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Issue:	*Rate of Return*
Witness:	*Stephen G. Hill*
Sponsoring Party:	*MoPSC Staff*
Type of Exhibit:	*Surrebuttal Testimony*
Case No.:	*ER-2007-0002*
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SURREBUTTAL TESTIMONY

OF

STEPHEN G. HILL

ON BEHALF OF

THE MISSOURI PUBLIC SERVICE COMMISSION

UNION ELECTRIC COMPANY,
d/b/a AmerenUE

CASE NO. ER-2007-0002

Jefferson City, Missouri
February 2007

BEFORE THE PUBLIC SERVICE COMMISSION

OF THE STATE OF MISSOURI

In the Matter of Union Electric Company d/b/a AmerenUE for Authority to File Tariffs Increasing Rates for Electric Service Provided to Customers in the Company's Missouri Service Area.	))))	Case No. ER-2007-0002

AFFIDAVIT OF STEPHEN G. HILL

STATE OF WEST VIRGINIA)
) ss.
COUNTY OF PUTNAM)

Stephen G. Hill, of lawful age, on his oath states: that he has participated in the preparation of the foregoing Surrebuttal Testimony in question and answer form, consisting of 41 pages to be presented in the above case; that the answers in the foregoing Rebuttal Testimony were given by him; that he has knowledge of the matters set forth in such answers; and that such matters are true and correct to the best of his knowledge and belief.

Stephen G. Hill
Stephen G. Hill

Subscribed and sworn to before me this 22nd day of February 2007.

OFFICIAL SEAL
NOTARY PUBLIC
STATE OF WEST VIRGINIA
BILLY JACK GREGG
P. O. Box 107
Hurricane, WV 25526
My Commission Expires Sept. 10, 2014

Notary Public

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Q. PLEASE STATE YOU NAME, OCCUPATION AND ADDRESS.

A. My name is Stephen G. Hill. I am self-employed as a financial consultant, and principal of Hill Associates, a consulting firm specializing in financial and economic issues in regulated industries. My business address is P. O. Box 587, Hurricane, West Virginia, 25526 (e-mail: sghill@compuserve.com).

Q. ARE YOU THE SAME STEPHEN HILL WHO TESTIFIED PREVIOUSLY IN THIS PROCEEDING ON BEHALF OF THE COMMISSION STAFF REGARDING COST OF CAPITAL ISSUES?

A. Yes, I am.

Q. WHAT IS THE PURPOSE OF YOUR SURREBUTTAL TESTIMONY?

A. I will respond to the Rebuttal Testimony submitted by AmerenUE (the Company) witnesses Dr. James H. Vander Weide and Ms. Kathleen C. McShane.

Q. CAN YOU PROVIDE A BREIF SUMMARY OF YOUR SURREBUTTAL?

A. Prior to addressing the technical details of the Company's rebuttal of my direct testimony, I discuss four issues of a general nature regarding the Company's continued focus on market-value capital structures in rate base/rate of return regulation.

- The Company's position ignores fifty years of regulation based on book value rate base and book value capital structure;

- The Company's reference to "economics" as homogenous field of study with one set of rules is misleading;
- The Company's home mortgage/capital structure example is not meaningful as an example of rate base regulation; and
- Ms. McShane's attempt to show that the use of market value capital structures would not cause an upward spiraling of market-to-book ratios is unrelated to capital structure and shows, instead, that a utility continually allowed a return in excess of the cost of capital will have a market price that exceeds its book value.

Following my discussion of general issues related to the improper use of market-value capital structures, I address the Company's concerns with the objective measures of the cost of capital I cited in my direct testimony:

- Ameren's long-term pension fund equity return expectations;
- Reports of relatively low expected returns in investor service publications;
- Recent research in the financial community which indicates that investors' current market risk premium expectations are much lower than indicated by long-term historical averages.

I demonstrate that all of those objective indicators of current equity costs are reliable and support my 9.25% equity return recommendation in this proceeding. I also show that a source the Company witnesses cite often for authority (Brealey and Meyers)[1] support a market risk premium considerably below that utilized by the Company, and which, if included in a CAPM analysis would indicate a cost of equity of approximately 9.0%.

The next section of my surrebuttal testimony addresses specific concerns raised by Company witnesses Vander Weide and McShane regarding my cost of equity analyses:

[1] Brealey, R., Meyers, S., Allen, F., Principles of Corporate Finance, 8th Ed., McGraw-Hill/Irwin, New York, NY, 2006.

- Sample group selection - I show that my sample group, which is comprised of companies that have at least 70% of revenues from electric utility operations, provides a reliable similar-risk proxy for AmerenUE.
- DCF dividend yield - I show that my DCF dividend yield matches Value Line year-head projections very closely and Dr. Vander Weide's quarterly compounding adjustment overstates the cost of equity.
- DCF growth rate – I show that a source of authority for the Company witnesses supports the use of the type of DCF growth rate I use and cautions that analysts' earnings growth (the only growth used by the Company witnesses) overstates investor expectations.
- CAPM – The market risk premium research I cite indicates a much lower market risk premium than that used by the Company witnesses is appropriate. That fact is confirmed by Brealey and Meyers, the Company's authoritative source.
- MEPR and MTB analyses – I show that both my Modified Earnings Price Ratio and Market-to-Book Ratio analyses provide useful and theoretically sound corroboration of my primary DCF analysis of the cost of equity capital.

Finally, my testimony addresses the Company's rebuttal to my financial risk adjustment for AmerenUE. I show that whether one measures by book value or by market value, the common equity of AmerenUE is greater than the average for the sample group of electric companies in my similar-risk sample group. Therefore, a downward risk adjustment for AmerenUE, below the mid-point of the range for the similar risk sample group is appropriate.

Q. HOW IS YOUR SURREBUTTAL TESTIMONY ORGANIZED?

A. Because the witnesses use similar logic in addressing portions of my testimony, I will address the Company's rebuttal by subject rather than by witness. Initially,

I will respond to the Company's rebuttal regarding the objective measures of the cost of equity capital presented in my testimony—Dr. Vander Weide refers to these as the "Tests of Reasonableness." Contrary to the spurious logic presented by Dr. Vander Weide and Ms. McShane, each one of the "Tests of Reasonableness" I reference in my direct testimony are valid indicators of investors' expected returns, which is precisely what a cost of equity estimate is designed to determine. Moreover, those indicators all support a cost of equity capital for electric and gas utilities that is below 10%.

Next, I turn to the Company's critique of my cost of equity analyses: my sample group selection and my equity cost estimation methodologies (DCF, CAPM, MEPR, and MTB). Finally, I briefly address the Company's comments on financial risk and capital structure.

Q. HAS THE COMPANY'S REBUTTAL TESTIMONY CAUSED YOU TO ALTER YOUR POSITION IN THIS PROCEEDING IN ANY WAY?

A. No. The Company's rebuttal testimony is ineffective because it is based on flawed logic and, elects to address "straw-man" issues that are purported to represent positions expressed in my testimony, but do not do so.

Q. PRIOR TO ADDRESSING THE DETAILS OF THE ISSUES RAISED IN THE COMPANY'S REBUTTAL, DO YOU HAVE COMMENTS OF A GENERAL NATURE REGARDING THE REBUTTAL TESTIMONY OF DR. VANDER WEIDE AND MS. McSHANE AND THEIR CONTINUED SUPPORT OF MARKET-BASED CAPITAL STRUCTURES?

A. Yes. Setting aside the uncomfortable fact that both of the Company witnesses have recently relied on book value, not market-value capital structures for rate setting purposes in sworn testimony, there are four aspects of their testimony regarding the use of market-value capital structures that should be addressed.

1. Rate of Return Regulation

There appears to be a belief on the part of the Company rate of return witnesses that the parties in this proceeding have forgotten (or doesn't care) how regulation has worked for the past fifty years or more, because, through their continued reference to market-based capital structures, they suggest dramatic changes to the status quo. For that reason, a very brief review of traditional rate base/rate of return regulation is in order.

Rate base is the depreciated original cost of the utility's used-and-useful plant, and it is the value of the plant investment on which the utility is allowed to earn a return. By convention, rate base is an accounting concept, not a market-value concept. The debate over "fair value" of the utility investment was settled long ago.[2] In regulation the fair value is the depreciated book value of the utility's plant assets, which is found on the asset side of the balance sheet.

The actual mix of capital used to finance rate base is found on the liability side of the utility balance sheet, and consists primarily of common equity capital and fixed-income capital (debt and preferred stock). The relative percentages of debt and equity form the ratemaking capital structure—the capital structure used to determine the overall cost of capital for ratemaking purposes. That capital structure is a book value capital structure and those book value amounts represent the manner in which the assets on the utility's balance sheet (the rate base) have been financed.

