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BEFORE THE PUBLIC SERVICE COMMISSION

OF THE STATE OF MISSOURI

REBUTTAL TESTIMONY

OF

JAMES H. VANDER WEIDE, Ph.D.

November 2004

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-2004-0570

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?

A. Yes, I am.

Q. What is the purpose of your rebuttal testimony?

A. I have been asked by Empire District Electric Company ("Empire" or "the Company") to review the pre-filed direct testimonies of Mr. David Murray and Mr. Travis Allen and to evaluate their recommended costs of equity. Mr. Murray's testimony is presented on behalf of the Staff of the Missouri Public Service Commission ("Staff"), and Mr. Allen's testimony is presented on behalf of the Office of the Public Counsel of the State of Missouri ("OPC").

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 8.29% to 9.29%.

Q. How did Mr. Murray estimate Empire's cost of equity?

A. Mr. Murray applied the Discounted Cash Flow ("DCF") model, the Capital Asset Pricing Model ("CAPM"), and his version of the Risk Premium model to both Empire and a small group of risk proxy companies.

A. 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 next 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 is the basic assumption of Mr. Murray's annual DCF model?

A. Mr. Murray's annual DCF model is based on the fundamental assumption that Empire and his proxy companies pay dividends annually, with the first dividend being paid one year from the date of analysis.

Q. 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. Do you agree with Mr. Murray's use of the annual DCF model to estimate Empire's cost of equity?

A. No. The DCF model is based on the assumption that a company's stock price is equal to the present value of the future cash flows investors expect to receive from their investment in the company. When dividends are paid quarterly, the quarterly DCF model is the only model that can be derived from the basic assumption that a company's stock price is equal to the present value of expected future cash flows received by investors. 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. Recognizing your disagreement with Mr. Murray's use of an annual DCF model, did Mr. Murray apply the annual DCF model correctly?

A. No. The annual DCF model is based on the assumptions that: (1) dividends grow at a constant rate; (2) dividends are paid annually; and (3) the first dividend is received one year from the date of the analysis. Thus, the correct dividend in the annual DCF model is the current annual dividend multiplied by the factor (1 + growth rate). However, rather than multiplying each company's current annual dividend by the factor (1 + growth rate), Mr. Murray incorrectly used the average of the expected dividend in 2004 and 2005 as his estimate of the expected next period dividend in his DCF model. Since his proxy companies' dividends are expected to grow at a lower rate over the next year than in the long run, his application of the annual DCF model produces results that are biased downwards. I have determined that this downward bias is equal to approximately 17 basis points.

Q. How did Mr. Murray estimate the price component of his DCF model?

A. Mr. Murray used the average of the monthly high and low stock prices over the six-month period, February through July 2004 as his estimate of the price component in his annual DCF model.

Q. Were Empire's stock prices and dividend yields relatively constant over the six-month period February through July 2004?

A. No. As shown in Mr. Murray's Schedule 13, Empire's stock price declined from an average of $22.39 in the three-month period February through April to an average of $20.13 in the three-month period May through July. The corresponding dividend yield increased from 5.72% to 6.36%, an increase of 64 basis points.

Q. Do you agree with Mr. Murray's use of stock prices for the six-month period February through July 2004 to estimate Empire's cost of equity?

A. No. Although it is common to average stock prices over a short period prior to the analysis in order to smooth out daily price fluctuations, it is important in applications of the DCF model that stock prices be matched with growth rates for the same point in time. Mr. Murray's use of growth rate information from the July 2, 2004, edition of Value Line, in combination with stock prices for the previous six months, involves a mismatch of data sets. Mr. Murray's mismatch of data sets is especially relevant in this case because Mr. Murray based his recommended cost

of equity entirely on his DCF results for Empire; and, as I have demonstrated, Empire's dividend yield increased by 64 basis points from February to July.

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.

Q. Do you agree with Mr. Murray's partial use 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.

Q. What growth rate should Mr. Murray have used in his application of the DCF model?

A. As described in my direct testimony, in applying the DCF model, I normally recommend use of the average analysts' forecast of the company's earnings per share growth as reported by I/B/E/S. The analysts' growth forecasts are most meaningful when the company is followed by three or more analysts. I therefore generally restrict my sample of companies to those companies that are followed by at least three analysts. When, as in the case of Empire, the I/B/E/S forecast is based on the views of fewer than three analysts, I recommend either that the company not be included in the proxy group at all, or that the I/B/E/S forecast be combined with other available earnings growth forecasts such as those provided by Value Line.

