BEFORE THE WASHINGTON

UTILITIES AND TRANSPORTATION COMMISSION

Washington Utilities and Transportation Commission vs. PSE, Inc.
Dockets UE-121697 and UG-121705 (*Consolidated*)

Washington Utilities and Transportation Commission vs. PSE, Inc.
Dockets UE-130137 and UG-130138 (*Consolidated*)

RESPONSE OF PUBLIC COUNSEL TO PSE DATA REQUEST NO. 002

Request No:	002
Directed to:	Simon J. ffitch, Senior Assistant Attorney General
Date Received:	December 5, 2014
Date Produced:	December 15, 2014
Prepared by:	Stephen G. Hill

PSE Data Request No 002:

Reference: Prefiled Direct Testimony of Stephen G. Hill, Exhibit No. ___(SGH-2T).

Please provide each document that Mr. Hill has filed at a state utility commission since January 1, 2009, that addresses returns on equity of an electric utility, a gas utility, or a combination electric and gas utility.

RESPONSE:

PDF versions of the documents Mr. Hill has filed from 2009 forward are attached electronically in a zip folder. Due to the voluminous nature of the response, the attachments are provided in electronic form only. A CD will be provided upon request.

ALABAMA PUBLIC SERVICE COMMISSION

RATE STABILIZATION MECHANISM REVIEW

FOR

ALABAMA POWER COMPANY

COST OF CAPITAL ANLAYSIS

BY

STEPHEN G. HILL

ON BEHALF OF

AARP

JULY 17, 2013

ALABAMA POWER COMPANY

COST OF CAPITAL ANALYSIS
STEPHEN G. HILL

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ATTACHMENTS

SCHEDULES

I. INTRODUCTION

Q. PLEASE STATE YOUR 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 (hillassociates@gmail.com).

Q. BRIEFLY, WHAT IS YOUR EDUCATIONAL BACKGROUND?

A. After graduating with a Bachelor of Science degree in Chemical Engineering from Auburn University in Auburn, Alabama, I was awarded a scholarship to attend Tulane Graduate School of Business Administration at Tulane University in New Orleans, Louisiana. There I received a Master's Degree in Business Administration. More recently, I have been awarded the professional designation of "Certified Rate of Return Analyst," by the Society of Utility and Regulatory Financial Analysts. This designation is based upon education, experience and the successful completion of a comprehensive examination. I have also served on the Board of Directors and am currently Vice President of that national organization. A more detailed account of my educational background and occupational experience appears in Attachment A.

Q. HAVE YOU APPEARED BEFORE THIS OR OTHER REGULATORY COMMISSIONS?

A. Yes, I have appeared previously in this regulatory jurisdiction and, over the past 30 years, I have testified on cost of capital, corporate finance and capital market issues in approximately 300 regulatory proceedings before the following regulatory bodies: the

West Virginia Public Service Commission, the Connecticut Department of Public Utility Control, the Oklahoma State Corporation Commission, the Public Utilities Commission of the State of California, the Pennsylvania Public Utilities Commission, the Maryland Public Service Commission, the Public Utilities Commission of the State of Minnesota, the Missouri Public Service Commission, the Ohio Public Utilities Commission, the Insurance Commissioner of the State of Texas, the North Carolina Insurance Commissioner, the Rhode Island Public Utilities Commission, the City Council of Austin, Texas, the Texas Railroad Commission, the Arizona Corporation Commission, the South Carolina Public Service Commission, the Public Utilities Commission of the State of Hawaii, the New Mexico Corporation Commission, the State of Washington Utilities and Transportation Commission, the Georgia Public Service Commission, the Public Service Commission of Utah, the Kentucky Public Utilities Commission, the Illinois Commerce Commission, the Kansas Corporation Commission, the Indiana Utility Regulatory Commission, the Virginia Corporation Commission, the Montana Public Service Commission, the Public Service Commission of the State of Maine, the Public Service Commission of Wisconsin, the Vermont Public Service Board, the Federal Communications Commission and the Federal Energy Regulatory Commission. I have also testified before the West Virginia Air Pollution Control Commission regarding appropriate pollution control technology and its financial impact on the company under review and have been an advisor to the Arizona Corporation Commission on matters of utility finance.

Q. ON BEHALF OF WHOM ARE YOU APPEARING IN THIS PROCEEDING?

A. I am appearing on behalf of AARP.

Q. WHAT IS THE PURPOSE OF YOUR ANALYSIS IN THIS PROCEEDING?

A. In this report, I present the results of studies I have performed related to the appropriate return on equity and overall cost of capital to be used in the determination of rates for the electric utility operations of Alabama Power Company (APCO, the Company), a wholly owned subsidiary of the Southern Company (SO, Southern Company, the parent).

Q. HAVE YOU PREPARED AN EXHIBIT IN SUPPORT OF YOUR ANALYSIS?

A. Yes, Exhibit_(SGH-1) consists of 12 Schedules and provides the analytical support for the conclusions reached regarding the cost of common equity, capital structure and overall cost of capital for APCO presented in the body of the analysis. This Exhibit was prepared by me and is correct to the best of my knowledge and belief. In addition, I have also provided three Attachments ("A" through "C"), which contain additional detail regarding certain aspects of my analysis in this proceeding.

II. SUMMARY OF CONCLUSIONS AND RECOMMENDATIONS

Q. PLEASE SUMMARIZE YOUR ANALYSIS AND RECOMMENDATIONS WITH REGARD TO THE APPROPRIATE RATE OF RETURN FOR APCO IN THIS PROCEEDING.

A. My rate of return analysis is organized into three additional sections. First, I review the current economic environment in which the equity return estimate is made.

Second, I evaluate the cost of equity capital for similar-risk utility operations using Discounted Cash Flow (DCF), Capital Asset Pricing Model (CAPM), and Risk Premium (RP) analyses. Third, provide an analysis of the Company's capital structure and overall cost of capital.

I have estimated the current equity capital cost of integrated electric utility operations similar in risk to APCO to fall in a range of 8.50% to 9.25%. Although APCO's bond rating his higher than the other utilities in the sample group, its utility operations have somewhat more financial risk than the sample group of electric utilities studied in my analysis because APCO's capital structure contains less common equity and more debt than average for the market-traded electric utilities used to estimate the cost of equity. While the general risk difference, based on bond rating would indicate that the Company's cost of equity should be set in the lower portion of the reasonable range, the cost of equity estimate should be increased somewhat to account for that differential in financial risk embodied in the capital structure. I estimate the Company's cost of equity to be slightly above the mid-point of the current cost of equity range for similar-risk electric utility operations—9.00%.

However, in light of a desire to be conciliatory in these informal proceedings, consistent in approach, and to reach a reasonable ratemaking compromise, AARP recommends the Commission set rates for APCO using a 10.00% ROE. As the Commission is aware, AARP also recently recommended a 10% ROE for Mobile Gas Corporation even though the current cost of equity was shown to be considerably below that level of return.

Applying a 10.00% equity capital cost to the Company's actual average capital structure over the most recent five quarters, containing 45.90% common equity, 5.80% preferred stock and 48.31% long-term debt, produces an overall cost of capital of 7.27%.[1]

Q. WHY SHOULD THE COST OF CAPITAL SERVE AS A BASIS FOR THE PROPER ALLOWED RATE OF RETURN FOR A REGULATED FIRM?

A. The Supreme Court of the United States has established, as a guide to assessing an appropriate level of profitability for regulated operations, that investors in such firms are to be given an opportunity to earn returns that are sufficient to attract capital and are comparable to returns investors would expect in the unregulated sector for assuming the same degree of risk. The *Bluefield* and *Hope* cases provide the seminal decisions.[2] These criteria were restated in the *Permian Basin* area rate cases.[3] However, the Court also makes quite clear in *Hope* that regulation does not guarantee profitability and, in *Permian Basin*, that, while investor interests (profitability) are certainly pertinent to setting adequate rates, those interests do not exhaust the relevant considerations.

As a starting point in the ratemaking process, then, the cost of capital of a regulated firm represents the return investors could expect from other investments, while assuming no more and no less risk. Since financial theory holds that investors will not provide capital for a particular investment unless that investment is expected

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[1] See Schedule 11.

[2] *Bluefield Waterworks Works & Improvement Company v. Public Service Commission or West Virginia*, 262 US 679 (1923); *Federal Power Commission v. Hope Natural Gas Company*, 320 US 591 (1944).

[3] *In Re Permian Basin Rate Cases*. 390 US 747 (1968).

to yield the opportunity cost of capital, the correspondence of the cost of capital with the Court's guidelines for appropriate earnings is clear.

Q. COST OF EQUITY CAPITAL ESTIMATES ARE OFTEN ACCOMPANIED BY A COMPLEX ARRAY OF ECONOMIC MODELS AND ALGABRAIC FORMULAS. IS THERE A SIMPLE WAY TO UNDERSTAND THE CONCEPT OF THE COST OF EQUITY CAPITAL?

A. Yes. In a regulated ratemaking context such as this, the cost of equity capital can be most easily understood as the percentage profit that should be allowed for the regulated firm. A firm's profit is the amount of money that remains from its revenues after the firm has paid all of its costs—operating costs (e.g., depreciation, equipment maintenance costs, salaries, fees, construction costs, fuel costs, retirement obligations, and property taxes), as well as income taxes and interest costs. That dollar amount of profit, divided by the amount of common equity capital (the money contributed by stock investors) used to finance the firm's regulated assets equals the percentage rate of return on equity. If, for example, the profit earned by a utility is $10/year and investors have provided $100 of equity capital, the firm's return on equity (ROE) or its percentage profit is 10%.

The purpose of all of the economic models and formulas in a cost of capital analysis is to estimate, using market data of similar-risk firms, the percentage rate of return equity investors require for a particular risk-class of firms. In this case, that particular risk class is electric utility operations. If the profit included in the utility's rates, as a percent of the firm's equity capital, is set equal to the market cost of equity capital (the investors' required return), the utility, under efficient management, will

be able to attract the capital necessary to maintain the firm's financial integrity. In that event, the interests of investors and ratepayers will be balanced, as called for in the U.S. Supreme Court cases cited above.

Simply put, the amount of profit the utility should be allowed the opportunity to earn, as a percentage of the total equity investment, should be equal to the market-based cost of equity capital.

Q. THE COMPANY HAS INDICATED THAT THE RETURN ON EQUITY IS NOT AS IMPORTANT TO INVESTORS AS THE OVERALL RETURN OR TOTAL RETURN. IS THAT CORRECT?

A. No. A utility derives its investor-supplied capital from two primary sources: debt investors who buy the Company's bonds and equity investors who buy the Company's common stock.[4] The return expectations of those two types of investors are quite different.

Equity investors expect a higher return than bond investors because their return is not contractually set like that of the bond investor and is subject to more variability and, thus, more risk. The overall return is a mixture of the return on debt and the return on equity and is affected by the mix of debt and equity with which the utility elects to finance its operations. The overall return doesn't provide a clear picture to either the bond investor or the equity investor of the return they are earning. As such, the overall return doesn't provide either investor the information necessary to discern whether or not that particular firm is providing a sufficient return.

[4] Alabama Power does not have its own market-traded common stock and is a wholly owned subsidiary of Southern Company. In order to own an equity interest in Alabama Power, investors must purchase a share of Southern Company stock.

The bond investor's return is determined by the coupon yield on the debt he or she purchases and the market price paid for that bond. A utility's debt costs are easily calculated and included as a part of the cost of service in setting utility rates. The income stream to the bondholder, then, is very secure and those debt obligations are met before the Company pays a return to any other security holders. The safety of the bond payments to investors is the primary reason why that type of investment is considered to be less risky and why, in the current market, even long-term (20- to 30-year) utility bond yields are in the neighborhood of 3.75% to 4.5%.

The return to the common stockholder, on the other had, is a residual. It is not guaranteed by any contract and consists of what's left over after the Company has met *all* of its other cost obligations (operating costs, fuel, purchased power, salaries, pension fund costs, debt costs, income taxes, property taxes, etc.). In other words, the return to the equity investor is the Company's profit—what's left of the Company's revenues after all other expenses have been met.

That income stream—the return to the common stockholder (the profit to the firm)—is the focus of this analysis. The return that utility common stock investors require in order to commit their funds to common equity is termed the cost of equity capital. It is the cost to the utility of attracting common equity investment. It is a market-based phenomenon, an opportunity cost. It is not contractually set like a bond yield and must, therefore, be estimated using market data.

Therefore, the overall return (the combined return of debt and equity) does not represent the return that is important to common equity investors. The return that is important to the common equity investors—the company's owners—is the return on

common equity, which should be at least equivalent to the market-based cost of common equity capital.

Q. CAN THE OVERALL RETURN BE A MISLEADING INDICATOR OF WHETHER OR NOT EQUITY INVESTORS ARE EARNING THEIR RETURN?

A. Yes. As shown the Table I below, two utilities can have identical overall returns but very different returns on common equity.

Table I
Why Overall Return Is Not A Good Measure of Utility Profitability

	Utility A			Utility B		
	Amount [1]	Cost Rate [2]	Wt. Cost Rate [3]=[1]x[2]	Amount [4]	Cost Rate [5]	Wt. Cost Rate [6]=[4]x[5]
Equity	80.00%	**8.75%**	7.00%	20.00%	**16.00%**	3.20%
Debt	20.00%	5.00%	1.00%	80.00%	6.00%	4.80%
	100.00%			100.00%		
		Overall Return =	**8.00%**		**Overall Return =**	**8.00%**

If a utility equity investor has a required return of 10%, then he or she would be very happy with an investment in Utility B, which has an ROE of 16% (much higher than the required return of 10%). Conversely, the investor would elect not to provide capital to Utility A because the equity return it provides (8.75%) is below our investors' required return of 10%. However, the investor can determine which investment is best *only* through an examination of the return on equity earned by each company. The overall return—8.0% for both utilities—does not provide the information necessary for the equity investor to make a prudent investment decision.

Therefore, the appropriate basis for determining if the profitability of a utility is insufficient or excessive is the return on common equity, not the overall return.

III. ECONOMIC ENVIRONMENT

Q. WHY IS IT IMPORTANT TO REVIEW THE ECONOMIC ENVIRONMENT IN WHICH AN EQUITY COST ESTIMATE IS MADE?

A. The cost of equity capital is a forward-looking, or *ex ante*, concept. In seeking to estimate the cost of equity capital of a firm, it is necessary to gauge investor expectations with regard to the relative risk and return of that firm, as well as that for the particular risk-class of investments in which that firm resides. Because this exercise is, necessarily, based on understanding and accurately assessing investor expectations for the future, a review of the larger economic environment within which the investor makes her or her decision is most important. Investor expectations regarding the strength of the U.S. economy, the direction of interest rates and the level of inflation (factors that are determinative of capital costs) are key building blocks in the investment decision. The analyst and the regulatory body should review those factors in order to assess accurately investors' required return—the cost of equity capital to the regulated firm.

Q. WHAT ARE THE INDICATIONS WITH REGARD TO THE COST OF CAPITAL IN THE CURRENT ECONOMIC ENVIRONMENT?

A. Although four full years have passed since the events of late 2008 and early 2009, any review of the current economic environment and the current cost of capital must take into account what was the most significant disruption in the financial markets since

the Great Depression in the 1930s. In the tumultuous economic environment that existed during the third and fourth quarters of 2008 and early 2009, the signals with regard to the cost of capital were difficult to discern. Stock prices fell dramatically, increasing dividend yields, which would indicate increasing capital costs if expected growth rates were constant. However, fundamental indicators of capital cost rates—long-term U.S. Treasury bond yields—declined, signaling that investors actually required and expected lower returns during that difficult economic time.

As shown in Chart I below, over the past decade there have been wide fluctuations in *short-term* interest rate levels as the Federal Reserve Board (the Fed) raised and lowered the Federal Funds rate to slow down and encourage (respectively) economic growth. However, *long-term* interest rates have ranged from 3.5% to 5% over most of that time, with a slow downward trend. As a result of that 2008/2009 economic downturn, long-term Treasury bond yields dipped, for a time, below the lower end of that historical range as the protection against default available with Treasury bonds caused investors to turn to U.S. government bonds as a "safe haven." As the economic downturn moderated and a modest recovery began to appear in 2010, long-term T-bond yields returned to their historical trend.

