exactly how investors determine future growth they expect when they price common stocks. The three versions of the DCF model I present assume investors determine future growth in three different ways. This same principle applies when using the risk premium approaches I present in Section IV to determine costs of equity. Each of these seven equity cost determination methods is based on different underlying

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assumptions about how investors price common stocks. Since no one knows exactly what method best explains investor behavior, all of them provide data useful for determining a fair rate of return for AELP.

Q32. Please summarize your DCF estimates.

A32. The results of my DCF estimates are reported in Tables 7, 9, and 10. The estimates presented in Table 7 are based on the constant growth DCF model and forward-looking estimates of growth. Table 7 relies on an average of analysts' forecasts of growth reported by three institutions and finds the benchmark cost of equity is 11.4% and an indicated cost of equity for AELP is 14.9%. Table 9 relies on concepts the Federal Energy Regulatory Commission ("FERC") used to estimate equity costs with a multi-period DCF growth model, a forecast of Gross Domestic Product ("GDP") growth and a range of initial growth forecasts reported in Table 8. This method finds the estimated DCF equity cost for the sample falls in a range of 10.5% to 12.2% with an average of 11.4% and an associated equity cost for AELP of 14.9%. Table 10 is an alternative multi-period DCF analysis which assumes three different stages of growth are expected by investors and that ultimately all dividends per share ("DPS") will grow at the same rate as growth in the economy as a whole. With this approach, the indicated average DCF equity cost estimate is 11.1% for the sample and 14.6% for AELP.

Q33. Please explain the first DCF method you used in your analysis.

A33. The first method is the constant growth DCF method. The constant growth DCF model computes the cost of equity as the sum of an expected dividend yield ("D_1/P_0") and

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expected dividend growth ("g"). The expected dividend yield is computed as the ratio of next period's expected dividend ("D_1") divided by the current stock price ("P_0"). Generally, the constant growth model is computed with formula (1) or (2):

(1) Equity Cost $= D_0/P_0 \times (1 + g) + g$

(2) Equity Cost $= D_1/P_0 + g$

where D_0/P_0 is the current dividend yield and D_1/P_0 is found by increasing the current yield by the growth rate or relying on a forecast of D_1. The constant growth DCF model and multistage DCF models presented in Tables 9 and 10 are derived from the valuation model shown in equation 3 below:

(3) $P_0 = D_1/(1+k) + D_2/(1+k)^2 + \ldots + D_\infty/(1+k)^\infty$,

where k is the cost of equity; P_0 is the current stock price, $D_1, D_2, \ldots D_\infty$ are the cash flows expected to be received in periods 1, 2, . . . ∞, respectively. Equation (3) is equivalent to equation (4) when it is expected that the stock will be sold at price P_n at the end of period n:

(4) $P_0 = D_1/(1+k) + D_2/(1+k)^2 + \ldots + (D+P)_n/(1+k)^n$,

In the case of the constant growth DCF model, DPS, EPS, stock prices and book values are all assumed to grow at the same rate in every future period. In multistage DCF models, after an initial period (or periods) has passed, future DPS, EPS, book values and stock prices are assumed to grow at faster or slower rates than in the initial stage (or stages).

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Q34. How did you compute the dividend yields?

A34. My dividend yield estimates are denoted as D_1/P_0 in equation (2) above. My dividend yields are averages of the highest and lowest dividend yields which occurred during the period July 1, 2009 to December 31, 2009. In Order No. 10 of U-08-157, the RCA indicated its preference for dividend yields to be computed with 6 months of data and D_1 determined by increasing current dividends (D_0) by one-half the expected growth rate. I adopt those concepts to compute my estimates of D_1 after adjusting my estimates of D_0 to compensate for the time value of money. *See* Table 5.

Q35. Why have you adjusted the values of D_1 for the time value of money?

A35. This adjustment is required because equation (3) above assumes dividends are paid once a year but investors receive dividend payments on a quarterly basis. If a utility pays a dividend of $100 per year, investors would prefer to be paid $25 every quarter instead of $100 at the end of the year. Prices investors pay for utility stocks reflect the benefit investors receive by utilities paying dividends every quarter but equation (3) assumes the $100 is paid only once a year. The method I use adjusts the dividend upward by just enough to offset the time value of receiving the $100 in four quarterly installments of $25 each.

The values adopted for D_1 must also reflect the fact that DPS are expected to increase over time since all of the utilities in the sample are projected to have growth in the future. I recognize that potential positive growth by adopting the method the RCA adopted in Order No. 10 of U-08-157 to determine values of D_1 by increasing current dividends by

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one-half the projected future growth. Other methods could be adopted to recognize the near-term growth in DPS, but I have used this conservative approach. A general discussion of the various approaches that could be taken is provided in Roger Morin, *New Regulatory Finance*, pages 343-349.

Q36. How did you estimate growth rates?

A36. Growth rates used with the DCF model should be based on the best available forecasts of future growth. A number of investor services report consensus averages of analysts' forecasts of growth. Zacks and Yahoo! Finance report information about what analysts expect future growth to be. Value Line reports its own predictions of future growth for 30 of the utilities and reports an average of analysts' forecasts for Northwestern Corp., the 31st utility in the sample. Table 6 provides a list of the available analysts' forecasts reported for the 31 sample utilities by each of the respective institutions. Column (d) of Table 6 reports averages of the available analysts' forecasts. Taken together, the average of the analysts' forecasts provided by the three institutions is 6.2% at this time.

Q37. Are you forecasting AELP will also have 6.2% growth?

A37. No, I am not attempting to forecast growth for AELP. The task at hand is to determine an appropriate equity cost estimate for AELP, not an appropriate growth rate. The DCF model recognizes electric utilities could have different growth rates but the same cost of equity. For example, utility A could have an expected growth rate of 9%. If the market determines it has a cost of equity of 11.9%, investors will buy and sell shares of common stock until the utility has a dividend yield of 2.9% (2.9% + 9% = 11.9%). Utility B could

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have an expected growth rate of only 4%. If it also has an equity cost of 11.9%, the market would re-price the utility's shares of stock until the Company has a dividend yield of 7.9% (7.9% + 4% = 11.9%).

The issue is not growth of AELP compared to growth of the sample being used to determine benchmark equity cost estimates. The issue is determining a fair ROE for AELP given benchmark cost of equity estimates for the sample of electric utilities and an appropriate risk premium to recognize AELP is more risky than that sample.

Q38. What cost of equity is indicated by your first DCF analysis?

A38. The indicated average cost of equity for the sample is 11.4%. This is the average cost of equity estimate for the 31 utilities reported in Table 7.

Q39. Please explain your second DCF analysis.

A39. My second DCF analysis is a two-stage DCF analysis based on concepts relied upon by the FERC and fully discussed in *Southern California Edison Company*, Opinion No. 445, 92 F.E.R.C. 61,070 (2000) and in Opinion 396-B, *Northwest Pipeline Company*, 79 F.E.R.C. 61,309 (1997). The concepts I rely upon are as follows:

- Adopt averages of high equity cost estimates and low equity cost estimates to determine a range of cost of equity estimates.
- Determine each equity cost with a two-stage DCF analysis in which the initial growth rate is given a weight of two-thirds and the terminal growth rate is given a weight of one-third.

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- Adopt the FERC method of relying on EPS growth forecasts to determine initial growth rates.
- Adopt the FERC method of relying on a GDP forecast as the terminal growth rate estimate.
- Consistent with the FERC approach, eliminate from consideration any equity cost estimate that is not greater than 40 basis points above the cost of A-rated bonds.

In making each of the high (low) equity cost estimates, I rely upon the highest (lowest) analyst's forecast in the range of growth rates reported in Table 8.

Q40. How did you estimate GDP growth for the second stage of this two-stage analysis?

A40. When FERC gives a weight of one-third to GDP growth it is assumed that the second stage will not start for many years into the future and therefore investors relying on this method would focus primarily on expected long-term GDP growth, not GDP growth expected in the next few years. Such estimates of long-term GDP growth would consider not only forecasts of future GDP growth but GDP growth that has occurred during long periods in the past.

In determining my estimate of GDP growth, I considered past long-term annual average GDP growth of 6.7% which Staff of the Arizona Corporation Commission relied on to determine growth for the second stage of its multi-stage DCF analysis (Direct Testimony for ACC Staff of Steven P. Irvine, in Docket No. W-01303A-07-0209 (Arizona-American Water Company), dated October 15, 2007, page 26). I updated and revised that historical average to obtain a forward-looking estimate of GDP growth by reducing

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the updated growth rate by past average inflation of 3.1% (reported by Morningstar in Table 2-1 of *Ibbotson SBBI 2009 Valuation Yearbook)*, and replacing it with a forecast of the future inflation of 3.0% for 2013 (Value Line, *Quarterly Economic Review*, November 27, 2009) to determine a forward-looking estimate of GDP growth of 6.6% (i.e., 6.7% minus 3.1% plus 3.0% = 6.6%). I also consider a forecast of GDP growth in 2013 from Value Line's estimates of future real GDP growth of 3.3% in 2013 and the future GDP deflator of 1.7% in 2013 to estimate future near-term GDP growth of 5.1% (1.051 = 1.033*1.017). These forecasts are also provided by Value Line in its *Quarterly Economic Review*, dated November 27, 2009. Based on an average of those estimates of 6.6% and 5.1%, I determined a forward-looking estimate of GDP growth of 5.8% for my analyses.

Q41. What are the results of your FERC-type DCF analysis?

A41. The results are reported in Table 9. When conducting this analysis, I applied FERC's standard method of removing from consideration any estimated equity cost that is less than 40 basis points above the cost of A-rated bonds. Given normal spreads between A-rated and Baa-rated bonds, the FERC criteria would require elimination of any equity cost estimate that is below the cost of Baa bonds. Such a principle is appropriate for any equity cost approach because all credible estimates of the cost of equity for utilities are expected to be higher than the yield on investment grade bonds. Table 11 shows a current average of forecasts of Baa rates made by Blue Chip is 7.33% and thus I did not include the low equity cost estimate for Edison International of 6.72% in the final estimate of the average of low equity cost estimates. Using this method, the average of

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the high equity cost estimates is 12.2%, the average of low equity cost estimates is 10.5% and the overall average is 11.4%.

Q42. Why is the preliminary range of equity cost estimates so wide?