Q. What analysts' growth rates did Mr. Murray report for Empire?

A. Mr. Murray reports an average analysts' growth rate of 4%, based on an estimate of 2.5% from I/B/E/S, 3% from Standard & Poor's, and 6.5% from Value Line (see Mr. Murray's testimony at p. 29).

Q. What DCF result would Mr. Murray have obtained for Empire if he had applied the DCF model correctly and used a growth rate of 4% in his model?

A. If Mr. Murray had correctly used a quarterly DCF model and 3-month average prices for the period May through July 2004, he would have obtained a DCF estimate of Empire's cost of equity equal to 10.9%.

Q. The 10.9% result you report is based on a 4% growth rate. Is 4% a reasonable growth estimate for Empire?

A. The 4% growth estimate is likely somewhat low. Although Mr. Murray reports three sources of growth forecasts, his growth forecast from Value Line represents Value Line's expectations for growth from the period 2001 – 2003 to the period 2007 – 2009. From Value Line data it is also possible to derive a Value Line growth rate for the period 2004 – 2008. If Mr. Murray had derived his Value Line forecast from data for the period 2004 – 2008, he would have obtained a higher average forecasted growth and a correspondingly higher DCF result.

B. 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 following criteria: (1) availability of ten years of historical data on dividends per share, book value per share, and earnings per share; (2) greater than 70% revenue from electric utility operations; (3) market capitalization of less than $5 billion; (4) no nuclear operations; (5) not subject of an acquisition; and (6) availability of projected data from Value Line, I/B/E/S, and Standard & Poor's.

Q. Did Mr. Murray explain why he chose these criteria to select his proxy companies?

A. No, he did not.

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.

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, involve estimates of quantities such as growth rates, betas, and expected risk premiums that can only be measured imprecisely. Fortunately, 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.

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 proxy selection criteria eliminated a large number of utilities that most investors would consider to be of comparable risk to

Empire. For example, Mr. Murray's requirement that each proxy company must have at least 70% of revenues from electric operations eliminates all combination electric and natural gas utilities, even though these utilities are widely considered to be comparable in risk to Empire. Indeed it is reasonable to 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 combined energy companies to diversify their risks. Since many of companies in Value Line's group of electric utilities operate in both the electric and natural gas segments of the energy markets, Mr. Murray's 70% criteria ruled out many comparable risk companies that should have been included in Mr. Murray's risk proxy group.

Q. Do Mr. Murray's selection criteria eliminate any other companies that are comparable in risk to Empire?

A. Yes. Mr. Murray's selection criteria eliminated all companies with nuclear operations, even though the investment community does not consider nuclear operations to be a significant risk factor in the current investment environment. Indeed, since nuclear operations generally produce electricity at a lower incremental cost than coal or natural gas

operations, companies with nuclear operations may be conservative proxies for the risks of investing in Empire.

Q. What proxy selection 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 five years; (2) did not decrease dividends during any quarter of the past five years; (3) had at least three analysts included in the I/B/E/S average growth forecast; and (4) have not announced a merger. In addition, each of the companies included in my proxy group has a Value Line Safety Rank of 1, 2, or 3.

Q. Do you have any evidence that your proxy groups are comparable in risk to Empire?

A. Yes. On page 31 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+, with a business profile of 5, while Empire has an S&P bond rating of BBB with a business profile of 5. In addition, my proxy group of LDCs have an average Value Line Safety Rank of 2 and an S&P bond rating of A, with a business risk profile of 4 (see page 34 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. What average DCF result did you obtain for your proxy groups of electric and natural gas companies?

A. I obtained an average DCF result of 9.9% for my proxy groups of electric and gas companies.

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 11.3 percent. I reiterate the results of my DCF studies here to demonstrate the downward bias in Mr. Murray's DCF-based estimate of Empire's cost of equity.

C. 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 5.06%, the yield to

maturity on 30-year Treasury bonds in August 2004.[1] As his estimate of the company-specific risk factor or beta, Mr. Murray used Value Line's estimated betas for Empire (0.65) and his proxy companies (0.75). As his estimate of the risk premium on the market portfolio, Mr. Murray used both the average geometric mean risk premium on the S&P 500 compared to the yield on long-term Treasury bonds for the period 1926 – 2003 (6.60%), and the geometric mean risk premium on the S&P 500 compared to long-term Treasury bonds for the period 1994 – 2003 (3.05%). Mr. Murray obtained his risk premium data from Ibbotson Associates.

