Exhibit No.
Issue: Cost of Capital
Witness:James H. Vander Weide, Ph.D.
Type of Exhibit:Rebuttal Testimony
Sponsoring Party: Empire District
Case No. ER-2006-0351

BEFORE THE PUBLIC SERVICE COMMISSION

OF THE STATE OF MISSOURI

REBUTTAL TESTIMONY

OF

JAMES H. VANDER WEIDE, PH.D.

July 2006

REBUTTAL TESTIMONY
OF
DR. JAMES H. VANDER WEIDE
ON BEHALF OF
THE EMPIRE DISTRICT ELECTRIC COMPANY
BEFORE THE
MISSOURI PUBLIC SERVICE COMMISSION
CASE NO. ER-2006-0351

Q. WHAT IS YOUR NAME AND BUSINESS ADDRESS?

A. My name is James H. Vander Weide. I am Research Professor of Finance and Economics at the Fuqua School of Business of Duke University. I am also President of Financial Strategy Associates, a firm that provides strategic and financial consulting services to corporate clients. My business address is 3606 Stoneybrook Drive, Durham, North Carolina.

Q. ARE YOU THE SAME JAMES H. VANDER WEIDE WHO PRESENTED DIRECT TESTIMONY IN THIS PROCEEDING BEFORE THE MISSOURI PUBLIC SERVICE COMMISSION ("COMMISSION")?

A. Yes, I am.

Q. WHAT IS THE PURPOSE OF YOUR REBUTTAL TESTIMONY?

A. I have been asked by The Empire District Electric Company ("Empire" or "the Company") to review the pre-filed direct testimonies of Mr. David Murray and Mr. Charles W. King and to evaluate their recommended costs of equity. Mr. Murray's testimony is presented on behalf of the Staff of the Commission ("Staff"), and Mr. King's testimony is presented

on behalf of the Office of the Public Counsel of the State of Missouri ("OPC").

Q. IS THERE ANYTHING IN THE DIRECT TESTIMONIES OF MR. MURRAY OR MR. KING THAT WOULD CAUSE YOU TO CHANGE YOUR RECOMMENDED 11.7 PERCENT COST OF EQUITY FOR EMPIRE?

A. No. After reviewing their testimonies, I continue to recommend that Empire be allowed to earn a return on equity of 11.7 percent.

I. REBUTTAL OF MR. MURRAY

Q. WHAT IS MR. MURRAY'S RECOMMENDED COST OF EQUITY FOR EMPIRE?

A. Mr. Murray recommends a cost of equity in the range 9.5 percent to 9.6 percent.

Q. HOW DID MR. MURRAY ESTIMATE EMPIRE'S COST OF EQUITY?

A. Mr. Murray estimated Empire's cost of equity by applying the Discounted Cash Flow ("DCF") model and the Capital Asset Pricing Model ("CAPM") to a small group of risk proxy companies.

A. ECONOMIC ENVIRONMENT

Q. DOES MR. MURRAY DISCUSS HIS VIEW OF THE CURRENT ECONOMIC ENVIRONMENT IN THE CAPITAL MARKETS?

A. Yes. On page 9, lines 5 – 7 of his direct testimony, Mr. Murray states:

Long-term interest rates have finally started to respond to the Fed's monetary policy tightening. However, it would be premature to label the increase in long-term interest rates as a trend at this point.

Q. DO YOU AGREE WITH MR. MURRAY'S OPINION THAT IT IS TOO EARLY TO SAY THAT LONG-TERM INTEREST RATES ARE TRENDING UP?

A. No. Long-term interest rates have been trending up for at least the last year. As shown in Table 1 below, the average interest rate on long-term securities has increased by approximately 140 basis points during the past year.

Table 1
Trends in Long-term Interest Rates[1]

Category	Recent (29-Jun-06)	3 Months Ago (30-Mar-06)	Year Ago (30-Jun-05)	Change (6/05-6/06)
30-year U.S. Treasuries	5.25%	4.90%	4.19%	1.06%
A-rated utility bonds	6.33%	5.98%	5.03%	1.30%
BBB-rated utility bonds	6.71%	6.32%	5.37%	1.34%
Prime rate	8.25%	7.75%	6.25%	2.00%
Average Change				1.43%

Q. ARE ECONOMISTS FORECASTING THAT LONG-TERM INTEREST RATES WILL CONTINUE TO INCREASE OVER THE NEXT SEVERAL YEARS?

[1] Value Line Selection & Opinion, July 7, 2006, p. 1047.

A. Yes. Value Line forecasts that long-term Treasury bond rates and AAA-rated corporate bond rates will increase by another 60 basis points over the next several years.[2]

Q. DOES MR. MURRAY ALSO DISCUSS THE CHANGE IN EMPIRE'S S&P CREDIT RATING DURING THE LAST YEAR?

A. Yes. On page 13 of his testimony, Mr. Murray states:

> Empire's current Standard & Poor's Corporation's (S&P) corporate credit rating is "BBB-," which is only one notch above non-investment grade, *i.e.*, junk, status. S&P downgraded Empire on May 17, 2006, by one notch from its previous rating of "BBB."

Q. DID S&P EXPLAIN WHY IT LOWERED EMPIRE'S CREDIT RATING FROM BBB TO BBB-?

A. Yes. In its research update on Empire dated May 17, 2006, S&P states:

> The downgrade reflects Standard & Poor's view that Empire's financial measures will be constrained over the next several years by fuel and power costs that continue to exceed the level recoverable in rates, and by Empire's higher-than-historical level of capital spending, including the acquisition of a Missouri gas utility.

Q. DOES MR. MURRAY ACKNOWLEDGE S&P'S EXPLANATION FOR WHY IT LOWERED EMPIRE'S CREDIT RATING FROM A BBB TO A "BBB–?

A. No. In fact, Mr. Murray incorrectly claims on page 14 of his testimony that S&P failed to provide a "good explanation" for its lowering of Empire's credit rating. He then claims that an S&P analyst, Garritt

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[2] Value Line Selection & Opinion, May 26, 2006, "The Quarterly Economic Review," p. 1109.

Jepson, told him in a telephone conversation that S&P downgraded Empire's credit rating because, in addition to other factors, it was previously unaware of Empire's investment in the Plum Point project.

Q. DO YOU AGREE WITH MR. MURRAY'S CLAIM THAT S&P LOWERED EMPIRE'S CREDIT RATING BECAUSE, AMONG OTHER THINGS, IT HAD BEEN UNAWARE OF EMPIRE'S INVESTMENT IN THE PLUM POINT PROJECT?

A. No. First, Mr. Murray's claim that S&P failed to provide a "good explanation" for Empire's down rating is misleading. In its May 17, 2006, update on Empire, S&P clearly states that the credit down rating

> reflects Standard & Poor's view that Empire's financial measures will be constrained over the next several years by fuel and power costs that continue to exceed the level recoverable in rates, and by Empire's higher-than-historical level of capital spending, including the acquisition of a Missouri gas utility.

Second, Mr. Murray's telephone conversation with Mr. Jepson cannot be verified because it was not recorded, and Mr. Jepson has not submitted testimony in this proceeding. Third, it is difficult to believe that S&P would have been unaware of Empire's investment in the Plum Point project, since this project had previously been announced by the Company.

B. DCF MODEL

Q. WHAT DCF MODEL DID MR. MURRAY USE TO ESTIMATE EMPIRE'S COST OF EQUITY?

A. Mr. Murray used an annual DCF model of the form, $k = D_1/P_0 + g$, where k is the cost of equity, D_1 is the expected first period dividend, P_0 is the current stock price, and g is the average expected future growth in the company's earnings and dividends.

Q. WHAT ARE THE BASIC ASSUMPTIONS OF MR. MURRAY'S ANNUAL DCF MODEL?

A. Mr. Murray's annual DCF model is based on the assumptions that: (1) a company's stock price is equal to the present value of the future dividends investors expect to receive from their investment in the company; (2) dividends are paid annually; (3) dividends, earnings, and book value are expected to grow at the same constant rate forever; and (4) the first dividend is received one year from the date of the analysis.

Q. ONE OF THE ASSUMPTIONS OF MR. MURRAY'S ANNUAL DCF MODEL IS THAT DIVIDENDS ARE PAID ANNUALLY. DO ANY OF MR. MURRAY'S PROXY COMPANIES, IN FACT, PAY DIVIDENDS ANNUALLY?

A. No. All of Mr. Murray's proxy companies pay dividends quarterly.

Q. CAN MR. MURRAY'S ANNUAL DCF MODEL BE MATHEMATICALLY DERIVED FROM THE ASSUMPTION THAT DIVIDENDS ARE PAID QUARTERLY?

A. No. Mr. Murray's annual DCF model can only be derived from the assumption that dividends are paid annually. When dividends are paid quarterly, the quarterly DCF model is the only model that can be

mathematically derived from DCF assumptions. Since Mr. Murray's proxy companies pay dividends quarterly, he should have used a quarterly DCF model to estimate Empire's cost of equity.

Q. YOU ALSO MENTION THAT MR. MURRAY'S DCF MODEL REQUIRES AN ESTIMATE OF THE EXPECTED FIRST PERIOD DIVIDEND FOR EACH COMPANY. HOW DID MR. MURRAY ESTIMATE THE EXPECTED FIRST PERIOD DIVIDEND IN HIS ANNUAL DCF MODEL?

