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Witness:	James H. Vander Weide, Ph.D.
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Case No.	ER-2004-0570

BEFORE THE PUBLIC SERVICE COMMISSION

OF THE STATE OF MISSOURI

SURREBUTTAL TESTIMONY

OF

JAMES H. VANDER WEIDE, Ph.D.

November 24, 2004

SURREBUTTAL TESTIMONY
OF
DR. JAMES H. VANDER WEIDE
ON BEHALF OF
THE EMPIRE DISTRICT ELECTRIC COMPANY
BEFORE THE
MISSOURI PUBLIC SERVICE COMMISSION
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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 and rebuttal testimonies in this proceeding?

A. Yes, I am.

Q. What is the purpose of your surrebuttal testimony?

A. I have been asked by Empire District Electric Company ("Empire" or "the Company") to review the rebuttal testimonies of Mr. David Murray and Mr. Travis Allen and to respond to their comments regarding Empire's cost of capital. 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. Surrebuttal of Mr. Murray

A. Focus of Cost of Equity Testimony

Q. What is Mr. Murray's opinion regarding the proper focus of cost of equity testimony in this proceeding?

A. Mr. Murray believes that cost of equity testimony should be focused on applying the DCF model to Empire. On page 13 of his rebuttal testimony, for example, he states:

> Of course, because Empire is publicly traded and is largely confined to the electric utility business, it is preferable to go even one step further and perform a cost-of-common-equity analysis on Empire itself. I believe this provides the best estimate of Empire's cost of common equity.

At page 26 of his rebuttal testimony, Mr. Murray further states:

> Although I have already indicated this several times, the best way to capture the risks that investors perceive to be associated with Empire is to perform a company specific DCF analysis on Empire. When done appropriately, this will give a reliable indication of Empire's true cost of capital.

Q. Do you agree with Mr. Murray's opinion that cost of equity testimony should be focused on applying the DCF model to Empire?

A. No. I disagree with Mr. Murray's opinion for at least four reasons. First, focusing on applying the DCF model to Empire is inconsistent with the fundamental economic definition of the cost of equity, which is defined as the return investors expect to receive on alternative investments of comparable risk. Second, focusing on applying the DCF model to Empire provides less reliable cost of equity estimates than an approach of applying several cost of equity models to a group of comparable risk

companies. Third, Mr. Murray's opinion ignores the fact that it is difficult to apply the DCF model to Empire at this time because Empire is experiencing abnormal economic conditions that violate the assumptions of the DCF model. Fourth, Mr. Murray's opinion fails to recognize the basic circularity that arises when the DCF model is applied to the regulated company whose rates are being set.

Q. How do economists define the cost of equity?

A. Economists define the cost of equity as the return investors expect to receive on alternative investments of comparable risk. Thus, the cost of equity basically involves the concept of "opportunity cost," that is, the return investors forego when they invest in Empire rather than other companies of comparable risk.

Q. Has the economic definition of the cost of equity been recognized in any U.S. Supreme Court cases?

A. Yes. The economic definition of the cost of equity has been recognized in both the *Bluefield Waterworks* and *Hope Natural Gas* cases cited on page 11 of my direct testimony. The cost of equity standard adopted by the Court in those cases is frequently summarized by the famous statement from the *Hope* case:

> By that standard, the return to the equity owner should be commensurate with returns on investments in other enterprises having corresponding risks. [*Federal Power Comm'n v. Hope Natural Gas Co*., 320 U.S. 591, 603 (1944)].

Q. Why is Mr. Murray's opinion that cost of equity testimony should be focused on applying the DCF model to Empire inconsistent with the economic definition of the cost of equity?

A. Mr. Murray's opinion is inconsistent with the economic definition of the cost of equity because the economic definition focuses on the return investors expect from other investments of the same risks, whereas Mr. Murray would have the Commission focus on the return investors expect on the regulated utility itself.

Q. Why does applying the DCF model to Empire alone provide a less reliable cost of equity estimate than the alternative of applying several cost of equity models to a proxy group of companies of comparable risk?

A. Applying the DCF model to Empire alone would provide a less reliable cost of equity estimate because a DCF result by its very nature depends on highly uncertain estimates of a company's long-run growth in dividends, earnings, book value, and share prices. For some companies, the growth estimate used by the analyst will unavoidably either understate or overstate the growth expectations of investors. However, the uncertainty in estimating the expected growth for one company can be significantly reduced by applying the DCF model to a reasonably large group of comparable risk companies. Intuitively, any over- and under-estimate of the expected growth for a single company will be offset by under- or over-estimates of growth for other companies

when the DCF results for a relatively large group of comparable risk companies are averaged.

Second, the DCF model itself is based on the fundamental assumption that companies operate in a stable environment where dividend payout ratios and returns on equity are expected to remain relatively constant; and earnings, dividends, book value, and stock prices are expected to grow at the same constant rate forever. Since Empire is currently experiencing abnormal economic conditions, the basic stability assumptions of the DCF model fail to apply to Empire. The problems of applying a cost of equity model to a company that is experiencing abnormal economic conditions can be partially ameliorated by considering the results of several cost of equity methodologies applied to a relatively large group of comparable companies.

Q. Does Mr. Murray himself recognize that the results of applying the DCF model can be highly uncertain?

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

> The primary concern I have about this approach is that it uses DCF cost of common equity estimates to estimate the risk premium for the comparable companies. As this Commission is well aware, application of the DCF model on its own to arrive at a cost of common equity recommendation is the subject of much contention.

Q. Would the result of applying the DCF model be even more "contentious" if the DCF model were applied to just a single company?

A. Yes. Although the results of the DCF model are uncertain, as noted above, this uncertainty can be significantly reduced by applying the model to a large group of comparable risk companies.