A42. It is this wide because it is based on the highest and lowest forecasts of growth from Table 8, not consensus estimates of growth. While it is generally not appropriate to base an equity cost estimate on either of those extreme values, the FERC approach recognizes a reasonable equity cost estimate is expected to fall within that range. Based on the range of growth forecasts and the average of 11.4% for the sample, the indicated cost of equity for AELP is 14.9%.

Q43. Please describe your third DCF analysis.

A43. My third DCF analysis is developed in Table 10. This analysis determines the cost of equity by finding the internal rate of return that is consistent with different growth rates in three stages. Initially it is assumed that an average of prices ("P_{2010}") and the forecasted dividends ("D_{2011}") reported in Table 5 are appropriate for the analysis. Growth rates adopted for the first stage (for 2012-2016, the next five years) are the mid-points of the ranges of EPS growth rates reported in Table 8. I have assumed—as does the FERC—that EPS growth is the critical concern of knowledgeable investors who realize that earnings enable the utility to increase dividends. Table 10 reports the first and last forecasted dividend for this period (D_{2012} and D_{2016}) for each utility.

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The second stage is a transition stage in which growth in the first stage is assumed to gradually increase (or decrease) toward a terminal growth rate over a period of ten years (2017 to 2026). Table 10 reports the first and last forecasted cash distributions for this period (D_{2017} and $(P+D)_{2026}$) for each utility. The terminal growth rate is assumed to be GDP growth of 5.8% which I discussed above. In 2026 it is also assumed that the stocks are sold and the prices paid for those stocks anticipate DPS growth will equal GDP growth in all future periods. The selling price for the respective stocks reflects GDP growth during that final (third) stage.

Q44. What is your average equity cost estimate based on this third DCF approach?

A44. This analysis indicates the average cost of equity estimates for the benchmark sample companies is 11.1% and thus the indicated cost of equity for AELP is 14.6%.

IV. RP EQUITY COST ESTIMATES

Q45. Please turn to your risk premium equity cost estimates. Please summarize the equity cost estimates you make with this approach.

A45. I make four risk premium ("RP") equity cost estimates that indicate the cost of equity for AELP falls in a range of 14.3% to 15.4%. We do not know exactly what information investors use when they use risk premium approaches to price common stocks and thus I present four alternative versions of the method. The CAPM is the fourth RP approach. The version of the CAPM I present recognizes the added risks of companies the size of the electric utilities sample and small firms the size of AELP.

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Q46. In general, how is an equity cost determined with a risk premium approach?

A46. A risk premium equity cost is made by first determining what the relationship has been between equity costs and interest rates over a period of time. Then that relationship is combined with a current forecast of the interest rate to predict the current cost of equity.

Q47. Are risk premium approaches widely used in the financial community?

A47. Yes.

Q48. Please compare interest rates in the past to interest rates expected in 2011, 2012 and 2013.

A48. In 2005, annual averages of various interest rates dropped to the lowest levels that have occurred in close to forty years. From 1976 to 2002, annual average rates for Baa Corporate bonds, for example, ranged from 7.80% to 16.11%. In 2005, that annual average was only 6.06%. For comparison, in 2009 the annual average for Baa Corporate bond rates was 7.29%. Baa bond rates are expected to bounce back up in 2011-2013, the period in which permanent new rates for AELP are expected to be in place. Table 11 reports a consensus of forecasts reported by Blue Chip indicate Baa bond rates are expected to average 7.33%. My analyses below recognize that Baa bond rates are expected to be higher in 2011 to 2013 (see Table 11) than in 2009 (see Table 2), but that such future rates are lower than in most years used to determine risk premiums with historic data.

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Q49. Do you expect risk premiums to vary inversely with interest rates?

A49. Yes. There is a theoretical reason and many sources of empirical data to support equity cost risk premiums increasing as interest rates decrease.

Q50. Why is this inverse relationship between interest rates and risk premiums important at this time?

A50. It is important because average Baa bond rates in 2011-2013 are expected to be lower than historical averages of Baa bond rates and thus risk premiums in 2011-2013 are expected to be higher than in the past. While Baa bond rates have increased somewhat since 2005, the level of Baa bond rates in 2010 and expected in 2011-2013 are still lower than interest rates were during most years used to determine historical relationships between Baa bond rates and equity costs (and thus, risk premiums). As a result, risk premiums today are expected to be higher than in the past.

Q51. What is the theoretical reason risk premiums are expected to increase when interest rates decrease?

A51. The theoretical reason is found in Myron Gordon and Paul Halpern's article, "Bond Share Yield Spreads Under Uncertain Inflation," *American Economic Review,* Vol. 66, No. 4, September 1976, pp. 559-565. In that article Gordon and Halpern explained that as investors expect higher uncertain inflation, interest rates increase to reflect greater uncertainty and higher expected inflation, but costs of equity would not increase as much because stocks—but not bonds—provide a hedge against inflation. This common sense theory provides a strong conceptual basis for the empirical analyses discussed and

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applied below. I note that Gordon and Halpern concluded their article with empirical support for the theory based on differences in bond costs and equity costs for electric utilities. They found that as Aaa bond rates increased, risk premiums for electric utilities decreased.

Q52. Have other authors found an inverse relationship between risk premiums and interest rates?

A52. Yes. Harris and Marston, "Estimating Shareholders Risk Premia Using Analysts' Growth Rates," *Financial Management*, Summer 1992 found an inverse relationship as did Roger Morin in a study reported in chapter 4 of his 2006 book, *New Regulatory Finance*.

Q53. Have regulators addressed this issue?

A53. Yes. Regulators in Oregon and California have. In Oregon docket UT-85, Staff economist Phil Nyegaard stated "Theory suggests that relatively high inflation narrows the risk spread between stocks and bonds, and that relatively low inflation widens that spread." Based on this theory and data from Ibbotson and Sinquefield, Mr. Nyegaard determined the risk premium for the stock market as a whole was expected to be above the long-term average because investors expected inflation (and future bond rates) to be lower than the long-term average at the time he prepared that testimony. Staff/3 Nyegaard/14, UT-85, January 20, 1989.

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In California, the Public Utility Commission also determined that risk premiums vary inversely with interest rates. In 1997, the CPUC found that costs of equity for energy utilities move in the same direction as interest rates but by less. The table below summarizes Table 3 of Decision 97-12-089, which established costs of capital for Pacific Gas and Electric Company ("PG&E").

Year	Forecasted Interest Rate	Authorized Change	Average Average ROE	Change
1991	9.76%		12.92 %	
1992	9.10%	-66	12.65	-27
1993	8.32%	-78	11.85	-80
1994	6.76%	-156	10.92	-90
1995	8.37%	+161	12.05	+110
1996	7.29%	-108	11.60	-45
1997	7.92%	+63	11.60	0
1998	7.18%	-74	11.40	-20

(Note: the last two columns above each contain averaged data. Thus, year-to-year "average change" may not precisely equal the difference between two years' of "average authorized ROE.")

In all but one case, the CPUC found that equity costs moved in the same direction as interest rates, but the change in the cost of equity was less than the change in interest rates. In Decision 02-11-027, the California PUC confirmed that its practice was to adjust returns on equity for energy utilities by one-half to two-thirds of the change in the benchmark interest rate.

Q54. Please turn to your first risk premium analysis.

A54. The first approach I use is based on a method routinely used by the Department of Ratepayer Advocates of the California PUC to determine equity costs for utilities (*see* Division of Ratepayer Advocates, California PUC Report on the Cost of Capital, San

Jose Water June 2006, Application 065-02-014). This method relies on annual averages of past recorded book returns on equity for a sample of utilities as proxies for costs of equity. It assumes that regulators adopt rates and rate adjustment mechanisms that give utilities reasonable opportunities to earn their costs of equity and thus—though each individual utility may earn more or less than its cost of equity in a given year—the average of the sample ROEs provides a useful proxy for the average cost of equity for the sample.

Q55. How did you implement this method in this case?

A55. To implement this method, I adopted averages of earned ROEs for the twelve surviving utilities adopted by the Oregon PUC Staff in Oregon Docket UE-180 as the proxies for annual average equity costs for the ten year period starting in 1999 and ending in 2008. The Oregon Public Utility Commission found this sample provided conservative estimates of the cost of equity. In Oregon PUC Order 07-015 in that case, the Oregon PUC found estimates of the cost of equity made with data for that Staff sample were "uniformly low." Thus, using this Oregon PUC Staff sample to determine a risk premium equity cost estimate is expected to provide conservative estimates of the cost of equity for a typical electric utility. To prepare this analysis, I used data for annual earnings per share from 1999 to 2008 and beginning and ending book values from 1998 to 2008 reported by Value Line.

Q56. What are the results of this first RP analysis?

A56. This risk premium analysis indicates the estimated 2011-2013 average cost of equity for

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this electric utility sample falls in a range of 11.1% to 11.5%. As expected from the evidence I presented above, the estimated average risk premium in the most recent 5-year period is somewhat higher than the average risk premium based on data for the full 10-year period. This result is expected because average interest rates were lower in 2004-2008 than the average in 1999-2008. My analysis is reported in Table 12. Forecasts of Baa bond rates for 2011-2013 are reported in Table 11.

Q57. What is your second RP analysis?

A57. My second RP approach computes the risk premium as the average of realized market return premiums over a relatively long period of time. This analysis indicates the cost of equity for a typical electric utility falls in a range of 10.8% to 11.9% and thus the indicated cost of equity range for AELP is 14.3% to 15.4%. *See* Table 13.

Q58. Please discuss this second risk premium analysis.

A58. The second risk premium analysis is a market approach. It is based on an average of differences between annual total realized returns for Moody's index of electric utilities and yields on Baa bonds at the beginning of the respective years. This approach recognizes that the annual actual risk premium in any particular year will probably not equal the required risk premium but that, over a long period of time, the average of those annual actual risk premiums provides a good estimate of the average risk premium which was required during that period.

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Initially, I computed two preliminary average risk premiums. The first preliminary risk premium is for the period ending in the year 2000 when Moody's stopped updating this index. The second preliminary estimate was for the period ending in 2008. It is based on my update of the Moody's sample using data for surviving utilities from the original Moody's 24 sample with data for the period 2001 to 2008. I report the results for both the original period and the updated period to determine this second RP estimate of the cost of equity.