In addition to recovering its on-going, normalized operating expenses and taxes, the utility is allowed to earn a return on the book value of its utility plant investment (its rate base). The return allowed the utility is designed to be sufficient to 1) meet the interest

[2] According to Morin (Utilities Cost of Capital, Public Utilities Reports, Inc., Arlington VA, 1984, p. 15), the Hope case in 1944 sounded the death knell for fair value rate base shifting the debt from reproduction cost to the "end-result" doctrine and the allowed return.

costs of the debt that is on the company's books, and 2) to provide the return investors require on the common equity portion of the book value capital structure.

With the introduction of market-based equity cost estimation techniques in the early 1960s, the return allowed on the common equity portion of the book value capital structure for utilities has been a market-based return—the cost of equity capital. That is, regulatory economics estimates the return investors expect in the marketplace for utility equity (the cost of equity capital), and the utility is allowed to earn that market-based return on the portion of its book value rate base financed with equity capital. In order that debt and equity investors are provided their required returns, the capital costs of debt and equity are applied to the book value percentages of those types of capital in determining the overall return to be allowed is setting rates. The allowed return is set equal to the cost of capital so the utility can achieve the optimal rate of investment at the minimum price to the ratepayers.

A market-based cost of equity and an embedded cost of debt applied to a book value capital structure determine the overall return, which is the return allowed to be earned on the book value investment in utility plant (the rate base)—that has been the regulatory paradigm followed in the U.S. for the last fifty years. The above description is not a *theory* of how regulation might work, it is how regulation has actually operated (and operated successfully) for a very long time. The Company's insistence that "economic theory" *requires* that market values be used to determine capital structure ratios and allowed returns is simply incorrect, and ignores five decades of regulatory history.

2. Economics

The Company witnesses use the term "economics" as if it is, somehow, an unvarying, monolithic field of social science in which the theories and assumptions are uniform and rigid. In other words, whatever theories and assumptions apply in one branch of

economics apply to all. This is simply not the case. There are different areas of economics. For example, while financial economics looks at the dollar rate of return as the measure of value to investors, behavioral economics uses a utility function as the fundamental measure of worth to investors. Each branch is well developed and has its adherents, but operates under differing theoretical precepts. In fact, as I discuss in more detail subsequently, it is the difference between the risk premium predicted by behavioral economists and the historical risk premium results relied on by financial economists that gave rise to the "risk premium puzzle" that has been the genesis of much of the new research on the risk premium that I reference in my direct testimony.

In addition, regulatory economics is different from the standard textbook financial economics, to which the Company witnesses now elect to adhere. The engine of value in regulatory economics is the book value of the assets—the rate base of the utility—not the economic value of those assets. In regulation, the future income stream of the utility assets is predicated on the depreciated original cost (book value) of the utility plant. For unregulated companies, the future cash flows generated by a firm's assets are not a function of the book value of those assets, but, rather, to the ability of that firm to earn a profit in a competitive environment. For unregulated companies, there is no easily identifiable nexus between the book value of its assets (or its book value capital structure) and the market value of the firm. However, with a regulated utility, there is such a nexus. That is why book value capital structures are appropriate for rate-setting purposes and also why general references to generalized "economic theory" do not necessarily apply to utility ratemaking.

3. Home Mortgage Example

A useful example of the differences between financial economics and regulatory economics can be observed in "market-value" examples offered by both

Dr. Vander Weide and Ms. McShane. In attempting to buttress their reliance on market-value capital structures in a regulatory setting, both Company witnesses offer a home mortgage example in which the original cost of the home (the book value), purchased with a certain level of debt, changes due to housing demand and supply conditions, raising the market value of the home, and changing the effective leverage. However, those examples are not germane when applied in a regulatory setting.

In order to be analogous to regulatory economics and utility rate setting, the valuation of a home would have to be directly related to its book value. For example, the original cost of the home (the book value), the manner in which it was originally financed (book value capital structure) and the cost of capital of the debt and equity used to purchase the home, along with how efficiently the homeowner operated the home, would determine its value. That is certainly not the case in the mortgage examples offered by the Company. The Company's mortgage/leverage examples operate under very different circumstances than those that exist under rate-base/rate of return regulation. The Company's home mortgage examples are off-point, and do not support its position that utility rates should be set using market value capital structures.

4. Market-to-Book Ratios

In attempting to show, in response to intervener criticism, that the use of market-value capital structures in rate-base/rate of return regulation would not cause an upward spiraling of market-to-book ratios, Ms. McShane offers Table 2 at page 14 of her Rebuttal Testimony. Unfortunately, her Table 2 example does not support her position because a fundamental change in the manner in which capital structure is calculated (her recommendation in this proceeding) is not involved in her numerical example. Moreover, Ms. McShane's Table 2 shows very clearly that when a utility is continually allowed to earn a

return that *exceeds* the cost of capital (the result she advocates here), the market-to-book ratio will be maintained at a level greater than 1.0.

The exact calculations used by Ms. McShane also demonstrate that when a utility is allowed a return equal to the cost of capital, the market price will equal book value and dividends, earnings, book value, and stock price all grow at the same constant rate:

Table I

McShane's Rebuttal Table 2 Example With Allowed Return Equal to the Cost of Capital

		Year 1	Year 2	Year 3	Year 4	Year 5
1	Book Value	$10.00	$10.46	$10.93	$11.43	$11.95
2	Market Value	$10.00	$10.46	$10.93	$11.43	$11.95
3	M/B Ratio	1.00	1.00	1.00	1.00	1.00
4	Payout Ratio	52%	52%	52%	52%	52%
5	Book Return	**9.50%**	**9.50%**	**9.50%**	**9.50%**	**9.50%**
6	Earnings/Sh.	$0.95	$0.99	$1.04	$1.09	$1.14
7	Dividends/Sh.	$0.49	$0.52	$0.54	$0.56	$0.59
8	Growth	4.56%	4.56%	4.56%	4.56%	4.56%
	Dividend					
9	Yield	4.94%	4.94%	4.94%	4.94%	4.94%
10	Market Return	--	**9.50%**	**9.50%**	**9.50%**	**9.50%**

TESTS OF REASONABLENESS

Q. TO WHAT DOES THE TERM "TESTS OF REASONABLENESS" REFER?

A. At the outset of my direct testimony, in support of my 9.25% equity cost estimate for AmerenUE in this proceeding, I offered the Commission several objective indicators of investors' equity return expectations. Equity return expectations are the focus of an equity cost estimate. The reason why expert witnesses in utility rate cases use DCF, CAPM and Risk Premium methods, is to estimate the market cost of equity—the equity return that

investors' expect in the marketplace. The market cost of equity is defined as that return equity investors expect in order to commit capital to a firm of a particular risk-class.

The application of econometric models like the DCF and CAPM necessarily include the subjective judgment of the analyst.[3] Therefore, it is useful, in my view, to present examples of equity return expectations that are published by independent sources, are available to the public and are, therefore, representative of the level of returns actually expected by investors. If the expected equity returns available in independent published sources are similar to the returns provided by econometric analysis, then the analysts' equity cost estimate is more robust. In the instant proceeding, my 9.25% equity cost estimate is supported by several other independent indicators and the equity cost estimate proffered by the Company's witnesses (approximately 12%) is not.

It is important to underscore that the returns I use for comparison are market-based returns. They must be market-based returns because those are the returns that are directly comparable to the equity return estimates provided by the DCF, CAPM and Risk Premium. Book value returns (cited by both Company witnesses) are not equivalent to the cost of capital and are not the appropriate measure of investors' expected returns to be used in regulation. For example, at pages 9 and 10 of his rebuttal, Dr. Vander Weide cites projected 11% returns on book value for electric companies as not being supportive of my 9.25% equity return recommendation. However, book value returns are not equal to the cost of equity

[3] While the Company witnesses would argue that the use of analysts' earnings growth rates, for example, eliminates subjectivity from the DCF, that is untrue. The decision to use only one measure of future growth when many others are available is a subjective choice that can have a dramatic affect on the outcome of the model, as I have shown at pages 36 through 40 of my Rebuttal Testimony.

capital. [4] As I show on Schedule 9 attached to my direct testimony, when utility market prices are significantly above book value, as they are now,[5] the cost of equity capital (what we're looking for in this case) is well below the expected return on book value. Therefore, not only is Dr. Vander Weide's reference to Value Line's projected return on book value for electric utilities not an indicator of utility cost of equity capital, it provides further support for my 9.25% equity return recommendation in this case, and shows that his 12% recommendation is not reliable.

Q. BOTH WITNESS VANDER WEIDE AND McSHANE DEVOTE CONSIDERABLE REBUTTAL TESTIMONY TO YOUR USE OF AMEREN'S PENSION FUND RETURN EXPECTATIONS AS CORROBORATING YOUR 9.25% EQUITY RETURN RECOMMENDAITON IN THIS PROCEEDING. WHY HAVE THE WITNESSES FOCUSED SO HEAVILY ON THAT ONE ISSUE?