Q. What is the fundamental assumption of the DCF model?

A. As discussed above, the fundamental assumption of the DCF model is that the company whose cost of equity is being estimated operates in a steady-state equilibrium where its dividend payout ratio and rate of return on equity are expected to remain relatively constant, and its earnings, dividends, book value, and stock price are all expected to grow at the same rate in perpetuity.

Q. In what way does Empire violate these assumptions?

A. Empire violates these assumptions in at least three ways. First, Empire is currently earning a return on equity that is less than either its allowed rate of return on equity or its cost of equity capital, and this situation is unsustainable in the long run. If Empire continues to earn less than its cost of equity, stockholders will pressure management to liquidate the firm. Second, Empire's dividends currently exceed its earnings, and this situation is also unsustainable in the long run. Because the problem lies primarily in Empire's low earnings, Empire's earnings must grow at a greater rate than its dividends until its dividend payout ratio reaches a more normal level. Third, Empire is in the dangerous situation where its bond rating agencies have placed the company on a negative watch for

a bond downgrade. This situation is unsustainable in the long run as well.

Q. Do you agree with Mr. Murray's suggestion on pages 35 - 43 of his rebuttal testimony that Empire could reduce its cost of equity by reducing or eliminating its dividend?

A. No. As I explained on pages 121 – 122 of my deposition testimony, it is never in the interest of stockholders to cut dividends when the company is not earning its cost of capital. Indeed, when the company is not earning its cost of capital, stockholders are always better off if the company pays out all of its earnings in dividends rather than reinvesting in the company:

> If the company is not earning its cost of capital and is not expected to earn its cost of capital in the future, then shareholders have an interest for the company to pay out all its earnings in dividends and not reinvest a thing, because every reinvestment that earns a return less than the cost of capital decreases the wealth of the shareholders…The only way that it pays to cut dividends is when the company can retain the earnings and invest in projects that earn a return that's greater than the cost of capital. (See Vander Weide Deposition, November 12, 2004, pp. 111 – 134.)

Thus, Empire's financial difficulties arise because Empire has not been able to earn either its cost of capital or its authorized rate of return, not because Empire's dividend policy is inappropriate. If this Commission were to set Empire's authorized rate of return at least in line with authorized rates of return in other states, and create a regulatory environment where Empire would be able to earn its cost of capital in the

face or rising energy prices, Empire would not have a problem with its dividend payout ratio.

Q. What are the implications of your observation that Empire violates the basic stability assumptions of the DCF model?

A. The fact that Empire violates the basic stability assumptions of the DCF model implies that the DCF model can only be applied to Empire with extreme care at this time. The usual uncertainty in estimating the basic parameters of the DCF model, such as dividend yields and growth, is exacerbated because Empire fails to obey the fundamental stability assumptions of the DCF model itself.

Q. Did you apply the DCF model to Empire in your direct testimony?

A. No. As noted on page 6 of my rebuttal testimony, I generally apply the DCF model only to companies that are followed by at least three analysts who provide long-term growth forecasts for the company. Since Empire does not meet this criteria, I did not include Empire in my proxy group of companies.

Q. You also mention a basic circularity that arises when the DCF model is applied to the company whose rates are being set. Can you explain this circularity?

A. Yes. The DCF model depends on dividend yield and growth expectations that reflect investors' views of the results of the regulatory process. But the purpose of the regulatory process, as it relates to the cost of equity, is to reflect the views of investors. Thus, we have a

situation where investors' expectations depend on the results of the regulatory process, and the regulatory process depends on investors' expectations—an obvious circularity.

Q. Have the problems of applying the DCF model to the single company whose rates are being regulated been recognized in the financial literature?

A. Yes. Professor Roger Morin provides a good summary of these problems on pp. 201 – 202 of his book, *Regulatory Finance: Utilities' Cost of Capital,* Public Utilities Reports, Inc., Arlington, Virginia, 1994.

Q. Have the problems of applying the DCF and other models to just the single company whose rates are being regulated also been recognized in regulatory practice?

A. Yes. In my experience in testifying on the cost of capital in regulatory rate proceedings, I have found that experts generally apply the DCF and other cost of equity models to a reasonably large sized sample of proxy companies, rather than just to the target company.

Q. Despite the problems of applying the DCF model to Empire, did you apply the DCF model to Empire in your rebuttal testimony?

A. Yes. As described on page 6 of my rebuttal testimony, I applied the DCF model to Empire, obtaining a result of 10.9% before any adjustment to recognize the difference in financial risk perceived by investors in the market place and the financial risk associated with Empire's recommended capital structure.

B. Comparable Companies

Q. What comparable risk companies did you use to estimate Empire's cost of equity?

A. As described in my direct testimony, I used two relatively large groups of comparable risk electric and natural gas companies to estimate Empire's cost of equity in this proceeding.

Q. Does Mr. Murray agree with your choice of comparable risk companies?

A. No. Mr. Murray claims that the purpose of comparable company analysis is to identify companies that are as "pure play" as possible (see Mr. Murray's rebuttal at page 6); and, in Mr. Murray's opinion, my comparable risk companies are not "pure plays" for Empire's electric operations.

Q. What is a "pure play" company?

A. A "pure play" company is a publicly-traded company that is engaged in a single line of business that is identical to the business being considered in a particular case.

Q. Do you agree with Mr. Murray's opinion that the purpose of comparable company analysis is to identify companies that are as "pure play" as possible?

A. No. The purpose of comparable company analysis is to identify companies that are comparable in risk. Neither the economic definition of the cost of equity cited above nor the legal definition of the allowed

rate of return on equity cited by the Supreme Court require that comparable companies be "pure play."