The preliminary analyses determine average risk premiums and thus do not incorporate the expectation that risk premiums vary inversely with interest rates. Since a Baa bond rate of 7.33% expected in 2011-2013 is lower than the average of Baa rates of 7.9% for the period 1950 to 2008 and lower than the average interest rate of 8.1% during the period of the original study, the future risk premium is expected to be slightly higher in 2011-2013 than the simple average RP based on past data. To incorporate this additional information, I adjusted upward the risk premium estimates by assuming the cost of equity changes by half as much as the difference in Baa bond rates. This adjustment is consistent with the California PUC orders I discussed above. Based on these estimates, the benchmark equity cost range is 10.8% to 11.9% and the indicated cost of equity for AELP falls in a range of 14.3% to 15.4%.

Q59. What is the conceptual basis for your third RP analysis?

A59. The third approach is an extension of the method adopted by Staff of the FERC to implement its risk premium approach in Docket No. ER93-465-000 in which FERC staff

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adopted authorized ROEs as proxies for costs of equity. My analysis extends the FERC analysis by recognizing risk premiums increase (decrease) as interest rates decrease (increase). This third RP method is similar to a risk premium estimation approach Roger Morin presented in Chapter 4 of his 2006 book, *New Regulatory Finance*.

Dr. Morin reports that risk premium equity cost estimates have been used in regulatory proceedings for many years and are widely used by analysts, investors and expert witnesses. He notes that the RP approach to estimating the cost of equity derives its usefulness from the simple fact that while equity return requirements cannot be readily quantified at any given time, the returns on bonds can. Thus, if the risk premium is known, it can be used to produce a useful estimate of the cost of equity.

One of the risk premium techniques used by Dr. Morin relies on returns on equity allowed by regulatory commissions for utilities as the proxies for the cost of equity when determining risk premiums. *New Regulatory Finance*, p. 123. Dr. Morin reports the following statistical relationship between risk premiums ("RPm") and Treasury rates ("YIELD") for the period 1987 to 2005 for electric utilities:

$$\text{RPm} = 8.2049 \qquad \underset{(t = -8.4)}{0.4833 \times \text{YIELD}} \qquad R^2 = 0.81$$

where allowed equity returns reported by Regulatory Research Associates are adopted as the proxies for equity costs. To obtain a cost of equity estimate, Dr. Morin inserts a current or projected Treasury bond yield in his estimated equation. He further explains, "Figure 4-4 shows the clear inverse relationship between the allowed risk premium and

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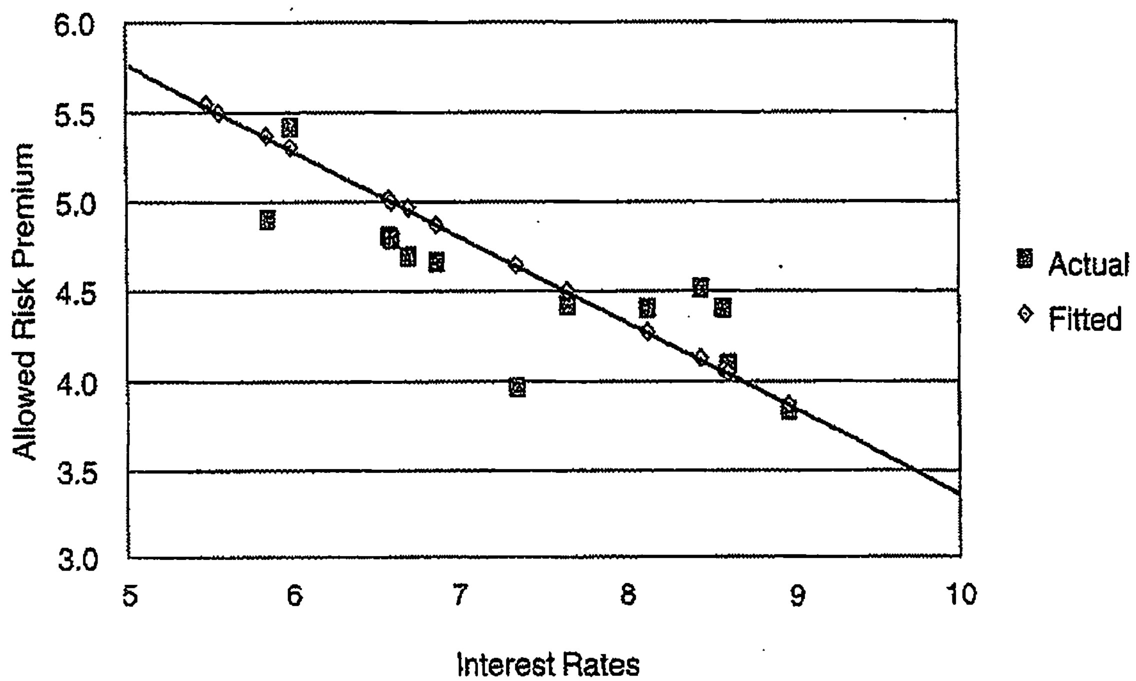
interest rates revealed in past common equity decisions." The risk premium method presented by Dr. Morin is discussed in Section 4.5 of his new book and is shown graphically in Figure 4-4 reproduced below:

FIGURE 4-4
ALLOWED RISK PREMIUM VS INTEREST RATES
1987–2005



The risk premiums reported in the figure are the costs of equity implied by consideration of authorized ROEs relative to contemporaneous yields on long-term Treasury bonds.

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Q60. Is your third RP approach consistent with the analysis Dr. Morin presented in his new book?

A60. Yes. My third RP analysis is consistent with academic research and the analysis presented by Dr. Morin in *New Regulatory Finance*, but relies on a larger sample of 491 individual actual litigated decisions instead of annual averages of decisions used in Dr. Morin's analysis. I have also based my analysis on Baa bond rates six months prior to the dates decisions were issued by the commissions to recognize the practical constraints of regulatory proceedings in which DCF, RP and other financial models used to determine authorized ROEs are based on data available several months prior to the issue of orders. Baa bond rates instead of Treasury rates are adopted to determine the risk premiums based on the analysis presented in Table 2 and discussed above.

Q61. What specific study did you conduct?

A61. I conducted an analysis with data for the period 1985 to 2008. This period is longer than the 1987 to 2005 period Dr. Morin used in his analysis. The results of my analysis are shown in Table 14. This risk premium approach indicates a typical electric utility can expect to face a cost of equity of 11.0% in 2011-2013. As AELP is more risky than the typical electric utility, once a 350 basis point risk adjustment for AELP is recognized, this model indicates a point estimate of AELP's cost of equity of 14.5%.

Q62. What is the capital asset pricing model?

A62. The CAPM is a model that was originally developed by William Sharpe and John Lintner in the mid-1960's, was tested with data for common stocks in the early 1970's and is now

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a common topic in college finance textbooks. The original version of CAPM says the cost of equity is explained by the following relationship:

$$\text{Equity cost} \quad = \quad RF \quad + \quad \beta \ \text{x} \ MRP,$$

where RF is a return on a zero-beta asset (an asset with returns that are not expected to have correlation with market index returns), the beta ("β") is the risk of the security at issue and the MRP ("market risk premium") is the additional return that is required by investors to hold an average risk asset instead of the zero-beta asset. Morningstar (formerly Ibbotson Associates) explains that the appropriate choice for the zero beta asset is a return that is no less than the expected return for long-term Treasury securities.

> The horizon of the chosen Treasury security should match the horizon of whatever is being valued. When valuing a business that is being treated as a going concern, the appropriate Treasury security should be that of a long-term Treasury bond. Note that the horizon is a function of the investment, not the investor. If the investor plans to hold a stock in a company for only five years, the yield on a five-year Treasury note would not be appropriate since the company will continue to exist beyond those five years. . . .
>
> Companies are entities that generally have no defined life span; when determining a company's value, it is important to use a long-term discount rate because the life of the company is assumed to be infinite. Morningstar, *Ibbotson SBBI 2009 Valuation Yearbook*, page 46 and page 57.

If the zero-beta asset is assumed to be the long-term Treasury security, for consistency, the MRP should also be computed as the expected difference between returns for the market and the long-term Treasury security. An average risk common stock has a beta of 1.0 and companies with below average risk have betas less than 1.0. As discussed in Section II, however, Fama and French and Morningstar found the more appropriate version of the CAPM is one in which the size of companies is also included in the equation used to determine costs of equity. With that version of the model, the cost of equity is found as follows:

$$\text{Equity cost} = RF + \beta \times MRP + \text{size risk premium},$$

where the size risk premium increases as the size of the company decreases. I have used this version of the CAPM to make my fourth RP estimate.

Q63. Do you have concerns with implementation of the CAPM at this time?

A63. Yes. Given the flight to quality and the tremendous drop in the stock market during the last year, I have concerns with estimates of (1) the zero-beta asset return (RF) appropriate to use when implementing the model and (2) obtaining a reasonable estimate of the MRP now demanded by investors. Additionally, (3) there is difficulty determining a beta estimate for AELP because it is not publicly traded. While I do have these concerns I have constructed guarded CAPM estimates for the electric utilities sample and AELP which are shown in Table 15.

Conceptually, the return on the zero-beta asset should be the highest return an investor could receive if he/she held an asset that has returns that are not correlated with the market portfolio. After the flight to quality, the prices for Treasury bonds have been bid up and potential future returns have been bid down. Given investors current concerns with financial markets, they appear to be willing to take the risk of negative future returns from Treasuries which may occur if inflation and higher interest rates result from the huge amount of debt being issued by the United States government. Also, the beta for

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long-term Treasury securities may actually be negative at this time as investors have bid up prices for Treasury securities when the market dropped in value and the negative correlation may continue in the future when investors sell Treasuries and buy stocks. I am skeptical that the return for long-term Treasury securities is as high as the zero-beta return that is required by CAPM theory, particularly at this time[2].

Second, as for the MRP, Morningstar correctly points out that annual MRPs have been random in the past and "the best estimate of the expected value of a variable that has behaved randomly in the past is the average (or arithmetic mean) of its past values". (Morningstar, *Ibbotson SBBI 2010 Valuation Yearbook*, p. 58). In Order No. 10 of U-08-157, the RCA adopted the Morningstar method of determining the MRP which was 6.5% at the time. But while such an average MRP—which has dropped from 7.1% for the period ending in 2007 to 6.5% for the period ending in 2008 to 6.7% for the period ending in 2009—may be the best long-term measure of the MRP, investors also know that *Value Line* is forecasting a short-term market return premium of 8.3% for the next several years[3]. To implement CAPM, we need to estimate what investors expect the average MRP to be in all future periods and that expectation may include the higher than average near-term market return premium forecasted by *Value Line* followed by the long-term average of 6.7%. If that is the case, the current expected MRP is higher than

[2] Academic studies of CAPM also cast doubt on rates for Treasury securities being as high as the required return for the zero beta asset.