A. Dr. Vander Weide and Ms. McShane devote about one-quarter and one-third, respectively, of their entire rebuttal of my testimony to this one issue for two basic reasons, in my view. First, this is a simple, easily understood issue: Ameren's expected return on the equity investments in its pension fund is similar to the return I recommend in this proceeding. That provides powerful support for my equity return recommendation. The volume of the Company's response to this issue is, I believe, an attempt to obfuscate the issue and make it seem more complicated than it actually is. Second, a large part of the Company's rebuttal on pension fund equity returns (i.e., many pages addressing the arithmetic/geometric mean issue)

[4] Although she points to higher book value returns for utilities as rationale for not relying on my cost of equity recommendation (McShane Rebuttal, p. 20), Company witness McShane recognizes that the return on book equity is not equal to the cost of capital: "The return on book equity...does not measure the return required on the market value of utility shares..." (McShane Rebuttal, p. 44).

[5] AUS Utility Reports, January 2007 indicates the average combination gas/electric company stock price is 190% of book value.

is simply off-point and unrelated to the fact that the range of equity returns Ameren expects to earn from its equity investments (8.4%-10.6%)[6] supports the reasonableness of the equity return I recommend for AmerenUE in this proceeding (9.25%).

Q. WHAT ARE THE SPECIFIC ISSUES RAISED BY THE COMPANY IN REGARD TO AMEREN'S PENSION FUND EQUITY RETURN EXPECTATION?

A. Dr. Vander Weide's rebuttal to the use of Ameren's expected pension fund equity returns as an indicator of investors' current return expectations can be summarized in four parts, which are set out in bullet points below.

- Ameren's published pension fund overall return is 8.5%, which is higher than the overall return for AmerenUE recommended by Staff, and doesn't support Staff's recommendations.
- The published pension fund returns are based on historical geometric return averages and, if adjusted to arithmetic averages, would indicate equity returns of 12%. (Ms. McShane provides similar rationale on this point.)
- The pension fund return is a return on market value and represents "a different base than recommended return on equity."
- The pension fund return is based on GAAP (Generally Accepted Accounting Principles) and, thus, is an "entirely different concept," from the cost of equity capital.

Company witness McShane adds the following points regarding Ameren's pension fund equity return expectations:

- The expected return is only one part of several economic assumptions that occur in calculating pension fund expense.
- Actuaries' analyses are conservative.

[6] Hill Direct, p. 6.

Q. WHAT IS YOUR RESPONSE TO THE ISSUES RAISED REGARDING THE VALUE OF PENSION FUND EQUTIY RETURN EXPECTATIONS AS A PROXY FOR THE COST OF EQUTIY CAPITAL IN THIS PROCEEDING?

A. It is certainly true that pension fund expense is calculated by actuaries who adhere to generally accepted professional procedures of both accounting and actuarial science. It is also true that the expected return is only one part of the determination of the current annual pension fund expense. Neither of those facts affect, in any way, the validity of comparing the Company's expected return on the equity investments in its retirement portfolio to the cost of equity estimate I recommend in this proceeding. They are both investor-expected long-term equity return expectations.

In order to calculate the current pension fund expense many factors must be considered: the actual portfolio return earned in the most recent year must be determined, the differences between last year's expected return and the actual return must be accounted for, and the projected changes in the workforce or mortality statistics must be estimated. Those are all accounting/actuarial issues. However, those who calculate pension fund expense must also make economic assumptions (as Ms. McShane correctly notes, they make *many* economic assumptions). Therefore, Dr. Vander Weide's suggestion that the determination of pension fund expense is solely an accounting exercise, and is, therefore, an entirely different concept from the cost of equity (investors' expected return), is obviously incorrect.

A key economic assumption that must be made in the determination of current pension fund expense—and the one on which I focus as support for my equity cost estimate—is the long-term expected return on the equity capital assets in the Company's retirement

portfolio.[7] The Company has an obligation to its employees to provide a pension when they retire. Therefore, it has to have available a certain amount of money in the future to pay those retirees. In order to make sure they have that money available in the future, the Company currently has a large investment portfolio. In order to know if the current investment portfolio will generate the monies necessary when their workers retire, the Company must estimate the annual rate of return it will earn on the equity and debt assets that it currently has invested.

The annual return on the equity portion of the Company's portfolio is an objective measure of investors' long-term equity return expectations—it is what one very large investor (Ameren) believes it will earn on its equity investments over the long-term. That is precisely the parameter the cost of equity analyst seeks to estimate using the DCF, CAPM and Risk Premium analyses. Therefore, even though the expected long-term return on equity used by Ameren to project the future value of its pension fund portfolio is only one part of a complicated process of determining the current pension expense, it is a legitimate measure of investors' long-term equity return expectations, which is directly equivalent to the cost of equity capital. Again, Dr. Vander Weide's rationale that the Company's expected equity return is a concept unrelated to the cost of capital is simply incorrect.

Also, the cost of equity capital is a market-based concept, as I have discussed above. All of the equity cost estimation methods used in regulation (DCF, CAPM, Risk Premium) produce market-based equity cost measures. The expected return on equity in

[7] Company witness Vander Weide's focus on Ameren's overall expected portfolio return of 8.5% is off-point. The mix of debt and equity in Ameren's retirement portfolio is different from the ratemaking capital structure requested by AmerenUE and the cost rates of the fixed-income capital components are also different. My focus is on the long-term expected return on the equity investments in Ameren's portfolio, which ranges from 8.4% to 10.6%, with a mid-point of 9.5%. That expectation is similar to my estimate of the cost of equity capital (investors' required return) for AmerenUE of 9.25%.

Ameren's retirement portfolio is also a market-based return, as Dr. Vander Weide correctly notes, and is, for that reason, directly comparable to the cost of equity capital that will be used to determine the allowed return in this proceeding.

With regard to Ms. McShane's caution that the expected return on Ameren's pension plan assets may be somewhat conservative, I have previously discussed the factors that tend to limit both over- and under-statement of pension fund returns at pages 7 and 8 of my direct testimony. An understatement of expected returns on pension fund assets will lead to an overstatement of current pension fund expense, lower current profits and lost infrastructure investment opportunities. In addition, when asked in Staff Data Request 226(d), "Is the return expectation used to determine pension costs designed to be low in order to be conservative," Company witness Vogl, an actuary for Towers Perrin, said simply, "No."

Q. HOW DO YOU RESPOND TO THE COMPANY'S POSITION THAT THE 9.5% LONG-TERM EQUITY RETURN ESTIMATE FOR AMEREN'S EQUITY INVESTMENTS IS A GEOMETRIC VALUE THAT SHOULD BE ADJUSTED UPWARD TO APPROXIMATELY 12%?

A. According to data published in its S.E.C. filings and responses to data requests filed in this proceeding, Ameren is basing its current pension fund expense on an assumption that the long-term return it will earn on the equity investments in its retirement portfolio ranges from 8.4% to 10.6%, with a mid-point of 9.5%. The Company's long-term equity return expectation is 9.5%; it is not 12%. If Ameren actually expected to earn a 12% return on its equity investments, a) its current pension expense would be much, much lower and 2) it would have mis-represented its retirement portfolio return expectations in public information filings required by the S.E.C. Therefore, the Company witnesses' claims that Ameren's

expected return on its equity investments "ought to be" or "is really" something other than what it undeniably actually is, should simply be dismissed.

Dr. Vander Weide and Ms. McShane base their claim that 9.5% is "really" 12% on the false assumption that the 9.5% expected equity return is based solely on historical earned return results (e.g., those published by Ibbotson Associates). Following that incorrect assumption leads the Company witnesses to long digressions on averaging techniques for historical data.[8] Those discussions are off-point because it is not the case that current return expectations are based solely on historical return data. In making their economic decisions with regard to the expected long-term returns actuaries consider current yields, projected market return information (which would include the relatively low risk premium estimates contained in the economic literature) as well as historical results, and statistical factors related to those historical results.[9]

Considering all the factors—both historical and projected—the Company's best estimate of the long-term return it will earn on its common equity investments ranges from 8.4% to 10.6%, with a mid-point of 9.5%. That is the return the Company expects. It doesn't expect an equity return higher than that, and the Company witnesses' claims that that long-term equity return expectation should be "transformed" to be comparable to a cost of equity estimate are wrong.

Q. ALTHOUGH THE COMPANY'S TESTIMONY ON THE GEOMETRIC AND ARITHMETIC MEAN DOES NOT AFFFECT THE VALIDITY OF YOUR USE OF THE COMPANY'S PENSION FUND EQUITY RETURN EXPECTATION AS SUPPORT

[8] Arithmetic versus geometric averaging.