A. Mr. Murray used the average of Value Line's expected 2006 and 2007 dividends for each company as his estimate of the expected first period dividend in his annual DCF model.

Q. DO YOU AGREE WITH MR. MURRAY'S USE OF THE AVERAGE OF VALUE LINE'S EXPECTED 2006 AND 2007 DIVIDENDS FOR EACH COMPANY AS THE ESTIMATE OF THE EXPECTED FIRST PERIOD DIVIDEND IN HIS APPLICATION OF THE DCF MODEL?

A. No. Mr. Murray's annual DCF model is based on the assumption that dividends will grow at the same constant rate forever. Under the assumption that dividends will grow at the same constant rate forever, the cost of equity is given by the equation, $k = D_0 (1 + g) / P_0 + g$, where D_0 is the current annualized dividend, P_0 is the stock price, and g is the expected constant annual growth rate. Thus, the correct first period dividend in the annual DCF model is the current annualized dividend multiplied by the factor, (*1 + growth rate*).

In addition, Mr. Murray is conducting his DCF analysis in June 2006. Since the first dividend in the annual DCF model is assumed to be received one year from the time of the analysis, the first period annual dividend would not occur until June 2007. In a world of increasing dividends, the average of Value Line's 2006 and 2007 expected dividends is a poor predictor of the annualized dividend in 2007.

Q. WHAT IS THE EFFECT OF MR. MURRAY'S USE OF AN INCORRECT ESTIMATE OF THE FIRST PERIOD DIVIDEND IN HIS ANNUAL DCF MODEL?

A. Mr. Murray's use of an incorrect estimate of the first period dividend, taken by itself, caused him to underestimate the DCF cost of equity for his proxy group by approximately 25 basis points.

Q. HOW DID MR. MURRAY ESTIMATE THE GROWTH COMPONENT OF HIS DCF MODEL?

A. Mr. Murray reviewed historical five- and ten-year growth rates in dividends per share, earnings per share, and book value per share, as reported in Value Line, along with forecasts of earnings per share obtained from I/B/E/S, Standard & Poor's, and Value Line. Mr. Murray's final choice of growth rate was based on his judgment about the growth rate that, in his opinion, investors could expect for the proxy companies. In this case, Mr. Murray gave primary weight to the analysts' forecasts of earnings per share growth in estimating the growth component of his

DCF model; but he also reported and considered DCF results based on historical growth rates.

Q. DO YOU AGREE WITH MR. MURRAY'S CONSIDERATION OF HISTORICAL GROWTH RATES TO ESTIMATE INVESTORS' EXPECTATIONS WHEN ANALYSTS' GROWTH EXPECTATIONS FOR HIS PROXY COMPANIES ARE READILY AVAILABLE?

A. No. Historical growth rates are inherently inferior to analysts' forecasts because analysts' forecasts already incorporate all relevant information regarding historical growth rates and also incorporate the analysts' knowledge about current conditions and expectations regarding the future. My studies indicate that the correlation between analysts' growth forecasts and stock prices is significantly higher than the correlation between historical growth rates and stock prices.

C. PROXY COMPANIES

Q. WHAT CRITERIA DID MR. MURRAY USE TO SELECT HIS PROXY COMPANY GROUP?

A. Mr. Murray selected his proxy companies based on the criteria that each company: (1) is included in Standard & Poor's analysis of a group of "electric utilities—integrated" in an August 11, 2005, issue of *CreditStats*; (2) has publicly traded stock; (3) is followed by Value Line; (4) has ten years of historical data on dividends per share, book value per share, and earnings per share; (5) has an investment-grade credit rating; and

(6) has two sources of projected growth estimates, one of which is Value Line.

Q. HOW MANY COMPANIES ARE INCLUDED IN S&P'S ANALYSIS OF A GROUP OF "ELECTRIC UTILITIES—INTEGRATED" IN THE AUGUST 11, 2005, ISSUE OF *CREDITSTATS*?

A. S&P's analysis includes 11 companies.

Q. DOES STANDARD & POOR'S INDICATE IN THE AUGUST 11, 2005, ISSUE OF *CREDITSTATS* THAT ITS ANALYSIS INCLUDES ALL INTEGRATED ELECTRIC UTILITIES THAT IT FOLLOWS?

A. No, it does not.

Q. DO YOU HAVE ANY EVIDENCE THAT STANDARD & POOR'S ANALYSIS IN THE AUGUST 11, 2005, ISSUE OF *CREDITSTATS* DID NOT INCLUDE ALL INTEGRATED ELECTRIC UTILITIES THAT S&P FOLLOWS?

A. Yes. An integrated electric utility is a utility that both produces and distributes electricity. The Standard & Poor's Global Industry Classification Standard (GICS®) system includes five utility categories: electric utilities; gas utilities; multi-utilities; water utilities; and independent power producers and energy traders. Within these categories, there are more than 60 domestic companies that produce and distribute electricity.

Q. DOES MR. MURRAY'S PROXY GROUP INCLUDE ALL ELEVEN OF THE COMPANIES IN STANDARD & POOR'S ANALYSIS OF A GROUP OF "ELECTRIC UTILITIES—INTEGRATED"?

A. No. Mr. Murray's proxy group includes only five companies, including: Hawaiian Electric Industries Inc.; IDACORP Inc.; Pinnacle West Capital Corp.; Puget Energy Inc.; and Southern Co. Mr. Murray eliminated the remaining six companies through his other selection criteria.

Q. ARE THERE ANY OTHER INFORMATION SERVICE COMPANIES THAT PROVIDE INVESTOR INFORMATION ON A LARGE GROUP OF ELECTRIC UTILITIES?

A. Yes. Value Line currently provides investor information on some 60 publicly-traded electric utilities.

Q. DOES STANDARD & POOR'S INDICATE ANYWHERE IN ITS AUGUST 11, 2005, ISSUE OF *CREDITSTATS* THAT IT CONSIDERS THE "ELECTRIC UTILITIES—INTEGRATED" GROUP TO BE DIFFERENT IN RISK FROM OTHER INVESTMENT-GRADE COMPANIES THAT PRODUCE AND DISTRIBUTE ELECTRICITY?

A. No. Indeed, the average Standard & Poor's credit rating for Mr. Murray's proxy companies is the same (BBB+) as the average Standard & Poor's credit rating for the entire set of investment grade Standard & Poor's domestic companies that produce and distribute electricity.

Q. IF THE AVERAGE STANDARD & POOR'S CREDIT RATING FOR MR. MURRAY'S PROXY COMPANIES IS THE SAME AS THE AVERAGE

CREDIT RATING FOR THE ENTIRE SET OF INVESTMENT-GRADE STANDARD & POOR'S DOMESTIC ELECTRIC UTILITIES, HOW WOULD YOU CHARACTERIZE MR. MURRAY'S USE OF A SMALL GROUP OF FIVE PROXY COMPANIES TO ESTIMATE EMPIRE'S COST OF EQUITY?

A. Mr. Murray's use of such a small proxy group is unreasonable.

Q. WHY IS IT UNREASONABLE TO USE SUCH A SMALL PROXY GROUP TO ESTIMATE EMPIRE'S COST OF EQUITY?

A. It is unreasonable to use such a small group of proxy companies because, as explained below, the cost of equity estimated from a large sample of proxy companies is more reliable than the cost of equity result obtained from a small sample of proxy companies.

Q. WHAT IS THE PURPOSE OF PROXY SELECTION CRITERIA?

A. The purpose of proxy selection criteria is to identify the ***largest*** possible group of ***comparable risk*** companies that have sufficient data to reliably apply cost of equity methodologies such as the DCF, CAPM, and risk premium.

Q. WHY IS IT DESIRABLE TO CHOOSE A RELATIVELY LARGE GROUP OF COMPARABLE RISK COMPANIES?

A. It is desirable to choose a relatively large group of comparable risk companies because the estimate of the cost of equity obtained from applying cost of equity methodologies to a single company is uncertain. Cost of equity methodologies such as the DCF, CAPM, and risk

premium, require estimates of quantities such as growth rates, betas, and expected risk premiums that necessarily involve a degree of uncertainty. However, the uncertainty in estimating the cost of equity by applying cost of equity methodologies to a single company can be significantly reduced by applying cost of equity models to a relatively large group of comparable risk companies. Intuitively, any over- and under-estimate of the cost of equity that arises from the application of cost of equity methods to a single company is averaged out by applying the methods to a larger group of comparable risk companies.

In addition, the choice of a relatively small group of proxy companies requires a great deal of judgment. When the analyst applies judgment to select a small group of companies, the analyst may be tempted to choose a set of selection criteria that produce a desired result. The analyst can eliminate the possibility of selection bias by starting with the largest possible group of comparable risk companies and eliminating only those companies with insufficient data to estimate the cost of equity.

Q. DO MR. MURRAY'S PROXY SELECTION CRITERIA PRODUCE THE LARGEST POSSIBLE GROUP OF COMPARABLE RISK COMPANIES THAT HAVE SUFFICIENT DATA TO RELIABLY APPLY COST OF EQUITY METHODOLOGIES?

A. No. Mr. Murray's initial decision to begin with a group of only 11 electric utilities from the Standard & Poor's August 11, 2005, *CreditStats*

unnecessarily eliminated a large number of utilities that most investors would consider to be a conservative proxy for the risk of investing in Empire. Because the use of a larger sample of comparable risk companies produces more reliable results than a smaller sample, Mr. Murray's initial decision reduced the reliability of his cost of equity estimates.