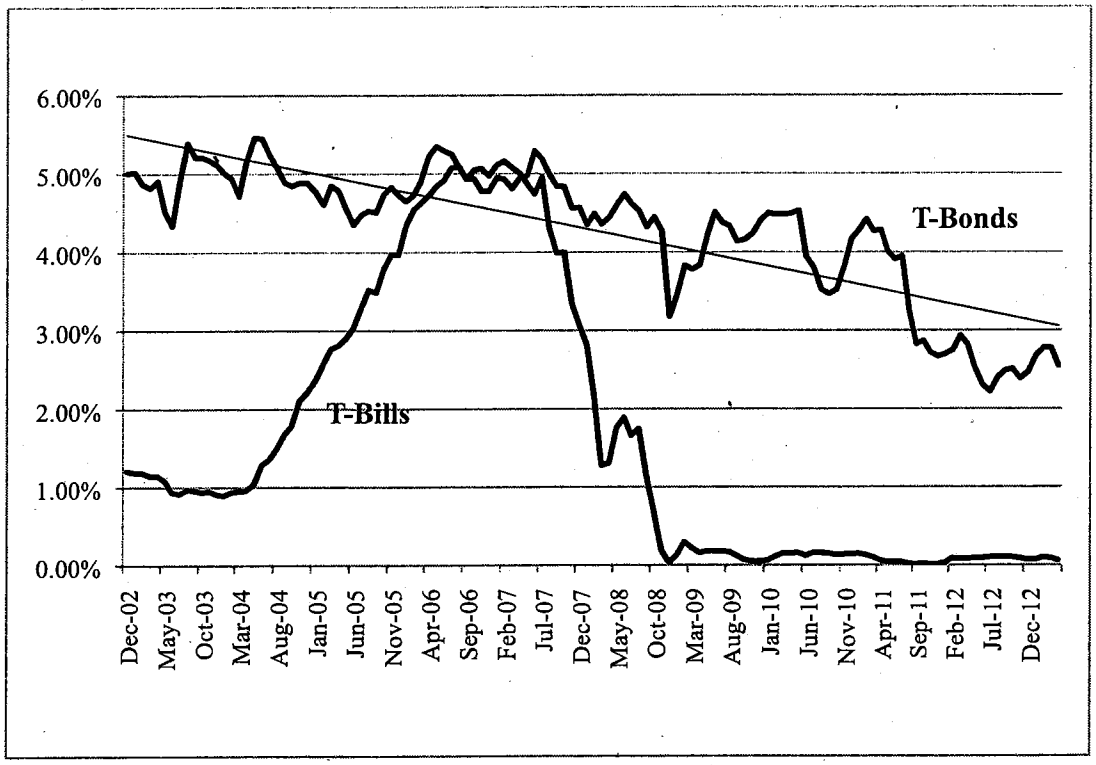
More recently however, with renewed concerns about the international banking industry, centered primarily on the smaller economies in the European Union, long-term Treasury rates have again taken a dip below historical trends. That reduction in Treasury yields results, again, from investors turning to U.S. Treasuries as reliable and safe investments, effectively without default risk. According to the

most recent Federal Reserve Statistical Release H.15, the average 30-year T-Bond yield in April 2013 was approximately 3%.[5]

The interest rate data in Chart I also indicate that the Fed lowered short-term interest rates to near zero to attempt to lessen the impact of the recession and, continues to take a very accommodative stance regarding monetary policy, with short-term T-Bills yielding a near zero. The Fed has also announced it intention to keep short-term rates low until unemployment declines significantly. As a result, fundamental long-term capital costs have not increased as a result the financial crisis in 2008/09 and, in fact, are currently somewhat below the long-term downward trend in capital costs begun prior to the financial crisis.

[5] http://www.federalreserve.gov/Releases/H15/Current/, May 6, 2013.

Chart I.
Relative U.S. Treasury Interest Rate Changes



Data from Federal Reserve Statistical Release H.15

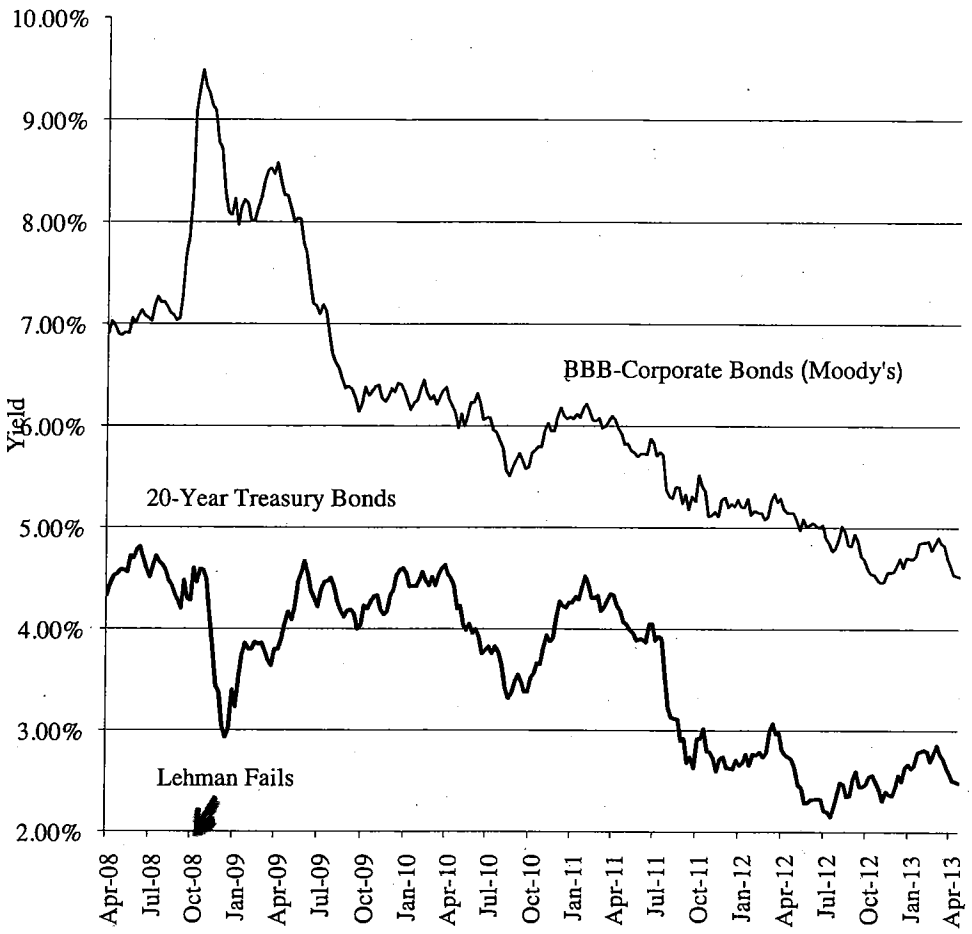
Because the market for U.S. Treasury securities remained liquid throughout the 2008/09 financial crisis and because the corporate liquidity problems existing during that crisis eventually subsided, it is reasonable to believe that the yields on long-term Treasuries are representative of investors' general long-term risk-free return expectations. Absent the recent downturn in T-Bond yields due to international banking concerns, the trend in 20-year T-Bond yields, as shown in Chart I, above, indicates a current "normalized" long-term risk-free yield expectation of approximately 3.0%. Also, over the past few months the yield difference between 30-year T-Bonds and 20-year T-Bonds has been approximately 40 basis points,

indicating a current "normalized" long-term risk-free rate of 3.40%. Therefore, this fundamental building block of capital costs (long-term T-bond yields) provides an indication that in the current economic environment, capital costs are lower than they were prior to the economic troubles of late 2008 and early 2009.

However, a review of corporate bond yield history indicates that, during the financial crisis of 2008/2009 declining yields was not the case with corporate bonds. Following the demise of Lehman Brothers and the near-collapse of the financial industry in the U.S. and abroad due to enormous debt obligations related to mortgage-back securities and credit default swaps—even with the commitment of government support of the successor financial institutions—there was a temporary lack of liquidity in the corporate sector of the bond market. The banks, investment brokerage firms, and other institutional investors were holding on to capital in order to shore up their own balance sheets rather than re-injecting those monies into the financial system through lending (buying corporate debt). As a result, even though the Fed was driving down short-term Treasury rates to provide additional liquidity for the economy in general, that liquidity was not passed through to the corporate bond market and, with a lack of capital supply, corporate bond yields increased in late 2008 and early 2009. The relative movement of BBB-rated corporate bond yields and U.S. Treasury yields is shown in Chart II, on the next page.

Chart II

Financial Crisis: Bond Yield Changes



Following the failure of Lehman Brothers, as the full extent of the debt/derivative risk overhang in the financial industry became known, BBB-rated corporate bond yields increased, even as long-term Treasury yields remained relatively steady at about 4.5%. According to the database of the Federal Reserve, BBB-rated corporate bond yields rose dramatically by 250 basis points as the risk of default, and the nervousness of investors increased and, as a result the spread between

corporate bonds and U.S. Treasuries widened to about 5%—well above the more normal 1.5% to 2%.

As liquidity began to be restored to the bond markets, initially through direct government intervention and subsequently through the return of modestly positive economic growth, corporate bond yields declined substantially from the highs established in the fall of 2008. Over the past couple of years, investors' concerns have eased, the stock market has rebounded, and corporate bond yields have declined well below pre-crisis levels. As a result, the yield spread differential between corporate bonds and long-term Treasury securities, while still slightly elevated from historical levels, has declined to a more normal level. Therefore, because both the absolute level of the risk-free rate and the yield spread between Treasury bonds and corporate bonds have declined since the financial crisis, any concerns that the 2008/09 financial crisis implies continuing financial difficulty in the U.S. capital markets for utilities would be unfounded.

For example, for BBB-rated utilities, a recent, May 3, 2013, Value Line reports that 25/30-year utility bonds are yielding an average of 4.18%. One year ago, BBB-rated utility bonds were providing average yields of 4.65%—47 basis points higher.[6] Therefore, in terms of relative capital costs, the broad economic environment currently is more benign than it was prior to the financial crisis—capital costs are lower—and, thus, more favorable for capital intensive industries like utilities.

On balance, then, the fixed-income data available in the financial marketplace indicate that while there were technical difficulties in the corporate bond market that

[6] The Value Line Investment Survey, *Selection & Opinion*; May 3, 2012, p. 985.

drove up yields for a period of time, those difficulties have not proven to be a long-term phenomenon and the high corporate bond yields experienced in the latter part of 2008 and early 2009 do not represent investors' long-term expectations. Those data also indicate that investors' required return for a risk-free investment and for corporate debt remains low by historical standards.

Q. WHAT IS THE CURRENT EXPECTATION WITH REGARD TO THE ECONOMY AND INTEREST RATES?

A. As Value Line notes in its most recent Quarterly Review, the current expectation for the U.S. economy is that recovery from the recent economic recession is likely to continue at a moderate pace, which will allow core inflation to remain moderate. Moreover, the Fed is expected to keep interest rates low for at least the next two years.

> **Economic Growth:** As we peer over the current quarter, we see a sequester-induced "spring swoon." Our sense is that the biggest impact of the spending cuts will be felt in the present period. The inconsistent pattern of the economic issuances is partly a function of the massive cuts in defense spending.... Many expect that as the deficit has fallen more than expected, Washington is less likely to see the full sequester go into effect. Still, growth may falter in the period, likely easing into the 1%-2% range [Chart omitted]. Thereafter, we think fundamentals will improve further, particularly in housing, car sales, and employment [Chart omitted], and that the Fed, armed with a benign inflation outlook, will have plenty of flexibility and [will] stay supportive. But possible headwinds remain, in particular on the fiscal side, where the automatic spending cuts will exact a toll in the near term, as well expiring stimulus, and the further reduction in discretionary spending....
>
> **Inflation:** Here, unlike the spotty situation chronicled above, the news has been consistently favorable, with consumer prices under tight control and showing few signs of deviating from

> that orderly path. In fact, such stability has been the rule for the past half decade—a period of occasionally heightened turbulence in other areas....
>
> **Interest Rates:** The central bank has given itself plenty of room to maneuver. In fact, the Federal Open Market Committee's policy statement on May 1st noted: "The Committee is prepared to increase or reduce the pace of its purchases to maintain appropriate policy accommodation as the outlook for the labor market or inflation changes." This is the dual mandate of the Fed.... In all, the Federal Reserve is holding its federal funds target at 0% to 0.25%, and plans to keep such rates in this historically low range for as long as the jobless rate holds above 6.5%. We believe that will the case until at lease 2015 [Chart omitted]. After than, a slow rise in short- and long-term interest rates is likely, as the seemingly sustainable expansion becomes better able to evolve on its own, and the inevitable creep higher in inflation becomes a reality.[7]

In the most recent Quarterly Economic Review, cited above, Value Line projects long-term Treasury bond rates will average 3.1% through 2013 and 3.6% in 2014.[8] According to Value Line's Selection and Opinion, 30-year Treasury bond yields have averaged 3.01% over the most recent six weeks.[9] Therefore, the indicated expectation with regard to long-term interest rates is that they are expected move slightly higher in the future, provided the economic recovery continues to advance at a moderate pace. Simply put, due to the moderate pace of the economy and relatively low core inflation, capital costs are low and are expected to remain low until the economy shows more rapid growth, which Value Line now expects to occur in the 2016-2018 period. If and when the long-awaited and often-predicted economic

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[7] The Value Line Investment Survey, *Selection & Opinion*, at 944 (May 24, 2013)

[8] Id. at 943.

[9] The Value Line Investment Survey, *Selection & Opinion*, "Selected Yields," (March 28 through May 3, 2013).

recovery does eventually appear, interest rates and capital costs are expected to increase moderately.

IV. METHODS OF EQUITY COST EVALUATION

A. Discounted Cash Flow Model

Q. PLEASE DESCRIBE THE DISCOUNTED CASH FLOW (DCF) MODEL YOU USED TO ARRIVE AT AN ESTIMATE OF THE COST RATE OF COMMON EQUITY CAPITAL FOR ALABAMA POWER COMPANY IN THIS PROCEEDING.

A. The DCF model relies on the equivalence of the market price of the stock (P) with the present value of the cash flows investors expect from the stock, and assumes that the discount rate equals the cost of capital. The total return to the investor, which equals the required return to the investor and the cost of equity capital, is, according to DCF theory, the sum of the dividend yield and the expected growth rate in the dividend.

The theory is represented by the equation,

$$k = D/P + g, \qquad (1)$$

where "k" is the equity capitalization rate (cost of equity, required return), "D/P" is the dividend yield (dividend divided by the stock price) and "g" is the expected long-term sustainable growth rate.

Q. WHAT GROWTH RATE (G) DID YOU ADOPT IN DEVELOPING YOUR DCF COST OF COMMON EQUITY FOR THE COMPANY IN THIS PROCEEDING?

A. The growth rate variable in the traditional DCF model is quantified, theoretically, as the dividend growth rate investors expect to continue into the indefinite future. The DCF model is actually derived by 1) considering the dividend a growing perpetuity, that is, a payment to the stockholder which grows at a constant rate indefinitely, and 2) calculating the present value (the current stock price) of that perpetuity. The model also assumes that the company whose equity cost is to be measured exists in a steady state environment, i.e., the payout ratio and the expected return are constant and the earnings, dividends, book value and stock price all grow at the same rate, forever.

While that assumption seems unrealistic because, in the short term, growth rates in those parameters (dividends, earnings and book value) can be quite different, over the long term it has proven to be true. For example, according to Value Line's published retrospective of the Dow Jones Industrials Index (DJI) from 1920 through 2005, the average earnings, dividend and book value growth rates for the companies in the DJI over that time period were 5.3%, 4.9% and 5.2%—not exactly the same rate, but relatively close. For utility companies, over the long term, historical average growth rates in earnings, dividends and book value are closer. Moody's Public Utility Manual reports that, between 1947 and 1999,[10] average growth in earnings, dividend and book value growth of Moody's Gas Utilities was 3.34%, 3.22% and 3.66%, respectively. Therefore, the fundamental DCF assumption that earnings,

[10] Moody's ceased publication of its Public Utility Manual in 2001.

dividends and book value are expected to grow at the same sustainable rate of growth over the long-term, is rational and is, in fact, an accurate representation of how firms actually grow over time.

However, even though the long-term the fundamental assumptions of the DCF have proven to be sound, as with all mathematical models of real-world phenomena, the DCF theory does not precisely "track" reality in the shorter term. Payout ratios and expected equity returns as well as earnings and dividend growth rates do change over the short-term. Therefore, in order to properly apply the DCF model to any real-world situation and, in this case, to find the long-term sustainable growth rate called for in the DCF theory, it is essential to understand the determinants of long-run expected dividend growth.

Q. CAN YOU PROVIDE AN EXAMPLE TO ILLUSTRATE THE DETERMINANTS OF LONG-RUN EXPECTED DIVIDEND GROWTH?

A. Yes, in Attachment B, I provide an example of the determinants of a sustainable growth rate on which to base a reliable DCF estimate. In addition, in Attachment B, I show how reliance on earnings growth rates alone, absent an examination of the underlying determinants of long-run growth, can produce inaccurate DCF results.

Q. HOW HAVE YOU DEVELOPED AN ESTIMATE OF THE EXPECTED GROWTH RATE FOR THE DCF MODEL?

A. While I have calculated both the historical and projected sustainable growth rates for a sample of utility firms with similar risk to APCO, I have relied other growth rate indicators as well. To estimate an appropriate DCF growth rate, I have also relied on published data regarding projected and historical growth rates in earnings, dividends,

and book value for the sample group of utility companies. Recall that DCF theory assumes that earnings, dividends and book value all grow at the same rate. Through an examination of all of those data, which are available to and used by investors, I estimate investors' long-term growth rate expectations. To that long-term growth rate estimate, I add any additional growth that is attributable to investors' expectations regarding the on-going sale of stock for each of the companies under review.

Q. WHY HAVE YOU USED THE TECHNIQUE OF ANALYZING THE MARKET DATA OF SEVERAL COMPANIES?

A. I have used the "similar sample group" approach to cost of capital analysis because it yields a more accurate determination of the cost of equity capital than does the analysis of the data of one individual company. Any form of analysis, in which the result is an estimate, such as growth in the DCF model, is subject to measurement error, i.e., error induced by the measurement of a particular parameter or by variations in the estimate of the technique chosen. When the technique is applied to only one observation (e.g., estimating the DCF growth rate for a single company) the estimate is referred to, statistically, as having "zero degrees of freedom." This means, simply, that there is no way of knowing if any observed change in the growth rate estimate is due to measurement error or to an actual change in the cost of capital. The degrees of freedom can be increased and exposure to measurement error reduced by applying any given estimation technique to a sample of similar-risk companies rather than one single company. Therefore, by analyzing a group of firms with similar characteristics, the estimated value (the growth rate and the resultant cost of capital) is more likely to equal the "true" value for that type of operation.