Q. Do you agree with Mr. Murray's choice of inputs in his application of the CAPM?

A. No. I disagree primarily with Mr. Murray's estimate of the market risk premium.

Q. Why do you disagree with Mr. Murray's estimate of the market risk premium?

A. I disagree with Mr. Murray's estimate of the market risk premium for at least two reasons. First, I disagree with his use of the geometric mean historical return rather than the arithmetic mean historical return because a cost of capital based on the arithmetic mean return is the only cost of

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[1] Mr. Murray lists Yahoo Finance as his source for the 5.06% average yield. However, according to the Federal Reserve statistical release, the average yield on 30-year Treasury bonds in August 2004 was 5.42%. See http://www.federalreserve.gov/Releases/H15/.

capital that will discount the investors' expected future wealth to the current price of the stock (see Ibbotson Associates *2004 Yearbook, Valuation Edition*, pp. 71 – 74). 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.

Second, I disagree with Mr. Murray's use of a realized risk premium for the extremely short period 1994 to 2003. When using realized risk premiums to estimate future risk premiums, it is best to use the longest time frame for which reasonable data are available because using the longer period results will average out unexpected short-run variations in the market that occur over short time periods. Use of a longer time frame is especially relevant when there is no trend in risk premium data, as is the case for the period 1926 to the present.

Q. What is the arithmetic mean risk premium for the period 1926 through 2003?

A. The arithmetic mean risk premium for the period 1926 through 2003, reported in the 2004 Ibbotson Associates yearbook, is 7.2%.

Q. What CAPM result would Mr. Murray have obtained for his proxy companies if he had correctly used the 7.2% arithmetic mean risk premium for the period 1926 through 2003 in his CAPM calculations?

A. Mr. Murray would have obtained a CAPM result of 10.5% [5.06 + (.75 x 7.2) = 10.5].

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.[2]

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. Chapter 7 of the Ibbotson 2004 Yearbook, Valuation Edition, 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 addition, Ibbotson provides estimates of the risk premium required to be added to the basic CAPM cost of equity, shown below in Table 1.

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[2] 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 1

Ibbotson Estimates of CAPM Small Company Size Premia

Decile	Smallest Mkt. Cap.	Premia
No Adjustment, 1-2	4,794,027	-
Mid-Cap, 3 -5	1,167,040	0.91%
Low-Cap, 6 -8	330,797	1.70%
Micro-Cap, 9 - 10	0.332	4.01%

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?

A. As shown in Vander Weide Rebuttal Schedule 2, Mr. Murray would have obtained a CAPM cost of equity for Empire equal to 11.4% and an average CAPM cost of equity for his proxy company group equal to 11.3%.

D. Risk Premium Method

Q. What is the risk premium method of estimating the cost of equity?

A. The risk premium method estimates the cost of equity by adding an estimated risk premium to a base interest rate.

Q. What base interest rate did Mr. Murray use in his risk premium approach?

A. Mr. Murray used the yield to maturity on 30-year Treasury bonds as the base interest rate in his risk premium approach.

Q. How did Mr. Murray estimate the required risk premium on an investment in Empire compared to the yield to maturity on 30-year Treasury bonds?

A. Mr. Murray calculated the difference between Value Line's estimate of Empire's return on equity and the yield on 30-year Treasury bonds over the period January 1994 through August 2004. From these data, he estimates that the required risk premium on an investment in Empire compared to an investment in 30-year Treasury bonds is 4.17%.

Q. Do you agree with Mr. Murray's method of estimating the risk premium on an investment in Empire compared to an investment in 30-year Treasury bonds?

A. No. Mr. Murray fails to recognize that the risk premium method requires an estimate of the expected market return on a company's stock, not the accounting rate of return on the book value of the company's equity. Since accounting rates of return are frequently poor indicators of future required returns in the market place, Mr. Murray's risk premium method provides no useful information on Empire's cost of equity.

Q. Are there other ways to estimate the required risk premium on investments in utility stocks such as Empire compared to investments in bonds?