Q. SOME OF THE ELECTRIC COMPANIES IN STANDARD & POOR'S UTILITIES GROUP ARE COMBINATION ELECTRIC/NATURAL GAS COMPANIES. IS THERE ANY REASON WHY COMBINATION ELECTRIC/NATURAL GAS COMPANIES SHOULD BE ELIMINATED FROM THE PROXY GROUP?

A. No. For the reasons described on pages 32 – 33 of my direct testimony, natural gas operations are similar in risk to electric operations. Thus, a combination electric/natural gas company is similar in risk to a pure electric company.

Q. IS THERE ANY REASON WHY A COMBINATION ELECTRIC/NATURAL GAS COMPANY MIGHT EVEN BE LESS RISKY THAN A PURE ELECTRIC COMPANY?

A. Yes. One could reasonably expect that a combination electric and gas utility might be slightly less risky than a company operating in a single energy market such as electricity because electric and natural gas operations are comparable in risk when considered individually, but are not perfectly correlated with each other. The imperfect correlation of

returns on electric and natural gas operations can allow the combination electric/natural gas companies to diversify their risks.

Q. WHAT CRITERIA DID YOU USE TO SELECT PROXY COMPANIES?

A. I selected all the companies in Value Line's electric and natural gas groups that: (1) paid dividends during every quarter of the last two years; (2) did not decrease dividends during any quarter of the past two years; (3) had at least three analysts included in the I/B/E/S average growth forecast; (4) have an investment-grade bond rating and a Value Line Safety Rank of 1, 2, or 3; and (5) have not announced a merger.

Q. DO YOU HAVE ANY EVIDENCE THAT YOUR PROXY GROUPS ARE A CONSERVATIVE PROXY FOR THE RISK OF INVESTING IN EMPIRE?

A. Yes. On page 29 of my direct testimony, I note that my proxy electric companies have an average Value Line Safety Rank of 2, while Empire has a Value Line Safety Rank of 3. I also note that the average S&P bond rating of my electric proxy companies is approximately BBB+, while Empire has an S&P bond rating of BBB-. In addition, my proxy group of LDCs have an average Value Line Safety Rank of 2 and an S&P bond rating of A- (see page 33 of my direct testimony). These data indicate that my proxy groups of comparable companies are, if anything, conservative proxies for the risk of investing in Empire.

Q. DO YOU HAVE ANY EVIDENCE THAT YOUR PROXY GROUPS ARE SIMILAR IN RISK TO MR. MURRAY'S SMALL PROXY GROUP?

A. Yes. As noted above, the average S&P bond rating for both my large proxy electric group and Mr. Murray's small group of five electric companies is BBB+ and the average Value Line Safety Rank for both groups is 2.

Q. WHAT ARE THE IMPLICATIONS OF YOUR OBSERVATION THAT YOUR PROXY COMPANIES ARE A CONSERVATIVE PROXY FOR THE RISK OF INVESTING IN EMPIRE?

A. My observation that my proxy companies are demonstrably less risky than Empire implies that my cost of equity results are a lower bound for Empire's cost of equity. That is, Empire's cost of equity should be higher than the cost of equity results I obtain from my proxy companies.

Q. WHAT ARE THE IMPLICATIONS OF YOUR OBSERVATION THAT YOUR LARGE GROUP OF PROXY COMPANIES IS SIMILAR IN RISK TO MR. MURRAY'S SMALL PROXY GROUP OF FIVE COMPANIES?

A. The implications of my observation that my large group of proxy companies is similar in risk to Mr. Murray's small proxy group of five companies is that my cost of equity results are more reliable than Mr. Murray's. As discussed above, it is preferable to use a larger proxy group of similar risk companies to estimate the cost of equity because the cost of equity results for a single company or a small group of companies is uncertain. However, the uncertainty in cost of equity results for a small group of companies can be reduced by using a larger group of companies of comparable risk.

Q. WHAT DCF RESULTS DID YOU OBTAIN IN YOUR DIRECT TESTIMONY FOR YOUR PROXY COMPANIES?

A. I obtained an average DCF result of 9.8 percent for my proxy companies, as reported in Table 4 in my direct testimony.

Q. HAVE YOU UPDATED YOUR DCF STUDIES?

A. Yes, I have.

Q. WHAT DCF RESULT DO YOU OBTAIN FROM YOUR UPDATED STUDIES?

A. For my proxy electric companies, I obtain an average DCF result of 10.9 percent, as shown in Vander Weide Rebuttal Schedule JVW-1.

Q. IS THIS DCF RESULT A REASONABLE ESTIMATE OF EMPIRE'S COST OF EQUITY?

A. No. The DCF model is only one method of estimating the cost of equity. In my direct testimony, I also performed several risk premium studies and adjusted the cost of equity for differences in risk associated with different capital structures. The result of all my studies produced a recommended cost of equity of 11.7 percent. I have summarized my original and updated DCF results here to demonstrate the downward bias in Mr. Murray's DCF-based estimate of Empire's cost of equity.

D. CAPM

Q. WHAT IS THE CAPM?

A. The CAPM is an equilibrium model in which the expected rate of return on an investment in a company is equal to a risk-free rate of interest,

plus an expected risk premium, where the expected risk premium is the product of a company-specific risk factor, or beta, and the expected risk premium on the market portfolio of all securities.

Q. HOW DID MR. MURRAY USE THE CAPM TO ESTIMATE EMPIRE'S COST OF EQUITY?

A. The CAPM requires estimates of the risk-free rate, the company-specific risk factor, or beta, and the risk premium on the market portfolio. As his estimate of the risk-free rate, Mr. Murray used the yield to maturity on 30-year Treasury bonds in April 2006 (5.06 percent). As his estimate of the company-specific risk factor or beta, Mr. Murray used Value Line's average estimated beta for his proxy companies (0.81). As his estimate of the risk premium on the market portfolio, Mr. Murray used: (1) the arithmetic mean risk premium on the S&P 500 compared to the yield on long-term Treasury bonds for the period 1926 – 2005 (allegedly 6.5 percent); (2) the geometric mean risk premium on the S&P 500 compared to the yield on long-term Treasury bonds for the period 1926 – 2005 (allegedly 4.90 percent); and (3) the geometric mean risk premium on the S&P 500 compared to long-term Treasury bonds for the period 1996 – 2005 (allegedly 1.48 percent). Mr. Murray obtained his risk premium data from Ibbotson Associates' 2006 Yearbook, Stocks, Bonds, Bills, and Inflation (SBBI).

Q. DO YOU AGREE WITH MR. MURRAY'S USE OF THE YIELD TO MATURITY ON LONG-TERM TREASURY BONDS TO ESTIMATE THE RISK-FREE RATE?

A. Yes. Since equity investments are long term, it is reasonable to use the yield to maturity on long-term Treasury bonds to estimate the risk-free rate in the CAPM.

Q. DO YOU AGREE WITH MR. MURRAY'S SPECIFIC USE OF A 5.06 PERCENT ESTIMATE OF THE YIELD TO MATURITY ON 30-YEAR U.S. TREASURY BONDS IN HIS CAPM ANALYSIS?

A. No. First, since the Ibbotson Associates risk premium calculations are based on a comparison of returns on stock investments compared to investments in 20-year U.S. Treasury bonds, when using the Ibbotson risk premium estimates, consistency requires that the yield on 20-year U.S. Treasury bonds be used to estimate the risk-free rate component of the CAPM. Second, the current yield on 20-year U.S. Treasury bonds is 5.30 percent, not the 5.06 percent used by Mr. Murray's analysis. Third, Mr. Murray is using the CAPM to estimate Empire's cost of equity for the period in which rates will be in effect. For this purpose, Mr. Murray should have used the forecasted yield to maturity on long-term U.S. Treasury bonds. At the time of my direct testimony, the forecasted yield on long-term Treasury bonds was 5.5 percent, and the current forecasted yield on long-term Treasury bonds is also 5.5 percent.

Q. DO YOU AGREE WITH MR. MURRAY'S USE OF THE AVERAGE VALUE LINE BETA FOR HIS SMALL SAMPLE OF FIVE PROXY COMPANIES TO ESTIMATE THE BETA COMPONENT OF HIS CAPM COST OF EQUITY?

A. No. Since betas for individual companies can only be estimated with uncertainty, it is wise to use the average beta for a relatively large group of risk proxy companies to estimate the beta component in the CAPM in order to minimize estimation error. At the time I prepared my direct testimony, the average beta for my large sample of risk comparable companies was 0.84. However, since that time, the average beta of my recommended large sample of risk comparable companies has increased to 0.95. Thus, Mr. Murray's use of a 0.81 beta for a small group of companies caused him to significantly underestimate Empire's CAPM cost of equity.

Q. IN YOUR RESPONSE TO THE PREVIOUS QUESTION, DID YOU UNDERSTAND THAT VALUE LINE'S BETA ESTIMATE FOR EMPIRE IS 0.80?

A. Yes. However, it is important to remember that the beta for an individual company can only be estimated with uncertainty. Therefore, it is more reliable to use the average beta for my large sample of proxy companies to estimate Empire's cost of equity using the CAPM.