Q. HOW WERE THE FIRMS SELECTED FOR YOUR ANALYSIS?

A. For the purposes of estimating the market-based cost of equity capital for APCO, I analyzed the market data of a select group of electric utility companies followed by The Value Line Investment Survey. As shown on Schedule 1, in order to select a group of utility companies that had similar risk characteristics to APCO, I screened all of the companies followed by Value Line to remove those companies with dissimilar characteristics. From that large group of electric and combination electric and gas utility companies, I selected firms that derived 70% or more of their revenues from electric utility operations, did not have a recent dividend reduction, were not recently involved in a merger, had generation assets, had stable operations (a non volatile book value), and had an investment-grade senior bond rating between "BBB" and "A".

The electric utility companies selected for my analysis as generally similar in risk to APCO are: Southern Company (SO), ALLETE (ALE), Alliant Energy (LNT), American Electric Power (AEP), Cleco Corp. (CNL), Entergy (ETR), Westar Energy (WR), Wisconsin Energy (WEC), PG&E Corporation (PCG), Pinnacle West Capital Corporation (PNW), Portland General (POR) and Xcel Energy (XLS).[11]

It is important to note that some of the companies included in the sample group have unregulated operations such as merchant generation operations, which are inherently more risky than are utility operations. That indicates that the cost of capital for the sample group should be somewhat higher than that appropriate for a lower-risk, pure-play electric utility operation like APCO.

[11] In the Schedules accompanying my analysis, the sample group companies are referred to by their stock ticker symbols, shown above in parentheses.

Q. YOU INDICATED THAT A DCF EQUITY COST ESTIMATE IS COMPRISED OF A DIVIDEND YIELD AND AN EXPECTED LONG-TERM GROWTH RATE. HOW HAVE YOU CALCULATED THE DIVIDEND YIELDS FOR YOUR SAMPLE GROUP OF ELECTRIC COMPANIES?

A. The DCF requires the use of the next year's expected dividend. Therefore, for this report I have utilized the year-ahead expected dividend published by The Value Line Investment Survey for each of the sample group companies.

The published year-ahead dividends were divided by a recent daily closing average stock price to obtain the DCF dividend yields. I use the most recent six-week period to determine an average stock price in a DCF cost of equity determination because I believe that period of time is long enough to avoid daily fluctuations and recent enough so that the stock price captured during the study period is representative of current investor expectations.

Schedule 2 attached to this report contains the market prices, projected dividends and dividend yields of the utility companies under study. The average dividend yield for the sample group of electric companies is 3.73%.

Q. HOW HAVE YOU CALCULATED THE DCF GROWTH RATES FOR THE SAMPLE OF COMPARABLE COMPANIES?

A. Schedule 3 pages 1 through 5, shows the retention ratios, equity returns, sustainable growth rates, book values per share and number of shares outstanding for the comparable electric companies for the past five years. Also included in the information presented in Schedule 3 are Value Line's projected 2013, 2014 and 2016-

2018 values for equity return, retention ratio, book value growth rates and number of shares outstanding.

In evaluating these data, I first calculate the five-year average sustainable growth rate, which is the product of the earned return on equity (r) and the ratio of earnings retained within the firm (b). For example, Schedule 3, page 1, shows that the five-year average sustainable growth rate for APCO's parent company (Southern Company (SO)) is 3.26%. The simple five-year average sustainable growth value is used as a benchmark against which I measure the company's most recent growth rate trends. Recent growth rate trends are more investor influencing than are simple historical averages.

Continuing to focus on Southern Company, we see that sustainable growth has been higher in recent years during the historical period indicating increasing growth. By the 2016-2018 period, Value Line projects Southern Company's sustainable growth will increase from the recent five-year average, to 3.65%. These forward-looking data indicate that investors can expect Southern Company to grow at a rate slightly higher than the growth rate that has existed, on average, over the past five years, but, overall, they point to relative growth rate stability for Southern Company.

Another factor to consider is that Southern Company's book value growth is expected to increase at a 4.5% level over the next five years, which is lower than the 5.5% growth rate level that existed over the past five years. This information indicates an expectation for somewhat lower growth in the future. Also, as shown on Schedule 4, page 2, Southern Company's dividend growth rate, which was 4% historically, is expected to moderate slightly to a 3.5% rate of growth in the future.

The projected dividend growth shows moderating, but relatively stable growth expectations.

Projected earnings growth rate data available from Value Line indicate that investors can expect slightly higher growth rate in the future (4.5%), compared to the sustainable growth rate projections, and higher than historical earnings growth (3.0%). IBES and Zack's (investor advisory services that poll sell-side institutional analysts for growth earnings rate projections) also project slightly higher earnings growth rate for Southern Company—4.84% and 4.76%, respectively—over the next five years.

Southern Company's projected sustainable growth is expected to approach 3.6%, dividends are expected to increase at a 3.5% annual rate, and book value growth is expected to increase at a 4.5% rate. Per share earnings growth is expected to range from 4.5% to 4.8%, and Value Line's average earnings, dividends and book value growth projection for Southern Company is 4.33%. A long-term growth rate of 4.25% is a reasonable long-term growth rate expectation for Southern Company.

Q. IS THE INTERNAL LONG-TERM GROWTH RATE THE FINAL GROWTH RATE YOU USE IN YOUR DCF ANALYSIS?

A. No. An investor's long-term growth rate analysis does not end upon the determination of an internal growth rate. Investor expectations regarding growth from external sources (sales of stock) must also be considered and examined. For Southern Company, page 1 of Schedule 3 shows that the number of outstanding shares increased at a 2.79% rate over the most recent five-year period. In addition, Value Line expects the number of shares outstanding to increase at a much lower rate

through the 2016-2018 period, bringing the share growth rate to a 0.84% rate by that time. Weighing both historical and projected data, an expectation of share growth of 1.5% is reasonable for this company.

Because Southern Company is currently trading at a market price that is greater than book value, issuing additional shares will increase investors' growth rate expectations. Multiplying the expected growth rate in shares outstanding by (1-(Book Value/Market Value))[12] increases the investor-expected growth rate for Southern Company by eighty-two basis points (0.82%). Therefore, the combined internal and external growth rate for Southern Company is 5.07% (4.25% internal growth and 0.82% external growth, see Schedule 4, page 1).

I have included the details of my growth rate analyses for Southern Company as an example of the methodology I use in determining the DCF growth rate for each company in the electric industry sample. A description of the growth rate analyses of each of the companies included in my sample group is set out in Attachment C. Schedule 4, page 1 of Exhibit_(SGH-1) attached to this analysis shows the internal, external and resultant overall growth rates for the electric utility companies analyzed.

Q. HAVE YOU CHECKED THE REASONABLENESS OF YOUR GROWTH RATE ESTIMATES AGAINST PUBLICLY AVAILABLE GROWTH RATE DATA?

A. Yes. Page 2 of Schedule 4 shows the results of my DCF growth rate analysis as well as 5-year historic and projected earnings, dividends and book value growth rates from

[12] Professor Myron Gordon is the originator of the DCF in regulation. This is Gordon's formula for "v" the accretion rate related to new stock issues. B=book value, M=market value. (M. J. Gordon, *The Cost of Capital to a Public Utility*, 30-33, MSU Public Utilities Studies, (East Lansing, Michigan, 1974).

Value Line, earnings growth rate projections from IBES and Zack's, the average of Value Line and IBES growth rates and the 5-year historical compound growth rates for earnings, dividends and book value for each company under study.

As shown on page 2 of Schedule 4, my DCF growth rate estimate for all the electric utility companies included in my analysis is 4.87%. This figure exceeds Value Line's projected average growth rate in earnings, dividends and book value for those same companies (4.28%), but is below the five-year historical average earnings, dividend and book value growth rate reported by Value Line for those companies (5.06%). My growth rate estimate for the similar-risk electric companies under review is above the IBES analysts' earnings growth rate projections—4.40% and similar to the average projected earnings growth estimate of those polled by Zack's (4.81%). Also, my growth rate estimate is similar to the projected dividend growth rate of the sample companies, 4.80%. Therefore, my average DCF growth rate is similar to or somewhat exceeds the growth rate data available to investors, and is likely to provides a conservative (high) assessment of investors' long-term sustainable growth rate expectations for the electric utility companies under review.

Q. DOES THIS CONCLUDE THE GROWTH RATE PORTION OF YOUR DCF ANALYSIS?

A. Yes, it does.

Q. WHAT IS THE COST OF EQUITY CAPITAL ESTIMATE FOR THE UTILITY COMPANIES, UTILIZING THE DCF MODEL?

A. Schedule 5, attached to this report shows that the overall average DCF cost of equity capital for the group of electric utilities is 8.62%.

Q. HAVE YOU PROVIDED AN ADDITIONAL DCF ANALYSIS THAT UTILIZES ONLY PROJECTED DATA?

A. Yes. Some cost of capital practitioners utilize only published forward-looking growth rates in a DCF analysis, and elect not to analyze all the data available to investors that I have described in detail above. In my view, such a mechanical analysis is not as reliable as one that considers all the data available to investors, including historical data. Nevertheless, in the interest of offering this Commission a variety of equity cost estimates, I have also prepared a "mechanical" DCF analysis for the similar-risk sample group of electric utilities that relies only on published forward-looking growth rates.

Schedule 6 attached to this reports shows a mechanical DCF analysis. For the growth rate I have used the average of Value Line's projected earnings, dividend and book value growth rates for each company in the sample group as well as the projected earnings growth rates for each company published by IBES and Zack's. Combining those projected growth rates with the year-ahead dividend yield for each company produces an average mechanical DCF result of 8.09%. Two of those results are quite low due to the fact that the current earnings growth rates for those companies (Entergy and Edison International) are low (negative or zero).[13] Eliminating those unusually low results produces a mechanical DCF estimate of 8.51%.

Also, shown in Schedule 6 is a mechanical DCF analysis that uses only earnings growth rate projections (again, a methodology preferred by some analysts).

[13] This illustrates the analytical problems with relying solely on specific sets of published data.

The average earnings-only DCF result is 8.00% for all the sample group companies. Absent the two companies with very low earnings growth projections, the average mechanical, earnings-only DCF is 8.65%.

B. Capital Asset Pricing Model

Q. PLEASE DESCRIBE THE CAPITAL ASSET PRICING MODEL (CAPM) YOU USED TO ARRIVE AT AN ESTIMATE FOR THE COST RATE OF APCO GAS UTILITIES'S EQUITY CAPITAL.

A. The CAPM states that the expected rate of return on a security is determined by a risk-free rate of return plus a risk premium, which is proportional to the non-diversifiable (systematic) risk of a security. Systematic risk refers to the risk associated with movements in the macro-economy (the economic "system") and, thus, cannot be eliminated through diversification by holding a portfolio of securities. The beta coefficient (b) is a statistical measure that attempts to quantify the non-diversifiable risk of the return on a particular security against the returns inherent in general stock market fluctuations. The formula is expressed as follows:

$$k = r_f + \beta(r_m - r_f), \qquad (2)$$

where "k" is the cost of equity capital of an individual security, "r_f" is the risk-free rate of return, "β" is the beta coefficient, "r_m" is the average market return and "$r_m - r_f$" is the market risk premium. The CAPM is used in my analysis, not as a primary cost of equity analysis, but as a check of the DCF cost of equity estimate. Although I

believe the CAPM can be useful in testing the reasonableness of a cost of capital estimate, certain theoretical shortcomings of this model (when applied in cost of capital analysis) call for caution in application of the model.

Q. WHAT VALUE HAVE YOU CHOSEN FOR A RISK-FREE RATE OF RETURN IN YOUR CAPM ANALYSIS?

A. As the CAPM is designed, the risk-free rate is that rate of return investors can realize with certainty. The nearest analog in the investment spectrum is the 13-week U. S. Treasury Bill. However, T-Bill yields can be heavily influenced by Federal Reserve policy, as they have been over the past three years. While longer-term Treasury bonds have equivalent default risk to T-Bills, those longer-term government securities carry maturity risk that the T-Bills do not have. When investors tie up their money for longer periods of time, as they do when purchasing a long-term Treasury, they must be compensated for future investment opportunities forgone as well as the potential for future changes in inflation. Investors are compensated for this increased investment risk by receiving a higher yield on T-Bonds. However, when T-Bills and T-Bonds exhibit a "normal" (historical average) spread of about 1.5% to 2%, the results of a CAPM analysis that matches a higher market risk premium with lower T-Bill yields or a lower market risk premium with higher T-Bond yields, are very similar.

As I noted in my previous discussion of the macro-economy, in an attempt to fend off a severe recession and to inject liquidity into the financial system, the Fed has acted vigorously over the past two years to lower short-term interest rates. Recently, T-Bills have produced an average yield near zero. Also, as I noted in my

discussion of the current economic environment, the current yield for T-Bonds is influenced by an increased demand for secure investments (a flight to quality), and, absent that exaggerated demand, the long-term trend of T-Bond pricing would indicate a current yield of approximately 3.4%. Therefore, for purposes of a forward-looking CAPM analysis in this proceeding I will use 3.4% as the long-term risk-free rate.

Q. WHAT MARKET RISK PREMIUM HAVE YOU USED IN YOUR CAPM ANALYSIS?

A. In their 2011 edition of Stocks, Bonds, Bills and Inflation, Morningstar indicates that the average market risk premium between stocks and T-Bills over the 1926–2009 time period is 6.0% (based on an arithmetic average), and 4.4% (based on a geometric average). I have, in prior analyses, used these values as an estimate of the market risk premium in the CAPM analysis.

As I noted previously, immediately following the 2008/2009 financial crisis and again last year, investor worries regarding the international financial system caused investors to be more concerned about default risk and seek the safety of risk-free investments. Because of that fact, the yields on long-term U.S. Treasury bonds declined more rapidly than did yields on corporate debt (see Chart II). For that reason, I believe it is reasonable to rely on the upper end of the historical risk premium range (6.0%) published by Ibbotson in calculating a current cost of equity capital. Therefore, I have the upper end of that long-term historical risk premium range in my CAPM equity cost estimate in this proceeding.

Q. WHAT VALUE HAVE YOU SELECTED FOR THE BETA COEFFICIENT IN THE CAPM ANALYSIS?

A. Value Line reports beta coefficients for all the stocks it follows. Value Line's beta is derived from a regression analysis between weekly percentage changes in the market price of a stock and weekly percentage changes in the New York Stock Exchange Composite Index over a period of five years. The average beta coefficient of the sample of electric companies under study is 0.66.

Q. WHAT IS YOUR ESTIMATE OF COST OF EQUITY CAPITAL FOR THE SAMPLE OF ELECTRIC COMPANIES USING THE CAPITAL ASSET PRICING MODEL ANALYSIS?

A. Schedule 7 shows that the average Value Line beta coefficient for the group of electric companies under study is 0.66. The upper end of the range of market risk premiums published by Ibbotson of 6.0% would, upon the adoption of a 0.66 beta, become a sample group-specific market risk premium of 4.08% (0.66 x 6.0%). That risk premium added to the risk-free T-Bond rate of 3.4%, previously derived, yields a common equity cost rate estimate of 7.36%. This analysis indicates a cost of equity capital below the standard DCF analysis.

C. Allowed Return Risk Premium Analysis

Q. PLEASE DESCRIBE THE RISK PREMIUM ANALYSIS YOU HAVE USED TO ESTIMATE THE COST OF COMMON EQUITY CAPITAL FOR THIS ANALYSIS.

A. A risk premium analysis is based on the concept that because the return on a common equity investment is riskier than a return on a debt instrument (because the debt return

is contractually set while the equity return is discretionary), the equity investor will require a premium over the available return on debt. Measuring the return difference between common equity and debt, or the risk premium, and then adding that risk premium to the current yield on utility debt will provide an estimate the current cost of equity capital.

Schedule 8 attached to this report shows how the Risk Premium equity cost is determined. Column 1 of Schedule 8 shows the average return on common equity (ROE) allowed for electric utilities in the U.S. each year from 1974 through 2011. Column 2 shows the average BBB-rated utility bond yield for each year over that same time period. The difference between those two measures of return provides an estimate the risk premium electric utility investors require over the available yield on bonds.

Schedule 8 shows that over the entire period investors have required approximately a 3.5% return premium for utility common equity over the yield on BBB-rated utility bonds. Over the most recent ten years, that risk premium has widened to approximately 4.4%.

According to The Value Line Investment Survey, over the most recent six weeks, the average yield on BBB-rated utility bonds has been 4.28%. That current yield, added to the Risk Premium between allowed ROEs and BBB-rated utility bonds over the past ten years (4.4%) indicates a current cost of equity capital of 8.68%.

D. Summary

Q. PLEASE SUMMARIZE THE RESULTS OF YOUR EQUITY CAPITAL COST ANALYSES FOR THE SAMPLE GROUP OF ELECTRIC UTILITY COMPANIES.

A. My analysis of the cost of common equity capital for the sample group of electric utility companies is summarized in Table II below.

Table II

Equity Cost Estimates

METHOD	Electric utility Companies
DCF	8.62%
Mech. DCF	8.51%
CAPM	7.36%
Risk Prem.	8.68%

For the entire electric utility sample group, the DCF results average approximately 8.6%. In addition, the corroborating cost of equity analyses (Mechanical DCF, CAPM, and Risk Premium) indicate that the DCF result is at the upper end of a reasonable range of the cost of equity capital. Averaging the corroborative analyses for the electric companies produces an equity cost result of 8.22%.