[9] Actuarial Standard of Practice No. 27 (Selection of Economic Assumptions for Measuring Pension Obligations), provided by Company witness McShane in her Rebuttal workpapers.

FOR YOUR EQUTIY COST ESTIMATE, DO YOU HAVE ANY COMMENTS WITH REGARD TO WHICH OF THOSE MEASURES IS APPROPRIATE?

A. Yes. As I noted in my direct testimony at pages 42 through 44, both averages should be considered, and I cited sources for that position. Since the filing of my direct testimony I have encountered other support for why geometric averages of historical data are reasonably considered in determining an appropriate market risk premium.

Company witness McShane cited a paper by Mehra and Prescott at page 35 of her Rebuttal Testimony. While those authors endorse arithmetic averages of historical data, they also note that if historical returns were not strictly independent (an assumption for the use of arithmetic means), then the geometric mean deserved consideration.

> If, however, the objective is to obtain the *median* future value of the investment, then the initial investment should be compounded at the geometric sample average. When returns are serially correlated, then the arithmetic average [footnote] can lead to misleading estimates and thus the geometric average may be the more appropriate statistic to use.
>
> [footnote] The point is well illustrated by the textbook example where an initial investment of $100 is worth $200 after one year and $100 after two years. The arithmetic average return is 25% whereas the geometric average return is 0%. The latter coincides with the true return. (Mehra, R., Prescott, E., "The Equity Premium in Retrospect," Handbook of the Economics of Finance, Constantinides, Harris, Stultz, Editors, 2003)

Also, in a white paper presented to the Social Security Administration in 2001 regarding expected equity returns in the 21st Century, Professor John Campbell of Harvard had the following comments regarding geometric means:

> When returns are negatively serially correlated, however, the arithmetic average is not necessarily superior as a forecast of long-term future returns. To understand this, consider an extreme example in which prices alternate deterministically between 100 and 150. The return is 50% when prices rise, and –33% when prices fall. Over any even number of periods, the geometric average return is zero, but the arithmetic average

> return is 8.5%. In this case the arithmetic average return is misleading because it fails to take account of the fact that high returns always multiply a low initial price of 100, while low returns always multiply a high initial price of 150. The geometric average is a better indication of long-term future prospects in this example. [footnote omitted]
>
> The point here is not just a theoretical curiosity, because in the historical data summarized by Siegel, there is strong evidence that the stock market is mean-reverting. That is, periods of high returns tend to be followed by periods of lower returns. This suggests that the arithmetic average return probably overstates expected future returns over long periods." (Estimating the Real Rate of Return on Stocks Over the Long Term, Papers by Campbell, Diamond, Shoven, Presented to the Social Security Advisory Board, August 2001; Cambell, J., "Forecasting U.S. Equity Returns in the 21st Century", pp. 3, 4)

I present the above information, not in an attempt to prove that only geometric averages of historical data should be used to analyze historical return data, but to counter the Company's implication that the arithmetic average of historical return data is the only reasonable parameter. Clearly, that is not the case, and consideration of both arithmetic and geometric averages of historical return data is reasonable.

Q. ANOTHER "TEST OF REASONABLENESS" PRESENTED IN YOUR TESTIMONY IS EQUITY RETURN EXPECTATIONS PUBLISHED BY INVESTOR SERVICES LIKE A.G. EDWARDS AND VALUE LINE. HOW DO YOU RESPOND TO THE COMPANY'S CONCERNS THAT SUCH INFORMATION DOES NOT SUPPORT YOUR EQUITY RETURN RECOMMENDATION?

A. Dr. Vander Weide claims that the Value Line return projections, which range from 0% to 9% on average for electric utilities, are too short-term (3- to 5-year projections) to be representative of cost of equity estimates and are too low to be reliable. Dr. Vander Weide also ignores the fact that A.G. Edwards' total market return projection for gas distributors is about 8%, and focuses, instead on the fact that the projected return on book value for some of the companies in A.G. Edwards' universe is higher than that.

First, it is important to understand that I do not represent either Value Line's or A.G. Edwards' published projections of total return for utility stocks to be estimates of the cost of equity capital. However, the cost of equity capital is defined as the market return investors expect. Therefore, I present the evidence from these investor services as an example of the objective information to which investors are exposed in the current market, and which indicate that investor expectations are likely to be low. My equity cost estimate of 9.25%, I believe, is a reasonable estimate of investors' long-term expectations and that estimate is conservative (i.e., high) in comparison to what investor advisory services are indicating investors can expect to earn on their utility investments.

Second, it is interesting that Dr. Vander Weide questions the reliability of Value Line three- to five-year projections as being not long-term enough to be representative of the cost of equity, when he bases his entire DCF analysis on five-year earnings growth estimates, which are similarly "short-term." Value Line's three- to five-year total return projections for electric utilities show that my recommended return in this proceeding is at the upper end of that investor service's market return projections, which supports the reasonableness of my estimate.

Ms. McShane complains that the returns cited by A.G. Edwards are returns on market value, and she cited book value returns (as does Dr. Vander Weide). However, book value returns are not the cost of capital (especially when market prices are well above book value). The only appropriate measure of return for comparison to a cost of equity estimate is that based on market value. Ms. McShane's concerns are miss-placed.

Ms. McShane also testifies that the Value Line total return expectations for electric utilities is probably downward-biased because interest rates are expected to increase somewhat in the future. While that may be true, Value Line's published market return

forecasts are what they are, and even if they were raised several hundred basis points, would still support the reasonableness of my equity return estimate in this proceeding.

Q. ANOTHER OF YOUR "TESTS OF REASONABLENESS" IS A SERIES OF RECENT RESEARCH TEXTS AND PAPERS RELATING TO THE MARKET RISK PREMIUM. WHAT ARE THE COMPANY'S CONCERNS WITH THAT RESEARCH AND HOW DO YOU REPOND TO THOSE CONCERNS?

A. Dr. Vander Weide claims that the articles are not current, and, in making that statement, fails to note that the Graham/Harvey paper[10] I reference is dated January 2006. All of the articles I reference have been published within the past five or six years, except the Seigel text, which was published in the 1990s. However, it is important to understand that the topic of these papers is the available historical record of stock and bond returns in the capital markets. Those data stretch back for more than 100 years. Therefore, whether one analyzes the 100-year record in 1998 or in 2003, the data set is only minutely different and any difference in the conclusions reached are not attributable to the point in time during the last few years when the research was done. Therefore, Dr. Vander Weide's implication that the market risk premium results from the research papers I cite are lower than the market risk premium he prefers, because of timing differences (i.e., the articles not being current) is incorrect. Finally, if Dr. Vander Weide were aware of any "current" research that supports risk premiums as high as those published by Ibbotson, I'm certain that he would have referenced those studies in his rebuttal testimony. The fact that he did not do so indicates that current support for high market risk premiums is non-existent.

[10] Graham and Harvey are professors of finance at Duke University and co-editors of the *Journal of Finance*. They publish an on-going survey of Chief Financial Officer's opinions about the expected market risk premium. The current (January 2007) publication indicates an expected market risk premium above 10-year T-bonds of 3.2%.

Dimson, Marsh and Staunton

With regard to the Dimson, Marsh, and Staunton paper[11], both Dr. Vander Weide and Ms. McShane extract some numbers from the document and claim that the publication supports the Ibbotson data they rely on. That is incorrect. As I noted in my direct testimony:

> Researching more data over a longer period of time, those authors come to the conclusion that over the past 100 years common stocks have earned an average arithmetic return that is 5.0% above Treasury bonds. [footnote omitted] Ibbotson's return difference between stock and long-term bonds is 6.5%—150 basis points higher. However, Dimson, et al, argue further that historical results, alone, are not accurate measures of future returns expectations unless the abnormalities in the historical record that are unlikely to exist in the future are removed in order to project for the future. Taking those facts into account, the authors conclude that, "the key qualitative point is that [the expected risk premium] is lower than the raw historical risk premium."(Hill Direct, pp. 11, 12)

Neither Company witness attempts to directly refute the above quote from my direct testimony. Rather, they select other information from the paper and imply that Dimson, et al, agree with Ibbotson. They do not. The research of Dimson, March and Staunton concludes that the historical risk premium is substantially lower than that published by Ibbotson and, more importantly, also conclude that the risk premium going forward (the focus of our investigation here) will be lower than that realized historically.