A. Yes. In my direct testimony, I provided two different estimates of the required risk premium on utility stocks compared to investments in A-rated utility bonds. From my ex ante risk premium approach, I found that the required risk premium on utility stocks was in the range 4.7% to 5%, and from my ex post risk premium approach, I found that the risk

premium was in the range 4.6% to 5.2%. The costs of equity indicated by these studies were 11.0% and 11.2%, respectively.

Q. Do the corrected DCF and CAPM results for Mr. Murray's proxy companies and Empire support your recommended 11.3% cost of equity for Empire in this proceeding?

A. Yes. I have demonstrated that a correct application of the DCF approach to Empire produces a cost of equity equal to 10.9%, and that a correct application of the CAPM to Empire and Mr. Murray's proxy companies produces cost of equity estimates in the range 11.3% to 11.4%, with a specific CAPM result for Empire equal to 11.4%. These results are certainly consistent with my recommended 11.3% cost of equity for Empire.

II. Rebuttal of Mr. Allen

Q. What is Mr. Allen's recommended cost of equity for Empire in this proceeding?

A. Mr. Allen recommends cost of equity for Empire in the range 8.96% to 9.41%.

Q. How did Mr. Allen estimate Empire's cost of equity?

A. Mr. Allen applied the DCF and CAPM methodologies to both Empire and his proxy group of companies.

A. DCF Model

Q. What DCF model did Mr. Allen use to estimate Empire's cost of equity?

A. Mr. Allen used an annual DCF model of the form $k = D_0 (1 + .5g)/P_0 + g$, where k is the cost of equity, D_0 is the current annual dividend per share, P_0 is the current stock price, and *g* is the investors' expected growth.

Q. Do you agree with Mr. Allen's use of an annual DCF model to estimate Empire's cost of equity?

A. No. As explained in my rebuttal of Mr. Murray, the annual DCF model underestimates the cost of equity for companies that pay dividends quarterly because investors expect to earn a higher rate of return when the firm pays the dividend quarterly.

Q. Mr. Allen's DCF formula increases the company's current dividend to account for ½ year of growth. Does increasing the annual dividend for ½ year of growth properly account for the quarterly payment of dividends?

A. No. Increasing the dividend for ½ year of growth only allows Mr. Allen to approximate the average annual dividend that will be paid over the next year. His method of increasing the dividend in the context of an annual model does not account for the timing of the quarterly dividend payments or the time value of money associated with the quarterly payment of dividends. Thus, the present value of the future quarterly dividends does not equal the company's current stock price, as the DCF method requires.

Q. How does Mr. Allen estimate the growth component of his DCF model?

A. Mr. Allen reviewed four methods of estimating growth, including the "br + sv" method, historical growth rates in dividends per share, book value per share, and earnings per share, Value Line projections of dividends per share and book value per share, and the average of Value Line and Thomson Financial projected earnings per share. Although he reviewed numerous sources of growth information, Mr. Allen generally relied on "br + sv" growth as his growth input for his DCF model.

Q. What is the "br + sv" method of estimating future growth in the DCF model?

A. The "br + sv" method estimates future growth by examining growth in two components, internal growth and external growth. According to the "br + sv" method, internal growth arises through retention of earnings and the rate of return that is earned on the retained earnings. Thus, internal growth is measured by the product of the company's retention rate, "b," and the company's expected rate of return on equity, "r." External growth arises when the company issues new stock at prices in excess of book value. Thus, external growth is the product of "v," and "s," where "v" is the fraction of new common stock sold that accrues to the current shareholder and "s" is the funds raised from the sale of stock as a fraction of existing equity.

Q. Is the "br + sv" method of estimating future growth widely used in the investment community?

A. Yes. The "br + sv" method is widely used in the investment community when analyzing non-utility companies. In fact, the "br + sv" method generally provides approximately the same growth estimate as the I/B/E/S estimate. However, it is less frequently applied to utilities because of the problems that arise when it is applied to rate-regulated companies.

Q. What are the problems of applying the "br + sv" method of estimating growth to rate-regulated public utilities?

A. The main problem is that the "br + sv" method is circular. As noted above, the expected rate of return on equity is one of the key inputs in calculating internal growth. Yet the growth rate that is being calculated using the "br + sv" method will be used to estimate the cost of equity for a rate-regulated company, which, in turn, determines the company's allowed rate of return on equity. Since the company is generally expected to earn its allowed rate of return on equity, the "br + sv" method requires knowledge of the allowed rate of return before the allowed rate of return can be calculated, a logical impossibility.