The results indicate that the cost of equity capital for the electric utility sample group lies generally below the standard DCF results for the sample group of companies. Moreover, while the CAPM results are at the lowest end, they are based

on widely accepted theory and observable risk-free rates of return trends, and provide a credible indication that the current cost of equity is lower than that represented by the DCF. Reviewing the results cited above and given the expectation in the broad economy that when and if the economic pace quickens interest rates are likely to begin to increase to some degree, it is my opinion that the current cost of equity for the entire sample group of electric companies studied ranges from 8.50% to 9.25%.

Q. WHAT HAVE YOU DETERMINED TO BE A REASONABLE POINT-ESTIMATE FOR ALABAMA POWER COMPANY WITHIN A THE RANGE FOR SIMILAR-RISK FIRMS?

A. First, as shown on Page 1 of Schedule 9, Alabama Power Company has a bond rating at the upper end of the sample group, indicating that, overall, APCO's overall risk is lower than that of the sample group of electric utilities. For example, the average Standard & Poor's corporate credit rating of the sample group of publicly-traded electric utilities is between "BBB" and "BBB+", while Alabama Power's is "A"; more than two notches higher. Also, shown on Page 2 of Schedule 9 is the average bond yield spread between A-rated utilities and BBB-rated utilities over the past three years. That yield spread indicates a cost of capital difference between A and BBB-rated utilities of about 60 basis points. By that credit rating measure, it would be reasonable to conclude that APCO's cost of capital is at the lower end of the reasonable range defined by the sample group.

However, the capital structure for APCO contains a common equity ratio, which is somewhat below the average for the electric companies included in my sample group. As shown on Schedule 10, according to its quarterly S.E.C. filings,

Alabama Power's capital structure over the past five quarters averaged 44.07% common equity, 5.57% preferred stock and 50.37% long-term debt. For the sample group of companies, Value Line reports an average common equity ratio in 2012 of 49.7%.[14]

That capital structure difference imparts higher financial risk to the APCO utility operating company. Accounting for that financial risk difference, an appropriate point-estimate equity return for APCO would be above the low end of a reasonable range of the cost of equity capital for similar-risk electrics. As noted, however, the Company's bond rating is higher than the average for the sample group of electric companies, and is designed to account for the financial risk difference. Therefore, in this instance an appropriate return on equity for APCO in this proceeding would be approximately 9.0%, which is just above the mid-point of the reasonable range of the current cost of equity capital.

Q. IS THE 9.0% COST OF EQUITY YOUR RECOMMENDED RETURN ON EQUITY IN THIS PROCEEDING?

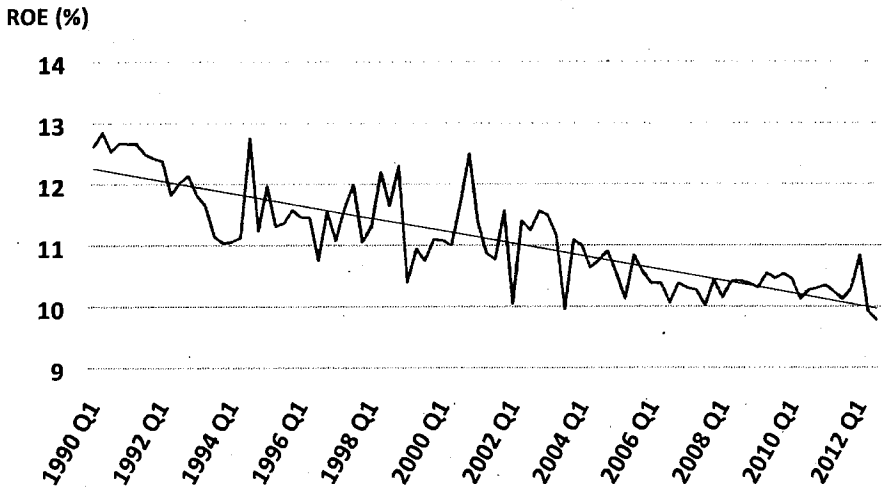
A. No. Although the allowed return should be set equal to the cost of equity, in order to be consistent in its recommendations in these Rate Stabilization Mechanism reviews being undertaken by the Alabama Public Service Commission, and in order to take a conciliatory stance in light of the Commission's desire to foster co-operation among the parties, AARP recommends that the Commission set electric rates for Alabama Power using an allowed return on equity of 10.0%. An ROE of 10.0% is well above

[14] Value Line's capital structure averages do not include consideration of short-term debt. When short-term debt is considered, the average common equity ratio of the sample group of electric utilities is 47.7% of total capital.

the Company's current cost of common equity capital, which will serve to allow the Company to continue to attract capital and maintain its financial position as required in Hope and Bluefield. An ROE of 10.0% is also very similar to the average return on common equity currently being allowed regulated utilities in the U.S., as shown in the Chart III, below, based on data published by the Edison Electric Institute. Therefore, a 10.0% ROE also meets the Hope and Bluefield requirement that the return allowed a regulated utility be similar to those being earned by other companies of comparable risk.

Chart III

Average Allowed ROE for Electric Utilities



Finally, an allowed return of 10% would afford electric ratepayers in Alabama significant savings on their electric bill.

Q. CAN YOU PROVIDE AN ANALYSIS TO SHOW HOW MUCH ALABAMA RATEPAYERS WOULD SAVE EVERY YEAR IF THE COMPANY'S ALLOWED ROE WERE MORE IN LINE WITH ITS COST OF EQUITY CAPITAL?

A. Yes. Alabama Power's November 30, 2012, Retail Common Equity (RSE) filing with this Commission projects that the Company will earn a profit of $691 Million, which represents a return on equity of 13.32% on an equity base of $5.187 Billion. The Company's filing also shows that, if the Company is allowed to earn a 13.32% return on equity, ratepayers will provide an additional $461 Million to pay the income taxes associated with that return on equity, or a total pre-tax return on equity of $1.152 Billion.

If the Company's ROE were 10% instead of its projected 13.32%, its projected year-end profit would be $519 Million instead of the $691 Million currently projected. That change alone would save Alabama ratepayers $172 Million annually.

However, there would also be additional savings afforded by a smaller profit margin—lower income taxes. Assuming a combined Federal and State income tax rate of 40%, a 10% ROE would create a pre-tax equity return of 16.67% (10%/(1-tax rate of 40%)). That pre-tax return, multiplied by APCO's projected equity base of $5.187 Billion indicates a pre-tax equity return of $864.5 Million.

The pre-tax return shown on the Company's November 20, 2012 RSE filing is $1.152 Billion. Therefore, the total *annual* savings to ratepayers from lowering the Company's allowed return from its current level to 10.0% would be approximately $287.5 Million.

Q. HOW WOULD YOU RESPOND TO THOSE WHO SAY THAT A REDUCTION IN THE ALLOWED ROE COULD LEAD TO A REDUCED BOND RATING WHICH COULD LEAD TO INCREASED COSTS FOR RATEPAYERS?

A. First, it is important to understand that because of the rate construct existing in this regulatory jurisdiction in which rates are adjusted so that the Company will earn a return very near the ROE it is allowed, Alabama Power is a low risk electric utility. Standard & Poor's recently published its annual risk ranking of 232 publicly traded utility companies and their operating companies, and Alabama Power was 18th on that list.[15] That means that Alabama Power has lower risk than 214 other utility companies. Because of that fact, in my view it is reasonable to believe that setting rates for Alabama Power with an equity return similar to that which is currently being allowed other electric utilities, on average, will have little discernable effect on the Company's relative risk and, thus, it's bond rating.

Second, if a reduction in the Company's allowed return were sufficient to cause a lowering of its bond rating, which I believe is unlikely, any increase in debt costs that might occur would be significantly smaller than the savings realized by setting the Company's ROE closer to its actual cost of equity capital.

[15] Standard & Poor's Ratings Services, Ratings Direct, U.S. Electric, Gas and Water Utilities, Strongest to Weakest, February 1, 2013.

Q. CAN YOU PROVIDE AN EXAMPLE TO SHOW THAT THE REDUCTION IN EQUITY COST WILL FAR OUTWEIGH ANY INCREASE IN DEBT COSTS THAT MIGHT OCCUR AS A RESULT?

A. Yes. As I noted above, page 2 of Schedule 9 attached to this analysis shows the yield difference between A-rated utility bonds and Baa-rated utility bonds over the past three years (2010 through 2012; Data from Mergent Bond Record). Those data show that the average yield difference between A-rated utility debt and BBB-rated utility debt is about 60 basis points.

Of course, there are three bond rating "notches" between the broader "A" and "Baa" categories. The bond rating "notches" are "Baa2" to "Baa1"; "Baa1" to "A3"; and "A3" to "A2". Therefore because the average yield differential over all three notches (mid-level "A" rating to mid-level "Baa" rating) is about 60 basis points, the yield spread between each "notch" is about 20 basis points.

If we assume, for the sake of estimating the impact of a bond rating reduction, that the Company's long-term bond rating was reduced from "A2" to "A3," then we can estimate that the cost of the Company's debt would be approximately 20 basis points (0.20%) higher than it would be otherwise. In addition, the Company's cash flow statement (Southern Company, S.E.C. Form 10-K, p. I-150) shows that Alabama Power has issued $1.95 Billion in long-term debt over the past three years (2010-2012), or, on average $650 Million per year.

If Alabama Power continues to issue about $650 Million in new long-term debt per year, a 0.20% increase in borrowing costs would increase costs to ratepayers by $1.3 Million per year [$650 Million x 0.20% = $1.3 Million]. Even if the

Company doubled its debt issuances from $650 Million to $1,300 Million per year, *and* its debt costs were increased by 20 basis points, those debt costs (which are passed on to ratepayers) would increase by $2.6 Million per year.

Therefore, if we assume the Company's bond rating were reduced as a result of this Commission lowering the allowed ROE to the level currently authorized other electric utilities *and* if we assume the Company doubled its rate of debt financing from that established over the past three years, costs would increase by $2.6 Million per year. That amount, which I believe is exaggerated, pales in comparison to the savings engendered by reducing the allowed ROE to a level closer to the Company's actual cost of capital, which, as shown above, amounts to $287.5 Million annually. The increased debt costs that might result are less than 1% of the savings engendered by setting APCO's ROE closer to its actual cost of equity capital.

If the Company claims that this Commission should keep its allowed return at current levels (14%) rather than lower it to currently industry-average ROE allowances (10%) because their debt costs might increase, they are, in effect, requesting that the Commission require ratepayers to spend $287.5 Million every year in additional equity costs in order to save (at most) $2.6 Million annually in debt costs. That is a bargain that neither this Commission nor its ratepayers should accept.

V. CAPITAL STRUCTURE AND OVERALL COST OF CAPITAL

Q. WHAT IS THE COMPANY'S CURRENT CAPITAL STRUCTURE?

A. Schedule 10 attached to my analysis shows the capital structure (common equity, preferred stock, and long-term debt) reported by Alabama Power in its Securities and

Exchange Commission filings over the past five quarters. Those data were supplied by the Company in response to AARP 1-1, and indicate that, over the most recent five quarters, APCO has been capitalized with 44.07% common equity, 5.57% preferred stock and 50.37% long-term debt.

Q. WHAT IS THE OVERALL COST OF CAPITAL FOR APCO'S ELECTRIC UTILITY OPERATIONS, BASED ON AN ALLOWED ROE OF 10.0%?

A. Schedule 11 attached to my analysis shows that an equity return of 10.00%, operating through a ratemaking capital structure of 44.07% common equity, 5.57% preferred stock and 50.37% long-term debt, and embedded capital cost rates for long-term debt and preferred stock (4.25%, 5.91%), produces an overall return of 6.88% for Alabama Power Company.[16] Schedule 11 also shows that a 6.88% overall cost of capital affords the Company an opportunity to achieve a pre-tax interest coverage level of 4.69 times. As a comparison, the ratio of the Company's operating income divided by its interest expense in 2012 was 5.2.[17] Based on an allowed return on common equity of 10%, the Company's operating earnings will be four and two-thirds times larger than its interest expense, indicating that it's financial strength will continue to be well supported.

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[16] The Company's weighted-average coupon rates for debt and preferred stock were provided in response to AARP 1-2. Those cost rates were 4.0% (long-term debt) and 5.66% (preferred stock) at the end of the first quarter of 2013 (3/31/2013). I have added an estimated 25 basis points to each of the average coupon rates to approximate an embedded cost that would account for flotation/underwriting costs. Accounting for debt and preferred stock flotation costs, the embedded costs of long-term debt and preferred stock, respectively, are 4.25% and 5.91%.

[17] S.E.C. 2012 Form 10-K, p. II-148.

Q. DOES THIS CONCLUDE YOUR DETERMINATION OF THE COST OF EQUITY CAPITAL AND THE OVERALL COST OF CAPITAL FOR ALABAMA POWER IN THESE PROCEEDINGS, MR. HILL?

A. Yes, it does.

EDUCATION AND EMPLOYMENT HISTORY
STEPHEN G. HILL

EDUCATION

Auburn University - Auburn, Alabama - Bachelor of Science in Chemical Engineering (1971); Honors - member Tau Beta Pi national engineering honorary society, Dean's list, candidate for outstanding engineering graduate; Organizations - Engineering Council, American Institute of Chemical Engineers

Tulane University - New Orleans, Louisiana - Masters in Business Administration (1973); concentration: Finance; awarded scholarship; Organizations - member MBA curriculum committee, Vice-President of student body, academic affairs

Continuing Education - NARUC Regulatory Studies Program at Michigan State University

EMPLOYMENT

West Virginia Air Pollution Control Commission (1975)
Position: Engineer ; Responsibility: Overseeing the compliance of all chemical companies in the State with the pollution guidelines set forth in the Clean Air Act.

West Virginia Public Service Commission-Consumer Advocate (1982)
Position: Rate of Return Analyst ; Responsibility: All rate of return research and testimony promulgated by the Consumer Advocate; also, testimony on engineering issues, when necessary.

Hill Associates (1989)
Position: Principal; Responsibility: Expert testimony regarding financial and economic issue in regulated industries.

PUBLICATIONS

"The Market Risk Premium and the Proper Interpretation of Historical Data," Proceedings of the Fourth NARUC Biennial Regulatory Information Conference, Volume I, pp. 245-255.
"Use of the Discounted Cash Flow Has Not Been Invalidated," Public Utilities Fortnightly, March 31, 1988, pp. 35-38.
"Private Equity Buyouts of Public Utilities: Preparation for Regulators," National Regulatory Research Institute, Paper 07-11, December 2007.

MEMBERSHIPS

American Institute of Chemical Engineers; Society of Utility and Regulatory Financial Analysts (Certified Rate of Return Analyst, Member of the Board of Directors)

ATTACHMENT B

Q. PLEASE PROVIDE AN EXAMPLE WHICH DESCRIBES THE DETERMINANTS OF LONG-TERM SUSTAINABLE GROWTH.

A. Assume that a hypothetical regulated firm had a first period common equity or book value per share of $10, the investor-expected return on that equity was 10% and the stated company policy was to pay out 60% of earnings in dividends. The first period earnings per share are expected to be $1.00 ($10/share book equity x 10% equity return) and the expected dividend is $0.60. The amount of earnings not paid out to shareholders ($0.40), the retained earnings, raises the book value of the equity to $10.40 in the second period. The table below continues the hypothetical for a five year period and illustrates the underlying determinants of growth.

TABLE A.

	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	GROWTH
BOOK VALUE	$10.00	$10.40	$10.82	$11.25	$11.70	4.00%
EQUITY RETURN	10%	10%	10%	10%	10%	-
EARNINGS/SH.	$1.00	$1.040	$1.082	$1.125	$1.170	4.00%
PAYOUT RATIO	0.60	0.60	0.60	0.60	0.60	-
DIVIDENDS/SH.	$0.60	$0.624	$0.649	$0.675	$0.702	4.00%

We see that under steady-state conditions, the earnings, dividends and book value all grow at the same rate. Moreover, the key to this growth is the amount of earnings retained or reinvested in the firm and the return on that new portion of equity. If we let "b" equal the retention ratio of the firm (1 – the payout ratio) and let "r" equal the firm's expected return on equity, the DCF growth rate "g" (also referred to as the internal or sustainable growth rate) is equal to their product, or

$$g = br. \qquad \text{(i)}$$

Professor Myron Gordon, who developed the Discounted Cash Flow technique and first

introduced it into the regulatory arena, has determined that Equation (i) embodies the underlying fundamentals of growth and, therefore, is a primary measure of growth to be used in the DCF model. Professor Gordon's research also indicates that analysts' growth rate projections are useful in estimating investors' expected sustainable growth.

I should note here that the above hypothetical does not allow for the existence of external sources of equity financing, i.e., sales of common stock. Stock financing will cause investors to expect additional growth if the company is expected to issue new shares at a market price that exceeds book value. The excess of market over book would inure to current shareholders, increasing their per share equity value. Therefore, if the company is expected to continue to issue stock at a price that exceeds book value, the shareholders would continue to expect their book value to increase and would add that growth expectation to that stemming from earnings retention or internal growth. Conversely, if a company were expected to issue new equity at a price below book value, that would have a negative effect on shareholder's current growth rate expectations. In such a situation, shareholders would perceive an overall growth rate less than that produced by internal sources (retained earnings). Finally, with little or no expected equity financing or a market-to-book ratio near unity, investors would expect the sustainable growth rate for the company to equal that derived from Equation (i), "g = br." Dr. Gordon[1] identifies the growth rate which includes both expected internal and external financing as:

$$g = br + sv, \qquad \text{(ii)}$$

where,

g = DCF expected growth rate,
r = return on equity,
b = retention ratio,
v = fraction of new common stock sold that accrues to the current shareholder,
s = funds raised from the sale of stock

[1]Gordon, M.J., The Cost of Capital to a Public Utility, MSU Public Utilities Studies, East Lansing, Michigan, 1974, pp., 30–33.

as a fraction of existing equity.