[3] Determined as the difference between January 8, 2010 dividend yields of 2.0% and potential capital appreciation of 50% in four years and the January Treasury rate of 4.6%. Expected market returns are equal to 2.0% x (1.107) + 10.7% = 12.9%.

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6.7%. To be consistent with the past RCA order in U-08-157, however, I adopt the updated value of 6.7% for the MRP.

Finally, there is no market estimate of the beta for AELP. Thus I have made the very conservative assumption that AELP has a beta no larger than the average beta for the electric utilities sample. This is a conservative assumption because the data in Table 3 show betas are expected to increase as the size of companies decrease.

Q64. What are your CAPM estimates of the cost of equity for the electric utilities sample and for AELP?

A64. My CAPM estimates are 11.0% and 14.5% for the sample and for AELP, respectively. They are developed in Table 15. The estimates are the same except for the estimates of the size risk premiums. The estimate of the average size risk premium for the electric utilities sample and AELP are developed in Table 3. They are based on data reported by Morningstar in the 2009 Ibbotson SBBI Valuation Yearbook.

V. SUMMARY AND CONCLUSIONS

Q65. Please summarize your testimony.

A65. The fair rate of return for AELP should be determined by recognizing that AELP is more risky because it is much smaller than the utilities in the sample I use to determine benchmark equity cost estimates, has risk related to a take-or-pay contract for power from Snettisham, faces ongoing risk of lost revenues and not being able to recover all expenses if power from Snettisham is interrupted, has the need for higher capital expenditures in the future than in the past, has liquidity risk and has limited financial flexibility. I determined that a risk premium required to compensate AELP for its above-average risks is not less than 350 basis points.

My equity cost estimates are summarized in Table 16. In Section III, I presented benchmark DCF estimates based on data for a sample of 31 electric utilities. My first estimate for the benchmark sample of 11.4% is based on the constant growth DCF model and consensus estimates of future EPS growth reported by Value Line, Zacks and Yahoo! Finance. My second benchmark DCF estimate is based on concepts used by FERC. It indicates the cost of equity for a typical electric utility falls in a range of 10.4% to 12.2% with an average of 11.4%. This approach recognizes investors require higher expected returns for equity than they could obtain by holding less risky Baa bonds and assumes investors expect two-stage growth with the second stage being future growth in GDP. My third DCF approach determines an internal rate of return for each of the benchmark sample utilities from an examination of expected growth in three future stages. It assumes investors expect growth rates that gradually increase or decrease toward an estimate of future GDP growth. Based on that analysis, the average equity cost for the sample is 11.1%. Recognizing AELP is more risky than the electric utilities sample, these benchmark DCF equity cost estimates indicate AELP's cost of equity falls in a range of 14.6% to 14.9%.

In Section IV, I explain why risk premiums are expected to vary inversely with interest rates and summarize Gordon and Halpern's theory that supports such a relationship. I

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present four risk premium studies that used different methods to determine risk premiums: one bases risk premiums on realized book returns on average equity for electric utilities during the last ten years, another determines risk premiums from long-term averages of holding period returns, a third determines risk premiums from a statistical analysis of past litigated electric utilities' decisions and the fourth is the CAPM. Taken together, the risk premium analyses support a benchmark ROE range of 10.8% to 11.9% and indicates AELP's cost of equity falls in a range of 14.3% to 15.4%.

Q66. What is your recommended ROE?

A66. I recommend AELP be authorized an ROE of 14.75%, the mid-point of my estimated cost of equity range.

Q67. Does this complete your prefiled testimony?

A67. Yes.

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THOMAS M. ZEPP

Vice President
Utility Resources, Inc.

EDUCATION

University of Florida	Ph.D. Economics M.A. Economics
Wofford College	A.B. Economics (Magna Cum Laude, Phi Beta Kappa)

SELECTED CONSULTING EXPERIENCE

- Finance

Sponsored testimony on the cost of capital faced by electric utilities in court cases and before regulatory commissions in Alaska, Arizona, Idaho, Illinois, Nevada, Oregon, and Washington.

Sponsored testimony on the cost of capital faced by natural gas utilities before regulatory commissions in Illinois, Oregon, Washington and Wyoming.

Sponsored testimony on the cost of capital faced by water utilities before regulatory commissions in Alaska, Arizona, California, Hawaii, Kentucky, Montana, New Mexico, Oregon, and Tennessee.

Estimated costs of capital for Bell Operating Companies and General Telephone local companies in Illinois, Nevada, Oregon and Washington.

Presented estimates of cost of capital of U. S. railroads to the Interstate Commerce Commission.

Estimated cost of capital for a large insurance company.

Presented testimony on the cost of capital of hospitals on behalf of Washington State Hospital Commission.

- Court Proceedings

Expert witness in PPL Montana, Avista Corporation and Pacific Corp vs State of Montana. Testified on behalf of Avista Corporation and was deposed on July 23, 2007.

Expert witness in Umatilla County, Oregon, Circuit Court on the harms to PacifiCorp and benefits to the City of Hermiston of a condemnation of property in the City of Hermiston.

Expert witness in Linn County, Oregon, Circuit Court regarding the harms to an electric utility compared to the benefits of two mills and a People's Utility District of an annexation resulting in a condemnation of electric facilities.

Expert witness in Superior Court of California regarding the value of water company facilities that were made inoperative or otherwise reduced in value after a sanitation district duplicated those facilities.

Expert witness in an Oregon District Court on the present value of economic benefits/harms of transferring hydroelectric plants from Pacific Power & Light Company to a PUD in Oregon.

Rebuttal witness for the Illinois Attorney General in a court appeal on the cost of capital and need for a stay in rates for an electric utility.

Estimated the present value of severance damages resulting from condemnation of a distribution system in California.

Determined the value of facilities to be taken by a City from Strawberry Electric Service District in Utah.

Witness in an Oregon District Court on rates that would have been charged by electric utilities if markets had been more competitive.

Presented an affidavit in Federal Court in Georgia on the cost of service of a municipal water utility.

- Other Studies and Testimonies

Testified on economic principles of regulation before the West Virginia PSC.

Sponsored expert testimony on potential export revenues for BC Hydro to the British Columbia Utility Commission based upon analysis of Canadian and Pacific Northwest hydroelectric records.

Analyzed the costs and benefits of improved efficiency of a BPA system dam based upon the Northwest System Analysis Model and export prices on behalf of Hitachi America.

Presented testimony on the appropriate cost of service methodology to be used to determine electric rates to the Public Utilities Board of the Great Northwest Territories, Canada.

Estimated avoided costs for two Pacific Northwest electric utilities on behalf of the City of Portland, Oregon and Northwest Natural Gas Company.

- Telecommunications and Cable

Prepared a Declaration on appropriate fees for the use of rights of way in Portland, Oregon on behalf of Electric Lightwave, Inc.

Testified on behalf of New Edge and Advanced TelCom Group, Inc. regarding Nevada Bell's proposed nonrecurring charges to be assessed to CLECs for certain loop conditioning activities.

Prepared cost estimates and testified on economic principles and costs of paging on behalf of AirTouch Paging in Colorado and Washington.

Testified on economic principles and costs of wireless service on behalf of AT&T Wireless Services in arbitrations with U S WEST in Colorado, Minnesota, Oregon, and Washington.

Testified on economic principles on behalf of AT&T in arbitrations with GTE in Oklahoma and Oregon.

Testified on behalf of Frontier Telemanagement regarding U S WEST's proposal to withdraw Centrex service after the 1996 Federal Act was passed.

Testified on economic principles and an analysis of U S WEST cost studies on behalf of AT&T Communications and MCIMetro in arbitrations and permanent cost dockets in nine states.

Prepared analyses of local costs of telecommunication service and presented testimony on appropriate rates in Idaho, Nevada, Oregon and Washington.

Sponsored testimony in support of resale of local telecommunications services in California, Iowa, Minnesota, Oregon and Washington.

Presented testimony on the benefits of intraLATA competition in Nebraska.

Presented analyses of private line costs and appropriate rates in Colorado, Idaho, Oregon and Washington.

Estimated costs of local telephone service for a study commissioned by the Oregon legislature.

Reviewed cost studies and negotiated Enhanced 9-1-1 rates with Washington telecommunications companies on behalf of the State of Washington.

Prepared econometric estimates of telephone usage costs and sponsored testimony on appropriate cost-based usage rates.

Sponsored testimony on the appropriate costs and prices for pole attachments in Washington.

PREVIOUS POSITIONS

Zinder Companies, Inc.	Senior Consultant
Oregon Public Utility Commissioner	Senior Economist
Central Michigan University	Assistant Professor of Econometrics
Armstrong State College and Savannah State College, the Joint Graduate Program	Assistant Professor of Business and Economics
University of Florida	Instructor

PROFESSIONAL AFFILIATIONS AND ACTIVITIES

Published papers in Water, Financial Management, The Quarterly Review of Economics and Finance and Explorations in Economic History.

Read papers at the Southern Economic Association meetings.

Invited lecturer at Stanford University seminar.