Q. Did you present evidence in your direct testimony that your comparable companies on average are comparable in risk to Empire?

A. Yes. I presented evidence on pages 31 and 34 of my direct testimony that my comparable groups of electric and natural gas companies are comparable in risk to Empire. Indeed, I presented evidence that the average Value Line safety rank and Standard & Poor's bond ratings and business profiles for my comparable risk companies are, if anything, slightly less risky than Empire's safety rank, bond rating, and business profile.

Q. Does Mr. Murray rebut your evidence regarding the relative risk of your proxy companies compared to Empire?

A. No, he does not.

Q. Does Mr. Murray, in fact, agree that electric utilities with similar credit ratings are comparable in risk to Empire?

A. Yes. On page 10 of his rebuttal testimony, Mr. Murray states,

> This is why comparing electric utility companies that have the same average credit rating as the subject company is appropriate, regardless of the varying financial risk between the comparable group and the subject company. The credit rating assigned to a company contemplates all of the risks of that company, which includes business risk and financial risk.

Q. You mention that the goal of comparable company analysis is to identify companies of comparable risk to Empire. Is it necessary that every company in the group be similar in risk to Empire?

A. No. Since the cost of equity results for the companies in the group are averaged, it is only necessary that the average risk of companies in the group be similar to Empire's risk.

Q. Since you have provided ample evidence that your proxy companies on average are similar in risk to Empire, why does Mr. Murray disagree with your comparable groups of companies?

A. Mr. Murray claims that my comparable companies are inappropriate because, in his opinion, they are not sufficiently "pure play." In Mr. Murray's opinion, an electric proxy company must receive at least 70% of its revenues from the sale of electricity, and a natural gas proxy company must have either 90% of their revenues from distribution or be electric utilities with at least 15% of their operating revenues from natural gas distribution (see Mr. Murray's rebuttal testimony at page 5 and page 8).

Q. Is the percentage of revenues from a particular line of business reflected in Standard & Poor's bond rating and business risk profile for electric and natural gas companies?

A. Yes, it is.

Q. Didn't Mr. Murray previously suggest that electric companies could be compared on the basis of their Standard & Poor's bond ratings?

A. Yes, he did.

Q. On page 12 of his rebuttal testimony, Mr. Murray claims that your DCF results are inconsistent with your evidence that local natural gas distribution companies are less risky than electric companies. Does the fact that LDCs have higher DCF results imply that LDCs are more risky than electric companies?

A. No. I present strong evidence that the LDCs are, if anything, less risky on average than the electric companies. That LDCs have higher DCF results merely reflects the uncertainties of applying the DCF model to electric and natural gas companies at this time.

Q. On page 12 of his rebuttal testimony, Mr. Murray also claims that Empire's financial ratios are consistent with Standard & Poor's guidelines for a BBB bond rating. Has Standard & Poor's recently expressed an opinion regarding Empire's bond rating?

A. Yes. On September 28, 2004, Standard & Poor's placed Empire's BBB corporate credit rating on CreditWatch with negative implications. In announcing this action, Standard & Poor's stated:

> The CreditWatch listing reflects prospects for erosion of Empire's pressured financial condition if recent testimony by the Missouri Public Service Commission (MPSC) staff in Empire's pending general rate case is ultimately endorsed by the MPSC.

C. Ex Ante Risk Premium Analysis

Q. Please describe your ex ante risk premium method of estimating Empire's cost of equity.

A. The ex ante risk premium (forward-looking risk premium) method is based on the principle that investors expect to earn a return on an equity

investment in Empire that reflects a "premium" over and above the return they expect to earn on an investment in a portfolio of bonds. This equity risk premium compensates equity investors for the additional risk they bear in making equity investments versus bond investments. To measure the equity risk premium in my ex ante risk premium study, I calculated the difference between the DCF cost of equity for a proxy group of electric companies for each month in a 53-month study period and the interest rate on Moody's A-rated utility bonds. I also adjusted the estimated risk premium in each month for the statistical correlation between the ex ante risk premium and the level of interest rates. My studies indicate that the ex ante risk premium tends to increase when interest rates decline and decrease when interest rates rise. [**1**] From the observed correlation between the ex ante risk premium and interest rates, I estimated the current ex ante risk premium at the time of my study and added this risk premium to the current interest rate on A-rated utility bonds.

Q. What are Mr. Murray's criticisms of your ex ante risk premium method for estimating Empire's cost of equity?

A. Mr. Murray criticizes my ex ante risk premium method on the grounds that: (1) it is based on DCF estimates of the cost of equity, and DCF estimates tend to be "the subject of much contention" (Murray Rebuttal at

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[1] I also performed an ex ante risk premium study for a group of comparable risk natural gas companies.

p. 13.); (2) I used a different proxy group than I had used for my DCF estimate of the cost of equity; (3) my study included companies that receive less than 40% of their revenues from electricity and also mistakenly included Reliant Energy; and (4) I calculated the risk premium using the yield to maturity on corporate bonds rather than long-term government bonds.

Q. Mr. Murray criticizes your ex ante risk premium analysis because it relies on DCF estimates, and, in his opinion, DCF estimates are highly "contentious." Did Mr. Murray himself recommend using the DCF method to estimate Empire's cost of equity in this proceeding?

A. Yes, he did. In fact, Mr. Murray recommends that the Commission "focus primarily on Empire's DCF results" to determine the cost of equity in this proceeding (Murray Rebuttal at p. 29).

Q. Are there any reasons why your DCF estimates would be subject to more "contention" than Mr. Murray's?

A. No. In fact, my DCF estimates should be considerably more reliable than Mr. Murray's because they represent the average DCF result for a reasonably large group of comparable risk companies, while Mr. Murray's recommended cost of equity depends entirely on the DCF result for a single company. As discussed above, the application of the DCF model to a single company produces a significantly less reliable result than the average result produced by the application of the DCF model to a reasonably large group of comparable risk companies.