Ms. McShane expresses concern that market return data prior to 1926 (the beginning of the Ibbotson data set), which consisted mostly of banks and railroads, is not reliable and would diminish the value of the 100-year study of Dimson. Both she and Dr. Vander Weide also make the same claim with regard to the Seigel text that I cite, which

[11] Dimson, March, Staunton, "Risk and Return in the 20th and 21st Centuries," *Business Strategy Review*, 2000, Volume 11, Issue 2, pp. 1-18.

shows that the market risk premium has recently returned to levels that existed in the late 19th and early 20th Centuries, after ballooning during the time period that Ibboston studies.[12]

However, simply because the economy was comprised of different types of companies in the early 20th Century than it is today, does that mean that investors' market return experience was substantially different? The Company witnesses have not made the case that investor experience was significantly different during that time. In fact, the research shows that it was remarkably consistent. Also, the U.S. economy has changed dramatically during the 1926-2006 period studied by their preferred risk premium source—Ibbotson. The heavily industrialized economy of the 1930s depression era is markedly different from the computer chip/service industry economy of today—but Ms. McShane and Dr. Vander Weide are apparently not concerned about those differences. Also, other research performed specifically on analysis of pre-20th Century U.S. markets finds the stock and bond return data series during that time "show remarkable homogeneity" with more current data.[13]

Fama and French

In commenting on the Fama & French (FF) risk premium research (which indicates that the current market risk premium ranges from 2.6% to 4.3%), both Company witnesses express concern that Fama & French rely on a DCF-type model to estimate expected returns, although both witnesses use the DCF model to estimate the cost of equity in their testimony in the current proceeding. As Fama & French note, risk premium estimates from their fundamental DCF analysis "are more precise" than risk premium estimates developed from average earned returns (the data used by Ibbotson).[14]

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[12] Seigel, J., Stocks for the Long Run, A Guide to Selecting Markets for Long-term Growth (Irwin Professional Publishing, Chicago, IL, 1994, pp. 11-15.
[13] Schwert, W.G., "index of U.S. Stock Prices from 1802 to 1987," *Journal of Business*, 1990, Vol. 63, no. 3.
[14] Fama, E., French, K., "The Equity Premium," *The Journal of Finance*, Vol. LVII, No. 2, April 2003, pp. 639.

Dr. Vander Weide also expresses concern with FF's finding that investors' expected risk premium (the expected difference in stock and bond returns) in the latter half of the 20th Century was 60% lower than the actual earned returns. However, that is precisely the point of the FF study—historical averages of earned returns data (e.g., the Ibbotson data) are not reliable proxies for investor expectations. Over the last 50 years, earned returns substantially overstated the returns investors expected. Most importantly, in the determination of the cost of equity capital, it is investors' expected risk premiums that we seek, and that is why the appropriate risk premium to use in the CAPM is much lower than that published by Ibbotson. The result of using a lower market risk premium, of course, is a lower cost of equity estimate.

In response to FF's use of a DCF analysis to estimate the market risk premium, Company witness McShane cited an article by Harris et al, noting that article finds a risk premium similar to Ibbotson. I discussed that article at pages 14 and 15 of my direct testimony, explaining that it was the only recent research that produced risk premium results similar to Ibbotson—all of the other research indicates lower risk premiums. Also, Ibbotson (Ms. McShane's authority on historical market risk premiums) cautions against reliance on anything other than a very long-term history of returns, noting that shorter periods lead to anomalous results. As I note in footnote 10 on page 15 of my direct testimony, the Harris paper cited by Ms. McShane studies a relatively short-term period (mid 1980s through late 1990s)—a period that includes the longest bull market in U.S. history. Market risk premium data from that period is unlikely to be representative of the future.

Graham and Harvey

In his rebuttal to his Duke University colleagues' research, Dr. Vander Weide offers the concern that surveys are biased and suffer from low response rates, which

contribute to their unreliability. Here is how Graham and Harvey respond to that criticism:

> The quarterly survey of CFOs was initiated in the third quarter of 1996. [footnote omitted] Every quarter, Duke University polls financial officers with a short survey on important topical issues (Graham and Harvey, 2006). The usual response rate for the quarterly survey is 5%-8%.
>
> ...
>
> The response rate of 5-8% could potentially lead to a non-response bias. There are four reasons why we are not overly concerned with the response rate. First, our response rate is within the range that is documented in many other survey studies. Second, Graham and Harvey (2001) conduct a standard test for non-response biases (which involves comparing the result of those that fill out the survey early to the ones that fill it out late) and find no evidence of bias. Third, Brav, Graham, Harvey, and Michaely (2005) conduct a captured sample survey at a national conference in addition to an Internet survey. The captured responses (to which over two-thirds participated) are qualitatively identical to those for the Internet survey (to which 8% responded), indicating that non-response bias does not significantly affect their results. Fourth, Brav et al. Contrast survey responses to archival data from Compustat and find archival evidence for the universe of Compustat forms that is consistent with the responses from the survey sample. (Graham, J., Harvey, C., "The Equity Risk Premium in January 2007: Evidence from the Global CFO Outlook Survey, pp. 1, 2)

Dr. Vander Weide also expresses concern that Graham and Harvey note that some financial executives use "hurdle rates" that exceed the expected market return, and concludes that the risk premium, therefore, may not represent the opinions of investors. It would be reasonable to believe that a CFO who thought a particular project being evaluated had greater risk than the market, generally, would use a "hurdle rate" (a capital budgeting term for the appropriate discount rate or cost of capital for that project) higher than that of the market. However, utility investments have lower risk than the market generally. Moreover, Dr. Vander Weide's "hurdle rate" concern does not negate the fact that knowledgeable financial managers currently believe that the market risk premium is only 3.2% above 10-year Treasury bonds (the result of Graham and Harvey's most recent survey, published in

January 2007). With a current 10-year T-Bond yield of 4.8%,[15] that expectation points to a market return of 8.0%. Clearly, by this measure my 9.25% equity return recommendation for AmerenUE is reasonable.

Ibbotson

In response to my discussion of a paper by Ibbotson and Chen, which showed that forward-looking market risk premiums were 125 basis points lower than the Ibbotson historical averages, both Company witnesses cite recent updates of that study published in Ibbotson Associates yearbook. They note that the update indicates that the forward-looking risk premium (as analyzed by Ibbotson) is currently about 100 basis points below what Ibbotson publishes as the long-term historical risk premium.[16]

There are two points to note here. First, even with an update which raises the projected market risk premium, Ibbotson Associates still project market risk premiums in the future to be lower than past averages, which is precisely the point I make in my direct testimony. Second, it is not surprising that Ibbotson would continue to recommend the use of the historical averages he publishes rather than other, lower forward-looking indications, because to do otherwise would be to undercut the cottage industry he has created out of selling those historical data.

In summary, the vast majority of the recent research in financial economics regarding the market risk premium indicates that the investor-expected return of stocks over bonds is lower than the average return differences that have existed over the past 100 years,

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[15] Federal Reserve Statistical Release H.15, February 20, 2007. Average 10-year T-Bond yield for January 2007 = 4.76%.

[16] Interestingly, both witnesses cite Ibbotson Associates 2006 Yearbook, page 98 as the source for the updated information. Ms. McShane provides a copy of pages 95, 96 and 98 of Ibbotson Associates 2006 Yearbook in her rebuttal workpapers, but the new risk premium study cited is not shown on any of those pages from the Ibbotson 2006 Yearbook.

and the Company's rebuttal cannot change that fact. More importantly, that recent research supports the reasonableness my 9.25% cost of equity estimate for AmerenUE.

Q. DOESN'T MS. McSHANE ALSO CLAIM THAT THE FLURRY OF RISK PREMIUM STUDIES ARE A RESULT OF THE MARKET "BUBBLE" OF THE LATE 1990s, AND ARE OF LESSER IMPORT NOW, BECAUSE THAT EVENT HAS PASSED?

A. Yes, however, Ms. McShane's rationale regarding the genesis of the market risk premium studies is incorrect. She does, however, reference a paper in her Rebuttal Testimony by Professor Rajnish Mehra, whose research was the actual reason for the recent intense investigation of the market risk premium.

Understanding Mehra's relation to the market risk premium requires a short history. In 1985 Mehra and a colleague, Prescott, published a paper that would discover and come to be known by a phrase used in the article— "the equity risk premium puzzle."[17] In that paper, the authors noted that actual historical risk premiums were much higher than could be rationalized with standard economic models based on investors with reasonable risk aversion parameters. Mehra notes in the recent article cited by Ms. McShane:

> To the original question: Are stocks so much riskier than T-bills so as to justify a six percentage point differential in their rates of return?
> ...
> Stocks and bonds pay off in approximately the same states of nature or economic scenarios, and hence, as argued earlier, they should command approximately the same rate of return. In fact, using standard theory to estimate risk-adjusted returns, we found that stocks, on average, should command, at most, a 1 percent return premium over bills. Since, for as long as we had reliable data (about 100 years), the mean premium on stocks over bills was considerably and consistently higher, we realized we had a puzzle on our hands. It took us six more years to convince a skeptical profession and for our paper *the equity premium: a puzzle* to be published. (Mehra, R., Prescott, E.,

[17] Mehra, R., Prescott, E., "The Equity Premium: A Puzzle," Journal of Monetary Economics, No. 15 (March 1985), pp. 145-61.