Invited Speaker at the 2002 Pacific NW Regional Economic Conference and at the 57th Annual Western Conference of Public Service Commissioners

Journal Referee for Financial Management and International Review of Economics and Finance

Past Member, NARUC Subcommittee on Economics

Alaska Electric Light and Power Company

Table 1

Comparison of Alaska Electric Light and Power to the DCF Sample

			Percentage of Electric Revenues[a/]	Value Line Betas 2010[c/]	Value Line Betas 2001[d/]	Indicators of Size: Annual Revenues[a/] ($ millions)	Indicators of Size: Market Capitalization[b/] ($ millions)	Indicators of Size: Net Plant[a/] ($ millions)
1	Allegheny Energy	AYE	90%	0.95	0.60	$3,273	$3,800	$8,723
2	ALLETE	ALE	90%	0.70	0.50	$745	$1,200	$1,531
3	Alliant Energy	LNT	71%	0.70	0.55	$3,460	$3,400	$6,038
4	Ameren Corporation	AEE	82%	0.80	0.55	$7,323	$6,700	$17,272
5	Amer Electric Power	AEP	94%	0.70	0.55	$13,443	$17,000	$33,821
6	Avista	AVA	54%	0.70	0.60	$1,557	$1,100	$2,563
7	CLECO Corporation	CNL	95%	0.65	0.60	$901	$1,600	$2,209
8	CMS Energy	CMS	54%	0.80	0.55	$6,452	$3,500	$9,566
9	DPL Inc	DPL	100%	0.60	0.65	$1,576	$3,400	$2,880
10	DTE Energy	DTE	57%	0.75	0.55	$8,074	$7,200	$12,395
11	Duke	DUK	79%	0.65	0.55	$12,754	$21,000	$36,425
12	Edison International	EIX	81%	0.80	0.75	$12,846	$11,000	$20,876
13	Empire District Electric	EDE	86%	0.75	0.45	$508	$700	$1,430
14	Entergy Corporation	ETR	75%	0.70	0.55	$11,248	$16,000	$22,966
15	FPL Group	FPL	72%	0.75	0.45	$15,992	$21,000	$35,216
16	Great Plains Energy	GXP	100%	0.75	0.55	$1,931	$2,600	$6,532
17	Hawaiian Electric	HE	99%	0.70	0.50	$2,189	$1,700	$2,737
18	IDACORP	IDA	100%	0.70	0.55	$1,014	$1,400	$2,847
19	MGE Energy, Inc.	MGEE	60%	0.65	na	$553	$825	$927
20	Northwestern Corp	NEW	66%	0.70	na	$1,166	$951	$1,900
21	OGE Energy	OGE	61%	0.75	0.45	$2,782	$3,500	$5,773
22	PG&E	PCG	76%	0.55	na	$13,503	$15,000	$28,184
23	Pinnacle West	PNW	97%	0.75	0.45	$3,237	$3,400	$9,007
24	Portland General Electric	POR	96%	0.75	nmf	$1,768	$1,500	$3,800
25	Progress Energy	PGN	96%	0.65	nmf	$9,731	$10,700	$19,434
26	Southern Company	SO	99%	0.55	nmf	$16,035	$25,000	$38,142
27	TECO	TE	66%	0.85	0.50	$3,316	$3,200	$5,478
28	Unisource	UNS	85%	0.70	0.45	$1,383	$1,000	$2,767
29	Westar	WR	73%	0.75	na	$1,824	$2,400	$5,748
30	Wisconsin Energy	WEC	63%	0.65	0.50	$4,261	$5,600	$8,904
31	Xcel Energy	XEL	79%	0.65	nmf	$9,734	$8,800	$18,515
	Average		80%	0.71	0.54	$5,632	$6,651	$12,084
	Alaska Electric Light and Power[e/]		100%	--	--	$31	--	$123

Notes and Sources

a/ AUS Utility Reports, January, 2010.

b/ Value Line Investment Survey Issue 1 (dated November 27, 2009), the Standard Issue 5 and Small and Mid Cap Issue 5 (dated December 25, 2009) and Issue 11 (dated November 6, 2009).

c/ Value Line Table of Summary & Index, dated January 8, 2010.

d/ Value Line Table of Summary & Index, dated December 28, 2001.

e/ Company data. Revenues exclude COPA data.

04/16/10

Alaska Electric Light and Power Company

Table 2

Past and Current Spreads Between
Treasury Rates and Rates for Baa Bonds

A. Past Actual Rates (1990 to 2007)[a/]

Year	30-Year Treasury Rates	Baa Rates	Spread
1990	8.61%	10.36%	1.75%
1991	8.14%	9.80%	1.66%
1992	7.67%	8.98%	1.31%
1993	6.59%	7.93%	1.34%
1994	7.37%	8.63%	1.26%
1995	6.88%	8.20%	1.32%
1996	6.71%	8.05%	1.34%
1997	6.61%	7.87%	1.26%
1998	5.58%	7.22%	1.64%
1999	5.87%	7.88%	2.01%
2000	5.94%	8.37%	2.43%
2001	5.49%	7.95%	2.46%
2002	5.42%	7.80%	2.38%
2003	5.05%	6.76%	1.71%
2004	5.12%	6.39%	1.27%
2005	4.56%	6.06%	1.50%
2006	4.91%	6.48%	1.57%
2007	4.84%	6.48%	1.64%
Average (	6.19%	7.85%	1.66%
2008	4.28%	7.44%	3.16%
2009	4.08%	7.29%	3.21%

Expected spread in 2010[b/]	1.90%
Expected average spread for 2011-2013[c/]	2.03%

Notes and Sources:

a/ Source is Federal Reserve or as implied by rates for 20-year Treasury bonds when 30-year bonds are not available.

b/ Expected spread derived from January 2010 Blue Chip consensus forecasts of 6.8% for Baa bonds and 4.9% for 30-year Treasury securities for fourth quarter 2010.

c/ From data in Table 11.

4/16/10

Alaska Electric Light and Power Company

Table 3

Size Risk Premiums for the Electric Utility Sample and AELP

		Market Capitalization[a/] ($ millions)	Associated Decile[b/] in Morningstar Study	Beta for Decile in Morningstar Study[d/]	Size Risk Premium for the Decile[d/]
1	Allegheny Energy	$3,800	4	1.16	0.75
2	ALLETE, Inc.	$1,200	6	1.18	1.64
3	Alliant Energy	$3,400	4	1.16	0.75
4	Ameren Corporation	$6,700	3	1.08	0.86
5	Amer Electric Power	$17,000	2	1.05	0.53
6	Avista	$1,100	7	1.28	1.33
7	CLECO Corporation	$1,600	6	1.18	1.64
8	CMS Energy	$3,500	4	1.16	0.75
9	DPL Inc	$3,400	4	1.16	0.75
10	DTE Energy	$7,200	3	1.08	0.86
11	Duke	$21,000	1	0.94	-0.51
12	Edison International	$11,000	2	1.05	0.53
13	Empire District Electric	$700	8	1.37	1.86
14	Entergy Corporation	$16,000	2	1.05	0.53
15	FPL Group	$21,000	1	0.94	-0.51
16	Great Plains Energy	$2,600	5	1.19	1.32
17	Hawaiian Electric	$1,700	5	1.19	1.32
18	IDACORP	$1,400	6	1.18	1.64
19	MGE Energy, Inc.	$825	7	1.28	1.33
20	Northwestern Energy	$951	7	1.28	1.33
21	OGE Energy	$3,500	4	1.16	0.75
22	PG&E	$15,000	2	1.05	0.53
23	Pinnacle West	$3,400	4	1.16	0.75
24	Portland General Electric	$1,500	6	1.18	1.64
25	Progress Energy	$10,700	2	1.05	0.53
26	Southern Company	$25,000	1	0.94	-0.51
27	TECO	$3,200	4	1.16	0.75
28	Unisource	$1,000	7	1.28	1.33
29	Westar	$2,400	5	1.19	1.32
30	Wisconsin Energy	$5,600	3	1.08	0.86
31	Xcel Energy	$8,800	2	1.05	0.53
	Average for Sample	$6,651	--	1.14	0.88
	Average for Decile No. 10[c/]	$96	10	1.62	4.43
	Difference			--	3.55
	AELP[e/]	$37	10	--	--

Notes and Sources:

a/ As reported by Value Line for the electric utilties sample. See Table 1.

b/ Decile in which the electric utility falls based on data in Morningstar, *Ibbotson SBBI 2009 Valuation Yearbook*, Table 7-1 and Table 7-2.

c/ Determined from Morningstar, *Ibbotson SBBI 2009 Valuation Yearbook*, Table 7-6 and Table 7-11.

d/ Average betas and size risk premiums for the indicated decile as reported by Morningstar, *Ibbotson SBBI 2009 Valuation Yearbook*, Table 7-11.

e/ Based on data in Table 1, market capitalization for the average utility in the sample is 18% larger than annual revenues. The $37 million valuation assumes AELP would have a similar valuation if publicly traded and thus would be less than one-half as large as an average company in the Decile 10 category.

4/16/10

Alaska Electric Light and Power Company

Table 4

Table 7-7 from Ibbotson SBBI 2010 Valuation Yearbook

Table 7-7: Long-Term Returns in Excess of CAPM Estimation for Decile Portfolios of the NYSE/AMEX/NASDAQ, with 10th Decile Split

	Beta*	Arithmetic Mean Return (%)	Realized Return in Excess of Riskless Rate** (%)	Estimated Return in Excess of Riskless Rate† (%)	Size Premium (Return in Excess of CAPM) (%)
1	0.91	10.90	5.72	6.09	-0.37
2	1.03	12.81	7.64	6.90	0.74
3	1.10	13.36	8.18	7.33	0.85
4	1.12	13.82	8.65	7.50	1.15
5	1.16	14.59	9.41	7.72	1.69
6	1.18	14.81	9.63	7.90	1.73
7	1.24	15.19	10.01	8.28	1.73
8	1.30	16.33	11.15	8.67	2.49
9	1.35	17.01	11.84	8.99	2.85
10a	1.42	19.10	13.92	9.47	4.45
10w	1.39	18.33	13.15	9.30	3.85
10x	1.45	19.78	14.60	9.69	4.91
10b	1.38	24.39	19.21	9.20	10.01
10y	1.40	23.58	18.40	9.35	9.05
10z	1.35	26.23	21.05	8.99	12.06
Mid-Cap, 3-5	1.12	13.71	8.54	7.45	1.08
Low-Cap, 6-8	1.23	15.20	10.03	8.18	1.85
Micro-Cap, 9-10	1.36	18.23	13.06	9.07	3.99

Data from 1926–2009. Source: Morningstar and CRSP. Calculated (or Derived) based on data from CRSP US Stock Database and CRSP US Indices Database ©2010 Center for Research in Security Prices (CRSP®), The University of Chicago Booth School of Business. Used with permission.

*Betas are estimated from monthly portfolio total returns in excess of the 30-day U.S. Treasury bill total return versus the S&P 500 total returns in excess of the 30-day U.S. Treasury bill, January 1926–December 2009.

**Historical riskless rate is measured by the 84-year arithmetic mean income return component of 20-year government bonds (5.18 percent).

†Calculated in the context of the CAPM by multiplying the equity risk premium by beta. The equity risk premium is estimated by the arithmetic mean total return of the S&P 500 (11.85 percent) minus the arithmetic mean income return component of 20-year government bonds (5.18 percent) from 1926–2009.