Q. YOU NOTED EARLIER THAT MR. MURRAY USED DATA FROM IBBOTSON ASSOCIATES TO ESTIMATE THE REQUIRED MARKET

RISK PREMIUM COMPONENT OF THE CAPM. WHAT IS IBBOTSON ASSOCIATES' CURRENT ESTIMATE OF THE REQUIRED MARKET RISK PREMIUM ON STOCK INVESTMENTS COMPARED TO INVESTMENTS IN 20-YEAR U.S. TREASURY BONDS?

A. Ibbotson Associates' current estimate of the required market risk premium is 7.1 percent.

Q. HOW DOES IBBOTSON ASSOCIATES ARRIVE AT ITS 7.1 PERCENT ESTIMATE OF THE REQUIRED MARKET RISK PREMIUM?

A. Ibbotson Associates arrives at its estimate of the required market risk premium by calculating the arithmetic mean return on the S&P 500 and the arithmetic mean income return on 20-year U.S. Treasury bonds over the period 1926 through 2005. Ibbotson then uses the difference between these two arithmetic mean returns as its estimate of the forward-looking market risk premium.

Q. WHY DOES IBBOTSON ASSOCIATES RECOMMEND USING DATA FROM THE PERIOD 1926 THROUGH 2005 TO ESTIMATE THE MARKET RISK PREMIUM, RATHER THAN DATA FROM A SHORTER PERIOD OF TIME, SUCH AS THE PERIOD 1996 THROUGH 2005 USED BY MR. MURRAY IN HIS THIRD RISK PREMIUM ESTIMATE?

A. As Ibbotson Associates states:

> The estimate of the equity risk premium depends on the length of the data series studied. A proper estimate of the equity risk premium requires a data series long enough to give a reliable average without being unduly influenced by very good and very poor short-term returns. When calculated using a long data series, the historical equity risk premium is

> relatively stable. Furthermore, because an average of the realized equity risk premium is quite volatile when calculated using a short history, using a long series makes it less likely that the analyst can justify any number he or she wants. [SBBI Valuation Edition 2006 Yearbook, p. 82]

Q. DO YOU HAVE ANY EVIDENCE THAT MR. MURRAY'S COST OF EQUITY ESTIMATES USING GEOMETRIC MEAN RISK PREMIUM DATA FOR THE PERIOD 1996 – 2005 ARE UNREALISTICALLY LOW?

A. Yes. As shown in Mr. Murray's Schedule 17-1, Column 8, his CAPM model based on risk premiums for the short period from 1996 – 2005 produces an average cost of equity estimate of only 6.17 percent. Since investors are risk averse, reasonable investors would not invest in a more risky equity that was expected to earn just 6.17 percent if they could invest in a less risky bond that earned 6.4 percent. Thus, Mr. Murray's cost of equity estimates using geometric mean risk premium data for the period 1996 – 2005 are unrealistically low.

Q. WHY DOES IBBOTSON ASSOCIATES RECOMMEND USING THE ARITHMETIC MEAN RETURN ON THE S&P 500 RATHER THAN THE GEOMETRIC MEAN RETURN ON THIS INDEX IN ORDER TO ESTIMATE THE MARKET RISK PREMIUM?

A. Ibbotson Associates recommends using the arithmetic mean return rather than the geometric mean return in order to estimate the cost of equity because a cost of equity based on the arithmetic mean return is the only cost of equity that will discount the investors' expected future wealth to the current price of the stock (see Ibbotson Associates *2006*

Yearbook, Valuation Edition, pp. 77 – 80 and Schedule JVW-7 in my direct testimony). In addition, the arithmetic mean is most appropriate for use in the CAPM because the CAPM is based on the assumption that the return is obtained from an additive process, and the arithmetic mean return is additive, whereas the geometric mean return is not. Because the arithmetic mean provides the best estimate of the required market risk premium, the Commission should ignore Mr. Murray's two CAPM results based on geometric mean risk premiums.

Q. WHAT IS THE DIFFERENCE BETWEEN THE INCOME RETURN ON U.S. TREASURY SECURITIES AND THE TOTAL RETURN ON THESE SECURITIES?

A. The income return considers only the income an investor receives from owning a debt instrument such as U.S. Treasury securities, whereas the total return considers both the income and the capital gain or loss on the investment.

Q. WHY DOES IBBOTSON ASSOCIATES RECOMMEND USING THE INCOME RETURN ON U.S. TREASURY SECURITIES RATHER THAN THE TOTAL RETURN IN ITS RISK PREMIUM ESTIMATE?

A. Ibbotson Associates recommends using the income return rather than the total return on Treasury securities to estimate the risk-free rate component of the equity risk premium because the income return is the only return that is risk free. Since the total return includes capital gains

and losses, and capital gains and losses are highly uncertain, the total return is definitely not risk free.

Q. WHAT CAPM RESULT WOULD MR. MURRAY HAVE OBTAINED IF HE HAD BASED HIS CAPM CALCULATIONS ON CORRECT INPUTS FROM IBBOTSON ASSOCIATES FOR THE MARKET RISK PREMIUM, THE AVERAGE VALUE LINE BETA FOR A LARGE SAMPLE OF RISK COMPARABLE COMPANIES, AND THE FORECASTED INTEREST RATE ON LONG-TERM U.S. TREASURY SECURITIES?

A. Mr. Murray would have obtained a CAPM result of 12.2 percent [5.5 + (.94 x 7.1) = 12.2].

Q. DO YOU HAVE OTHER CRITICISMS OF MR. MURRAY'S USE OF THE CAPM TO ESTIMATE EMPIRE'S COST OF EQUITY?

A. Yes. Mr. Murray fails to recognize that the CAPM underestimates the cost of equity for companies with betas less than 1.0 and that the CAPM must be adjusted to include an additional risk premium for small capitalization companies such as Empire District.

Q. WHAT EVIDENCE DO YOU HAVE THAT THE CAPM TENDS TO UNDERESTIMATE THE COST OF EQUITY FOR COMPANIES WITH BETAS LESS THAN 1.0?

A. The original evidence that the unadjusted CAPM tends to underestimate the cost of equity for companies whose equity beta is less than 1.0 and to overestimate the cost of equity for companies whose equity beta is

greater than 1.0 was presented in a paper by Black, Jensen, and Scholes, "The Capital Asset Pricing Model: Some Empirical Tests." Numerous subsequent papers have validated the Black, Jensen, and Scholes findings, including those by Litzenberger and Ramaswamy, Banz, Fama and French, and Fama and MacBeth.[3]

Q. DO YOU HAVE ANY EVIDENCE THAT INVESTORS EXPECT TO EARN A HIGHER RATE OF RETURN ON SMALL CAPITALIZATION COMPANIES SUCH AS EMPIRE THAN WOULD BE PREDICTED FROM THE BASIC CAPM EQUATION USED BY MR. MURRAY?

A. Yes. As I described in my direct testimony, Ibbotson Associates provides ample evidence that investors require a higher rate of return for investments in small capitalization companies than is indicated by Mr. Murray's CAPM equation. In Chapter 7 of the Ibbotson Associates 2006 Yearbook Valuation Edition, Ibbotson Associates provides updated estimates of the risk premium required to be added to the basic CAPM cost of equity, shown below in Table 2.

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[3] Fischer Black, Michael C. Jensen, and Myron Scholes, "The Capital Asset Pricing Model: Some Empirical Tests," in Studies in the Theory of Capital Markets, M. Jensen, ed. New York: Praeger, 1972; Eugene Fama and James MacBeth, "Risk, Return, and Equilibrium: Empirical Tests," Journal of Political Economy 81 (1973), pp. 607-36; Robert Litzenberger and Krishna Ramaswamy, "The Effect of Personal Taxes and Dividends on Capital Asset Prices: Theory and Empirical Evidence." Journal of Financial Economics 7 (1979), pp. 163-95.; Rolf Banz, "The Relationship between Return and Market Value of Common Stocks," Journal of Financial Economics (March 1981), pp. 3-18; and Eugene Fama and Kenneth French, "The Cross-Section of Expected Returns," Journal of Finance (June 1992), pp. 427-465.

Table 2

Ibbotson Estimates of CAPM Small Company Size Premia ($ millions)

Decile	Smallest Mkt. Cap.	Premia
No Adjustment, 1-2	7,187.244	-
Mid-Cap, 3 -5	1,729.364	1.02%
Low-Cap, 6 -8	587.243	1.81%
Micro-Cap, 9 – 10	1.079	3.95%

Q. WHAT CAPM RESULT WOULD MR. MURRAY HAVE OBTAINED IF HE HAD CORRECTLY RECOGNIZED THE EFFECT OF A COMPANY'S MARKET CAPITALIZATION ON THE REQUIRED CAPM RATE OF RETURN AND CORRECTLY USED THE ARITHMETIC MEAN RETURN FOR THE PERIOD 1926 - 2005?

A. As shown in Vander Weide Rebuttal Schedule JVW-2, Mr. Murray would have obtained a CAPM cost of equity for his proxy company group equal to 11.3 percent.

E. TESTS OF REASONABLENESS

Q. DOES MR. MURRAY ATTEMPT TO PROVIDE ANY TESTS OF THE REASONABLENESS OF HIS RECOMMENDED 9.5 PERCENT TO 9.6 PERCENT COST OF EQUITY RANGE?