Q. Does your ex ante risk premium method contain any information that is not contained in an application of the DCF method?

A. Yes. Since my ex ante risk premium method produces an estimate of the required forward-looking risk premium over the last four to five years, it allows me to measure the correlation between the investors' required risk premium and the level of interest rates. My study reveals that the investors' risk premium varies inversely with the level of interest rates. Thus, when interest rates are lower, the risk premium is higher, and vice versa. My ex ante risk premium method uses the correlation between the risk premium and interest rates to predict the forward-looking risk premium at the time of my testimony. My DCF approach does not contain any information on the correlation between risk premiums and interest rates, and hence my ex ante risk premium approach provides an independent, and distinct cost of equity, from that provided by my DCF approach.

Q. Why did you use a different group of comparable risk companies for your ex ante risk premium studies than you used in your DCF studies?

A. As I described in my deposition:

> The data requirements of . . . that study [the ex ante risk premium study] are very much larger than the data requirements to do a DCF study today for a group of companies. So in order to make the trade-off between the amount of data that I could reasonably handle and the size of the group, I decided that I really needed a smaller group of companies -- still more than three or four or nine or ten -- in order to be able to estimate that many calculations over

that many months. And the Moody's Group is a well-known group that's smaller than all of the companies followed by Value Line. (Transcript at pp. 69 – 70.)

Q. Are the electric utilities you used in your ex ante risk premium approach comparable in risk to Empire?

A. Yes. As shown in my Surrebuttal Schedule JVW-1, the average Value Line safety rank for the Moody's electric companies included in my ex ante risk premium study is 2.5, the Standard & Poor's bond rating is BBB+, and the Standard & Poor's business profile 5.7. By comparison, Empire's Value Line safety rank is 3, its S&P bond rating is BBB, and business profile is 6. (As noted above, on September 28, 2004, Standard & Poor's placed Empire on CreditWatch for possible downgrade.)

Q. Mr. Murray claims that you should have excluded electric companies with less than 40% of revenues from electric operations from your ex ante study. Does Standard & Poor's consider information on the percentage of revenues from different lines of business when it determines a company's bond rating and business risk profile?

A. Yes. Since Standard & Poor's considers this information in determining a company's bond rating and business risk profile, and since the average bond rating and business profile of the Moody's companies is similar to Empire's, there is no justification for excluding electric companies from the proxy group that have less than 40% of revenues from electric operations.

Q. Mr. Murray criticizes your inclusion of Reliant in your ex ante studies. Did you include Reliant in all months of your study?

A. No. As shown in my work papers, I included Reliant only during the months before its stock price crashed as a result of financial difficulties related unregulated investments. Reliant was not included in the most recent 20 months of my study.

Q. Does the ex ante risk premium approach require that interest rates be measured from the yield to maturity on long-term government bonds?

A. No. Unlike the CAPM, the ex ante risk premium approach places no restrictions on the debt instrument that is used to measure the risk premium. However, in practice, it makes little difference which debt instrument is used because the interest rate is simply added to the expected risk premium. For example, if the interest rate on A-rated utility bonds is used rather than the interest rate on long-term Treasury bonds, the estimated risk premium will be lower, but the current interest rate will be somewhat higher. Thus, the estimate of the ex ante risk premium cost of equity should be approximately the same.

Q. Why did you use the yield to maturity on A-rated utility bonds rather than the yield to maturity on long-term Treasury bonds in your ex ante risk premium study?

A. I used the yield to maturity on A-rated utility bonds in my ex ante risk premium study because this yield conservatively represents the actual

capital costs utilities face in the capital markets. In recent years, the yield to maturity on long-term government bonds has been disconnected from the costs utilities experience in the capital markets because foreign governments have increasingly used investments in U.S. government securities to manage the exchange rate on their currencies.

D. Ex Post Risk Premium Study

Q. Please describe your ex post risk premium method for estimating the cost of equity.

A. Like my ex ante risk premium method, my ex post risk premium method is based on the principle that investors expect to earn a return on an equity investment that reflects a premium over and above the return they expect to earn on an investment in a portfolio of bonds. The major difference between my ex post risk premium and my ex ante risk premium methods is that in the ex post risk premium approach, the investors' expected risk premium is estimated from historical data on the returns to stock and bond investors over the last 66 years rather than from expected risk premiums calculated by the difference between DCF results for a proxy group of companies and the concurrent level of interest rates. In my studies, I estimated the ex post risk premium using historical returns on both the S&P 500 and the S&P Utilities index.

Q. Why did you conduct ex post risk premium studies based on historical returns for both the S&P 500 and the S&P Utilities?

A. As I explained in my direct testimony, I performed my ex post risk premium analysis on both the S&P 500 and the S&P Utilities because I

believe electric companies today face risks that are somewhere in between the average risk of the S&P Utilities and the S&P 500 over the years 1937 to 2003. Specifically, the risk premium on the S&P Utilities, 4.61 percent, represents a lower bound for the required risk premium on an equity investment in Empire because Empire is currently more risky than an investment in the average utility in the S&P Utilities index over the entire period 1936 to the present. On the other hand, the risk premium on the S&P 500, 5.22 percent, represents an upper bound because an investment in Empire is less risky than an investment in the S&P 500 over the period 1937 to the present. I use the average of the two risk premiums as my estimate of the required risk premium for Empire in my ex post risk premium method.