"The Equity Premium in Retrospect," Handbook of the Economic of Finance, p. 899, provided in the workpapers of Company witness McShane)

Mehra's 1985 paper challenged the academic community and set off a flurry of research on two tracks. One track focused on behavioral finance, attempting to apply new aspects to traditional models describing investors' utility preferences, and expanding on Mehra's original research, which indicated that equities should at most command return premiums of 1% above bonds. If it could be shown that other models indicated that the theoretical return difference for equities was higher (and closer to the historical result), the "puzzle" originally postulated by Mehra would be somewhat less problematic. That is the focus of the recent article by Mehra—a review of other attempts to determine a theoretical risk premium based on behavioral economics. As Mehra notes in the abstract of the 2003 article cited by Ms. McShane, the "proposed resolutions" in this track of research "fail along crucial dimensions." In other words, no one has yet come up with a behavioral model that explains the risk premium puzzle.

The other track of research that resulted from Mehra's original article was a detailed examination of the historical risk premium data, i.e., the historical financial data based on the earned returns of stocks and bonds. The questions examined included: is the period chosen by Ibbotson too short; is the volatility experienced historically likely to be representative of the future; are there stochastic problems in the data such a survivor bias? It is to this latter research track in financial economics that I refer—the research directly related to the historical market risk premium. As I note above, the overwhelming result of that recent research is that the traditional Ibbotson data overstate investors' current risk premium expectations.

Finally, Ms. McShane notes that Mehra concludes that, absent reasons to believe otherwise, the equity risk premium is likely to be similar to what it was in the past. First, there are many reasons to believe that the future will be different from the past as documented in the research that I have cited, and because of that, investors' current risk premium expectations are lower than historical averages. Second, Mehra's historical average market risk premium is 160 basis points lower than Ibbotson's. Mehra's analysis finds the return difference between stocks and T-Bills to be 6.9%. Ibbotson's most recent historical average for that parameter is 8.5%. [8.5% - 6.9% = 1.6%] Also, Ibbotson's historical return difference between T-Bills and T-Bonds is 2.0%. Adjusting the Mehra data downward by 200 basis points to be a market risk premium based on T-Bonds, would produce a market risk premium for use in the CAPM of 4.9%. [6.9% (Mehra's historical difference between stocks and T-Bills) – 2.0% (difference between historical T-Bond and T-Bill yields) = 4.9% market risk premium] A 4.9% market risk premium, with a current 5% T-Bond yield and a 0.9 beta for utility stocks would produce an equity cost estimate of 9.4%.

Q. DO YOU HAVE ANY CONCLUDING COMMENTS REGARDING THE MARKET RISK RPEMIUM?

A. Although Ms. McShane and Dr. Vander Weide attempt to paint my reference to recent research related to the market risk premium as "cherry picking", the same research I cite is quoted in the financial economics text on which they both rely for authority. In a section of Chapter 7 of their 2006 textbook entitled, "Using Historical Evidence to Evaluate Today's Cost of Capital," Brealey and Meyers cite Dimson, Welch, and Graham and Harvey. In summarizing their review of the historical data and recent research outlining why simple historical averages may overstate current investor expectations, those authors conclude:

> Out of this debate only one firm conclusion emerges: Do not trust anyone who claims to *know* what returns investors expect. History contains some clues, but ultimately we have to judge whether investors on average have received what they expected. Many financial economists rely on the evidence of history and therefore work with a risk premium of about 7.5 percent [Dimson's risk premium, based on T-Bills]. The remainder generally use a somewhat lower figure. Brealey, Meyers and Allen have no official position on the issue, but we believe that a range of 5 to 8 percent is reasonable for the risk premium in the United States. (Brealey, R., Meyers, S., Allen, F., Principles of Corporate Finance, 8th Ed., McGraw-Hill/Irwin, New York, NY, 2006, p. 154)

Because, according to Ibbotson, T-Bonds have earned returns 2.0% higher than T-Bills, converting Brealey and Meyer's 5% to 8% risk premium on T-Bills to one appropriate for use with T-Bonds to determine the cost of capital, produces a reasonable risk premium range of 3% to 6%. With a current 5% T-Bond yield, a 0.9 beta for utilities, and a market risk premium range of 3% to 6%, a CAPM cost of equity analysis produces a range of equity costs for utilities of 7.7% to 10.4%, with a mid-point of 9.05%.

COST OF EQUITY ANALYSIS

Q. BOTH COMPANY WITNESSES VANDER WEIDE AND McSHANE EXPRESS CONCERNS WITH YOUR SAMPLE GROUP SELECTION. DOES YOUR SAMPLE GROUP OFFER A RELIABLE SIMILAR-RISK PROXY FOR DETERMINING THE COST OF EQUITY OF AMEREN-UE?

A. Yes. My sample group, selected from all of the electric utilities followed by Value Line, contains companies that have 70% or more of their revenues provided by electric utility operations, have an investment-grade senior bond rating, have not recently cut dividends, did not have a pending merger, and have a stable book value. That screening process ensures that the sample group of companies used to estimate the cost of equity is

similar in risk to AmerenUE.

Q. WHAT ARE THE CONCERNS EXPRESSED REGARDING YOUR SAMPLE GROUP AND HOW DO YOU RESPOND TO THOSE CONCERNS?

A. At page 30 of his Rebuttal Testimony, Dr. Vander Weide states that it is desirable to select the "largest possible group of comparable risk companies." I don't disagree with that statement and that is what I have accomplished in my selection process. Dr. Vander Weide has selected a sample group that has more companies than my sample group, but it can not provide an accurate assessment of the cost of equity as a result of the number of companies included in the analysis, alone. Those companies must be reasonably similar in risk to AmerenUE. If the companies selected are not similar in risk to the subject company, then having more companies is of no advantage in producing an accurate estimate of the cost of equity. For example, in selecting the companies in his sample group, Dr. Vander Weide failed to consider the percentage of revenues produced by electric utility operations or the stability of those operations and selected a group of companies that are not similar to AmerenUE.

Dr. Vander Weide notes that in selecting companies that had at least 70% of revenues from electric utility operations, I eliminated most gas and electric combination companies, which have "slightly less risk than a company operating in a single energy market." If I have eliminated lower-risk companies from my sample group, then my result might be overstated for that reason, but that should not be of concern to the Company.

Dr. Vander Weide also indicates that I violated my own selection criterion by selecting some firms that have below-investment grade bond ratings. (Ms. McShane expresses the same concern.) If that were correct, that would also work to raise my equity cost estimate, or make it more conservative from the Company's point of view. However, as I note in my

direct testimony, my selection process was based on the bond rating of each company's senior (e.g., first mortgage) debt. All of those companies have investment-grade first mortgage debt. It is true that a couple of the companies have corporate debt ratings (usually a notch below senior debt ratings) that are below investment-grade, but that was not my selection criterion.

At page 32 of his Rebuttal Testimony, Dr. Vander Weide indicates that I should have included PPL Corporation because that company has 70% of revenues from electric operations and stable book values. However, PPL Corporation's September 30, 2006 S.E.C. Form 10-Q shows that utility revenue equals 66% of total company revenue—below my 70% threshold. Also, Value Line reports that PPL's book value in 2002 was $6.71/share and by 2004, was $11.21/share—almost doubling in two years. Dr. Vander Weide's assessment that PPL has stable book values is incorrect. That company is not like AmerenUE and was properly excluded from a similar-risk sample group.

Q. DR. VANDER WEIDE HAS UPDATED HIS DCF RESULTS. WHAT ARE YOUR COMMENTS?

A. As I noted in my rebuttal testimony, in reporting the results of his DCF analysis, Dr. Vander Weide elected to weight those results based on the market valuation of the companies in his sample group. For his electric companies, he reports a market value-weighted average result of 11.75%. However, the simple arithmetic average of those results is 10.82% and the middle value (i.e., the median) of his electric utility DCF results is 10.06%.

If we look more closely at Dr. Vander Weide's sample group, we see that his decision to weight his results based on market value causes the weighted average result to overstate the actual central nature of those results. That is because the two largest companies have DCF results that are much higher than the arithmetic average. Dr. Vander Weide's DCF methodology produces equity cost estimates of 16.66% and 20.74% for Dominion Resources

and TXU Corp., respectively, two of the largest companies in his sample group.

Also, Dr. Vander Weide's mechanistic DCF method (simply plugging in whatever I/B/E/S published for a growth rate) produces a *450 basis point increase* in the cost of equity for TXU between the time he filed his Direct and his Rebuttal Testimonies. It is simply not reasonable to believe that capital costs have changed to that degree in the past few months.