A. Yes. Mr. Murray attempted to test the reasonableness of his recommended 9.5 percent to 9.6 percent cost of equity range by calculating two additional CAPM results based on alternative estimates of the required risk premium on the market portfolio.

Q. WHAT IS THE SOURCE FOR MR. MURRAY'S FIRST ALTERNATIVE ESTIMATE OF THE REQUIRED RISK PREMIUM ON THE MARKET PORTFOLIO?

A. Mr. Murray obtained his first alternative estimate of the required risk premium from a study by Roger Ibbotson and Peng Chen, described in Chapter 9 of Ibbotson Associates 2006 Yearbook.

Q. DID MR. MURRAY CORRECTLY CHARACTERIZE THE IBBOTSON/CHEN RESULT DESCRIBED IN THE 2006 YEARBOOK?

A. No. In the Ibbotson/Chen paper, referred to in Chapter 9 of the 2006 Yearbook, Ibbotson and Chen use a "supply-side earnings model" to estimate the market risk premium. As Ibbotson Associates states in its Yearbook:

> The equity risk premium, based on the supply side earnings model, is calculated to be 4.24 percent on a geometric basis and 6.28 percent on an arithmetic basis. [Ibbotson Associates, SBBI, p. 176.]

Since Ibbotson Associates recommends that the arithmetic mean risk premium be used to estimate the cost of equity in the CAPM, the supply side earnings model of Ibbotson/Chen implies an equity risk premium of 6.28 percent, not the 4.61 percent suggested by Mr. Murray.

Q. YOU USED AN EQUITY RISK PREMIUM OF 7.1 PERCENT IN YOUR UPDATED CAPM RESULTS DESCRIBED ABOVE. WHAT CAPM RESULT WOULD YOU HAVE OBTAINED IF YOU HAD USED AN EQUITY RISK PREMIUM OF 6.28 PERCENT?

A. Using an equity risk premium of 6.28 percent produces a CAPM cost of equity of 11.4 percent [5.5 percent + (.94 x 6.28) = 11.4 percent].

Q. WHAT CAPM RESULT WOULD MR. MURRAY HAVE OBTAINED BASED ON HIS 5.06 PERCENT RISK-FREE RATE AND HIS 0.81 BETA ESTIMATE IF HE HAD USED THE CORRECT IBBOTSON/CHEN EQUITY RISK PREMIUM OF 6.28 PERCENT?

A. If Mr. Murray had used the correct Ibbotson/Chen equity risk premium of 6.28 percent, Mr. Murray would have obtained a CAPM estimate of 10.15 percent [5.06 + (0.81 x 6.28) = 10.15]. Although this result is lower than my CAPM result because of Mr. Murray's low risk-free rate and beta estimates, I have referred to this result here to demonstrate that, under a correct interpretation of the Ibbotson/Chen supply-side model, Mr. Murray's first alternative risk premium calculation would not support his recommended 9.5 percent to 9.6 percent cost of equity range.

Q. HAVE THE BETAS FOR ANY OF MR. MURRAY'S PROXY COMPANIES CHANGED SINCE THE TIME OF HIS TESTIMONY?

A. Yes. The betas for IDACORP and Pinnacle West have increased from 0.95 to 1.0, and, as a result, the average beta for Mr. Murray's proxy companies has increased from 0.81 to 0.83.

Q. WHAT CAPM RESULT WOULD MR. MURRAY HAVE OBTAINED IF HE HAD USED AN EQUITY RISK PREMIUM OF 6.28 PERCENT AND A BETA OF 0.83?

A. Mr. Murray would have obtained a CAPM estimate of the cost of equity of 10.27 percent [5.06 + (0.83 x 6.28) = 10.27].

Q. DOES A CAPM RESULT OF 10.27 PERCENT SUPPORT MR. MURRAY'S RECOMMENDED 9.5 PERCENT TO 9.6 PERCENT COST OF EQUITY RANGE?

A. No, it does not.

Q. WHAT IS THE SOURCE FOR MR. MURRAY'S SECOND ALTERNATIVE ESTIMATE OF THE REQUIRED MARKET RISK PREMIUM?

A. Mr. Murray's second alternative estimate of the required market risk premium arises from his application of a two-stage DCF model to the S&P 500. Although the spreadsheet for this two-stage DCF model is available on a website developed by Dr. Damodaran, the inputs to the model were provided entirely by Mr. Murray.

Q. DOES MR. MURRAY REVEAL WHAT INPUTS HE USED IN HIS TWO-STAGE DCF MODEL FOR THE S&P 500 TO OBTAIN THE 2.88 PERCENT IMPLIED RISK PREMIUM HE REPORTS ON PAGE 26 OF HIS TESTIMONY?

A. No. Although Mr. Murray provided a set of inputs in his response to Data Request 0308, Mr. Murray's response indicates an implied equity risk premium of 3.69 percent, not the 2.88 percent he reports on page 26 of his direct testimony. Clearly Mr. Murray used a different set of inputs to arrive at the 2.88 percent implied equity risk premium he reports.

Q. DO YOU HAVE ANY EVIDENCE THAT MR. MURRAY'S INPUTS TO THE TWO-STAGE DCF MODEL MUST HAVE BEEN UNREALISTICALLY LOW?

A. Yes. To arrive at the 3.69 percent implied equity risk premium shown in Mr. Murray's response to Data Request 0308 requires that the S&P 500 would grow at a rate of only 4.25 percent in the long run. The current average analysts' growth forecast for the companies in the S&P 500 is approximately 11 percent, and the current growth forecast for the economy as a whole is approximately 5.5 percent. Thus, the assumptions required to arrive at a 3.69 percent implied risk premium are extremely unrealistic, and the assumptions required to arrive at an implied 2.88 percent equity risk premium would be even more unrealistic.

Q. IN HIS APPLICATION OF THE DCF MODEL TO HIS PROXY COMPANIES, MR. MURRAY USED ANALYSTS' FORECASTS TO ESTIMATE THE GROWTH COMPONENT OF HIS MODEL. WHAT IMPLIED EQUITY RISK PREMIUM WOULD MR. MURRAY HAVE OBTAINED IF HE HAD USED ANALYSTS' FORECASTS TO ESTIMATE THE GROWTH COMPONENT IN HIS APPLICATION OF THE DCF MODEL TO THE S&P 500?

A. Mr. Murray would have obtained an implied equity risk premium of approximately 8 percent.

Q. DOES MR. MURRAY PROVIDE ANY OTHER INFORMATION THAT ALLEGEDLY SUPPORTS HIS LOW COST OF EQUITY RECOMMENDATION IN THIS PROCEEDING?

A. Yes. On pages 27 – 31 of his testimony, Mr. Murray refers to two articles and a book that allegedly support his "belief that equity risk premiums are currently quite low" [Murray direct at page 27].

Q. WHEN WERE THE ARTICLES AND BOOK CITED BY MR. MURRAY WRITTEN?

A. The articles were written in December 2001 and June 2003, and the book was published in 2003. Most of the information noted in these articles and in the book was developed in the later 1990s.

Q. DOES THE INFORMATION IN THESE ARTICLES SUPPORT MR. MURRAY'S BELIEF THAT EQUITY RISK PREMIUMS ARE "*CURRENTLY*" QUITE LOW"?

A. No. As noted above, the data for the studies reported in the two articles and the book came primarily from the late 1990s. Thus, it seems entirely inappropriate to characterize the risk premiums from these studies as being "current." Furthermore, the risk premiums reported in these studies are controversial because they are based on DCF models that use unrealistically low growth forecasts.

II. REBUTTAL OF MR. KING

Q. WHAT IS MR. KING'S RECOMMENDED COST OF EQUITY FOR EMPIRE IN THIS PROCEEDING?

A. Mr. King recommends a 9.65 percent cost of equity for Empire.

Q. HOW DID MR. KING ESTIMATE EMPIRE'S COST OF EQUITY?

A. Mr. King applied the DCF and CAPM methodologies to two proxy groups of companies.

A. DCF MODEL

Q. WHAT DCF MODEL DID MR. KING USE TO ESTIMATE EMPIRE'S COST OF EQUITY?

A. Mr. King used an annual DCF model of the form $k = D_1/P_0 + g$, where k is the cost of equity, D_1 is the current annual dividend per share, P_0 is the current stock price, and g is the investors' expected growth.

Q. DO YOUR CRITICISMS OF MR. MURRAY'S USE OF AN ANNUAL DCF MODEL TO ESTIMATE EMPIRE'S COST OF EQUITY APPLY TO MR. KING'S USE OF THIS MODEL?

A. Yes, they do.

Q. HOW DOES MR. KING ESTIMATE THE GROWTH COMPONENT OF HIS DCF MODEL?

A. Mr. King uses the average of analysts' growth rates from Value Line, I/B/E/S, and Zacks to estimate the growth component in his DCF model.

Q. DO YOU AGREE WITH MR. KING'S USE OF ANALYSTS' GROWTH RATES TO ESTIMATE THE GROWTH COMPONENT OF HIS DCF MODEL?

A. Yes. For the reasons discussed in my direct testimony, analysts' growth rates provide more reliable estimates of investors' growth expectations than other methods for estimating future growth rates, such as historical growth rates.

Q. DO YOU AGREE WITH MR. KING'S VIEW THAT IT IS BETTER TO USE THREE SOURCES OF ANALYSTS' GROWTH ESTIMATES THAN A SINGLE SOURCE, SUCH AS THE I/B/E/S GROWTH ESTIMATES THAT YOU USED IN YOUR APPLICATION OF THE DCF MODEL?