Additionally,

$$v = 1 - BV/MP, \qquad \text{(iii)}$$

where,

MP = market price,
BV = book value.

I have used Equation (iii) as the basis for my examination of the investor expected long-term growth rate (g) in this proceeding.

Q. IN YOUR PREVIOUS EXAMPLE, EARNINGS AND DIVIDENDS GREW AT THE SAME RATE (br) AS DID BOOK VALUE. WOULD THE GROWTH RATE IN EARNINGS OR DIVIDENDS, THEREFORE, BE SUITABLE FOR DETERMINING THE DCF GROWTH RATE ?

A. No, not necessarily. Rates of growth derived from earnings or dividends alone can be unreliable due to extraneous influences on those parameters such as changes in the expected rate of return on common equity or changes in the payout ratio. That is why it is necessary to examine the underlying determinants of growth through the use of a sustainable growth rate analysis.

If we take the hypothetical example previously stated and assume that, in year three, the expected return on equity rises to 15%, the resultant growth rate for earnings and dividends far exceeds that which the company could sustain indefinitely. The potential error in using those growth rates to estimate "g" is illustrated in the following table.

TABLE B.

	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	GROWTH
BOOK VALUE	$10.00	$10.40	$10.82	$11.47	$12.157	5.00%
EQUITY RETURN	10%	10%	15%	15%	15%	10.67%
EARNINGS/SH.	$1.00	$1.040	$1.623	$1.720	$1.824	16.20%
PAYOUT RATIO	0.60	0.60	0.60	0.60	0.60	-
DIVIDENDS/SH.	$0.60	$0.624	$0.974	$1.032	$1.094	16.20%

What has happened is a shift in steady-state growth paths. For years one and two, the sustainable rate of growth (g=br) is 4.00%, just as in the previous hypothetical. Then, in the last three years, the sustainable growth rate increases to 6.00% (g=br = 0.4x15%). If the regulated firm were expected to continue to earn a 15% return on equity and retain 40% of its earnings, then a growth rate of 6.0% would be a reasonable estimate of the long-term sustainable growth rate. However, the compound annual growth rate for dividends and earnings exceeds 16% which is the result only of an increased equity return rather than the intrinsic ability of the firm to grow continuously at a 16% annual rate. Clearly, this type of estimate of future growth cannot be used with any reliability at all. In the case of the hypothetical, to utilize a 16% growth rate in a DCF model would be to expect the company's return on common equity to increase by 50% every five years into the indefinite future. This would be a ridiculous forecast for any regulated firm and underscores the importance of utilizing the underlying fundamentals of growth in the DCF model.

It can also be demonstrated that a change in our hypothetical regulated firm's payout ratio makes the past rate of growth in dividends an unreliable basis for predicting "g". If we assume our regulated firm consistently earns its expected equity return (10%) but in the third year, changes its payout ratio from 60% to 80% of earnings, the results are shown in the table below.

TABLE C.

	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	GROWTH
BOOK VALUE	$10.00	$10.40	$10.82	$11.036	$11.26	3.01%
EQUITY RETURN	10%	10%	10%	10%	10%	-
EARNINGS/SH.	$1.00	$1.040	$1.082	$1.104	$1.126	3.01%
PAYOUT RATIO	0.60	0.60	0.80	0.80	0.80	7.46%
DIVIDENDS/SH.	$0.60	$0.624	$0.866	$0.833	$0.900	10.67%

What we see here is that, although the company has registered a high dividend growth rate (10.67%), it is, again, not at all representative of the growth that could be sustained indefinitely, as called for in the DCF model. In actuality, the sustainable growth rate has declined from 4.0% the first two years to only 2.0% (g=br = 0.2x10%) during the last three years due to the increased payout ratio. To utilize a 10% growth rate in a DCF analysis of this hypothetical regulated firm would 1) assume the payout ratio of the firm would continue to increase 33% every five years into the indefinite future, 2) lead to the highly implausible result that the firm intends to consistently pay out more in dividends than it earns and 3) grossly overstate the cost of equity capital.

INDIVIDUAL SAMPLE COMPANY GROWTH RATE ANALYSES

ELECTRIC UTILITIES

SO – Southern Company - SO's sustainable growth rate has averaged 3.26% over the most recent five year period (2008-2012). However, VL expects SO's sustainable growth to increase from that historical growth rate level to reach 3.65% by the 2016-2018 period. SO's book value growth rate is expected to be 4.5% over the next five years, down from the 5.5% rate of growth experienced over the past five years. SO's earnings per share are projected to increase at a 4.5% (Value Line) to 4.76% (Zack's) to 4.84% (IBES) rate. SO's dividends are expected to show 3.5% growth over the next five years, slightly below historical dividend growth. Over the past five years, SO's earnings grew at a 3% rate, according to Value Line. Investors can reasonably expect a sustainable growth rate in the future of **4.25%** for SO.

Regarding share growth, SO's shares outstanding grew at a 2.79% rate over the past five years due mainly to an equity issuance in 2008. The number of shares is projected by VL to show a 0.84% rate of increase through the 2016-18 period, to correspond with a building program. An expectation of share growth of **1.5%** for this company is reasonable.

ALE – ALLETE – ALE's sustainable growth rate has averaged 2.21% over the most recent five-year period, with higher growth in the two most recent years. VL expects ALE's sustainable growth to increase to 4.13% through the 2016-18 period. Also, ALE's book value growth rate is expected to be 4.0% over the next five years, below the 5.5% rate of growth experienced over the past five years indicating lower growth in the future. Projected book value growth (4%) is, however, similar to internal growth projections. Also, ALE's earnings per share are projected to increase 7% according to Value Line (6% IBES and 5% Zacks). Value Line also projects a 3.5% growth in dividends, which is below the sustainable growth indications and would indicate long-term growth rate expectations. The dividend growth projections are also lower than the historical dividend growth (4.5%). In this instance projected sustainable growth and projected book value growth indicate moderate growth while earnings growth rates are higher. Investors can reasonably expect a sustainable growth rate in the future, of **4.5%** for ALE.

Regarding share growth, ALE's shares outstanding increased at a 4.85% rate over the past five years due. The number of shares is expected to grow at a 2% rate through 2016-18. An expectation of share growth of **3%** for this company is reasonable.

LNT – Alliant Energy- LNT's sustainable growth rate has averaged 3.53% over the most recent five-year period, with an upward trend showing higher growth in the last three years. Value Line expects LNT's sustainable growth to rise to 4.46%

through the 2016-2018 period. LNT's book value growth rate is expected to be 4% over the next five years, below sustainable growth projections, and marginally greater than historical book value growth (3.5%). Also, LNT's earnings per share are projected to increase at a rate of from 4.5% (Value Line), to 5.87% (IBES), to 6.15% (Zack's). Value Line's projected dividend growth is 4.5%. Investors can reasonably expect sustainable growth over the long term similar to historical the average — **4.5%** for LNT is reasonable.

Regarding share growth, LNT's shares outstanding increased at a 0.12% rate over the past five years. The number of shares is expected to increase at a 0.89% rate through 2016-18. An expectation of share growth of **0.5%** for this company is reasonable.

AEP- American Electric Power- AEP's sustainable growth rate has averaged 4.12% over the most recent five-year period. VL expects AEP's sustainable growth to continue at a level of 3.687% by the 2016-2018 period. AEP's book value growth rate is expected to increase at a 4.0% rate over the next five years, slightly below the 4.5% book value growth over the past five years. Both sustainable growth and book value growth point to somewhat slower growth for this company. AEP's earnings per share are projected to increase at 4.5% (VL), to 3.84% (IBES) and 3.38% (Zack's)—all approximating the indicated projected internal growth rate. Also, AEP's dividends are expected to grow at 4.0%. Value Line's average projected earnings, dividends and book value for this company is 4.17%. Investors can reasonably expect a sustainable growth rate in the future of **4.0%** for AEP.

Regarding share growth, AEP's shares outstanding increased at a 4.58% rate over the past five years, due to an equity issuance in 2009. Prior to 2009, the number of shares outstanding increased at a 1% rate, and after 2009, the number of shares increased at about a 0.5% annual rate. The number of shares outstanding in 2016-2018 is expected to show a 0.78% increase from 2011 levels. An expectation of share growth of **1.5%** for this company is reasonable.

CNL – Cleco Corp. - CNL's sustainable growth rate averaged 5.44% for the five-year period, with the results in the most recent two years above that average, indicating an increasing trend. VL expects sustainable growth to moderate to a 4.71% level through the 2016-18 period. CNL's book value growth is expected to increase at a 5.5% rate, well below the historical level of 10.0%, established during the building of a new generating plant; but that projected growth is still above sustainable growth indications. CNL's earnings per share are projected to show 7% growth over the next five years, according to Value Line (IBES and Zacks project 8% earnings growth). Historically CNL's earnings increased at a 10% rate, according to Value Line. CNL's dividend growth, which has held to 2% over the past five years is expected to expand to 10.5% over the next three- to five-year period as management expects to increase the payout ratio. The sustainable growth data indicate that future growth will be similar to prior growth rate averages, but at lower overall levels than indicated by Value Line's earnings

growth projections, and would moderate future growth expectations somewhat. Investors can reasonably expect sustainable growth from CNL to be above past averages, a sustainable internal growth rate of **6.0%** is reasonable for this company.

Regarding share growth, CNL's shares outstanding grew at approximately a 0.40% rate over the past five years. The growth in the number of shares is expected by VL to be 0.0% through 2016-18. An expectation of share growth of **0.25%** for this company is reasonable.

ETR – Entergy Corp. - ETR's internal sustainable growth rate has averaged 7.31% over the most recent five-year period (2008-2012). Sustainable growth is expected to decline to about 3.17% by the 2016-2018 period. Also, ETR's book value growth rate is expected to be 3% over the next five years—a decrease from the 4.5% rate of growth experienced over the past five years—pointing to lower growth expectations for the future. ETR's earnings per share growth is projected to be -3.5% (VL), 0% (IBES). ETR's dividends are expected to grow at a 1.0% rate, down from an historical rate of 9%-- a substantial decline, moderating long-term growth expectations. Over the past five years, ETR's earnings grew at an 8.5% rate according to Value Line. These data indicate that investors can reasonably expect a sustainable growth rate in the future to be below past averages. Therefore, **4.0%** is a reasonable long-term growth expectation for ETR.

Regarding share growth, ETR's shares outstanding grew at a –1.56% rate over the past five years. The number of shares outstanding is projected by VL to decrease at a -0.66% rate through 2016-18. An expectation of share growth of **0%** for this company is reasonable.

WR – Westar Energy, Inc.- WR's sustainable growth rate has averaged 1.91% over the most recent five-year period, with higher growth in recent years. Value Line expects WR's sustainable growth to increase substantially to 3.74% by the 2016-2018 period. However, WR's book value growth rate is expected to be 4.0% over the next five years, down slightly from the 4.5% rate of growth experienced over the past five years, and above sustainable growth projections. Also, WR's earnings per share are projected to increase at a rate of from 5% (Value Line), to 4.8% (IBES), to 5.1% (Zack's). Over the past five years, WR's earnings growth was 1.5% according to Value Line. Historically, dividends grew at a 5% rate, but Value Line expects that rate to decline to 3.0% over the next five years. The average earnings dividends and book value growth for WR, as published by Value Line is 4.00%. Investors can reasonably expect a higher sustainable growth over the long term — **4.25%** for WR is reasonable.

Regarding share growth, WR's shares outstanding increased at about a 3.96% rate over the past five years, due to an equity issuance in 2011. The number of shares is expected to increase at a 1.31% rate through 2016-18. An expectation of share growth of **2.0%** for this company is reasonable.

WEC – Wisconsin Energy – WEC's sustainable growth rate has averaged 6.64% over the most recent five-year period, with similar growth in the most recent year.

VL expects WEC's sustainable growth to decline to 4.67% through the 2016-18 period. Also, WEC's book value growth rate is expected to be 3.5% over the next five years, well below the 7% rate of growth experienced over the past five years indicating lower growth in the future. Projected book value growth (3.5%) is also below internal growth projections. WEC's earnings per share are projected to increase at 6.5% according to Value Line (5.55% IBES and 5.2%, Zacks). Value Line also projects a 13% growth in dividends, which is well above the sustainable growth indications and would confirm higher long-term growth rate expectations but is the result of declining retention ratio and would not be sustainable over the long-term. In this instance projected sustainable growth and projected book value growth indicate moderate growth while earnings growth rates are higher. Investors can reasonably expect a sustainable growth rate in the future, of **5.25%** for WEC.

Regarding share growth, WEC's shares outstanding increased at a -0.52% rate over the past five years. The number of shares is expected to grow at a 0.4% rate through 2016-18. An expectation of share growth of **0%** for this company is reasonable.

EIX – Edison International - EIX's sustainable growth rate has averaged 7.85% over the most recent five-year period, with an upward trend showing higher growth in the last year. Value Line expects EIX's sustainable growth to decline to 6.34% through the 2016-2018 period. EIX's book value growth rate is expected to be 4.5% over the next five years, below sustainable growth projections, and below to historical book value growth (5.5%). Also, EIX's earnings per share are projected to increase at a rate of from 2.5% (Value Line), to -2% (IBES), to 4.82% (Zack's). Value Line's projected dividend growth is 5.5%. Investors can reasonably expect sustainable growth over the long term similar to historical the average — **6.0%** for EIX is reasonable.

Regarding share growth, EIX's shares outstanding increased at a 0% rate over the past five years. The number of shares is expected to increase at a 0% rate through 2016-18. An expectation of share growth of **0%** for this company is reasonable.

IDA – IDACORP- IDA's sustainable growth rate has averaged 5.20% over the most recent five-year period, with an upward trend showing higher growth in the last year. Value Line expects IDA's sustainable growth to decline to 4.08% through the 2016-2018 period. IDA's book value growth rate is expected to be 4.5% over the next five years, near sustainable growth projections, and less than historical book value growth (5.5%). Also, IDA's earnings per share are projected to increase at a rate of from 2.0% (Value Line), to 4.0% (IBES & Zack's). Value Line's projected dividend growth is 7.0%, substantially higher than the company's historical dividndd. Investors can reasonably expect sustainable growth over the long term similar to historical the average — **4.5%** for IDA is reasonable.

Regarding share growth, IDA's shares outstanding increased at a 1.68 % rate over the past five years. The number of shares is expected to increase at a

0.33% rate through 2016-18. An expectation of share growth of **0.75%** for this company is reasonable.

NWNE – Northwestern Corp- NWNE's sustainable growth rate has averaged 3.32% over the most recent five-year period. Value Line expects NWNE's sustainable growth to remain steady and reach 3.28% through the 2016-2018 period. NWNE's book value growth rate is expected to be 4.5% over the next five years, above sustainable growth projections, and also above historical book value growth (2.5%), which would point to increasing growht. Also, NWNE's earnings per share are projected to increase at a rate of from 3.0% (Value Line), to 5.0% (IBES & Zack's). Value Line's projected dividend growth is 4.0%, equal to historical dividend growth. Investors can reasonably expect sustainable growth over the long term similar to historical the average — **4.0%** for NWNE is reasonable.

Regarding share growth, NWNE's shares outstanding increased at a 0.89% rate over the past five years. The number of shares is expected to increase at a 0.94% rate through 2016-18. An expectation of share growth of **1%** for this company is reasonable.

PCG – PGE Corporation – PCG's sustainable growth rate has averaged 3.78% over the most recent five-year period, with a declining growth rate. After a couple of low-growth years due to the financial costs related to a pipeline explosion, VL expects PCG's sustainable growth to reach 3.18% through the 2016-18 period, showing moderating growth. PCG's book value growth rate is expected to be 3.0% over the next five years, down from the 6.0% rate of growth experienced over the past five years indicating moderating growth in the future. Projected book value growth is, also, similar to sustainable internal growth projections. Also, PCG's earnings per share are projected to increase at 4.0% according to Value Line (3.12% IBES and 3.8% Zacks). Value Line also projects a 2.5% growth in dividends, which is well below historical growth of 6.5%. Investors can reasonably expect a stable sustainable growth rate in the future of **3.5%** for PCG.

Regarding share growth, PCG's shares outstanding increased at approximately a 4.5% rate over the past five years. The number of shares is expected to grow at a 1.98% rate through 2016-18. An expectation of share growth of **2.5%** for this company is reasonable.

PNW — Pinnacle West Capital Corp. - PNW's sustainable growth rate has averaged 1.97% over the most recent five-year period with higher growth in the most recent years (indicating an increasing trend). VL expects PNW's sustainable growth to rise above that historical average growth rate level to 3.88% by the 2016-2018 period. PNW's book value growth rate is expected to be 3.5% over the next five years, much greater than the 0% rate of book value growth experienced over the past five years, and pointing to higher growth in the future. PNW's earnings per share are projected to increase at a 5% (VL) to 7.25% (IBES) to 5.53% (Zack's) rate, with all projections above the indicated internal growth rate. PNW's dividends are expected to grow at a 2.0% rate, supporting more moderate

long-term growth rate expectations. Over the past five years, PNW's earnings growth was 2.5% and its dividends also increased at a 2.5% rate. The average Value Line projected growth rate for this company is 3.50%. Investors can reasonably expect a sustainable growth rate in the future of **4.0%** for PNW.