Source: Morningstar, 2010 Valuation Yearbook

Alaska Electric Light and Power Company

Table 5

Current Annualized Average Dividend Yields for Electric Utilities Sample

		Yield-[a/] Based on 6-month Range of Prices	Forecast of D_1 Adjusted for Time Value of Money	6-month-[b/] High Stock Price	6-month-[b/] Low Stock Price
1	Allegheny Energy, Inc.	2.63%	$0.64	$27.70	$21.84
2	ALLETE, Inc.	6.07%	$1.88	$35.19	$27.75
3	Alliant Energy Corporation	5.79%	$1.61	$31.53	$24.73
4	Ameren Corporation	6.45%	$1.65	$28.67	$23.09
5	American Electric Power Co.	5.53%	$1.76	$36.51	$28.07
6	Avista Corporation	4.56%	$0.90	$22.44	$17.59
7	Cleco Corporation	3.96%	$0.96	$28.14	$21.47
8	CMS Energy Corporation	3.97%	$0.54	$16.13	$11.58
9	DPL Inc.	4.83%	$1.22	$28.86	$22.48
10	DTE Energy Company	6.24%	$2.27	$44.96	$30.59
11	Duke Energy Corporation	6.51%	$1.03	$17.94	$14.10
12	Edison International	4.11%	$1.35	$36.72	$29.71
13	Empire District Electric Co.	7.71%	$1.37	$19.36	$16.44
14	Entergy Corporation	4.14%	$3.21	$84.44	$71.76
15	FPL Group, Inc.	3.88%	$2.03	$56.57	$48.55
16	Great Plains Energy Incorporated	5.27%	$0.89	$20.29	$14.47
17	Hawaiian Electric Industries, Inc.	7.10%	$1.33	$21.55	$16.50
18	IDACORP, Inc.	4.56%	$1.28	$32.83	$24.68
19	MGE Energy, Inc.	4.42%	$1.58	$38.23	$33.40
20	Northwestern Corporation	5.85%	$1.43	$26.85	$22.58
21	OGE Energy Corp.	4.88%	$1.52	$37.79	$26.50
22	PG&E Corporation	4.42%	$1.80	$45.79	$36.59
23	Pinnacle West Capital Corp.	6.86%	$2.25	$37.96	$28.87
24	Portland General Electric	5.64%	$1.09	$21.39	$17.69
25	Progress Energy Inc.	6.84%	$2.66	$42.20	$35.97
26	Southern Company	5.82%	$1.88	$34.47	$30.27
27	TECO Energy, Inc.	6.40%	$0.86	$16.71	$11.16
28	UniSource Energy Corporation	4.26%	$1.24	$33.25	$25.96
29	Westar Energy, Inc.	6.47%	$1.28	$22.30	$17.91
30	Wisconsin Energy Corporation	3.23%	$1.45	$50.62	$40.25
31	Xcel Energy Inc.	5.40%	$1.05	$21.94	$17.44
	Average	5.28%			

Sources and Notes:

a/ Dividend yields (D_1/P_0) are based on RCA's indicated preference to increase D_0 by one-half growth rate. U-08-157 (10), page 35.

b/ Prices (P_0) are the highest and lowest prices durng the six-month period July 2009 to December 2009. Six month period adopted based on U-08-157 (10), page 35.

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Table 6

Estimates of Growth Based on Analysts' Forecasts Reported by Value Line, Yahoo! Finance and Zacks[a]

		Value Line[a] (a)	Zacks[b] (b)	Yahoo![b] (c)	Average[c] (d)
1	Allegheny Energy, Inc.	7.0	16.0	14.0	12.3
2	ALLETE, Inc.	nmf	4.0	4.0	4.0
3	Alliant Energy Corporation	4.0	3.0	4.3	3.8
4	Ameren Corporation	1.0	4.0	3.0	2.7
5	American Electric Power Co.	3.0	3.3	3.0	3.1
6	Avista Corporation	6.5	5.0	5.0	5.5
7	Cleco Corporation	9.5	9.0	9.0	9.2
8	CMS Energy Corporation	10.0	5.8	5.6	7.1
9	DPL Inc.	9.0	6.2	7.1	7.4
10	DTE Energy Company	8.5	4.5	3.0	5.3
11	Duke Energy Corporation	5.0	4.3	3.6	4.3
12	Edison International	4.5	5.0	1.0	3.5
13	Empire District Electric Co.	6.0	na	6.0	6.0
14	Entergy Corporation	6.0	4.7	6.8	5.8
15	FPL Group, Inc.	8.0	7.8	7.9	7.9
16	Great Plains Energy Incorporated	0.5	5.0	5.0	3.5
17	Hawaiian Electric Industries, Inc.	7.0	11.3	10.5	9.6
18	IDACORP, Inc.	4.5	5.0	5.0	4.8
19	MGE Energy, Inc.	6.0	5.0	5.0	5.3
20	Northwestern Corporation	7.7	7.7	7.0	7.5
21	OGE Energy Corp.	4.5	6.0	6.0	5.5
22	PG&E Corporation	6.5	7.7	7.3	7.2
23	Pinnacle West Capital Corp.	3.0	8.0	8.0	6.3
24	Portland General Electric	3.5	6.7	6.8	5.7
25	Progress Energy Inc.	6.0	4.5	4.5	5.0
26	Southern Company	4.5	7.6	4.5	5.5
27	TECO Energy, Inc.	4.5	10.8	9.8	8.4
28	UniSource Energy Corporation	17.0	5.0	5.0	9.0
29	Westar Energy, Inc.	4.0	5.0	3.7	4.2
30	Wisconsin Energy Corporation	8.0	8.3	9.9	8.7
31	Xcel Energy Inc.	6.5	5.7	7.3	6.5
	Average	6.1	6.4	6.1	6.2

Notes and Sources:

a/ Value Line Investment Survey Issue 1 (dated November 27, 2009), the Standard Issue 5 and Small and Mid Cap Issue 5 (dated December 25, 2009) and Issue 11 (dated November 6, 2009).

b/ Sources are analysts' forecasts reported on the Internet on December 18, 2009.

c/ Average of analysts' forecasts including Value Line.

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Table 7

Application of the Constant Growth DCF Model

		D_1/P_0 [a/]	G [b/]	Equity Cost Estimates
1	Allegheny Energy, Inc.	2.63%	12.33%	14.96%
2	ALLETE, Inc.	6.07%	4.00%	10.07%
3	Alliant Energy Corporation	5.79%	3.77%	9.56%
4	Ameren Corporation	6.45%	2.67%	9.11%
5	American Electric Power Co.	5.53%	3.10%	8.63%
6	Avista Corporation	4.56%	5.50%	10.06%
7	Cleco Corporation	3.96%	9.17%	13.12%
8	CMS Energy Corporation	3.97%	7.13%	11.10%
9	DPL Inc.	4.83%	7.43%	12.26%
10	DTE Energy Company	6.24%	5.33%	11.57%
11	Duke Energy Corporation	6.51%	4.30%	10.81%
12	Edison International	4.11%	3.51%	7.62%
13	Empire District Electric Co.	7.71%	6.00%	13.71%
14	Entergy Corporation	4.14%	5.83%	9.97%
15	FPL Group, Inc.	3.88%	7.89%	11.77%
16	Great Plains Energy Incorporated	5.27%	3.50%	8.77%
17	Hawaiian Electric Industries, Inc.	7.10%	9.61%	16.71%
18	IDACORP, Inc.	4.56%	4.83%	9.39%
19	MGE Energy, Inc.	4.42%	5.33%	9.75%
20	Northwestern Corporation	5.85%	7.47%	13.32%
21	OGE Energy Corp.	4.88%	5.50%	10.38%
22	PG&E Corporation	4.42%	7.18%	11.60%
23	Pinnacle West Capital Corp.	6.86%	6.33%	13.19%
24	Portland General Electric	5.64%	5.67%	11.31%
25	Progress Energy Inc.	6.84%	5.00%	11.84%
26	Southern Company	5.82%	5.54%	11.36%
27	TECO Energy, Inc.	6.40%	8.37%	14.77%
28	UniSource Energy Corporation	4.26%	9.00%	13.26%
29	Westar Energy, Inc.	6.47%	4.22%	10.69%
30	Wisconsin Energy Corporation	3.23%	8.73%	11.96%
31	Xcel Energy Inc.	5.40%	6.49%	11.89%
	Column Average	5.3%	6.2%	11.4%

Notes and Sources:

a/ Dividend yields (D_1/P_0) developed in Table 5.

b/ Growth rates are the average growth rates reported in Table 6.

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16.71%
7.62%

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Table 8

Range of Growth Rates Reported by Three Investor Services-[a/]

		Range of Analysts' Forecasts		
		Maximum	Minimum	Mid-point
1	Allegheny Energy, Inc.	16.0%	7.0%	11.5%
2	ALLETE, Inc.	4.0%	4.0%	4.0%
3	Alliant Energy Corporation	4.3%	3.0%	3.7%
4	Ameren Corporation	4.0%	1.0%	2.5%
5	American Electric Power Co.	3.3%	3.0%	3.2%
6	Avista Corporation	6.5%	5.0%	5.8%
7	Cleco Corporation	9.5%	9.0%	9.3%
8	CMS Energy Corporation	10.0%	5.6%	7.8%
9	DPL Inc.	9.0%	6.2%	7.6%
10	DTE Energy Company	8.5%	3.0%	5.8%
11	Duke Energy Corporation	5.0%	3.6%	4.3%
12	Edison International	5.0%	1.0%	3.0%
13	Empire District Electric Co.	6.0%	6.0%	6.0%
14	Entergy Corporation	6.8%	4.7%	5.7%
15	FPL Group, Inc.	8.0%	7.8%	7.9%
16	Great Plains Energy Incorporated	5.0%	0.5%	2.8%
17	Hawaiian Electric Industries, Inc.	11.3%	7.0%	9.2%
18	IDACORP, Inc.	5.0%	4.5%	4.8%
19	MGE Energy, Inc.	6.0%	5.0%	5.5%
20	Northwestern Corporation	7.7%	7.0%	7.4%
21	OGE Energy Corp.	6.0%	4.5%	5.3%
22	PG&E Corporation	7.7%	6.5%	7.1%
23	Pinnacle West Capital Corp.	8.0%	3.0%	5.5%
24	Portland General Electric	6.8%	3.5%	5.2%
25	Progress Energy Inc.	6.0%	4.5%	5.3%
26	Southern Company	7.6%	4.5%	6.1%
27	TECO Energy, Inc.	10.8%	4.5%	7.7%
28	UniSource Energy Corporation	17.0%	5.0%	11.0%
29	Westar Energy, Inc.	5.0%	3.7%	4.3%
30	Wisconsin Energy Corporation	9.9%	8.0%	9.0%
31	Xcel Energy Inc.	7.3%	5.7%	6.5%
	Column average	7.5%	4.8%	6.1%

Notes and Sources:
a/ Sources are Value Line, Zacks and Yahoo! Finance. See Table 6.