Q. What are Mr. Murray's criticisms of your ex post risk premium method for estimating Empire's cost of equity?

A. Mr. Murray criticizes my ex post risk premium method for two reasons. First, he contends that my historical risk premium estimate of the cost of equity does not reflect Empire's relative risk compared to the S&P 500. He contends that I should have multiplied the historical risk premium for the S&P 500 by Empire's beta to estimate the risk premium for Empire. Second, he claims that my historical risk premium study for the S&P Utilities is inappropriate because the S&P Utilities include a group of 33 companies that have an average beta of 0.9, which is higher than Empire's beta.

Q. Do you agree that your historical risk premium estimate of the cost of equity does not reflect Empire's relative risk compared to the S&P 500?

A. No. As noted above, my historical risk premium study reflects both my belief that Empire is less risky than the average risk of the S&P 500 over the period of my study, and more risky than the average risk of the S&P Utilities over the 66 years of my study. Because Empire's risk lies somewhere in between the risk of the S&P 500 and the risk of the S&P Utilities over the years of my study, I estimated the risk premium for Empire based on an upper and lower bound rather than from data on the S&P 500 alone.

Q. Would it be appropriate to estimate investors' required risk premium for Empire by multiplying the historical risk premium on the S&P 500 by Empire's beta of 0.65?

A. No. First, there is no evidence that Empire was only 65% as risky as the S&P 500 over the entire 66 years of my study. If Empire's current beta measures anything at all, it measures Empire's risk relative to the S&P 500 today, not Empire's risk relative to the S&P 500 over the period of my study. Second, Mr. Murray fails to recognize that the beta estimate for a single company is highly unreliable, and that there is considerable evidence that the beta values for companies with betas less than 1.0 understate investors' views of the actual risks of those companies. Third, Mr. Murray's criticism fails to acknowledge that low capitalization

companies such as Empire face additional risks compared to the large cap companies in the S&P 500, and these risks are not reflected in estimates of beta.

Q. Do you agree with Mr. Murray's assertion that the S&P Utilities contain 33 companies with an average beta of 0.9?

A. No. Mr. Murray failed to recognize that the list of companies in the S&P Utilities index continuously changed over the 66 years of my risk premium study. In addition, he failed to recognize that S&P discontinued its former utilities index beginning in 2002 (see Schedule JVW-8 filed with my direct testimony). The companies Mr. Murray identifies in his rebuttal Schedule 4 are not the set of companies included in the (former) S&P Utilities index that I used in my ex post risk premium study.**[2]** For example, neither AES, Calpine, nor Dynegy (New), with betas of 1.75, 1.85, and 2.60, respectively, were ever in the S&P Utilities index used in my study. If just those three companies are removed from Mr. Murray's list, the average beta for the remaining group is 0.78, not 0.90.

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[2] The companies shown in Mr. Murray's Schedule 4 are the utility companies that are currently in the S&P 500. They are not the companies that were in the S&P Utilities index utilized in my study. On December 31, 2001, Standard & Poor's discontinued the use of its old industry classification methodology for the purpose of U.S. industry index calculations, moving to its new Global Industry Classification Standard (GICS)[sm].

E. Adjustments for Differences in Financial Risk

Q. What is financial risk?

A. Financial risk is the additional risk that equity investors face when a company issues fixed-cost debt to finance its assets. The more a firm relies on debt financing, the greater is the investment risk faced by the firm's equity investors.

Q. Did you adjust the results of your DCF and risk premium analyses for the difference between the financial risk reflected in your DCF and risk premium results and the financial risk reflected in Empire's recommended capital structure in this proceeding?

A. Yes. My adjustment for the difference between the financial risk reflected in my DCF and risk premium results and the financial risk reflected in Empire's capital structure is described on pp. 48 – 52 of my direct testimony.

Q. How do equity investors measure financial risk?

A. Equity investors measure financial risk by calculating the percentages of debt and equity in the firm's capital structure, where the debt and equity are measured using market values rather than book values. (Since debt typically trades at market values that are relatively close to market values, and because of the complexity of estimating the market value of debt, investors frequently use book values of debt to approximate market values.)

Q. Why do investors measure financial risk in terms of market values rather than book values?

A. Equity investors measure financial risk using the market values of debt and equity because both the expected return and the variance of returns on their investments depend on the market values of debt and equity in the firm's capital structure. See, for example, Brealey and Myers, *Principles of Corporate Finance*, 6th edition, pp. 228 – 232.

Q. Why is there a need to adjust the results of your DCF and risk premium analyses for the difference between the financial risk reflected in your DCF and risk premium results and the financial risk reflected in Empire's recommended capital structure in this proceeding?

A. My DCF and risk premium results must be adjusted for differences in financial risk because these results are based on the financial risk calculations of equity investors in the proxy group of companies, while the equity return used for regulatory purposes reflects the financial risk of Empire's recommended capital structure. Since the financial risk associated with Empire's recommended capital structure exceeds the financial risk of the comparable risk companies as calculated by investors, a higher cost of equity must be applied to Empire's recommended capital structure to compensate for this additional risk and to allow Empire's investors' an opportunity to attract capital in the capital markets.

Q. Does Mr. Murray agree with your recommended financial risk adjustment?

A. No. Mr. Murray argues that my financial risk adjustment should be dismissed because: (1) it is based on an "apples-to-oranges comparison;" (2) my assertion that comparable risk companies should have the same after-tax weighted average cost of capital is, in his opinion, illogical; and (3) the best way to capture Empire's risk, in his opinion, is to focus on a DCF analysis of Empire alone.