Regarding share growth, PNW's shares outstanding increased at a 2.12% rate over the past five years. The number of shares outstanding in 2016-2018 is expected to show a 0.94% increase from 2012 levels. An expectation of share growth of **1.5%** for this company is reasonable.

POR – Portland General- POR's sustainable growth rate has averaged 2.76% over the most recent five-year period, with higher growth in recent years. Value Line expects POR's sustainable growth to increase to 3.38% by the 2016-2018 period. POR's book value growth rate is expected to be 3.5% over the next five years, just above sustainable growth projections, and above historical book value growth (2%). Also, POR's earnings per share are projected to increase at a rate of from 3.5% (Value Line), to 4.77% (IBES), to 5.1% (Zack's). Value Line reports historical earnings growth for this company of 4%, and "projected dividend growth of 3.5%. The average Value Line projected earnings, dividend and book value growth is 3.5%. Investors can reasonably expect a higher sustainable growth over the long term — **3.75%** for POR is reasonable.

Regarding share growth, POR's shares outstanding increased at about a 4.82% rate over the past five years, due to an equity issuance in 2009. Prior to that annual share growth was very low. The number of shares is expected to increase at a 0.31% rate through 2016-18. An expectation of share growth of **1.0%** for this company is reasonable.

XEL – Xcel Energy - XEL's sustainable growth rate has averaged 3.60% over the most recent five-year period. Value Line expects XEL's sustainable growth to increase to 4% by the 2016-2018 period. Also, XEL's book value growth rate is expected to be 4.5% over the next five years, equal to the rate of growth experienced over the past five years, and above sustainable growth projections, pointing to rising growth expectations. XEL's earnings per share are projected to increase at a rate of from 4.5% (Value Line), to 5.11% (IBES) and 4.88% (Zack's). Over the past five years, XEL's earnings growth was 5.5% according to Value Line. Historically, dividends grew at a 3% rate, but Value Line expects that rate to be 4.5% over the next five years. Average Value Line projected earnings, dividends and book value for this company is 4.5%. Investors can reasonably expect a higher sustainable growth over the long term — **4.75%** for XEL is reasonable.

Regarding share growth, XEL's shares outstanding increased at a 1.83% rate over the past five years. The number of shares is expected to increase at a 1.05% rate through 2016-18. An expectation of share growth of **1.25%** for this company is reasonable.

Ehibit__(SGH-1)
Schedule 1

COST OF CAPITAL
ELECTRIC UTILITY SAMPLE GROUP SELECTION

	Company Name	Revenues % Elec.	Recent Merger?	Recent Div. Cut?	Generation Assets?	Stable Book Value?	Senior Bond Rating S&P	Senior Bond Rating Moody's	Selected
	SCREEN	≥70%	no	no	yes	yes	A to BBB		
EAST									
e+g	CH Energy	[redacted]	[redacted]	no	yes	yes	A	A3	
e+g	Consolidated Edison	72	no	no	[redacted]	yes	A-	A3/Baa1	
e+g	Dominion Resources	[redacted]	no	no	yes	yes	A	Baa1	
e+g	Duke Energy	80	[redacted]	no	yes	yes	A-	A3	
e+g	Exelon Corp.	[redacted]	[redacted]	[redacted]	yes	yes	BBB+/BBB	Baa1	
e	FirstEnergy Corp.	[redacted]	no	no	yes	yes	BBB	Baa2	
e	NextEra Energy	71	no	no	yes	yes	A	[redacted]	
e+g	Northeast Utilities	89	[redacted]	no	yes	yes	A-	A3	
e+g	PPL Corporation	[redacted]	no	no	yes	yes	A-	A3	
e+g	Pepco Holdings, Inc.	83	no	no	[redacted]	yes	A-/BBB+	Baa1/Baa2	
e+g	Public Service Ent. Gp.	[redacted]	no	no	yes	yes	BBB+/BBB	A1	
e+g	SCANA Corp.	[redacted]	no	no	yes	yes	BBB+	Baa1/Baa2	
e	Southern Company	95	no	no	yes	yes	A	A2/A3	√
e+g	TECO Energy	[redacted]	no	no	yes	yes	BBB+	A3/Baa1	
e	UIL Holdings Corp.	[redacted]	no	no	[redacted]	yes	BBB	Baa2	
CENTRAL									
e	ALLETE	91	no	no	yes	yes	A-	A2	√
e+g	Alliant Energy	84	no	no	yes	yes	A-	A2/A3	√
e+g	Ameren Corp.	86	no	[redacted]	yes	[redacted]	BBB/BBB-	Baa1/Baa2	
e	American Eelectric Power	92	no	no	yes	yes	BBB	Baa2	√
e+g	CMS Energy Corp.	[redacted]	no	[redacted]	yes	yes	BBB/BBB-	Baa2	
e+g	CenterPoint Energy	79	no	no	[redacted]	yes	BBB+	Baa1/Baa2	
e	Cleco Corporation	95	no	no	yes	yes	BBB	Baa2	√
e+g	DTE Energy	[redacted]	no	no	yes	yes	A	A2	
e+g	Empire District Electric	92	no	[redacted]	yes	yes	A	A3	
e+g	Entergy Corp.	76	no	no	yes	yes	BBB	Baa2	√
e	Great Plains Energy	100	no	[redacted]	yes	yes	BBB/BBB-	Baa1/Baa2	
e+g	Integrys Energy	[redacted]	no	no	yes	yes	A	A2/A3	
e+g	ITC Holdings	100	no	no	[redacted]	yes	A-	A	
e+g	MGE Energy	72	no	no	yes	yes	[redacted]	A	
e+g	OGE Energy Corp.	[redacted]	no	no	yes	yes	BBB	Baa1	
	Otter Tail Corp.	71	no	[redacted]	yes	[redacted]	[redacted]	Baa2	
e+g	Vectren Corp.	[redacted]	no	no	yes	yes	A/A-	A2	
e	Westar Energy	100	no	no	yes	yes	BBB+	A3	√
e+g	Wisconsin Energy	75	no	no	yes	yes	A-/BBB+	A1	√
WEST									
e+g	Avista Corp.	[redacted]	no	no	yes	yes	A-	A3	
e+g	Black Hills Corp.	[redacted]	no	no	yes	yes	BBB+	A3	
e	Edison International	98	no	no	yes	yes	BBB +	A1	√
e	El Paso Electric	100	no	[redacted]	yes	yes	BBB	Baa2	
e	Hawaiian Electric	92	no	no	yes	yes	[redacted]	Baa2	
e	IDACORP, Inc.	100	no	no	yes	yes	A-	A2	√
e+g	Northwestern Corp.	75	no	no	yes	yes	A-	A2	√
e+g	NV Energy Inc.	96	no	[redacted]	yes	yes	BBB	Baa1	
e+g	PG&E Corp.	80	no	no	yes	yes	BBB/BBB-	A3/Baa1	√
e	PNM Resources	100	no	[redacted]	yes	yes	BBB	Baa1/Baa2	
e	Pinnacle West Capital	100	no	no	yes	yes	BBB+	Baa1	√
e	Portland General	100	no	no	yes	yes	A-	A3	√
e+g	Sempra Energy	[redacted]	no	no	yes	yes	A/A-	A2	
e+g	UNS Energy	91	no	no	yes	yes	[redacted]	Baa2	
e+g	Xcel Energy, Inc.	84	no	no	yes	yes	A-	A3	√

e= electric company; e+g=combination electric and gas company
Data from Value Line Ratings and Reports, May 3, March 22, and February 22, 2013; AUS Utility Reports, May 2013.

Schedule 2

COST OF CAPITAL - 2013

STOCK PRICE, DIVIDENDS, DIVIDEND YIELDS
ELECTRIC UTILITIES

COMPANY	AVG. STOCK PRICE† 3/22/13-5/3/13 (PER SHARE) [1]	VALUE LINE PROJECTED DIVIDEND* (PER SHARE) [2]	DIVIDEND YIELD [3]=[2]/[1]
SO	$47.43	$2.02	4.26%
ALE	$49.60	$1.90	3.83%
LNT	$51.19	$1.88	3.67%
AEP	$49.58	$2.04	4.11%
CNL	$47.42	$1.60	3.37%
ETR	$67.74	$3.32	4.90%
WR	$33.61	$1.40	4.17%
WEC	$43.22	$1.52	3.52%
EIX	$51.64	$1.36	2.63%
IDA	$47.98	$1.56	3.25%
NWE	$41.03	$1.52	3.70%
PCG	$46.50	$1.82	3.91%
PNW	$58.95	$2.18	3.70%
POR	$30.97	$1.08	3.49%
XEL	$30.44	$1.11	3.65%
		Average	**3.74%**

† Daily closing average price from Yahoo!Finance, Historical Prices
*Value Line *Summary & Index*, May 3, 2012

COST OF CAPITAL - 2013
DCF GROWTH RATE PARAMETERS
ELECTRIC UTILITIES

COMPANY	INTERNAL GROWTH				EXTERNAL GROWTH	
SO	RETENTION RATIO	EQUITY RETURN	"g"	BOOK VALUE ($/SHARE)	SHARES OUTST (MILLIONS)	SHARE GROWTH
2008	0.2622	13.1%	3.44%	17.08	777.19	
2009	0.2543	12.4%	3.15%	18.15	819.65	
2010	0.2373	12.2%	2.89%	19.21	843.34	
2011	0.2667	12.5%	3.33%	20.32	865.13	
2012	0.2734	12.8%	3.50%	21.09	867.77	
AVERAGE GROWTH			3.26%	5.50%		2.79%
2013	0.2556	13.0%	3.32%		870.00	0.26%
2014	0.2702	13.0%	3.51%		872.00	0.24%
2016-2018	0.2923	12.5%	3.65%	4.50%	905.00	0.84%

COMPANY	INTERNAL GROWTH				EXTERNAL GROWTH	
ALE	RETENTION RATIO	EQUITY RETURN	"g"	BOOK VALUE ($/SHARE)	SHARES OUTST (MILLIONS)	SHARE GROWTH
2008	0.3901	10.0%	3.90%	25.37	32.60	
2009	0.0688	06.6%	0.45%	26.41	35.20	
2010	0.1963	07.7%	1.51%	27.26	35.80	
2011	0.3283	08.7%	2.86%	28.78	37.50	
2012	0.2868	08.1%	2.32%	30.48	39.40	
AVERAGE GROWTH			2.21%	5.50%		4.85%
2013	0.2963	08.0%	2.37%		41.50	5.33%
2014	0.3356	08.5%	2.85%		42.00	3.25%
2016-2018	0.4133	10.0%	4.13%	4.00%	43.50	2.00%

COMPANY	INTERNAL GROWTH				EXTERNAL GROWTH	
LNT	RETENTION RATIO	EQUITY RETURN	"g"	BOOK VALUE ($/SHARE)	SHARES OUTST (MILLIONS)	SHARE GROWTH
2008	0.4488	09.3%	4.17%	25.56	110.45	
2009	0.2063	06.8%	1.40%	25.07	110.66	
2010	0.4255	09.9%	4.21%	26.09	110.89	
2011	0.3818	09.5%	3.63%	27.14	111.02	
2012	0.4098	10.3%	4.22%	28.25	110.99	
AVERAGE GROWTH			3.53%	3.50%		0.12%
2013	0.4032	11.0%	4.43%		112.00	0.91%
2014	0.4061	10.5%	4.26%		113.00	0.90%
2016-2018	0.4054	11.0%	4.46%	4.00%	116.00	0.89%

COST OF CAPITAL - 2013
DCF GROWTH RATE PARAMETERS
ELECTRIC UTILITIES

COMPANY	INTERNAL GROWTH				EXTERNAL GROWTH	
AEP	RETENTION RATIO	EQUITY RETURN	"g"	BOOK VALUE ($/SHARE)	SHARES OUTST (MILLIONS)	SHARE GROWTH
2008	0.4515	11.3%	5.10%	26.33	406.07	
2009	0.4478	10.4%	4.66%	27.49	478.05	
2010	0.3423	09.1%	3.12%	28.33	480.81	
2011	0.4089	10.3%	4.21%	30.33	483.42	
2012	0.3691	09.5%	3.51%	31.37	485.67	
AVERAGE GROWTH			4.12%	4.50%		4.58%
2013	0.3841	09.5%	3.65%		489.00	0.69%
2014	0.3818	10.0%	3.82%		492.00	0.65%
2016-2018	0.3867	10.0%	3.87%	4.00%	505.00	0.78%

COMPANY	INTERNAL GROWTH				EXTERNAL GROWTH	
CNL	RETENTION RATIO	EQUITY RETURN	"g"	BOOK VALUE ($/SHARE)	SHARES OUTST (MILLIONS)	SHARE GROWTH
2008	0.4706	09.6%	4.52%	17.65	60.04	
2009	0.4886	09.5%	4.64%	18.50	60.26	
2010	0.5721	10.6%	6.06%	21.76	60.53	
2011	0.5676	11.1%	6.30%	23.55	60.29	
2012	0.5185	10.9%	5.65%	24.60	61.00	
AVERAGE GROWTH			5.44%	10.00%		0.40%
2013	0.4510	10.0%	4.51%		61.00	0.00%
2014	0.4386	10.5%	4.61%		61.00	0.00%
2016-2018	0.4286	11.0%	4.71%	5.50%	61.00	0.00%

COMPANY	INTERNAL GROWTH				EXTERNAL GROWTH	
ETR	RETENTION RATIO	EQUITY RETURN	"g"	BOOK VALUE ($/SHARE)	SHARES OUTST (MILLIONS)	SHARE GROWTH
2008	0.5161	15.3%	7.90%	42.07	189.36	
2009	0.5238	14.3%	7.49%	45.54	189.12	
2010	0.5135	14.7%	7.55%	47.53	178.75	
2011	0.5603	15.0%	8.40%	50.81	176.36	
2012	0.4485	11.6%	5.20%	51.75	177.80	
AVERAGE GROWTH			7.31%	4.50%		-1.56%
2013	0.2622	08.5%	2.23%		178.00	0.11%
2014	0.2703	08.5%	2.30%		178.00	0.06%
2016-2018	0.3524	09.0%	3.17%	3.00%	172.00	-0.66%

COST OF CAPITAL - 2013
DCF GROWTH RATE PARAMETERS
ELECTRIC UTILITIES

COMPANY	INTERNAL GROWTH				EXTERNAL GROWTH	
WR	RETENTION RATIO	EQUITY RETURN	"g"	BOOK VALUE ($/SHARE)	SHARES OUTST (MILLIONS)	SHARE GROWTH
2008	0.1145	06.2%	0.71%	20.18	108.31	
2009	0.0625	06.3%	0.39%	20.59	109.07	
2010	0.3111	08.5%	2.64%	21.25	112.13	
2011	0.2849	07.7%	2.19%	22.03	125.70	
2012	0.3860	09.4%	3.63%	22.89	126.50	
AVERAGE GROWTH			1.91%	4.50%		3.96%
2013	0.3524	08.5%	3.00%		127.00	0.40%
2014	0.3636	09.0%	3.27%		128.00	0.59%
2016-2018	0.4154	09.0%	3.74%	4.00%	135.00	1.31%

COMPANY	INTERNAL GROWTH				EXTERNAL GROWTH	
WEC	RETENTION RATIO	EQUITY RETURN	"g"	BOOK VALUE ($/SHARE)	SHARES OUTST (MILLIONS)	SHARE GROWTH
2008	0.6447	10.7%	6.90%	14.27	233.84	
2009	0.5750	10.6%	6.10%	15.26	233.82	
2010	0.5833	12.0%	7.00%	16.26	233.77	
2011	0.5229	12.9%	6.75%	17.20	230.49	
2012	0.4894	13.2%	6.46%	18.05	229.04	
AVERAGE GROWTH			6.64%	7.00%		-0.52%
2013	0.4333	13.0%	5.63%		229.50	0.20%
2014	0.3920	13.0%	5.10%		229.50	0.10%
2016-2018	0.3333	14.0%	4.67%	3.50%	229.50	0.04%

COMPANY	INTERNAL GROWTH				EXTERNAL GROWTH	
EIX	RETENTION RATIO	EQUITY RETURN	"g"	BOOK VALUE ($/SHARE)	SHARES OUTST (MILLIONS)	SHARE GROWTH
2008	0.6658	12.8%	8.52%	29.21	325.81	
2009	0.6142	10.8%	6.63%	30.20	325.81	
2010	0.6209	10.4%	6.46%	32.44	325.81	
2011	0.6006	10.5%	6.31%	30.86	325.81	
2012	0.7121	15.9%	11.32%	28.95	325.81	
AVERAGE GROWTH			7.85%	5.50%		0.00%
2013	0.6114	11.5%	7.03%		325.81	0.00%
2014	0.6054	11.5%	6.96%		325.81	0.00%
2016-2018	0.5765	11.0%	6.34%	4.50%	325.81	0.00%

COST OF CAPITAL - 2013
DCF GROWTH RATE PARAMETERS
ELECTRIC UTILITIES

COMPANY	INTERNAL GROWTH				EXTERNAL GROWTH	
IDA	RETENTION RATIO	EQUITY RETURN	"g"	BOOK VALUE ($/SHARE)	SHARES OUTST (MILLIONS)	SHARE GROWTH
2008	0.4495	07.6%	3.42%	27.76	46.92	
2009	0.5455	08.9%	4.85%	29.17	47.90	
2010	0.5932	09.3%	5.52%	31.01	49.41	
2011	0.6429	10.1%	6.49%	33.19	49.95	
2012	0.5935	09.6%	5.70%	35.07	50.16	
AVERAGE GROWTH			5.20%	5.50%		1.68%
2013	0.5273	09.0%	4.75%		50.50	0.68%
2014	0.5059	08.5%	4.30%		50.50	0.34%
2016-2018	0.4795	08.5%	4.08%	4.50%	51.00	0.33%