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Table 9

Application of the FERC Multi-period DCF Method

			D_1/P_0	Low Growth	Low Equity Cost Estimate	High Growth	High Equity Cost Estimate
1	Allegheny Energy, Inc.		2.63%	6.61%	9.24%	12.64%	15.27%
2	ALLETE, Inc.		6.07%	4.60%	10.67%	4.60%	10.67%
3	Alliant Energy Corporation		5.79%	3.93%	9.72%	4.80%	10.60%
4	Ameren Corporation		6.45%	2.59%	9.04%	4.60%	11.05%
5	American Electric Power Co.		5.53%	3.93%	9.46%	4.13%	9.66%
6	Avista Corporation		4.56%	5.27%	9.83%	6.27%	10.84%
7	Cleco Corporation		3.96%	7.95%	11.91%	8.28%	12.24%
8	CMS Energy Corporation		3.97%	5.67%	9.64%	8.62%	12.59%
9	DPL Inc.		4.83%	6.07%	10.90%	7.95%	12.78%
10	DTE Energy Company		6.24%	3.93%	10.17%	7.61%	13.85%
11	Duke Energy Corporation		6.51%	4.33%	10.84%	5.27%	11.78%
12	Edison International	_b/	4.11%	2.61%	6.72%	5.27%	9.38%
13	Empire District Electric Co.		7.71%	5.94%	13.65%	5.94%	13.65%
14	Entergy Corporation		4.14%	5.07%	9.21%	6.46%	10.60%
15	FPL Group, Inc.		3.88%	7.15%	11.02%	7.28%	11.16%
16	Great Plains Energy Incorporated		5.27%	2.25%	7.53%	5.27%	10.54%
17	Hawaiian Electric Industries, Inc.		7.10%	6.61%	13.71%	9.49%	16.60%
18	IDACORP, Inc.		4.56%	4.93%	9.50%	5.27%	9.83%
19	MGE Energy, Inc.		4.42%	5.27%	9.69%	5.94%	10.36%
20	Northwestern Corporation		5.85%	6.61%	12.46%	7.08%	12.93%
21	OGE Energy Corp.		4.88%	4.93%	9.82%	5.94%	10.82%
22	PG&E Corporation		4.42%	6.27%	10.70%	7.08%	11.50%
23	Pinnacle West Capital Corp.		6.86%	3.93%	10.79%	7.28%	14.14%
24	Portland General Electric		5.64%	4.26%	9.91%	6.48%	12.12%
25	Progress Energy Inc.		6.84%	4.93%	11.77%	5.94%	12.78%
26	Southern Company		5.82%	4.93%	10.76%	7.01%	12.83%
27	TECO Energy, Inc.		6.40%	4.93%	11.34%	9.16%	15.56%
28	UniSource Energy Corporation		4.26%	5.27%	9.53%	13.31%	17.57%
29	Westar Energy, Inc.		6.47%	4.38%	10.85%	5.27%	11.74%
30	Wisconsin Energy Corporation		3.23%	7.28%	10.51%	8.55%	11.78%
31	Xcel Energy Inc.		5.40%	5.74%	11.14%	6.80%	12.20%
	Constrained Average				10.5%		12.2%
	Mid-point					11.4%	

Sources and Notes:

a/ Use FERC method of assigning a weight of two-thirds to average EPS growth rates reported in Table 8 and one-third to a forecast of future GPD growth of 5.8%.

b/ Edison International is not included in the low equity cost estimate. Low equity cost estimate is below the expected cost of Baa bonds reported in Table 11.

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Table 10

Alternative Multi-Stage DCF Growth Analysis

		Internal Rate of		First Year Dividend D_1 [a]	Stage 1 [b]		Stage 2 and 3 [c,d]		
		Return	P_{2010}	D_{2011}	D_{2012}	D_{2016}	D_{2017}	$(P+D)_{2026}$	P_{2026} [d]
1	Allegheny Energy, Inc.	9.75%	-$24.77	$0.64	$0.72	$1.11	$1.23	$68.72	$66.25
2	ALLETE, Inc.	11.11%	-$31.47	$1.88	$1.96	$2.29	$2.39	$78.53	$74.79
3	Alliant Energy Corporation	10.73%	-$28.13	$1.61	$1.66	$1.92	$2.00	$69.57	$66.49
4	Ameren Corporation	10.89%	-$25.88	$1.65	$1.69	$1.87	$1.92	$62.36	$59.51
5	American Electric Power Co.	10.32%	-$32.29	$1.76	$1.81	$2.05	$2.12	$78.96	$75.74
6	Avista Corporation	10.29%	-$20.02	$0.90	$0.95	$1.19	$1.26	$51.48	$49.39
7	Cleco Corporation	10.77%	-$24.81	$0.96	$1.05	$1.50	$1.63	$68.31	$65.25
8	CMS Energy Corporation	10.27%	-$13.86	$0.54	$0.58	$0.78	$0.84	$36.91	$35.42
9	DPL Inc.	11.20%	-$25.67	$1.22	$1.31	$1.76	$1.89	$69.14	$65.80
10	DTE Energy Company	11.80%	-$37.78	$2.27	$2.40	$3.00	$3.18	$98.55	$93.28
11	Duke Energy Corporation	11.62%	-$16.02	$1.03	$1.07	$1.27	$1.33	$40.34	$38.24
12	Edison International	9.09%	-$33.22	$1.35	$1.39	$1.57	$1.62	$80.89	$78.45
13	Empire District Electric Co.	13.57%	-$17.90	$1.37	$1.45	$1.83	$1.94	$47.76	$44.50
14	Entergy Corporation	9.90%	-$78.10	$3.21	$3.40	$4.25	$4.49	$200.06	$192.61
15	FPL Group, Inc.	10.29%	-$52.56	$2.03	$2.19	$2.96	$3.19	$140.30	$134.61
16	Great Plains Energy Incorporated	9.92%	-$17.38	$0.89	$0.92	$1.02	$1.05	$42.15	$40.58
17	Hawaiian Electric Industries, Inc.	14.36%	-$19.03	$1.33	$1.45	$2.06	$2.24	$55.85	$51.68
18	IDACORP, Inc.	9.95%	-$28.76	$1.28	$1.35	$1.62	$1.70	$72.43	$69.70
19	MGE Energy, Inc.	10.12%	-$35.82	$1.58	$1.66	$2.06	$2.17	$91.55	$87.98
20	Northwestern Corporation	12.24%	-$24.72	$1.43	$1.54	$2.05	$2.19	$67.21	$63.37
21	OGE Energy Corp.	10.36%	-$32.15	$1.52	$1.60	$1.96	$2.07	$81.97	$78.60
22	PG&E Corporation	10.60%	-$41.19	$1.80	$1.93	$2.53	$2.71	$108.97	$104.26
23	Pinnacle West Capital Corp.	12.41%	-$33.42	$2.25	$2.37	$2.94	$3.10	$87.10	$82.00
24	Portland General Electric	11.16%	-$19.54	$1.09	$1.15	$1.40	$1.48	$50.03	$47.63
25	Progress Energy Inc.	12.37%	-$39.09	$2.66	$2.80	$3.43	$3.61	$101.21	$95.32
26	Southern Company	11.71%	-$32.37	$1.88	$1.99	$2.52	$2.67	$84.95	$80.48
27	TECO Energy, Inc.	12.74%	-$13.94	$0.86	$0.92	$1.24	$1.33	$38.41	$36.05
28	UniSource Energy Corporation	11.78%	-$29.61	$1.24	$1.38	$2.09	$2.31	$85.93	$81.36
29	Westar Energy, Inc.	11.61%	-$20.11	$1.28	$1.34	$1.59	$1.66	$50.67	$48.04
30	Wisconsin Energy Corporation	9.82%	-$45.44	$1.45	$1.58	$2.22	$2.41	$122.13	$117.66
31	Xcel Energy Inc.	11.40%	-$19.69	$1.05	$1.12	$1.44	$1.53	$52.00	$49.40
	Average	11.1%							

Notes and Sources:

a/ Forecast of DPS adjusted for the time value of money. See Table 5.

b/ Growth based on mid-point of range of analysts' forecasts fromTable 8.

c/ Growth based on gradual transition from analysts' forecasts of growth to expected long-term average GDP growth of 5.8%.

d/ Price received at end of stage 2.

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Table 11

Forecasts of Baa Rates and Long-term Treasury Securities Rates[a]
2011 - 2013

	2011	2012	2013	Average
Long-term Treasury Rates				
Blue Chip Consensus Forecasts[a]	5.10%	5.50%	5.80%	
Value Line Quarterly Forecasts[b]	5.00%	5.10%	5.30%	
Average				5.30%
Seasoned Baa Corporate Bonds	7.00%	7.40%	7.60%	
Blue Chip Consensus Forecasts[a]	na	na	na	
Value Line Quarterly Forecasts[b]				
Average				7.33%

Sources and Notes:
a/ Blue Chip long-term consensus forecasts, December 2009..
b/ Value Line Quarterly Forecasts, November 27, 2009.

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Table 12

Risk Premium Analysis:
Method Used by Department of Ratepayer Advocates of the California PUC[a] with Data for Oregon PUC Sample[b]
1999 to 2008

	Return on Equity[b]	Baa Corporate Bond Rates[c]	Average Annual Risk Premiums
1999	11.46%	7.88%	3.58%
2000	10.92%	8.37%	2.55%
2001	11.59%	7.95%	3.64%
2002	10.69%	7.80%	2.89%
2003	10.96%	6.76%	4.20%
2004	10.40%	6.39%	4.01%
2005	10.49%	6.06%	4.43%
2006	10.97%	6.48%	4.49%
2007	10.96%	6.48%	4.48%
2008	10.94%	7.44%	3.50%
	10-Year Average	7.16%	3.78%
	5-year Average	6.57%	4.18%
	Expected Baa Rate for 2011 to 2013[d]		7.33%
	Projected Returns on Equity for Sample		
	10-Year Average		11.1%
	5-Year Average		11.5%
	Indicated Average Cost of Equity for AELP		14.8%

Notes and Sources:

a/ Method developed in Division of Ratepayer Advocates, CPUC, *Report on the Cost of Capital for San Jose Water,* June 2006, A.06-02-014, Table 2-7.
b/ Average of earned ROEs for the surviving utilities relied upon by the Oregon PUC to determine equity costs for electric utilities sample in UE-180.
c/ As reported by the Federal Reserve.
d/ Source is Table 11.