Q. Do you agree with Mr. Allen's use of historical growth rates to estimate future growth in the DCF model?

A. No. As discussed in my rebuttal of Mr. Murray's direct testimony, analysts' growth rates are superior to historical growth rates because analysts can incorporate both information from historical growth rates and information on the company's current circumstances and likely future

condition to form a basis for future expected growth. My research indicates that the correlation of analysts' growth rates with stock prices is higher than that of historical growth rates with stock prices, indicating that investors use analysts' growth rates to make stock buy and sell decisions.

Q. What DCF result would Mr. Allen have obtained for Empire if he had applied the DCF model correctly?

A. As noted in my rebuttal of Mr. Murray, a correct application of the DCF model to Empire produces a DCF result of at least 10.9% (see Vander Weide Rebuttal Schedule 1).

B. Proxy Companies

Q. Did Mr. Allen also use proxy companies to estimate Empire's cost of equity?

A. Yes, he did.

Q. What criteria did Mr. Allen use to select his group of proxy companies?

A. Mr. Allen required that his proxy companies have: (1) at least 60% of revenues from electric operations; (2) have an S&P bond rating of at least BBB- or a Moody's bond rating of at least Baa3; (3) be covered by Value Line; and (4) pay a dividend.

Q. Do you agree with Mr. Allen's proxy company selection criteria?

A. No. Like Mr. Murray's criteria, Mr. Allen's criteria eliminate many combination electric and gas companies that are comparable in risk to Empire. Combination electric and gas companies are comparable in risk

because electric and gas operations are considered to have similar risk by the investment community. In addition, many of Mr. Allen's proxy companies are thinly traded and not widely followed in the investment community. For example, I/B/E/S does not report any earnings growth forecasts for Central Vermont Public Service, Green Mountain Power, and IdaCorp, and reports just one forecast for Cleco and UIL Holdings. Growth forecasts for these companies are not as reliable as a measure of investor sentiment as the average growth forecast for companies that are followed by many analysts.

C. CAPM

Q. How did Mr. Allen 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. Allen used the average yield on 3-month Treasury bills, 1.274%, as his estimate of the risk-free rate; the Value Line beta for each of his proxy companies as his estimate of company-specific risk; and for the risk premium on the market portfolio, Mr. Allen used the difference between the arithmetic mean market return from 1926 – 2003, 12.4%, and the average interest rate on 3-month Treasury bills, May through August 2004, 1.274%.

Q. Do you agree with Mr. Allen's estimate of the risk-free rate component of the CAPM?

A. No. The CAPM is intended to measure the cost of equity for companies with a long-term investment horizon. Over the long-term investment horizon of investors in public utilities such as Empire, the yield on 3-month Treasury bills is not risk free. The closest approximation to a risk-free rate for investors with a long investment horizon is the yield to maturity on long-term Treasury bonds, approximately 5% at the time of Mr. Allen's studies.

Q. Do you agree with Mr. Allen's estimate of the market risk premium component of the CAPM?

A. No. Mr. Allen should have used the difference between the arithmetic mean market return on the S&P 500 and the income return on long-term Treasury bonds over the period 1926 to 2003. As reported in Ibbotson Associates 2004 Yearbook, this difference is 7.2%.

Q. Do you have any other problems with Mr. Allen's application of the CAPM to estimate Empire's cost of equity?

A. Yes. Mr. Allen fails to recognize that the CAPM underestimates the cost of equity for companies with betas less than 1.0, and that the expected return on small companies such as Empire is significantly higher than the expected return on larger companies.

Q. What CAPM results would Mr. Allen have obtained if he had applied the CAPM correctly?

A. As shown on Vander Weide Rebuttal Schedule 3, Mr. Allen would have obtained an 11.4% CAPM result for Empire and an average CAPM result equal to 11.9% for his proxy companies.

Q. Do the corrected DCF and CAPM results for Mr. Allen's proxy companies and Empire support your recommended 11.3% cost of equity for Empire in this proceeding?

A. Yes. I have demonstrated that a correct application of the DCF approach to Empire produces a cost of equity equal to at least 10.9%,[3] and that a correct application of the CAPM to Empire and Mr. Allen's proxy companies produces a cost of equity estimate equal to 11.9%, with a specific CAPM result for Empire equal to 11.4%. These results are certainly consistent with my recommended 11.3% cost of equity for Empire.