COMPANY	INTERNAL GROWTH				EXTERNAL GROWTH	
NWE	RETENTION RATIO	EQUITY RETURN	"g"	BOOK VALUE ($/SHARE)	SHARES OUTST (MILLIONS)	SHARE GROWTH
2008	0.2542	08.9%	2.26%	21.25	35.93	
2009	0.3366	09.3%	3.13%	21.86	36.00	
2010	0.3645	09.4%	3.43%	22.64	36.23	
2011	0.4308	10.8%	4.65%	23.68	36.28	
2012	0.3451	09.0%	3.11%	25.09	37.22	
AVERAGE GROWTH			3.32%	2.50%		0.89%
2013	0.3796	09.5%	3.61%		38.10	2.36%
2014	0.3882	09.5%	3.69%		39.00	2.36%
2016-2018	0.3455	09.5%	3.28%	4.50%	39.00	0.94%

COMPANY	INTERNAL GROWTH				EXTERNAL GROWTH	
PCG	RETENTION RATIO	EQUITY RETURN	"g"	BOOK VALUE ($/SHARE)	SHARES OUTST (MILLIONS)	SHARE GROWTH
2008	0.5155	12.6%	6.50%	25.97	361.06	
2009	0.4455	11.2%	4.99%	27.88	370.60	
2010	0.3546	09.7%	3.44%	28.55	395.23	
2011	0.3453	09.2%	3.18%	29.35	412.26	
2012	0.1208	06.7%	0.81%	30.35	430.72	
AVERAGE GROWTH			3.78%	6.00%		4.51%
2013	0.0667	06.0%	0.40%		455.00	5.64%
2014	0.2417	07.5%	1.81%		460.00	3.34%
2016-2018	0.3538	09.0%	3.18%	3.00%	475.00	1.98%

COST OF CAPITAL - 2013
DCF GROWTH RATE PARAMETERS
ELECTRIC UTILITIES

COMPANY	INTERNAL GROWTH				EXTERNAL GROWTH	
PNW	RETENTION RATIO	EQUITY RETURN	"g"	BOOK VALUE ($/SHARE)	SHARES OUTST (MILLIONS)	SHARE GROWTH
2008	0.0094	06.2%	0.06%	34.16	100.89	
2009	0.0708	06.9%	0.49%	32.69	101.43	
2010	0.3182	09.0%	2.86%	33.86	108.77	
2011	0.2977	08.6%	2.56%	34.98	109.25	
2012	0.3943	09.8%	3.86%	36.20	109.74	
AVERAGE GROWTH			1.97%	0.00%		2.12%
2013	0.3771	09.5%	3.58%		111.00	1.15%
2014	0.3753	09.5%	3.57%		112.00	1.02%
2016-2018	0.3882	10.0%	3.88%	3.50%	115.00	0.94%

COMPANY	INTERNAL GROWTH				EXTERNAL GROWTH	
POR	RETENTION RATIO	EQUITY RETURN	"g"	BOOK VALUE ($/SHARE)	SHARES OUTST (MILLIONS)	SHARE GROWTH
2008	0.3022	06.4%	1.93%	21.64	62.58	
2009	0.2290	06.2%	1.42%	20.50	75.21	
2010	0.3735	07.9%	2.95%	21.14	75.32	
2011	0.4564	08.8%	4.02%	22.07	75.36	
2012	0.4225	08.2%	3.46%	22.87	75.56	
AVERAGE GROWTH			2.76%	2.00%		4.82%
2013	0.4158	08.0%	3.33%		75.75	0.25%
2014	0.4250	08.0%	3.40%		76.00	0.29%
2016-2018	0.4222	08.0%	3.38%	3.50%	76.75	0.31%

COMPANY	INTERNAL GROWTH				EXTERNAL GROWTH	
XEL	RETENTION RATIO	EQUITY RETURN	"g"	BOOK VALUE ($/SHARE)	SHARES OUTST (MILLIONS)	SHARE GROWTH
2008	0.3562	09.2%	3.28%	15.35	453.79	
2009	0.3490	09.4%	3.28%	15.92	457.51	
2010	0.3590	08.9%	3.19%	16.76	482.33	
2011	0.4012	09.9%	3.97%	17.44	486.49	
2012	0.4216	10.2%	4.30%	18.19	487.96	
AVERAGE GROWTH			3.60%	4.50%		1.83%
2013	0.4158	10.0%	4.16%		497.00	1.85%
2014	0.4103	09.5%	3.90%		506.50	1.88%
2016-2018	0.4000	10.0%	4.00%	4.50%	514.00	1.05%

Data from Value Line Ratings and Reports, May 3 and 24, March 22, 2013.

Schedule 4
Page 1 of 4

COST OF CAPITAL - 2013

DCF GROWTH RATES
ELECTRIC UTILITIES

COMPANY	br	+	sv=g*(1-(1/(M/B)))		=	g
SO	4.25%	+	1.50%	(1 - (1/ 2.22)))	=	5.07%
ALE	4.50%	+	3.00%	(1 - (1/ 1.57)))	=	5.59%
LNT	4.50%	+	0.50%	(1 - (1/ 1.74)))	=	4.71%
AEP	4.00%	+	1.50%	(1 - (1/ 1.52)))	=	4.51%
CNL	6.00%	+	0.25%	(1 - (1/ 1.84)))	=	6.11%
ETR	4.00%	+	0.00%	(1 - (1/ 1.28)))	=	4.00%
WR	4.25%	+	2.00%	(1 - (1/ 1.38)))	=	4.80%
WEC	5.25%	+	0.00%	(1 - (1/ 2.32)))	=	5.25%
EIX	6.00%	+	0.00%	(1 - (1/ 1.66)))	=	6.00%
IDA	4.40%	+	0.75%	(1 - (1/ 1.31)))	=	4.58%
NWE	4.00%	+	1.00%	(1 - (1/ 1.55)))	=	4.36%
PCG	3.50%	+	2.50%	(1 - (1/ 1.49)))	=	4.32%
PNW	4.00%	+	1.50%	(1 - (1/ 1.58)))	=	4.55%
POR	3.75%	+	1.00%	(1 - (1/ 1.31)))	=	3.99%
XEL	4.75%	+	1.25%	(1 - (1/ 1.59)))	=	5.21%

Average Market-to-Book Ratio = 1.62

SO	=	Southern Company
ALE	=	ALLETE
LNT	=	Alliant Energy
AEP	=	American Electric Power
CNL	=	Cleco Corporation
ETR	=	Entergy Corp.
WR	=	Westar Energy
WEC	=	Wisconsin Energy
EIX	=	Edison International
IDA	=	IDACORP
NWE	=	Northwestern Corp.
PCG	=	PG&E Corp.
PNW	=	Pinnacle West Capital
POR	=	Portland General
XEL	=	Xcel Energy

Schedule 4
Page 2 of 4

COST OF CAPITAL - 2013

GROWTH RATE COMPARISON
ELECTRIC UTILITIES

COMPANY	DCF Growth	Value Line Projected EPS	Value Line Projected DPS	Value Line Projected BVPS	IBES EPS	Value Line Historic EPS	Value Line Historic DPS	Value Line Historic BVPS	IBES & VL AVGS.	5-yr Compound Hist. EPS	5-yr Compound Hist. DPS	5-yr Compound Hist. BVPS
SO	5.07%	4.50%	3.50%	4.50%	4.84%	3.00%	4.00%	5.50%	4.26%	3.71%	3.90%	4.56%
ALE	5.59%	7.00%	3.50%	4.00%	6.00%	-2.50%	4.50%	5.50%	4.00%	-0.87%	2.01%	4.42%
LNT	4.71%	4.50%	4.50%	4.00%	5.87%	4.00%	8.00%	3.50%	4.91%	4.40%	6.07%	2.87%
AEP	4.51%	4.50%	4.00%	4.00%	3.64%	1.00%	4.00%	4.50%	3.66%	1.05%	3.42%	4.36%
CNL	6.11%	7.00%	10.50%	5.50%	8.00%	10.00%	2.00%	10.00%	7.57%	8.45%	9.24%	7.85%
ETR	4.00%	-3.50%	1.00%	3.00%	0.00%	8.50%	9.00%	4.50%	3.21%	-6.21%	2.05%	4.67%
WR	4.80%	5.00%	3.00%	4.00%	4.80%	1.50%	5.00%	4.50%	3.97%	9.90%	3.23%	3.87%
WEC	5.25%	6.50%	13.00%	3.50%	5.55%	10.00%	17.00%	7.00%	8.94%	9.57%	20.29%	5.50%
EIX	6.00%	2.50%	5.50%	4.50%	-1.89%	2.50%	3.00%	5.50%	3.09%	-1.00%	2.03%	1.23%
IDA	4.58%	2.00%	7.00%	4.50%	4.00%	10.00%	1.00%	5.50%	4.86%	8.65%	5.39%	5.66%
NWE	4.36%	3.00%	4.00%	4.50%	5.00%	9.00%	4.00%	2.50%	4.57%	6.72%	2.86%	4.44%
PCG	4.32%	4.00%	2.50%	3.00%	3.12%	-0.50%	6.50%	6.00%	3.52%	-9.54%	3.13%	3.80%
PNW	4.55%	5.00%	2.00%	3.50%	7.25%	2.50%	2.50%	0.00%	3.25%	10.55%	0.75%	1.75%
POR	3.99%	3.50%	3.50%	3.50%	4.77%	4.00%	14.50%	2.00%	5.11%	6.45%	2.73%	1.75%
XEL	5.21%	4.50%	4.50%	4.50%	5.11%	5.50%	3.00%	4.50%	4.52%	5.41%	3.38%	4.58%
		4.00%	4.80%	4.03%		4.57%	5.87%	4.73%		3.82%	4.70%	4.09%
AVERAGES	4.87%		4.28%		4.40%		5.06%		4.63%		4.20%	

Zack's growth rates: SO-4.76%, ALE-5%, LNT-6.15%, AEP-3.38%, CNL-8.0%, ETR, n/a, WR-5.1%, WEC-5.2%, EIX-4.82%, IDA-4.0%, NWE-5.0%, PCG-3.8%, PNW-5.53%, POR-5.1%, and XEL-4.88%. Zack's average earnings growth = 4.81%.

Schedule 5

COST OF CAPITAL - 2013

DCF COST OF EQUITY CAPITAL
ELECTRIC UTILITIES

COMPANY	DIVIDEND YIELD Schedule 2 [1]	GROWTH RATE Schedule 4 [2]	DCF COST OF EQUITY CAPITAL [3]=[1]+[2]
SO	4.26%	5.07%	9.33%
ALE	3.83%	5.59%	9.43%
LNT	3.67%	4.71%	8.39%
AEP	4.11%	4.51%	8.63%
CNL	3.37%	6.11%	9.49%
ETR	4.90%	4.00%	8.90%
WR	4.17%	4.80%	8.96%
WEC	3.52%	5.25%	8.77%
EIX	2.63%	6.00%	8.63%
IDA	3.25%	4.58%	7.83%
NWE	3.70%	4.36%	8.06%
PCG	3.91%	4.32%	8.23%
PNW	3.70%	4.55%	8.25%
POR	3.49%	3.99%	7.48%
XEL	3.65%	5.21%	8.86%
		AVERAGE	**8.62%**
		STANDARD DEVIATION	**0.58%**

Schedule 6

COST OF CAPITAL - 2013

MECHANICAL DCF COST OF EQUITY CAPITAL
ELECTRIC UTILITIES

Company	Value Line Projected EPS [1]	Value Line Projected DPS [2]	Value Line Projected BVPS [3]	IBES EPS [4]	Zacks EPS [5]	Average Growth [6]	Div. Yield (Sch. 2) [7]	DCF Result [8]	Earnings-only DCF Result [9]
SO	4.50%	3.50%	4.50%	4.84%	4.76%	4.42%	4.26%	8.68%	8.96%
ALE	7.00%	3.50%	4.00%	6.00%	5.00%	5.10%	3.83%	8.93%	9.83%
LNT	4.50%	4.50%	4.00%	5.87%	6.15%	5.00%	3.67%	8.68%	9.18%
AEP	4.50%	4.00%	4.00%	3.64%	3.38%	3.90%	4.11%	8.02%	7.95%
CNL	7.00%	10.50%	5.50%	8.00%	8.00%	7.80%	3.37%	11.17%	11.04%
ETR	-3.50%	1.00%	3.00%	0.00%	n/a	0.13%	4.90%	5.03%	3.15%
WR	5.00%	3.00%	4.00%	4.80%	5.10%	4.38%	4.17%	8.55%	9.13%
WEC	6.50%	13.00%	3.50%	5.55%	5.20%	6.75%	3.52%	10.27%	9.27%
EIX	2.50%	5.50%	4.50%	-1.89%	4.82%	3.09%	2.63%	5.72%	4.44%
IDA	2.00%	7.00%	4.50%	4.00%	4.00%	4.30%	3.25%	7.55%	6.58%
NWE	3.00%	4.00%	4.50%	5.00%	5.00%	4.30%	3.70%	8.00%	8.04%
PCG	4.00%	2.50%	3.00%	3.12%	0.38%	2.60%	3.91%	6.51%	6.41%
PNW	5.00%	2.00%	3.50%	7.25%	5.53%	4.66%	3.70%	8.35%	9.62%
POR	3.50%	3.50%	3.50%	4.77%	5.10%	4.07%	3.49%	7.56%	7.94%
XEL	4.50%	4.50%	4.50%	5.11%	4.88%	4.70%	3.65%	8.35%	8.48%
							AVERAGE	**8.09%**	**8.00%**
							STANDARD DEVIATION	**1.56%**	**2.09%**
							AVERAGE W/O ETR, EIX	**8.51%**	**8.65%**

Columns [1], [2], and [3], from Value Line Ratings and Reports, May 3, March 22, and February 22, 2013.
Columns [4] and [5], Data from Yahoo.com., and Zacks.com.
Column [6] = ([1]+[2]+[3]+[4]+[5])/5
Column [7], see Schedule 2
Column [8] = [6]+[7]
Column [9] = [7]+([1]+[4]+[5])/3

Schedule 7

COST OF CAPITAL - 2013

CAPM COST OF EQUITY CAPITAL

$$\mathbf{k = rf + B\ (rm - rf)}$$

[rf]* = 3.40%
[rm - rf]† = 6.00%
Electric Companies' Beta = 0.66

Electric Utilities

k = 3.40% + 0.66 (6.00%)
k = 3.40% + 3.96%
k = 7.36%

*Current "normative" T-Bond yield estimate based on trend shown in Chart I in narrative portion of testimony.
†Arithmetric market risk premium from 2011 Ibbotson SBBI Valuation Yearbook, at 23.
Beta coefficients from Value Line, *Summary & Index*, May 3, 2013.

Schedule 8

COST OF CAPITAL - 2013

HISTORICAL ALLOWED RETURN RISK PREMIUM

Year	Allowed Electric Util. Equity Returns [1]	Moody's Baa Utility Bond Returns [2]	Risk Premium [3]=[1]-[2]
1974	13.10%	9.27%	3.83%
1975	13.20%	9.88%	3.32%
1976	13.10%	9.17%	3.93%
1977	13.30%	8.58%	4.72%
1978	13.20%	9.22%	3.98%
1979	13.50%	10.39%	3.11%
1980	14.23%	13.15%	1.08%
1981	15.22%	15.62%	-0.40%
1982	15.78%	15.33%	0.45%
1983	15.36%	13.31%	2.05%
1984	15.32%	14.03%	1.29%
1985	15.20%	12.29%	2.91%
1986	13.93%	9.46%	4.47%
1987	12.99%	9.98%	3.01%
1988	12.79%	10.45%	2.34%
1989	12.97%	9.66%	3.31%
1990	12.70%	9.76%	2.94%
1991	12.55%	9.21%	3.34%
1992	12.09%	8.57%	3.52%
1993	11.41%	7.56%	3.85%
1994	11.34%	8.30%	3.04%
1995	11.55%	7.91%	3.64%
1996	11.39%	7.74%	3.65%
1997	11.40%	7.63%	3.77%
1998	11.66%	7.00%	4.66%
1999	10.77%	7.55%	3.22%
2000	11.43%	8.09%	3.34%
2001	11.09%	7.72%	3.37%
2002	11.16%	7.53%	3.63%
2003	10.97%	6.61%	4.36%
2004	10.75%	6.20%	4.55%
2005	10.54%	5.67%	4.87%
2006	10.36%	6.08%	4.28%
2007	10.36%	6.11%	4.25%
2008	10.46%	6.65%	3.81%
2009	10.48%	6.28%	4.20%
2010	10.34%	5.56%	4.78%
2011	10.22%	5.13%	5.09%
		Overall Average	**3.41%**
		10-year Average	**4.38%**
		20-year Average	**3.99%**
		30-year Average	**3.53%**

Allowed Return data from Regulatory Research Associates; BBB-rated Utility Bond Yield from Moody's.