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Table 13: Risk Premium Analysis Based on Holding Period Returns for Moody's Electric Utilities Sample as Updated, 1950 to 2008

	Baa Corporate Bond Rate[a/]	Year-end Price Index[b/]	Annual Average Dividend[b/]	Index Gain/Loss	Dividend Yield	Total Return	Risk Premium
1950	3.20%	$30.81				.	
1951	3.61%	$33.85	$1.88	9.87%	6.10%	15.97%	12.77%
1952	3.51%	$37.85	$1.91	11.82%	5.64%	17.46%	13.85%
1953	3.74%	$39.61	$2.01	4.65%	5.31%	9.96%	6.45%
1954	3.45%	$47.56	$2.13	20.07%	5.38%	25.45%	21.71%
1955	3.62%	$49.35	$2.21	3.76%	4.65%	8.41%	4.96%
1956	4.37%	$48.96	$2.32	-0.79%	4.70%	3.91%	0.29%
1957	5.03%	$50.30	$2.43	2.74%	4.96%	7.70%	3.33%
1958	4.85%	$66.37	$2.50	31.95%	4.97%	36.92%	31.89%
1959	5.28%	$65.77	$2.61	-0.90%	3.93%	3.03%	-1.82%
1960	5.10%	$76.82	$2.68	16.80%	4.07%	20.88%	15.60%
1961	5.10%	$99.32	$2.81	29.29%	3.66%	32.95%	27.85%
1962	4.92%	$96.49	$2.97	-2.85%	2.99%	0.14%	-4.96%
1963	4.85%	$102.31	$3.21	6.03%	3.33%	9.36%	4.44%
1964	4.81%	$115.54	$3.43	12.93%	3.35%	16.28%	11.43%
1965	5.02%	$114.86	$3.86	-0.59%	3.34%	2.75%	-2.06%
1966	6.18%	$105.99	$4.11	-7.72%	3.58%	-4.14%	-9.16%
1967	6.93%	$98.19	$4.34	-7.36%	4.09%	-3.26%	-9.44%
1968	7.23%	$104.04	$4.50	5.96%	4.58%	10.54%	3.61%
1969	8.65%	$84.62	$4.61	-18.67%	4.43%	-14.23%	-21.46%
1970	9.12%	$88.59	$4.70	4.69%	5.55%	10.25%	1.60%
1971	8.38%	$85.56	$4.77	-3.42%	5.38%	1.96%	-7.16%
1972	7.93%	$83.61	$4.87	-2.28%	5.69%	3.41%	-4.97%
1973	8.48%	$60.87	$5.01	-27.20%	5.99%	-21.21%	-29.14%
1974	10.63%	$41.17	$4.83	-32.36%	7.93%	-24.43%	-32.91%
1975	10.56%	$55.66	$4.97	35.20%	12.07%	47.27%	36.64%
1976	9.12%	$66.29	$5.18	19.10%	9.31%	28.40%	17.84%
1977	8.99%	$68.19	$5.54	2.87%	8.36%	11.22%	2.10%
1978	9.94%	$59.75	$5.81	-12.38%	8.52%	-3.86%	-12.85%
1979	12.06%	$56.41	$6.22	-5.59%	10.41%	4.82%	-5.12%
1980	14.64%	$54.42	$6.58	-3.53%	11.66%	8.14%	-3.92%
1981	16.55%	$57.20	$6.99	5.11%	12.84%	17.95%	3.31%
1982	14.14%	$70.26	$7.43	22.83%	12.99%	35.82%	19.27%
1983	13.75%	$72.03	$7.87	2.52%	11.20%	13.72%	-0.42%
1984	13.40%	$80.16	$8.26	11.29%	11.47%	22.75%	9.00%
1985	11.58%	$94.98	$8.61	18.49%	10.74%	29.23%	15.83%
1986	9.97%	$113.66	$8.89	19.67%	9.36%	29.03%	17.45%
1987	11.29%	$94.24	$9.12	-17.09%	8.02%	-9.06%	-19.03%
1988	10.65%	$100.94	$8.87	7.11%	9.41%	16.52%	5.23%
1989	9.82%	$122.52	$8.82	21.38%	8.74%	30.12%	19.47%
1990	10.43%	$117.77	$8.79	-3.88%	7.17%	3.30%	-6.52%
1991	9.26%	$144.02	$8.95	22.29%	7.60%	29.89%	19.46%
1992	8.81%	$141.06	$9.05	-2.06%	6.28%	4.23%	-5.03%
1993	7.69%	$146.70	$8.99	4.00%	6.37%	10.37%	1.56%
1994	9.10%	$115.50	$8.96	-21.27%	6.11%	-15.16%	-22.85%
1995	7.49%	$142.90	$9.02	23.72%	7.81%	31.53%	22.43%
1996	7.89%	$136.00	$9.06	-4.83%	6.34%	1.51%	-5.98%
1997	7.32%	$155.73	$9.06	14.51%	6.66%	21.17%	13.28%
1998	7.23%	$181.84	$7.83	16.77%	5.03%	21.79%	14.47%
1999	8.19%	$137.30	$8.10	-24.49%	4.45%	-20.04%	-27.27%
2000	8.02%	$227.09	$8.27	65.40%	6.02%	71.42%	63.23%
2001	8.05%	$210.41	$7.28	-7.35%	3.20%	-4.14%	-12.16%
2002	7.45%	$184.46	$7.52	-12.33%	3.57%	-8.76%	-16.81%
2003	6.60%	$194.36	$7.13	5.37%	3.87%	9.23%	1.78%
2004	6.15%	$231.72	$7.22	19.22%	3.72%	22.93%	16.33%
2005	6.32%	$250.52	$7.59	8.12%	3.27%	11.39%	5.24%
2006	6.22%	$287.25	$7.79	14.66%	3.11%	17.77%	11.45%
2007	6.65%	$318.76	$8.13	10.97%	2.83%	13.80%	7.58%
2008	--	$211.71	$8.57	-33.58%	2.69%	-30.90%	-37.55%

	Updated Study	Original Study
Average Baa rate	7.9%	8.1%
Unadjusted risk premium	3.2%	4.2%
Expected Baa bond rate	7.3%	7.3%
Adjusted risk premium[c/]	3.5%	4.5%
Estimated cost of equity for benchmark sample	10.8%	11.9%

Notes and Sources:

a/ Federal Reserve data. Monthly rates for December of the indicated year.

b/ Mergent, Moody's 2001 Public Utility Manuel with updates for 2001-2008.

c/ As explained in testimony, adjustment assumes equity costs change by 50% as much as interest rates.

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Table 14

Risk Premiums Deternined by Relationship Between Authorized ROEs and Baa Corporate Bond Rates[a/] During the Period 1985-2008

Regression Output:

Constant (A_0)		0.0652
Std Err of Y Est		0.0072
R Squared		58.2%
No. of Observations		491
Degrees of Freedom		489
X Coefficient (A_1)	-0.3931	
Std Err of Coef.	0.0151	
t-statistic	-26.08	

Equity Cost Estimate for Typical Electric Utility		Predicted Risk Premium		Expected Baa Bond Rate[b/]
11.0%	=	3.64%	+	7.33%

Formula: Risk Premium = A_0 + (A_1 x Baa bond Rate)[c/]

Sources and Notes:

_a/ Source of ROE Data: Oregon PUC Response to NW Natural Data request in UG 132 updated with data in Phillip Cross, "Rate of Return: Still an Issue at PUCs", *Public Utilities Fortnightly*, December 1998 and 2000 plus decisions reported by Regulatory Research Associates for 1999-2008.

_b/ Average of forecasts for 2011 to 2013 reported in Table 10.

_c/ 6-month lag between order dates and Baa bond rates adopted.

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Table 15

Estimates of Costs of Equity Based on the Version of the Capital Asset Pricing Model presented by Morningstar[a]

Equity cost = RF + β x MRP + Size Risk Premium

	Electric Utilities Sample	AELP
Risk Free Rate[b]	5.30%	5.30%
Beta[c]	0.71	0.71
Market Risk Premium[d]	6.7%	6.7%
Size Risk Premium[e]	0.9%	4.4%
Indicated Cost of Equity	11.0%	14.5%

Notes and Sources:

a/ As presented in chapter 7 of Morningstar, *Ibbotson SBBI 2010 Valuation Yearbook.*

b/ Source is Table 11.

c/ Source is Table 1. Beta for AELP has not been adjusted upward and thus is a conservative measrue of beta risk.

d/ Long-term average MRP as reported in Table 5-1 of Morningstar *Ibbotson SBBI 2009 Valuation Yearbook* updated with data for 2009. Does not reflect expected market risk premium for next several years predicted by *Value Line.*

e/ Source is Table 3.

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Table 16

Summary: Estimated Costs of Equity for Alaska Electric Light and Power

	Estimated Equity Costs for Benchmark Utilities			Estimated Equity Costs for AELP-n/		
DCF analysis -- Table 7		11.4%			14.9%	
DCF analysis -- Table 9		11.4%			14.9%	
DCF analysis -- Table 10		11.1%			14.6%	
Average of DCF estimates		11.3%			14.8%	
Risk premium -- Table 12	11.1%	to	11.5%	14.6%	to	15.0%
Risk Premium -- Table 13	10.8%	to	11.9%	14.3%	to	15.4%
Risk premium -- Table 14		11.0%			14.5%	
CAPM -- Table 15		11.0%			14.5%	
Average of RP estimates		11.2%			14.7%	
Range of Equity Cost Estimates	11.2%	to	11.3%	14.7%	to	14.8%
Recommneded ROE for AELP					14.75%	

Note:
n/ Except for CAPM, equity cost estimates include a 350 basis point risk premium for AELP. Risk premiums for CAPM are estimated directly.

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