Dr. Vander Weide did not screen the companies in his sample group to determine how much of the firm's revenue was derived through utility operations. Electric operations account for only 31% and 22% of Dominion Resources and TXU's revenues, respectively. Therefore, unregulated operations account for the vast majority of those firm's revenues, indicating that those companies do not provide reasonable proxies for AmerenUE, which realizes all of its revenues from lower-risk regulated utility operations. Removing Dominion Resources and TXU Corp. from Dr. Vander Weide's sample group would result in a median DCF cost of equity of 9.82%.

Finally on the subject of Dr. Vander Weide's DCF analysis, exclusive reliance on analysts' projected earnings growth causes his equity cost estimate to be overstated. As noted by an authority relied on by Dr. Vander Weide:

> Estimates of this kind [DCF cost of equity estimates using earnings estimates] are only as good as the long-term forecasts on which they are based. For example, several studies have observed that security analysts are subject to behavioral biases and their forecasts tend to be over-optimistic [footnote below]. If so, such DCF estimates of the cost of equity should be regarded as upper estimates of the true figure.
> [footnote] See, for example, A. Dugar and S. Nathan, "The Effect of Investment Banking Relationships on Financial Analysts' Earnings Investment Recommendations," *Contemporary Accounting Research* 12 (1995), pp. 131-160. (Brealey, R., Meyers, S., Allen, F., Principles of Corporate Finance, 8th Ed., McGraw-Hill/Irwin, New York, NY, 2006, p. 67)

Q. AT PAGES 35 AND 36 OF DR. VANDER WEIDE'S REBUTTAL TESTIMONY, HE CLAIMS THAT YOU IMPLEMENTED THE DCF INCORRECTLY AND SHOULD HAVE USED QUARTERLY DIVIDEND COMPOUNDING TO CALCULATE THE RESULTS. IS THAT CORRECT?

A. No. Dr. Vander Weide is mistaken when he states that I applied the DCF incorrectly. My dividend yield methodology is patterned after that of the model's originator, Professor Myron Gordon, who recognized that no "adjustment" was necessary to convert the DCF from an annual to a quarterly model. As I note in my direct testimony, my dividend yield methodology produces results that closely match Value Line's year-ahead dividend yields for the sample groups of companies studied. As such, they mirror investor expectations. [18]

My dividend yield methodology is accurate, is based on sound principle, and is representative of investor expectations. Moreover, the use of dividend compounding (which Company witness McShane does not employ) leads to an unnecessary overstatement of the cost of equity capital.

Q. CAN YOU PROVIDE A NUMERICAL EXAMPLE TO SHOW THAT QUARTERLY COMOUNDING THE DIVIDEND IN A DCF ANALYSIS WILL OVERSTATE THE COST OF EQUTIY CAPITAL?

A. Yes. Assume that the beginning-year stock price and book value of a utility are equal at \$29.25 ($P_0 = BV_0 = \$29.25$). In addition, assume that the dividend was just raised to \$0.65 per quarter (\$2.60 annually) and the expected growth rate is 7%. Without quarterly

[18] Ms. McShane suggests that I increase the current dividend of every company in my sample group even if those companies are not expected to raise dividends in the coming year. However, that would cause the dividend yield portion of my DCF analysis be overstated.

compounding the cost of equity is 15.89% (($2.60 / $29.25) + 7%). With quarterly compounding, the cost of equity is calculated as 16.42%.[19]

Assume the utility is allowed an equity return of 16.42%. The earnings per share in the first year equal the allowed equity return times the initial book value, or $4.80 ($29.25 x 16.42%). From these earnings, a dividend of $2.60 would have been paid ($0.65 x 4), leaving $2.20 per share in retained earnings ($4.80 - $2.60). The addition of these retained earnings causes the book value at the end of the first year to be $31.45 ($29.25 + $2.20). The resulting growth in book value is 7.52% ($2.20 / $29.25), which is greater than the initially assumed 7%. Continuing the example into the second period shows that, as time goes on, the differential widens between the growth rate assumed in the calculation of the compounded-dividend-DCF cost of equity capital and the actual growth rate realized through the allowance of that return.

The earnings in the second period are $5.16 ($31.45 x 16.42%, i.e., BV_1 x ROE). The dividend in period two, according to the original assumption that produced the DCF result—a 7% growth rate—is $2.78 ($2.60 x 1.07). The retained earnings in period two, then, are $2.38 ($5.16 - $2.78), causing the book value to rise to $33.83 ($31.45 + $2.38). The growth in book value is 7.57% ($2.38 / $31.45). Again, the assumed growth rate is overstated by the actual results.

In our example, in order to make the growth rate—which results from the allowance of a particular return on equity—equal the 7% growth assumed in the DCF calculation, the required retained earnings increment would be $2.048 (7% x $29.25, i.e., g x BV_0). Adding the dividends that will be paid in the first period ($2.60) to the required

[19] Formula for quarterly compounded DCF from Vander Weide Appendix JVW-1-10; $k = (d(1+k)^{.75} + d(1+k)^{.50} + d(1+k)^{.25} + d)/P_0 + g$, where $d = \$0.65$, $P_0 = \$29.25$, and $g = 7$. Solve iteratively for $k = 16.42\%$.

retained earnings just derived ($2.048) yields $4.648, the earnings necessary to produce the proper 7% growth rate. Those earnings, divided by the initial book value ($29.25) produces an equity return allowance of 15.89% -- the equity capital cost derived by the DCF model in which the quarterly dividends were not compounded. Therefore, the dividend compounding adjustment Dr. Vander Weide recommends would allow the Company to earn a return higher than its cost of equity capital.

In Dr. Vander Weide's rebuttal Schedule JVW-2, p. 1, dividend compounding adds approximately 40 basis points to the average DCF result. Eliminating his quarterly compounding adjustment the median DCF value for his electric utility sample group is 9.78%.

Q. AT PAGES 38 THROUGH 40 OF HIS REBUTTAL, DR. VANDER WEIDE CLAIMS THAT YOUR SUSTAINABLE GROWTH (b x r) METHODOLOGY (ONE OF THE METHODS YOU USE TO DETERMINE THE DCF GROWTH RATE) IS UNRELIABLE BECAUSE IT IS "LOGICALLY CIRCULAR." HOW DO YOU RESPOND?

A. As I noted above, Dr. Vander Weide (as well as Ms. McShane) rely for authority on Brealey and Meyer's most recent finance text. Those authors recommend the use of a "b x r" methodology as a reasonable alternative to estimate the expected growth rate in a DCF analysis, although their term for "b" (the retention rate) is "the plowback ratio." While Dr. Vander Weide seems to be quite concerned about the use of expected returns on book value to assist in estimating the cost of equity (supposedly the "logically circular" part of the analysis), Brealey and Meyers do not share that concern:

> An alternative approach to estimating long-term growth starts with the **payout ratio**, the ratio of dividend to earnings per share (EPS). For Cascade [a gas distributor], this was forecasted at 66 percent. In other words, each year the company was plowing back into the business about 44 percent of earnings per share:

> Plowback ratio = 1-payout ratio = 1-(DIV/EPS)=1-.66 = .44
>
> Also, Cascade's ratio of earnings per share to book equity per share was about 12 percent. This is its **return on equity**, or **ROE**:
>
> Return on equity = ROE = EPS/(book equity/share) = .12
>
> If Cascade earns 12 percent of book equity and reinvests 44 percent of income, then book equity will increase by .44 x .12 = .053 or 5.3 percent. Earnings and dividends per share will also increase by 5.3 percent:
>
> Dividend growth = g = plowback ratio x ROE =.44x.12 = .053
>
> That gives a second estimate of the market capitalization rate:
>
> $$r = DIV_1/P_1 + g = .046 + .053 = .099, \text{ or } 9.9\%$$
>
> (Brealey, R., Meyers, S., Allen, F., Principles of Corporate Finance, 8th Ed., McGraw-Hill/Irwin, New York, NY, 2006, p. 67)

Here, the authority on which Dr. Vander Weide relies, uses an expected book value of 12% and an expected retention ratio (plowback ratio) of 0.44 to derive an investor expected growth rate for the DCF of 5.3%—the same methodology that Dr. Vander Weide professes to be unreliable in my testimony. Also, Brealey and Meyers are not conflicted by the fact that the utility is expected to earn a return on book value of 12% and has a cost of equity of 9.9%. Those authors also are quite aware that the cost of capital to be set in utility rate proceedings is a market-based parameter, and the earnings base to which that cost of capital is to be applied is the book value of the utility, not the market value.