Q. Is Mr. Murray's criticism that your financial risk adjustment is based on an "apples-to-oranges comparison" correct?

A. No. My financial risk adjustment is based on an "apples-to-apples" comparison. In the case of my comparable companies, I measured financial risk in the same way that investors calculate financial risk when they invest in the comparable companies' equity, that is, in terms of market values. The financial risk calculated by investors is embedded in my comparable companies' average DCF and risk premium results. However, the financial risk embedded in Empire's recommended capital structure, which is the capital structure used to set rates in this proceeding, is higher than the financial risk embedded in my DCF and risk premium cost of equity estimates. If Empire's cost of equity is not adjusted to reflect the difference between the financial risk embedded in my market cost of equity estimates and the financial risk embedded in Empire's recommended capital structure, Empire will be unable to attract capital in the marketplace.

Q. Why do you believe that Empire should have the same weighted average after-tax cost of capital as your comparable risk companies?

A. Empire should have the same weighted average after-tax cost of capital as the comparable risk companies because an investment Empire's assets has approximately the same risk as an investment in the assets of my comparable risk companies. Empire's after-tax weighted average cost of capital measures the return expected on an investment in Empire's assets. Since investors expect the same rate of return on investments of the same risk, Empire should have the same weighted average cost of capital as the comparable companies.

Q. Do you agree with Mr. Murray's argument that the best way to capture Empire's risk is to apply the DCF model directly to Empire alone?

A. No. For the reasons described above, the application of the DCF model to Empire alone produces highly uncertain estimates of Empire's cost of equity. Indeed, Mr. Murray himself has recognized that the application of the DCF model to any company is the "subject of much contention." (Murray Rebuttal at p. 13.) Furthermore, an adjustment would be required even if the cost of equity were calculated by applying the DCF model to Empire.

Q. Why would a financial risk adjustment be required even if Empire's cost of equity were calculated by applying the DCF model directly to Empire alone?

A. A financial risk adjustment would be required because Empire's DCF result would reflect the financial risks calculated by investors when they invest in Empire's stock. As noted above, equity investors calculate financial risks in terms of the market values of debt and equity in the company's capital structure. Empire's recommended capital structure in this proceeding is based on the book values of debt and equity in its capital structure. Since Empire's recommended book value capital structure embodies greater financial risk than its market value capital structure, an adjustment to the cost of equity would be required.

II. Surrebuttal of Mr. Allen

A. DCF Model

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

A. As described on pp. 23 -25 and Appendix 1 of my direct testimony, I used the quarterly DCF model to estimate Empire's cost of equity.

Q. Why did you use the quarterly DCF model to estimate Empire's cost of equity?

A. I used the quarterly DCF model to estimate Empire's cost of equity because the DCF model is based on the assumption that a company's stock price is equal to the present value of the expected stream of cash flows accruing to investors over the life of the company. When dividends

are paid quarterly, as they are for Empire and the companies in my comparable groups, the quarterly DCF model is the only model that equates the present value of the expected stream of cash flows accruing to investors to the company's stock price. In particular, the annual DCF model does not follow from the assumption that the stock price is equal to the present value of future dividends when dividends are paid quarterly.

Q. Does Mr. Allen agree with your use of the quarterly DCF model to estimate Empire's cost of equity?

A. No. Mr. Allen argues that my use of the quarterly DCF model is inappropriate because: (1) expected quarterly dividends are calculated by adjusting previous quarterly dividends "by the entire amount of the expected growth rate;" and (2) investors in fact expect to receive only half of their expected growth rate over the next year.

Q. Are quarterly dividends calculated in the quarterly DCF model by multiplying the previous quarterly dividends by the "entire amount of the expected growth rate"?

A. I am not sure what Mr. Allen means when he states that dividends are calculated by multiplying the previous quarterly dividends "by the entire amount of the expected growth rate." If Mr. Allen means that an investor estimates the next four quarterly dividends by multiplying the previous four quarterly dividends by one plus the growth rate, then his assertion regarding the quarterly DCF model is correct. However, Mr. Allen's

argument seems to be referring to the annual pattern of expected dividends, not the quarterly pattern of expected dividends.

Q. Why does Mr. Allen's argument seem to apply to the annual rather than the quarterly pattern of expected dividends?

A. Mr. Allen's argument seems to apply to the annual pattern of expected dividends because he argues that investors will only expect to receive half of their expected growth rate over the next year. This statement refers to annual dividends, not quarterly dividends.

Q. Can you illustrate how dividends are calculated in the quarterly DCF model?

A. Yes. Assume that an investor purchases a stock on January 1 of 2004, that the investor believes that dividends will grow by 4% per year, and that the company paid a dividend of $0.25 on March 30, 2003, and June 30, 2003, and $0.26 on September 30, 2003, and December 30, 2003. Then the quarterly DCF model calculates the next four quarterly dividends by multiplying the previous four quarterly dividends by (1 + the growth rate). Thus, the quarterly DCF model calculates the expected next year dividends of $0.26 (0.25 x 1.04) on March 30 and June 30 of 2004 and $0.2704 (0.26 x 1.04) on September 30 and December 30 of 2004.

Q. Do you agree with Mr. Allen's argument that an investor will only expect to receive half of his expected growth rate over the next year?

A. No. As the example illustrates, an investor who purchases a stock on January 1, 2004, can expect to receive the entire amount of his expected growth rate in 2004. The first two dividends in 2004 will grow by 4% compared to the first two dividends in 2003, and the last two dividends in 2004 will grow by 4% compared to the last two dividends in 2003.

Q. Does Mr. Allen present a numerical example in his rebuttal testimony that attempts to illustrate that investors will only expect to receive half of their growth rate over the next year?

A. Yes. However, Mr. Allen's illustration does not compare investors who purchase a stock at the same point in time. Rather, he assumes that some investors purchase the stock in the first quarter, others purchase the stock in the second quarter, others in the third quarter, and others in the fourth quarter. This is not how the DCF model works. The DCF model looks at an investor who purchases a stock at a single point in time and calculates the present value of the future stream of dividends accruing to the investor. The quarterly DCF model is the only model that can be derived from the assumption that the stock price is equal to the present value of expected future dividends.