A. No. The I/B/E/S growth forecasts are generally considered to be superior to the Zacks' growth forecasts because they generally include a greater number of analysts' forecasts in the average, and their properties and forecasting ability have been more widely studied in the financial literature. The I/B/E/S forecasts are also generally considered to be superior to the Value Line forecasts because the I/B/E/S forecasts are based on normalized current earnings, whereas the Value Line forecasts use a three-year period as the base, and most of that period has already passed. However, in this case, Mr. King's use of three sources of analysts' growth forecasts, since it is applied to relatively large samples of proxy companies, did not significantly affect the results of his studies.

B. PROXY COMPANIES

Q. WHAT PROXY COMPANIES DID MR. KING USE TO ESTIMATE EMPIRE'S COST OF EQUITY?

A. Mr. King uses two groups of proxy companies to estimate Empire's cost of equity, a "broad" group of proxy companies shown in his Schedule CWK-6 and a "narrow" group of proxy companies shown in Schedule CWK-5.

Q. HOW DID MR. KING SELECT THE BROAD GROUP OF PROXY COMPANIES SHOWN IN SCHEDULE CWK-6?

A. Mr. King began with the list of 34 Value Line electric utilities that I used in my direct testimony to estimate Empire's cost of equity (see Vander Weide direct testimony, Schedule JVW-1). Mr. King then eliminated eight companies: four companies because they are more heavily involved in gas distribution than electric service (NiSource, OGE, Sempra, and Vectren); one company because it is heavily involved in non-utility activities, (MDU); one company because it has a low percentage of equity in its book value capital structure, (TXU); and two companies because they no longer meet criteria that I had used to select my proxy group (Constellation and FPL).

Q. DO YOU AGREE WITH MR. KING'S DECISION TO ELIMINATE NISOURCE, OGE, SEMPRA, AND VECTREN BECAUSE THEY ARE MORE HEAVILY INVOLVED IN NATURAL GAS THAN ELECTRICITY?

A. No. Mr. King fails to recognize that one of the purposes of proxy group selection is to select companies of similar risk. Since all companies that are similar in risk have the same cost of equity, it is irrelevant whether they are in exactly the same line of business.

Q. DID YOU PRESENT ANY EVIDENCE IN YOUR DIRECT TESTIMONY THAT NATURAL GAS COMPANIES ARE SIMILAR IN RISK TO ELECTRIC COMPANIES?

A. Yes. In Schedules JVW-1 and JVW-2 of my direct testimony, I demonstrate that natural gas companies, in fact, are conservative risk proxies for electric utilities. I also discuss reasons why natural gas companies are similar in risk to electric utilities on page 32 of my direct testimony.

Q. DO YOU AGREE WITH MR. KING'S DECISION TO ELIMINATE MDU FROM YOUR PROXY GROUP BECAUSE IT IS INVOLVED IN UNREGULATED ACTIVITIES AS WELL AS GENERATION AND DISTRIBUTION OF NATURAL GAS?

A. No. Mr. King fails to recognize that the primary purpose of proxy group selection is to choose a group of companies of comparable risk. As shown in my direct testimony, MDU is a safe company, with an S&P bond rating of A- and a Value Line Safety Rank of 1. In addition, since Value Line includes MDU in its electric utility classification, it is reasonable to believe that investors consider MDU to be in the electric utility business.

Q. DO YOU AGREE WITH MR. KING'S DECISION TO ELIMINATE TXU FROM YOUR PROXY GROUP BECAUSE IT ALLEGEDLY HAS GREATER FINANCIAL RISK THAN THE OTHER COMPANIES IN THE GROUP?

A. No. Mr. King incorrectly measures financial risk using TXU's book value capital structure rather than its market value capital structure. Although TXU's percentage of book equity is currently low as a result of TXU's decision to write-off certain unregulated operations, its operating cash flows continue to be strong; and its market value capital structure actually contains a higher percentage of equity, approximately 70 percent, than most of the other companies in my proxy group. (In addition, I also note that three of the companies that Mr. King eliminated from my proxy group, MDU, Sempra, and TXU, have the highest percentages of equity in the entire sample, 79 percent, 69.7 percent, and 69.7 percent, respectively, as measured using market values).

Q. WHY DOES FINANCIAL RISK DEPEND ON A COMPANY'S MARKET VALUE CAPITAL STRUCTURE RATHER THAN ON ITS BOOK VALUE CAPITAL STRUCTURE?

A. Financial risk depends on a company's market value capital structure because financial risk reflects the variability in the market price of the company's stock, and the variability in stock prices depends on the company's market value capital structure ratio, not its book value ratio.

Q. DO YOU AGREE WITH MR. KING'S DECISION TO ELIMINATE CONSTELLATION AND FPL BECAUSE THEY NO LONGER SATISFY YOUR CRITERIA FOR INCLUSION IN A PROXY GROUP?

A. Yes. However, if Mr. King wanted to select a proxy group that currently meets my criteria for inclusion, he should have determined whether there are other companies, excluded at the time of my original study, that now meet my criteria for inclusion.

Q. WHAT COMPANIES CURRENTLY MEET YOUR CRITERIA FOR INCLUSION IN A RISK PROXY GROUP?

A. The companies that currently meet my criteria for inclusion in a risk proxy group are shown in Vander Weide Rebuttal Schedule JVW-1.

Q. WHAT DCF RESULT DO YOU OBTAIN FOR THIS PROXY GROUP USING THE LATEST AVAILABLE DATA?

A. As discussed in my rebuttal of Mr. Murray, I obtain a DCF result of 10.9 percent for this proxy group.

Q. DO YOU HAVE ANY EVIDENCE THAT THE COMPANIES THAT CURRENTLY MEET YOUR RISK PROXY CRITERIA ARE CONSERVATIVE PROXIES FOR THE RISK OF INVESTING IN EMPIRE?

A. Yes. As shown in Rebuttal Schedule JVW-1, for the updated proxy group of companies, the average S&P bond rating is BBB+ and the Value Line Safety Rank is 2. Empire has a more risky S&P bond rating of BBB- and a lower Value Line Safety Rank of 3.

Q. HOW DID MR. KING SELECT HIS NARROW GROUP OF PROXY COMPANIES?

A. Beginning with the companies in his "broad" group of electric utilities, Mr. King eliminated an additional ten companies because they had less than 75 percent of revenues from regulated electric services.

Q. DO YOU AGREE WITH MR. KING'S DECISION TO ELIMINATE AN ADDITIONAL TEN COMPANIES FROM HIS BROAD PROXY GROUP BECAUSE THEY HAVE LESS THAN 75 PERCENT REVENUES FROM REGULATED ELECTRIC SERVICE?

A. No. Again, Mr. King fails to recognize that the purpose of risk proxy selection is to identify the largest possible group of companies that, on average, are similar in risk to the target company, not to select companies that have a similar percentage of revenues from regulated electric services.

Q. DO YOU HAVE ANY EVIDENCE THAT THE AVERAGE RISK OF MR. KING'S BROAD AND NARROW PROXY GROUPS IS SIMILAR?

A. Yes. As shown in Vander Weide Rebuttal Schedule JVW-3, the average S&P bond rating for both groups is BBB+ and the average Value Line Safety Rank is 2.

Q. AS YOU NOTED ABOVE, YOUR RECOMMENDED PROXY GROUP ALSO HAS AN AVERAGE S&P BOND RATING OF BBB+ AND AN AVERAGE VALUE LINE SAFETY RANK OF 2. DOES THIS INDICATE

THAT YOUR RECOMMENDED PROXY GROUP IS SIMILAR IN RISK TO MR. KING'S TWO PROXY GROUPS?

A. Yes.

Q. WHICH PROXY GROUP DOES MR. KING RECOMMEND FOR USE IN ESTIMATING EMPIRE'S COST OF EQUITY?

A. Mr. King recommends use of his smaller proxy group for the purpose of estimating Empire's cost of equity.

Q. GIVEN THAT YOUR PROXY GROUP AND MR. KING'S SMALLER PROXY GROUP ARE SIMILAR IN RISK, IS THERE ANY REASON WHY THE COMMISSION SHOULD RELY ON THE RESULTS OF STUDIES BASED ON YOUR LARGER PROXY GROUP RATHER THAN ON THE RESULTS OF STUDIES BASED ON MR. KING'S SMALLER PROXY GROUP?

A. Yes. As I discuss in my direct testimony, the cost of equity for a single company or even a small group of companies can only be estimated with uncertainty. However, the uncertainty in the cost of equity results for a small group of companies can be reduced by estimating the cost of equity for the largest possible group of risk proxy companies. Thus, the results of my application of the DCF model to a group of 34 companies in my direct testimony and to a group of 31 companies in my rebuttal testimony are more reliable than Mr. King's application of the DCF to a group of 16 companies.

Q. DOES MR. KING MAKE ANY ADJUSTMENT TO HIS COST OF EQUITY RESULTS TO ACCOUNT FOR EMPIRE'S HIGHER RISK COMPARED TO THE RISK OF HIS PROXY GROUP?