Q. Does this conclude your rebuttal testimony?

A. Yes, it does.

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[3] I did not apply the DCF model to Mr. Allen's proxy group of companies because five of his 13 proxy companies have insufficient growth data to reasonably apply the DCF model. Three of his proxy companies do not have any I/B/E/S growth forecasts, and two have just one I/B/E/S forecast of long-term growth. As I have described, I believe at least three analysts' estimates are required to provide reliable results using the DCF approach.

Vander Weide Rebuttal Schedule 1
Mr. Murray's Corrected DCF Method
Applied to Empire District Electric Company

Company	Stock Price	Dividend	Growth	Cost of Equity
Empire District Electric	20.13	1.280	4.0%	10.9%

Notes:

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 July 2004, the time of Mr. Murray's studies, per S&P Stock Guide.

g = Forecast of future earnings growth per Mr. Murray's Schedule 12.

k = Cost of equity using the quarterly version of the DCF model.

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

Vander Weide Rebuttal Schedule 2
Corrected CAPM Cost of Equity for
Mr. Murray's Proxy Companies

Company	Market Cap $(Mil)	Beta	Unadjusted CAPM	Size Premium	CAPM Cost of Equity
DPL Inc.	2,557	0.90	11.5%	0.91%	12.4%
Duquesne Light	1,393	0.75	10.4%	0.91%	11.3%
Hawaiian Electric	2,093	0.65	9.7%	0.91%	10.6%
NSTAR	2,605	0.70	10.0%	0.91%	11.0%
Average		0.75	10.4%		11.3%
Empire	520	0.65	9.7%	0.91%	11.4%

Notes:

Risk-free Rate	5% per Mr. Murray's Schedule 15
Market Risk Premium	7.2% from Ibbotson Associates 2004 Yearbook
Company Group	Mr. Murray's proxy companies
Market Cap	Value Line Investment Survey for Windows, September 2004
Beta	Value Line Investment Survey for Windows, September 2004
Size Premium	Ibbotson 2004 Yearbook, Valuation Edition, "Key Variables in Estimating the Cost of Capital." (See following table.)

Classification	Mkt. Cap Range $(Mil)	Premium
Large-Cap	4,794 and above	-
Mid-Cap	1,167 – 4,794	0.91%
Low-Cap	331 - 1,167	1.70%
Micro-Cap	0.332 – 331	4.01%

Vander Weide Rebuttal Schedule 2
Corrected CAPM Cost of Equity for
Mr. Allen's Proxy Companies

Company	Market Cap $ (Mil)	Beta	Unadjusted CAPM	Size Premium	CAPM Cost of Equity
American Elec. Pwr.	13,005	1.15	13.3%	-	13.3%
Cent. Vermont P.S.	258	0.50	8.6%	4.01%	12.6%
Cleco Corporation	845	1.05	12.6%	1.70%	14.3%
Duquesne Light	1,393	0.75	10.4%	0.91%	11.3%
FirstEnergy	13,500	0.75	10.4%	-	10.4%
FPL Group, Inc.	12,770	0.70	10.0%	-	10.0%
Green Mtn. Power	132	0.65	9.7%	4.01%	13.7%
Hawaiian Electric	2,093	0.65	9.7%	0.91%	10.6%
Idacorp, Inc.	1,118	0.85	11.1%	1.70%	12.8%
Pinnacle West	3,825	0.85	11.1%	0.91%	12.0%
Progress Energy	10,710	0.85	11.1%	-	11.1%
Southern Co.	22,396	0.65	9.7%	-	9.7%
UIL Holdings	711	0.80	10.8%	1.70%	12.5%
Average		0.78	10.6%		11.9%
Empire	520	0.65	9.7%	1.70%	11.4%

Notes:

Risk-free Rate	5% per Mr. Murray's Schedule 15
Market Risk Premium	7.2% from Ibbotson Associates 2004 Yearbook
Company Group	Mr. Murray's proxy companies.
Market Cap	Value Line Investment Survey for Windows, September 2004
Beta	Value Line Investment Survey for Windows, September 2004
Size Premium	Ibbotson 2004 Yearbook, Valuation Edition, "Key Variables in Estimating the Cost of Capital." (See following table.)

Classification	Mkt. Cap Range $(Mil)	Premium
Large-Cap	4,794 and above	-
Mid-Cap	1,167 – 4,794	0.91%
Low-Cap	331 - 1,167	1.70%
Micro-Cap	0.332 – 331	4.01%