Q. How did you estimate the growth component of your DCF model?

A. I estimated the growth component using the average analysts' long-run growth forecast reported by I/B/E/S, where the average is the average of all the growth forecasts contributed to the I/B/E/S survey of investment analysts.

Q. Did you apply your DCF model to Empire in your direct testimony?

A. No. As described on page 29 of my direct testimony, I only applied my DCF model to electric and natural gas companies that had at least three analysts included in the I/B/E/S average growth forecast. Since there were fewer than three analysts included in the growth forecast for Empire, I did not apply the DCF model to Empire in my direct testimony.**[3]**

Q. On page 25 of his rebuttal testimony, Mr. Allen criticizes your DCF analysis on the grounds that proxy companies "should not be the primary focus of an analysis when the subject company has publicly-traded stock." Do you agree?

A. No. As I described in my surrebuttal of Mr. Murray, proxy companies should be the primary focus of cost of equity testimony because the result of applying the DCF model to a single company is highly uncertain, especially when the subject company operates in an economic environment that is inconsistent with the basic stability assumptions of the DCF model.

Q. Does Mr. Allen have any other criticisms of your application of the DCF model?

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[3] At the time of my studies for my direct testimony, there were two analysts' forecasts included in the average long-term growth forecast for Empire. The most recent I/B/E/S data, October 2004, includes only one long-term growth forecast for Empire.

A. Yes. On page 26 of his rebuttal testimony, Mr. Allen states that I should have "used the consensus forecast published by S&P or the consensus forecast published by Thomson" because these forecasts are based on "consensus estimates with each having four contributing analysts."

Q. Is Mr. Allen's assertion that the S&P and Thomson Financial forecasts are based on four contributing analysts correct?

A. No. Mr. Allen's statement refers to the number of analysts making short-term earnings forecasts for these companies, not the number of analysts making long-term earnings forecasts for these companies. The DCF model requires estimates of long-term growth. While the S&P and Thomson Financial earnings forecasts for next year may be based on four contributing analysts, their long-term forecasts are based on significantly fewer contributing analysts. Indeed, at present S&P does not appear to have any analysts making a long-term earnings growth forecast for Empire, and Thomson has just one analyst. In addition, Thomson Financial owns I/B/E/S, and any long-term earnings growth forecasts for Empire presented by Thomson are identical to those presented by I/B/E/S.

Q. You mentioned earlier that you did not apply the DCF model to Empire in your direct testimony. Did you apply the DCF model to Empire in your rebuttal testimony?

A. Yes, I did. As described on page 6 of my rebuttal testimony, I applied the DCF model to Empire based on the 4% average analyst growth rate

reported in Mr. Murray's direct testimony at page 29. This calculation produced a DCF result for Empire of 10.9%.

B. CAPM

Q. Did Mr. Allen address issues relating to the application of the CAPM in his rebuttal testimony?

A. Yes. On page 14 of his rebuttal testimony, Mr. Allen argues that Empire does not merit a size premium adjustment because:

> any risk associated with Empire's small size is already factored into its market-derived stock price and is therefore already factored into its beta and CAPM return.

Q. Do you agree with Mr. Allen's argument that because Empire's small capitalization risk is factored into its stock price, Empire's small capitalization risk must also be factored into its beta and CAPM return?

A. No. The fact that Empire's small capitalization risk is factored into its stock price does not imply that this risk is also factored into its beta and CAPM return. In fact, there is substantial empirical evidence supporting the conclusion that small capitalization risk is not factored into either a company's beta or its CAPM return. These studies suggest that the problem is not with Empire's stock price, but with the CAPM equation itself. In particular, the CAPM equation does not appear to capture entirely how securities are priced in the capital markets.

Q. Do you have any evidence that the risks associated with Empire's small capitalization are not included in its beta and CAPM return?

A. Yes. In my rebuttal testimony at pp. 14 – 15, I discussed only a small sample of the evidence that the risks of small capitalization are not included in a company's beta and CAPM return. A more complete summary of the literature on the failure of the CAPM to include the risks of small capitalization is contained in a recent article by Fama and French, "The Capital Asset Pricing Model: Theory and Evidence," *The Journal of Economic Perspectives*, Summer, 2004.

C. Ex Ante Risk Premium Analysis

Q. What are Mr. Allen's criticisms of your ex ante risk premium method for estimating Empire's cost of equity?

A. Mr. Allen criticizes my ex ante risk premium method of estimating Empire's cost of equity on the grounds that: (1) I calculated the ex ante risk premium over a period of only 68 months; (2) when performing an historical analysis, analysts generally use many years of data because the returns that investors earn may be different than what was expected; and (3) my risk premium analysis is only as good as the DCF estimate used to calculate the ex ante risk premium. (See page 33 of Mr. Allen's rebuttal testimony.)

Q. Why did you calculate your ex ante risk premium results using 68 months of data?

A. As I explained in my deposition testimony at pages 87 - 89, I calculated my ex ante risk premium results over 68 months because this was the longest period of time for which I could obtain the data required to

perform DCF calculations that are the basis of my ex ante risk premium results.

Q. Do you agree with Mr. Allen's argument that analysts calculate risk premiums over much longer periods than 68 months because earned returns over shorter periods may not reflect investors' expected returns?

A. No. Mr. Allen is confusing "ex ante" risk premium studies with "ex post" risk premium studies. Ex ante risk premium studies are based on investors' expectations as reflected in DCF model calculations rather than earned returns. In ex ante risk premium studies it is common to limit the study period to a relatively short period of time. On the other hand, ex post risk premium studies are based on the returns actually earned in the marketplace by stock and bond investors. These studies are generally based on long periods of time because earned returns may turn out to be different than expected. For this reason I did use a very long period of time in my ex post risk premium study.