A. No.

C. CAPM

Q. HOW DID MR. KING APPLY THE CAPM TO ESTIMATE EMPIRE'S COST OF EQUITY?

A. As noted above, the CAPM requires estimates of the risk-free rate, the company-specific risk factor or beta, and the risk premium on the market portfolio. Mr. King used the average yield on long-term Treasury bonds as his estimate of the risk-free rate (5.17 percent as of June 2, 2006); the average of Thomson Financial, Value Line, and Zacks' betas for each of his proxy companies as his estimate of company-specific risk (0.66); and for the market risk premium, Mr. King used the difference between the market-expected return as determined by a DCF model and the current yield on long-term Treasury bonds (7.1 percent).

Q. DO YOU AGREE WITH MR. KING'S ESTIMATE OF THE RISK-FREE RATE COMPONENT OF THE CAPM?

A. No. Although I agree with Mr. King's use of the yield to maturity on long-term Treasury bonds, this yield has increased to 5.3 percent as of mid-July; and the forecasted yield to maturity on long-term Treasury bonds is approximately 5.5 percent.

Q. DO YOU AGREE WITH MR. KING'S ESTIMATE OF THE BETA COMPONENT OF THE CAPM?

A. No. I strongly disagree with Mr. King's use of the Thomson Financial and Zacks' betas. These betas are significantly lower than the Value Line betas because these betas are not adjusted for the well-recognized tendency of betas to move in the direction of the overall market beta of 1.0. Furthermore, as discussed in my direct testimony and above in my rebuttal of Mr. Murray, Mr. King fails to recognize the considerable evidence that the CAPM underestimates the cost of equity for companies with betas less than 1.0 and for companies such as Empire whose market capitalization is small.

Q. WHAT CAPM RESULT WOULD MR. KING HAVE OBTAINED IF HE HAD APPLIED THE CAPM CORRECTLY TO AN APPROPRIATE PROXY GROUP OF COMPANIES?

A. As discussed in my rebuttal of Mr. Murray, Mr. King would have obtained a CAPM cost of equity of 12.2 percent [5.5 Treasury bond yield + (0.94 proxy company beta x 7.1 market risk premium) = 12.2 cost of equity].

Q. ON PAGE 19 OF HIS TESTIMONY, MR. KING STATES THAT THE FCC HAS DETERMINED THAT "THE CLASSIC FORMULATION OF THE DCF MODEL IS THE MOST RELIABLE BASIS FOR ESTIMATING RETURNS TO EQUITY." DO YOU AGREE WITH MR. KING'S ASSERTION?

A. No. Mr. King's assertion is based on an FCC decision in CC Docket 84-800, Phase II, that was decided in 1986. In a more recent case heard before the FCC's Wireline Competition Bureau, the bureau relied on the CAPM to estimate the cost of equity.

D. RISK PREMIUM APPROACH

Q. WHAT IS THE RISK PREMIUM APPROACH TO ESTIMATING THE COST OF EQUITY?

A. The risk premium approach is based on the principle that investors expect to earn a return on an equity investment that reflects a premium over the return they expect to earn on an investment in a bond. Thus, the cost of equity can be estimated by adding an appropriate risk premium to the observed interest rate on bonds.

Q. DID YOU APPLY THE RISK PREMIUM APPROACH TO ESTIMATE EMPIRE'S COST OF EQUITY IN THIS PROCEEDING?

A. Yes. I applied both an ex ante, or forward-looking, and an ex post, or historical, risk premium approach to estimate Empire's cost of equity.

Q. PLEASE DESCRIBE YOUR EX ANTE RISK PREMIUM APPROACH TO ESTIMATING EMPIRE'S COST OF EQUITY.

A. My ex ante risk premium approach is based on studies of the DCF expected return on proxy groups of electric and natural gas companies compared to the interest rate on Moody's A-rated utility bonds for each month in my study period. I then performed a regression analysis to determine if there were a relationship between the calculated risk

premium and interest rates. I added the required risk premium determined from the regression relationship to the forecasted interest rates on A-rated utility bonds to estimate Empire's cost of equity, obtaining an ex ante risk premium cost of equity estimate of 11.1 percent.

Q. PLEASE DESCRIBE YOUR EX POST RISK PREMIUM APPROACH TO ESTIMATING EMPIRE'S COST OF EQUITY.

A. My ex post risk premium approach is based on the historical returns received by stock and bond investors over the 67 years of my study. I obtained an expected return on equity of 11.7 percent.

Q. WOULD THE RESULTS OF YOUR EX ANTE AND EX POST RISK PREMIUM APPROACHES BE APPROXIMATELY THE SAME IF YOU WERE TO APPLY THEM TODAY?

A. Yes. I have recently updated my ex ante and ex post risk premium studies and have determined that they produce cost of equity estimates of 11.0 percent and 11.4 percent, respectively.

Q. DOES MR. KING HAVE ANY CRITICISMS OF YOUR EX ANTE RISK PREMIUM APPROACH?

A. Yes. On page 25 of his testimony, Mr. King states:

> It is somewhat ironic that Dr. Vander Weide bases this analysis on a study of monthly DCF returns to electric utilities and then uses the results to denigrate his own DCF analysis. If the DCF approach is appropriate for this risk premium analysis, then it should be accepted as a valid test in its own right.

Q. DO YOU AGREE WITH MR. KING'S CRITICISM OF YOUR EX ANTE RISK PREMIUM APPROACH?

A. No. As discussed on pages 30 – 31 of my direct testimony, I believe that the current DCF result for electric utilities should not be given equal weight to the cost of equity determined by other methodologies because: (1) the DCF results for electric companies have displayed considerable volatility over the last several years; and (2) the DCF results for electric companies deviate significantly from the cost of equity results obtained from other widely-used cost of equity methodologies. The purpose of the ex ante risk premium study is to smooth out the unreasonable fluctuations in DCF results by examining both DCF results over a longer period of time and the relationship between DCF results and interest rates. Thus, the ex ante risk premium approach is an additional test of the cost of equity because it provides important information that is not available in simple, point-in-time DCF results for electric utilities.

Q. DOES MR. KING HAVE ANY CRITICISMS OF YOUR EX POST RISK PREMIUM APPROACH TO ESTIMATING EMPIRE'S COST OF EQUITY?

A. Yes. On pages 26 – 27 of his testimony, Mr. King makes three criticisms of my ex post risk premium approach. First, he argues that high variation in the year-by-year ex post risk premiums invalidates use of the mean as a predictor of the forward-looking risk premium. Second, he contends that realized rates of return are not the same as expected rates of return.

For example, in 2002, investors in electric utility stocks did not, in his opinion, expect to receive a return of negative 20.05 percent. Third, Mr. King argues that the ex post risk premium approach incorrectly assumes that risk premiums do not change over time.

Q. DO YOU AGREE WITH MR. KING'S CRITICISM THAT THE MEAN EX POST RISK PREMIUM IS A POOR PREDICTOR OF FUTURE RISK PREMIUMS BECAUSE INDIVIDUAL EX POST RETURNS DISPLAY HIGH VARIABILITY OVER TIME?

A. No. The advantage of using ex post returns is that they are directly observable evidence of the returns on stocks and bonds that investors have experienced in the marketplace. Although there is high variability in year-to-year historical returns, the average variability is significantly reduced by using the longest period of time for which reliable data are available. In addition, although the mean return may be a poor predictor of next year's actual return on stocks or bonds, the difference between the mean historical return on stocks and bonds is likely to be a reasonably good predictor of the long-run expected risk premium on stock investments over bond investments. If investors did not find that historical return data provided useful information on future risk premiums, Ibbotson Associates would not have a business.

Q. DO YOU AGREE WITH THE CRITICISM THAT REALIZED RATES OF RETURN DO NOT EQUATE TO EXPECTED RATES OF RETURN?

A. I agree that because rates of return are uncertain, the realized rate of return in any year is not necessarily equal to the rate of return that was expected at the beginning of the year. However, this simple observation does not invalidate the use of the average realized rate of return over a long period of time as a predictor of the expected rate of return in the future. Just because a batter with a batting average of .300 makes an out in a particular at bat does not mean that it is unreasonable to expect the batter will hit safely 30 percent of the time in the future.

Q. DO YOU AGREE WITH MR. KING'S CRITICISM THAT YOUR EX POST RISK PREMIUM APPROACH FAILS TO REFLECT FLUCTUATIONS IN RISK PREMIUMS OVER TIME?

A. No. Although my ex post risk premium approach does not consider cyclical fluctuations in risk premiums caused by changes in interest rates, it does consider the potential for long-term or secular changes in risk premiums. In fact, I provided evidence in my direct testimony on pages 41 – 42 that there is no long-term trend in risk premiums over time. Since the cost of equity is a long-run phenomenon, the fact that my ex post risk premium does not consider cyclical fluctuations is not disturbing. In addition, any fluctuations in risk premiums that may result from changes in interest rates is fully reflected in my ex ante risk premium results.

Q. ARE THERE ARE ANY OTHER ISSUES THAT YOU WOULD LIKE TO ADDRESS IN YOUR REBUTTAL TESTIMONY?

A. Yes. Staff has brought to my attention that in Table 7 of my direct testimony, I failed to recognize that the cost rate on Empire's preferred stock is tax deductible. If I had adjusted the cost rate for Empire's preferred stock to recognize its tax deductibility, my indicated cost of equity would have been 12.06 percent rather than 11.65 percent.