Q. WHAT ISSUES ARE RAISED IN THE COMPANY REBUTTAL IN REGARD TO YOUR CAPITAL ASSET PRICING MODEL ANALYSIS?

A. The primary difference between the CAPM cost of equity estimates offered by Dr. Vander Weide, Ms. McShane and me is the market risk premium. We all rely on the published Ibbotson data, but because of the recent research regarding the market risk

premium I tend to focus on the lower part of the range published by Ibbotson. The Company witnesses continue to rely steadfastly on the highest possible historical risk premium value published by Ibbotson. I have addressed these issues in detail and will not revisit them here.

Q. BOTH DR. VANDER WEIDE AND MS. McSHANE CLAIM THAT YOUR MODIFIED EARNINGS PRICE RATIO AND MARKET-TO-BOOK RATIO ANALYSES ARE NOT USEFUL IN ESTIMATING THE COST OF EQUTIY. ARE THEY CORRECT?

A. No. While the most reliable equity cost estimation methodology continues to be the DCF, I use the results of both the modified earnings-price ratio and the market-to-book ratio (as well as the CAPM) to temper and adjust, if necessary, my equity cost recommendation. For example, in this proceeding my DCF result for the electric utility companies under study was 9.26%, and the range of equity returns produced by my corroborative methods was 8.88% to 9.48%. The DCF result fell just above the mid-point of the range of returns produced by my corroborative results. Given those facts alone, it would have been reasonable to use a cost of equity range of 9.0% to 9.5%, because the evidence provided by my corroborating equity cost estimates confirmed my DCF result. However, as I noted in my direct testimony, due to the expectation of continued upward movement in interest rates I moved the upper end of my recommended range up twenty-five basis points to 9.75%.

The modified earnings-price ratio methodology is based on the use of two measures of investor return: the earnings-price ratio and the expected return on book value. Also the relationship between those two parameters, the market-to-book ratio and the cost of capital is set out in Schedule 9 attached to my direct testimony. The fact that the expected return on book value will equal the cost of capital when a utility's market price approximates

its book value is a long-accepted theorem of regulation, first propounded in Myron Gordon's seminal work, The Cost of Capital to a Public Utility.[20] As Professor Gordon noted, the market-to-book value ratio will be > 1, when the ratio of the allowed rate of return to the cost of equity capital is > 1; and the market-to-book value will be < 1, when the ratio of the allowed rate of return to the cost of capital is < 1.

Schedule 9 attached to my direct testimony begins with the premise, set out by Professor Gordon, that when utility market price equals the book value, the cost of equity equals the expected return. Also, when market price equals book value, the earnings-price ratio equals the cost of capital.[21] Schedule 9 goes on to show how, when market prices diverge from book value, the expected return and the earnings-price ratio diverge in opposite directions from the cost of capital. So, in the current market situation where market prices exceed book value, the expected return exceeds, and the earnings-price ratio understates the cost of capital. Nevertheless, because both of those econometric measures revolve around the cost of capital, and are equivalent to the cost of capital when the market price equals book value, the average of the two parameters (earnings-price ratio and the expected return on book value) provides a corroborative estimate of their locus—the cost of equity capital. However, the Company witnesses fail to mention my Schedule 8 in their attempted rebuttal of my modified earnings price ratio (MEPR).

Also, Ms. McShane indicates that the earnings-price ratio has "long been discarded" as an estimate of investors' required return. Again, Ms. McShane is in conflict

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[20] Gordon, M.J., The Cost of Capital to a Public Utility, MSU Public Utilities Studies, East Lansing, Michigan, 1974, pp., 63.

[21] At $MP = BV$, $i = r = \frac{E}{MP}$

with her authoritative source, Brealey and Meyers. At pages 72 and 73 of their most recent text, those authors discuss the earnings-price ratio as a measure of the cost of capital, noting that the cost of capital for a growing firm can be estimated by the earnings-price ratio as long as that firm can re-invest its earnings at the cost of capital.[22] In situations where the firm can re-invest its earnings at a return greater than the cost of capital the present value of growth opportunities (PVGO) will be positive and the earnings-price ratio will understate the cost of equity. For utilities, that situation is analogous to the utility earning a return greater than its cost of capital (causing the market price to rise above book value), which also causes the earnings-price ratio to understate the cost of equity. Brealey and Meyers also state that when PVGO is negative (the firm is expected to re-invest at a return below the cost of capital) the earnings-price ratio will overstate the cost of capital. Therefore, Ms. McShane's preferred authority confirms the reasonableness of my MEPR analysis.

Regarding my use of the market-to-book ratio analysis, in my direct testimony I point out clearly that this methodology is an algebraic re-arrangement of the DCF and cannot be considered a stand-alone methodology. However, as I noted previously, the DCF is the most reliable equity cost estimation methodology. Also, the Market-to-Book Ratio (MTB) method uses point-in-time parameters projected one year and three-to-five years into the future, rather than the data used in the DCF, which are "smoothed" to replicate investors' long-term sustainable growth rate expectations. Because of that fact, the MTB does provide information to corroborate and temper the results of a traditional DCF. For example, in my testimony in this proceeding my DCF result for the electric companies was 9.26%. My

[22] Brealey, R., Meyers, S., Allen, F., Principles of Corporate Finance, 8th Ed., McGraw-Hill/Irwin, New York, NY, 2006, pp. 72-76.

one-year and three-to-five year point-in-time MTB results were 9.22% and 9.07%, respectively. Both of those results are below my traditional DCF result, adding additional support to the notion that my traditional DCF result is a conservative estimate of the cost of equity capital.

Q. IN DETERMINING A POINT-ESTIMATE WITHIN YOUR ESTIMATED RANGE OF COMMON EQUTIY COSTS FOR UTILITIES (9.0% TO 9.75%), YOU RECOMMEND A RETURN FOR AMEREN-UE BELOW THE MID-POINT OF THAT RANGE BECAUSE AMEREN HAS A BOOK-VALUE COMMON EQUTIY RATIO ABOVE THE BOOK VALUE COMMON EQUTIY RAITO OF THE OTHER COMPANIES IN YOUR SAMPLE GROUP, CORRECT?

A. Yes, that is correct. The average common equity ratio of the electric companies in my sample group is 44.7%, while the capital structure to be used in setting rates for AmerenUE contains 52.4% common equity. Clearly, the financial risk of AmerenUE is lower than the sample group and the cost of equity should reflect the Company's lower financial risk.

Q. THE COMPANY WITNESSES BELIEVE THAT YOU SHOULD HAVE MADE THE CAPTIAL STRUCUTRE COMPARISON BASED ON MARKET VALUE CAPITAL STRUCUTRES. WOULD THE RESULT HAVE BEEN ANY DIFFERENT?

A. No. As shown in Table II below, if the book-value equity ratios of all of my sample group companies are transformed to market-value common equity ratios through their respective market-to-book ratios, and if we use Ameren's market-to-book ratio to transform AmerenUE's ratemaking common equity ratio to a market-value common equity ratio, AmerenUE has a *higher* common equity ratio and *lower* financial risk than the sample group.

Table II

Comparison of Market-Value Capital Structures

Sample Company	Book Value Equity Ratio [1]	Market/Book Ratio [2]	Market Value Equity Ratio [3]=[1]x[2]/([1]x[2]+(100-[1]))
Central Vermont P. S.	57.0	1.28	62.9
FirstEnergy Corp.	44.0	2.00	61.1
Northeast Utilities	51.0	1.47	60.5
Progress Energy	42.0	1.40	50.3
Alliant Energy	54.0	1.63	65.7
Ameren Corp.	50.0	1.68	62.7
American Electric Power	44.0	1.59	55.5
Cleco Corporation	52.0	1.71	64.9
DPL, Inc.	30.0	4.69	66.8
Empire District Electric	47.0	1.46	56.4
Entergy Corp.	47.0	2.05	64.5
Hawaiian Electric	28.0	1.82	41.4
PNM Resources	40.0	1.44	49.0
Pinnacle West Capital	52.0	1.30	58.5
Unisource Energy	32.0	1.82	46.1
AVERAGE	**44.7**		**57.8**
Ameren UE	**52.4**	1.68	**64.9**

Note: AmerenUE's market-value equity ratio calculated using Ameren's current market-to-book ratio.

Whether you measure the relative financial risk of AmerenUE to that of my similar-risk sample group of electric companies on the basis of book value or on the basis of market value, AmerenUE has lower financial risk. On a book value basis, AmerenUE's ratemaking capital structure contains 52.4% common equity while the average for the sample group is 44.7%. On a market value basis, AmerenUE's capital structure contains 64.9% common equity while the average for the sample group is 57.8%. By both measures, apples-to-apples and oranges-to-oranges, AmerenUE has lower financial risk and its cost of equity is therefore appropriately below the average for the sample group.

Q. DOES THIS CONCLUDE YOUR SURREBUTTAL TESTIMONY, MR. HILL?

A. Yes, it does.