Q. Do you agree with Mr. Allen's criticism that your ex ante risk premium results are questionable because they are "only as good as" your DCF estimates?

A. No. As noted in my rebuttal of Mr. Murray, all cost of equity calculations are based on estimates. Mr. Allen's concern about the accuracy of the DCF model is inconsistent with his own recommendation to rely solely on an application of the DCF model to one company, Empire. One of the

major purposes of my use of the ex ante risk premium approach is to significantly reduce the large uncertainties that arise when a single approach is applied to a single company.

D. Ex Post Risk Premium Analysis

Q. Does Mr. Allen make any comments in his rebuttal testimony regarding your ex post risk premium analysis?

A. Yes. Mr. Allen believes my ex post risk premium analysis based on the S&P 500 is inappropriate because I failed to adjust my results for Empire's risk relative to the S&P 500. He also criticizes my ex post risk premium result because the achieved historical risk premiums have a high standard deviation of returns.

Q. Have you already responded to Mr. Allen's first criticism regarding your ex post risk premium analysis?

A. Yes. In my surrebuttal of Mr. Murray, I explained that it is unnecessary to adjust my risk premium results for Empire's beta because my recommended cost of equity based on the ex post risk premium analysis is based on the results of both my S&P 500 and S&P Utilities risk premium studies; and Empire's current risk, in my opinion, is less than the S&P 500 over the period of my study, but greater than the risk of the S&P Utilities over the period of my study.

Q. Do you agree with Mr. Allen's assertion that the standard deviation of your historical risk premium results is relatively high?

A. Yes. However, this in no way invalidates the usefulness of my ex post risk premium studies for estimating the cost of equity. First, even though

the historical risk premiums have a high standard deviation, the arithmetic average risk premium over the many years of my study is still the best historically-based estimate of the forward-looking risk premium. Second, because my historical risk premium data provide cost of equity evidence that is distinct from my DCF and ex ante risk premium results, it contributes significantly to a reduction in the uncertainty regarding Empire's cost of equity. Third, there can be little doubt that Mr. Allen's cost of equity estimate based on the application of the DCF to a single company has an even higher standard deviation than my ex post risk premium estimate. However, the difficulty is that Mr. Allen does not report—indeed, he cannot report--the standard deviation because the range of possible investor growth expectations is very high.

E. Adjustment for Financial Risk

Q. On page 39 of his rebuttal testimony, Mr. Allen claims that you failed to "inform this Commission" that you used a market value capital structure to evaluate the financial risk of your proxy companies. Did you fail to inform the Commission regarding your use of a market value capital structure to evaluate the financial risk of Empire compared to your proxy companies?

A. No. I clearly stated that I assessed the financial risk of my proxy companies using market value capital structures in my direct testimony:

> The 10.7 percent cost of equity for my proxy groups reflects the financial risk associated with my proxy companies' average capital structures, ***where the capital structure weights are measured in terms of market values***. Since financial leverage, that is, the use of debt financing,

> increases the risk of investing in the proxy companies' equity, the cost of equity would be higher for a capital structure containing more leverage. [Emphasis added.] (Vander Weide Direct Testimony at page 49.)

Q. Are Mr. Allen's remaining concerns regarding your financial risk assessment identical to the concerns of Mr. Murray?

A. Yes, they are.

Q. Have you addressed Mr. Allen's remaining concerns regarding your financial risk adjustment in your surrebuttal testimony of Mr. Murray?

A. Yes, I have.

Q. Does this conclude your surrebuttal testimony?

A. Yes, it does.

The Empire District Electric Company
Surrebuttal Schedule JVW-1
Value Line Safety Rank and S&P Bond Ratings for Electric Companies
Included in Ex Ante Risk Premium DCF Studies

Ex Ante Electric DCF Companies	Ticker	Market Cap $ (Bil)	Value Line Safety Rank	S&P Bond Rating	June 04 S&P BOND RATING (Numerical)	S&P Business Profile
American Electric Power	AEP	12.0	3	BBB	8	6
Cinergy Corp.	CIN	6.8	2	BBB+	7	6
Consolidated Edison	ED	9.0	1	A	5	2
Constellation Energy	CEG	6.1	2	BBB+	7	7
Dominion Resources	D	20.0	2	BBB+	7	7
DPL Inc.	DPL	2.6	3	BB-	12	8
DTE Energy Co.	DTE	6.6	3	BBB+	7	6
Duke Energy Corp.	DUK	16.0	3	BBB	8	7
Energy East Corp.	EAS	3.4	2	BBB+	7	3
FirstEnergy Corp.	FE	11.0	3	BBB-	9	6
IDACORP. Inc.	IDA	1.2	3	A-	6	5
NiSource Inc.	NI	5.6	3	BBB	8	4
OGE Energy Corp.	OGE	2.1	3	BBB+	7	6
PPL Corp.	PPL	7.2	3	BBB	8	7
Progress Energy	PGN	10.5	2	BBB	8	6
Public Service Enterprise	PSEG	9.5	3	BBB	8	7
Southern Company	SO	21.2	2	A	5	4
Teco Energy Inc.	TECO	2.3	3	BBB-	9	5
Xcel Energy Inc	XEL	6.8	3	BBB	8	5
Market Wtd. Average			2.5	BBB+	7.3	5.7
Simple Average			2.6		7.6	5.6
Empire District			3	BBB	8	6

Source of Data:

The Value Line Investment Survey, Standard & Poor's Utilities & Perspectives