Q. DOES THIS CONCLUDE YOUR REBUTTAL TESTIMONY?

A. Yes, it does.

EMPIRE DISTRICT ELECTRIC COMPANY
REBUTTAL SCHEDULE JVW-1
UPDATED SUMMARY OF DISCOUNTED CASH FLOW ANALYSIS
FOR ELECTRIC ENERGY COMPANIES

Line No.	Company	d4	P_0	Growth	Cost of Equity
1	Amer. Elec. Power	0.370	33.782	2.93%	7.5%
2	Ameren Corp.	0.635	49.882	5.00%	10.6%
3	Consol. Edison	0.575	43.200	3.51%	9.2%
4	Dominion Resources	0.690	73.037	11.50%	15.9%
5	DTE Energy	0.515	40.345	4.33%	9.8%
6	Duke Energy	0.310	28.672	5.73%	10.3%
7	Edison Int'l	0.270	39.753	6.07%	8.9%
8	Empire Dist. Elec.	0.320	21.988	3.00%	9.2%
9	Energy East Corp.	0.290	23.818	4.33%	9.4%
10	Entergy Corp.	0.540	69.705	9.00%	12.5%
11	FirstEnergy Corp.	0.450	51.608	4.60%	8.2%
12	G't Plains Energy	0.415	28.150	2.50%	8.7%
13	Hawaiian Elec.	0.310	26.828	3.38%	8.3%
14	IDACORP Inc.	0.300	33.583	4.67%	8.5%
15	MDU Resources	0.190	35.468	7.82%	10.2%
16	NiSource Inc.	0.230	21.213	3.33%	7.9%
17	Northeast Utilities	0.175	20.015	7.75%	11.7%
18	NSTAR	0.303	27.693	5.00%	9.7%
19	Otter Tail Corp.	0.288	27.965	4.75%	9.1%
20	Pepco Holdings	0.260	22.885	5.20%	10.1%
21	Pinnacle West Capital	0.500	39.670	7.20%	12.8%
22	PNM Resources	0.220	25.205	11.93%	15.8%
23	PPL Corp.	0.275	29.953	9.56%	13.4%
24	Progress Energy	0.605	42.540	3.26%	9.3%
25	SCANA Corp.	0.420	38.508	4.60%	9.1%
26	Sempra Energy	0.300	45.188	5.88%	8.7%
27	Southern Co.	0.388	32.000	4.75%	9.9%
28	TXU Corp.	0.413	53.207	12.00%	15.1%
29	Vectren Corp.	0.305	26.513	4.98%	9.9%
30	Wisconsin Energy	0.230	39.570	7.64%	10.2%
31	Xcel Energy Inc.	0.215	18.727	5.00%	10.0%
32	Market Weighted Average				10.9%

Notes:

d_0	=	Most recent quarterly dividend.
d_1,d_2,d_3,d_4	=	Next four quarterly dividends, calculated by multiplying the last four quarterly dividends per Value Line by the factor (1 + g).
P_0	=	Average of the monthly high and low stock prices during the three months ending June per Thomson Financial.
g	=	I/B/E/S forecast of future earnings growth June 2005.
k	=	Cost of equity using the quarterly version of the DCF model.

$$k = \frac{d_1(1+k)^{.75} + d_2(1+k)^{.50} + d_3(1+k)^{.25} + d_4}{P_0} + g$$

EMPIRE DISTRICT ELECTRIC COMPANY
REBUTTAL SCHEDULE JVW-1 (CONTINUED)
RISK RATINGS
OF PROXY ELECTRIC ENERGY COMPANIES

Line No.	Company	S&P BOND RATING May 2006	S&P BOND RATING May 2006 (Numerical)	Value Line Safety Rank	Value Line Beta
1	Amer. Elec. Power	BBB	8	3	1.25
2	Ameren Corp.	BBB+	7	1	0.75
3	Consol. Edison	A	5	1	0.70
4	Dominion Resources	BBB	8	2	0.95
5	DTE Energy	BBB	8	3	0.75
6	Duke Energy	BBB	8	2	1.20
7	Edison Int'l	BBB	8	3	1.10
8	Empire Dist. Elec.	BBB-	9	3	0.80
9	Energy East Corp.	BBB+	7	2	0.90
10	Entergy Corp.	BBB	8	2	0.85
11	FirstEnergy Corp.	BBB	8	2	0.80
12	G't Plains Energy	BBB	8	2	0.95
13	Hawaiian Elec.	BBB	8	2	0.70
14	IDACORP Inc.	BBB+	7	3	1.00
15	MDU Resources	BBB+	7	1	1.00
16	NiSource Inc.	BBB	8	3	0.90
17	Northeast Utilities	BBB	8	3	0.85
18	NSTAR	A+	4	1	0.80
19	Otter Tail Corp.	BBB+	7	2	0.65
20	Pepco Holdings	BBB+	7	3	0.90
21	Pinnacle West Capital	BBB-	9	1	1.00
22	PNM Resources	BBB	8	2	1.00
23	PPL Corp.	BBB	8	2	1.05
24	Progress Energy	BBB	8	2	0.85
25	SCANA Corp.	A-	6	2	0.80
26	Sempra Energy	BBB+	7	2	1.05
27	Southern Co.	A	5	1	0.65
28	TXU Corp.	BBB-	9	3	1.10
29	Vectren Corp.	A-	6	2	0.85
30	Wisconsin Energy	BBB+	7	2	0.80
31	Xcel Energy Inc.	BBB	8	2	0.90
32	Market Weighted Average	BBB+	7.5	2.1	0.95

Data from Standard & Poor's, Utility and Power Ranking List, May 19, 2006; and the Value Line Investment Analyzer, June 2006.

EMPIRE DISTRICT ELECTRIC COMPANY
REBUTTAL SCHEDULE JVW-2
MR. MURRAY'S PROXY COMPANIES' CAPM RESULTS
ADJUSTED FOR SMALL COMPANY SIZE EFFECT

Mr. Murray's Proxy Company	Mr. Murray's Arithmetic Mean Base Result 1926 - 2005	Market Cap ($mils)	Size premium	CAPM Cost of Equity- Arithmetic 1926 - 2005
Hawaiian Elec.	9.61%	2,246.24	1.02%	10.6%
IDACORP Inc.	11.24%	1,466.09	1.81%	13.0%
Pinnacle West Capital	11.24%	3,999.62	1.02%	12.3%
Puget Energy	10.26%	2,149.99	1.02%	11.3%
Southern Co.	9.29%	24,324.33	0.00%	9.3%
Average	10.33%			11.3%
Empire	9.94%	563.02	3.95%	13.9%

See Mr. Murray's Schedule 17-1, Column (6)

IBBOTSON ESTIMATES OF CAPM SMALL COMPANY SIZE PREMIA
SOURCE: 2006 YEARBOOK VALUATION EDITION

Decile	Smallest Mkt. Cap. ($ millions)	Premia
No Adjustment, 1-2	7,187.244	-
Mid-Cap, 3 -5	1,729.364	1.02%
Low-Cap, 6 -8	587.243	1.81%
Micro-Cap, 9 – 10	1.079	3.95%

EMPIRE DISTRICT ELECTRIC COMPANY
REBUTTAL SCHEDULE JVW-3
RISK RATINGS
FOR MR. KING'S PROXY ELECTRIC ENERGY COMPANIES

"Broad" Company Group	Safety Rank	S&P BOND RATING May 2006	S&P BOND RATING May 2006 (Numerical)
Alliant Energy	3	BBB+	7
Amer. Elec. Power	3	BBB	8
Ameren Corp.	1	BBB+	7
Consol. Edison	1	A	5
Dominion Resources	2	BBB	8
DTE Energy	3	BBB	8
Edison Int'l	3	BBB	8
Energy East Corp.	2	BBB+	7
Entergy Corp.	2	BBB	8
FirstEnergy Corp.	2	BBB	8
G't Plains Energy	2	BBB	8
Hawaiian Elec.	2	BBB	8
IDACORP Inc.	3	BBB+	7
Northeast Utilities	3	BBB	8
NSTAR	1	A+	4
Otter Tail Corp.	2	BBB+	7
Pepco Holdings	3	BBB+	7
Pinnacle West Capital	1	BBB-	9
PNM Resources	2	BBB	8
PPL Corp.	2	BBB	8
Progress Energy	2	BBB	8
Puget Energy	3	BBB-	9
SCANA Corp.	2	A-	6
Southern Co.	1	A	5
Wisconsin Energy	2	BBB+	7
Xcel Energy Inc.	2	BBB	8
Average	2.1	BBB+	7.3

"Narrow" Company Group	Safety Rank	S&P BOND RATING May 2006	S&P BOND RATING May 2006 (Numerical)
Alliant Energy	3	BBB+	7
Amer. Elec. Power	3	BBB	8
Ameren Corp.	1	BBB+	7
Consol. Edison	1	A	5
Edison Int'l	3	BBB	8
Entergy Corp.	2	BBB	8
FirstEnergy Corp.	2	BBB	8
Hawaiian Elec.	2	BBB	8
IDACORP Inc.	3	BBB+	7
Pinnacle West Capital	1	BBB-	9
PNM Resources	2	BBB	8
Progress Energy	2	BBB	8
Puget Energy	3	BBB-	9
Southern Co.	1	A	5
Wisconsin Energy	2	BBB+	7
Xcel Energy Inc.	2	BBB	8
Average	2.1	BBB+	7.5