COST OF CAPITAL - 2013

BOND RATING COMPARISON

	Moody's Long-term Rating	Standard and Poor's Issuer Rating
ELECTRIC UTILITY COMPANIES		
Southern Company	Baa1	A
ALLETE	Baa1	BBB+
Alliant Energy	Baa1	A-
American Electric Power	Baa2	BBB
Cleco Corporation	Baa3	BBB
Entergy Corp.	Baa3	BBB
Westar Energy	Baa2	BBB
Wisconsin Energy	A3	A-
Edison International	Baa2	BBB-
IDACORP	Baa2	BBB
Northwestern Corp.	Baa1	BBB
PG&E Corp.	A3	BBB
Pinnacle West Capital	Baa2	BBB+
Portland General	Baa2	BBB
Xcel Energy	Baa1	A-
AVERAGE	**Baa2/Baa1**	**BBB/BBB+**
Alabama Power	**A2**	**A**

COST OF CAPITAL - 2013

Utility Bond Yields and Yield Spread

		A	Baa	Spread
2010	Jan	5.77%	6.16%	0.39%
	Feb	5.87%	6.25%	0.38%
	Mar	5.84%	6.22%	0.38%
	Apr	5.81%	6.19%	0.38%
	May	5.50%	5.97%	0.47%
	Jun	5.46%	6.18%	0.72%
	Jul	5.26%	5.98%	0.72%
	Aug	5.01%	5.55%	0.54%
	Sep	5.01%	5.53%	0.52%
	Oct	5.10%	5.62%	0.52%
	Nov	5.37%	5.85%	0.48%
	Dec	5.56%	6.04%	0.48%
2011	Jan	5.57%	6.06%	0.49%
	Feb	5.68%	6.10%	0.42%
	Mar	5.56%	5.97%	0.41%
	Apr	5.55%	5.98%	0.43%
	May	5.32%	5.74%	0.42%
	Jun	5.26%	5.67%	0.41%
	Jul	5.27%	5.70%	0.43%
	Aug	4.69%	5.22%	0.53%
	Sep	4.48%	5.11%	0.63%
	Oct	4.52%	5.24%	0.72%
	Nov	4.25%	4.93%	0.68%
	Dec	4.33%	5.07%	0.74%
2012	Jan	4.34%	5.06%	0.72%
	Feb	4.36%	5.02%	0.66%
	Mar	4.48%	5.13%	0.65%
	Apr	4.40%	5.11%	0.71%
	May	4.20%	4.97%	0.77%
	Jun	4.08%	4.91%	0.83%
	Jul	3.93%	4.85%	0.92%
	Aug	4.00%	4.88%	0.88%
	Sep	4.02%	4.81%	0.79%
	Oct	3.91%	4.54%	0.63%
	Nov	3.84%	4.42%	0.58%
	Dec	4.00%	4.56%	0.56%
	Average 2010-2012			0.58%

Data from Mergent Bond Record

Schedule 10

COST OF CAPITAL - 2013
ALABAMA POWER COMPANY
HISTORICAL CAPITAL STRUCTURE

AMOUNT (000,000)

Type of Capital	Mar-12 [1]	Jun-12 [2]	Sep-12 [3]	Dec-12 [4]	Mar-13 [5]	**Average [6]**
Common Equity	$5,350	$5,401	$5,558	$5,398	$5,415	**$5,424**
Preferred Stock	$685	$685	$685	$685	$685	**$685**
Long-term Debt	$6,380	$6,130	$6,130	$6,179	$6,179	**$6,200**
TOTAL	$ 12,415	$ 12,216	$ 12,373	$ 12,262	$ 12,279	**$12,309**

PERCENTAGE INCLUDING SHORT-TERM DEBT

Type of Capital	Mar-12 [1]	Jun-12 [2]	Sep-12 [3]	Dec-12 [4]	Mar-13 [5]	**5 Quarter Average [6]**
Common Equity	43.09%	44.21%	44.92%	44.02%	44.10%	**44.07%**
Preferred Stock	5.52%	5.61%	5.54%	5.59%	5.58%	**5.57%**
Long-term Debt	51.39%	50.18%	49.54%	50.39%	50.32%	**50.37%**
TOTAL	100.00%	100.00%	100.00%	100.00%	100.00%	**100.00%**

Data from quarterly S.E.C. filings, and Company response to AARP 1-1.

Schedule 11

COST OF CAPITAL - 2013
ALABAMA POWER COMPANY
OVERALL COST OF CAPITAL

Type of Capital	Percent of Total	Cost Rate	Wt. Average Cost Rate
Common Equity	44.07%	10.00%	4.41%
Preferred Stock	5.57%	5.91%	0.33%
Long-term Debt	50.37%	4.25%	2.14%
Totals	100.00%		**6.88%**

Pre-tax Interest Coverage = 4.69x

*Assuming a Federal and State combined tax rate of 40%, the pre-tax overall return would be 10.03% [6.88%-(2.14%) = 4.74%/(1-40%) = 7.89%+(2.14%)]. That pre-tax overall return (10.03%), divided by the weighted cost of debt (2.14%), indicates a pre-tax interest coverage level of 4.69 times.

Public Service Commission of Wisconsin
RECEIVED: 08/29/13, 11:33:07 AM

BEFORE THE
PUBLIC SERVICE COMMISSION OF WISCONSIN

Application of Wisconsin Public Service Corporation
For Authority to Adjust Electric and Natural Gas Rates

Docket No. 6690-UR-122

DIRECT TESTIMONY OF STEPHEN G. HILL ON BEHALF OF THE CITIZENS UTILITY BOARD
August 29, 2013

I. INTRODUCTION / SUMMARY

Q. Please state your 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: hillassociates@gmail.com).

Q. Briefly, what is your educational background?

A. After graduating with a Bachelor of Science degree in Chemical Engineering from Auburn University in Auburn, Alabama, I was awarded a scholarship to attend Tulane Graduate School of Business Administration at Tulane University in New Orleans, Louisiana. There I received a Master's Degree in Business Administration. I have been awarded the professional designation "Certified Rate of Return Analyst" by the Society of Utility and Regulatory Financial Analysts. This designation is based upon education, experience and the successful completion of a comprehensive examination. I have also been a member of the Board of Directors of that national organization for several years and am currently Vice President. A more detailed account of my educational background and occupational experience appears in Ex.-CUB-Hill-1.

Q. Have you testified before this or other regulatory commissions?

A. Yes, I have appeared previously before this Commission. In addition, over the past thirty years I have testified on cost of capital, corporate finance and capital market issues in

more than 300 regulatory proceedings before the following regulatory bodies: the West Virginia Public Service Commission, the Pennsylvania Public Utilities Commission, the Oklahoma State Corporation Commission, the Public Utilities Commission of the State of California, the Texas Public Utilities Commission, the Maryland Public Service Commission, the Public Utilities Commission of the State of Minnesota, the Ohio Public Utilities Commission, the Insurance Commissioner of the State of Texas, the North Carolina Insurance Commissioner, the Rhode Island Public Utilities Commission, the City Council of Austin, Texas, the Texas Railroad Commission, the Arizona Corporation Commission, the Missouri Public Service Commission, the South Carolina Public Service Commission, the Public Utilities Commission of the State of Hawaii, the New Mexico Corporation Commission, the Kentucky Public Service Commission, the Massachusetts Department of Public Utilities, the State of Washington Utilities and Transportation Commission, the Alabama Public Service Commission, the Georgia Public Service Commission, the Public Service Commission of Utah, the Illinois Commerce Commission, the Kansas Corporation Commission, the Indiana Utility Regulatory Commission, the Washington Utilities and Transportation Commission, the Montana Public Service Commission, the Public Service Commission of the State of Maine, the Virginia Corporation Commission, the Vermont Public Service Board, the Federal Communications Commission and the Federal Energy Regulatory Commission. I have also testified before the West Virginia Air Pollution Control Commission regarding appropriate pollution control technology and its financial impact on the company under review and have been an advisor to the Arizona Corporation Commission on matters of utility finance.

Q. On behalf of whom are you testifying in this proceeding?

A. I am testifying on behalf of the Citizens Utility Board of Wisconsin (CUB).

Q. **What is the purpose of your testimony?**

A. In this testimony, I present the results of studies I have performed related to the determination of the cost of capital for the integrated electric and gas utility operations of Wisconsin Public Service Corporation (WPSC, the Company), a subsidiary of Integrys

Energy Group, Inc. (Integrys, the Parent). My testimony also addresses the reduction in risk afforded by the Company's proposed decoupling ratemaking regime, and the shortcomings contained in the testimony of Company witness, Mr. Paul Moul. The theoretically unsound "financial risk" adders included in Mr. Moul's cost of equity estimates result in a substantial overstatement of his estimate of the current cost of equity capital.

Q. Have you prepared any exhibits in support of your testimony?

A. Yes. In addition to Ex.-CUB-Hill-1, I prepared two other exhibits. Ex.-CUB-Hill-2 consists of 11 Schedules and provides the analytical support for the conclusions reached regarding the cost of common equity, capital structure and overall cost of capital for WPSC presented in the body of my testimony. Ex.-CUB-Hill-3 provides a description of the growth rate analyses of each of the companies included in my sample group from my Discounted Cash Flow (DCF) analysis. These exhibits were prepared by me and are correct to the best of my knowledge and belief. Also, I have provided an Appendix ("Appendix A"), which contains additional detail regarding certain aspects of my narrative testimony in this proceeding.

Q. Please summarize your testimony and findings concerning the rate of return that should be utilized in setting rates for WPSC's utility operations in this proceeding.

A. My testimony is organized into four additional sections. First, I review the current economic environment in which my equity return estimate is made and evaluate the current state of the economy in light of the financial crisis of 2008-2009.

Second, I evaluate the cost of equity capital for utility operations that are similar in risk to WPSC using DCF, Capital Asset Pricing Model (CAPM), Modified Earnings-Price Ratio (MEPR), and Market-to-Book Ratio (MTB) analyses. Third, I review the capital structure and embedded cost rates requested by the Company for ratemaking purposes. Through that review as well as a review of the capital structures existing, on average, in the electric utility industry, I determine a capital structure and embedded cost rates appropriate for ratemaking purposes.

Fourth, I provide a discussion regarding the need for a reduction in the allowed return on equity to appropriately balance the interests of the Company and its customers for reductions in operating risk resulting from the Company's revenue decoupling proposal. Through decoupling revenues from unit sales, the volatility that impacts the Company's revenue stream due to weather and economic fluctuations will be significantly reduced. It is axiomatic that lowering volatility lowers risk for any financial instrument. Therefore, in order that the costs associated with volatility risk reduction from decoupling are not shifted from stockholders to ratepayers, the equity return WPSC is allowed to earn should be reduced.

In the fifth section of my testimony, I discuss the shortcomings of the cost of capital testimony provided by Company witness Mr. Paul Moul. Also, I explain both the theoretical and practical flaws contained in Mr. Moul's leverage adjustment—an unnecessary "financial risk adder" to the allowed return on equity that regulators have previously rejected[1] —and show why Mr. Moul's leverage adjustment should be rejected in this proceeding as well.

I have determined that the current cost of equity capital for similar-risk electric and combination gas and electric utility companies ranges from 8.50% to 9.50%. Within that range, due to the Company's higher-than-average common equity ratio and lower operating risk if its decoupling proposal is accepted, the allowed return should be in the lower end of that reasonable range, or 8.75%. If the Commission rejects the Company's decoupling proposal, the allowed return on equity should be set 25 basis points higher at 9.0%.

The Commission may believe that lowering the Company's allowed return from the currently allowed 10.3% to 8.75% or 9.0% is too substantial a change. I would disagree with that concern as my analysis shows that a 9.0% authorized return (8.75% with decoupling) is based on a conservative analysis and an authorized return above that level would require ratepayers to provide excess profit to the Company. However, if the Commission believes that setting the Company's allowed return on equity at the current

[1] Although Mr. Moul indicates that the Pennsylvania Public Utility Commission, at one time, adopted his "leverage" adjustment, in more recent decisions that Commission rejected Mr. Moul's adjustment: Pa. P.U.C. Docket No. R-00061366, et al, Metropolitan Edison, Pennsylvania Electric, January 11, 2007, pp. 135, 136; and Docket No. R-00072711, Aqua Pennsylvania, Inc., July 17, 2008, pp. 35 through 39.

9.0% cost of equity capital (8.75% with decoupling) is too substantial a change in the allowed return, I would recommend that the Commission utilize the uppermost end of the current reasonable range, or 9.50%, as an intermediate step toward setting the Company's profitability in line with its current cost of common equity capital.

Applying my recommended 8.75% equity capital cost to WPSC's projected 2014 test year capital structure containing 51.11% common equity, 1.90% preferred stock, 43.69% long-term debt, and 3.30% short-term debt, with the Company's requested fixed-income capital costs, produces an overall cost of capital of 6.59% (Ex.-CUB-Hill-2, Schedule 11). That overall cost of capital affords the Company an opportunity to achieve a pre-tax interest coverage level of 4.59 times.

That level of interest coverage (4.59x) is similar to but somewhat below recent historical average interest coverage for the Company and, therefore, will continue to support the Company's credit profile.[2] Also, the interest coverage level that results from the overall cost of capital I recommend is substantially higher than the average pre-tax interest coverage for Company witness Moul's group of similar-risk sample companies over the 2009-2011 period (3.19x).[3] Therefore, the current cost of equity and the overall return based on that equity cost rate fulfills the regulatory requirements of providing the Company the opportunity to earn a return that is commensurate with the risk of the operation while maintaining the Company's ability to attract capital.

Q. Why should the cost of capital serve as a basis for the proper allowed rate of return for a regulated firm?

A. The Supreme Court of the United States has established, as a guide to assessing an appropriate level of profitability for regulated operations, that investors in such firms are to be given an opportunity to earn returns that are sufficient to attract capital and are comparable to returns investors would expect in the unregulated sector for assuming the same degree of risk. The Bluefield and Hope cases provide the seminal decisions [Bluefield Water Works v. PSC, 262 US 679 (1923); FPC v. Hope Natural Gas

[2] The Company reports in its 2011 S.E.C. Form 10-K, Exhibit 12 (the most recent publication for which interest coverage data are available) that its pre-tax coverage of interest expense from 2009 to 2011 averaged 4.72 times [2009 (4.33x), 2010 (4.86x) and 2011 (4.97x)]. *See, also*, Ex.-WPSC-Moul-2, Schedule 2, page 1.
[3] *See* Ex.-WPSC-Moul-2, Schedule 3, p. 1.

Company, 320 US 591 (1944)]. These criteria were restated in the Permian Basin Area Rate Cases, 390 US 747 (1968). However, the Court also makes quite clear in Hope that regulation does not guarantee profitability and, in Permian Basin, that, while investor interests (profitability) are certainly pertinent to setting adequate rates, those interests do not exhaust the relevant considerations.

As a starting point in the rate-setting process, then, the market-based cost of capital of a regulated firm represents the return investors could expect from other investments, while assuming no more and no less risk. Since financial theory holds that investors will not provide capital for a particular investment unless that investment is expected to yield the opportunity cost of capital, the correspondence of the cost of capital with the Court's guidelines for appropriate earnings is clear.

Q. The cost of equity capital is most often estimated using a complex array of economic models and algebraic formulas. Is there a simple way to understand the concept of the cost of equity capital?

A. Yes. In a regulated ratemaking context such as this, the cost of equity capital can be most easily understood as the rate of profit that should be allowed for the regulated firm. A firm's profit is the amount of money that remains from its revenues after a firm has paid all of its costs—operating costs (commodity supply costs, depreciation, equipment maintenance costs, salaries, fees, taxes, retirement obligations), as well as income taxes and interest costs. That dollar amount of profit, divided by the amount of common equity capital used to finance the firm's regulated assets produces a percentage rate of return on equity. If, for example, the profit earned by a utility is $10/year and investors have provided $100 of equity capital, the firm's return on equity (ROE) is 10%.

The purpose of all of the economic models and formulas in cost of capital testimony is to estimate, using market data of similar-risk firms, the percentage rate of return equity investors require for that risk-class of firms—in this case, electric utility operations. If the profit included in the rates, as a percent of the firm's equity capital, is set equal to the cost of equity capital (the investors' required return), the utility, under efficient management, will be able to attract the capital necessary to maintain the firm's

financial integrity and the interests of investors and ratepayers will be balanced, as called for in the U.S. Supreme Court cases cited above.

Simply put, the amount of profit the utility should be allowed the opportunity to earn, as a percentage of the total equity investment, should be equal to the cost of equity capital.

Q. You have estimated the cost of equity capital for WPSC to be 8.75%. Is there independent evidence that supports the reasonableness of your equity cost estimate?

A. Yes. As noted above, the return on a utility's common equity capital should be set equal to the cost of equity capital, which is the return investors expect to earn in the marketplace for a particular risk-class of assets. According to WPSC's 2012 S.E.C. Form 10-K (p. 52), the Company has approximately three-quarters of a billion dollars invested in its pension plan, 70% of which is invested in common equities.

In order to provide their employees a pension, corporations have to maintain large investment portfolios that will, eventually, be able to provide the monies to pay the promised pension benefits. Those investment portfolios are comprised of stocks and bonds and are managed, most often, by professional investment firms on behalf of the corporations whose funds are invested. In order for the companies to know how much to invest in those portfolios every year in order to meet their future needs, the investment managers must estimate the returns they expect over the long term for each of the asset-classes in which the firm invests. Often, the majority of the pension fund portfolio is invested in common stocks, and the investment manager's estimate of the expected long-term return on common stocks provides an independent view of investors' current equity return expectations.

According to WPSC's 2012 S.E.C. Form 10-K, the Company indicates that its long-term expected return on its pension fund portfolio of investments is expected to be 8.00% in 2013.[4] Moreover, WPSC indicates that its pension fund investment is comprised of 70% equity investments and 30% fixed-income (debt) investments.[5] In response to 2-CUB/Inter-05, the Company provided the long-term expected return for

[4] WPSC, S.E.C. Form 10-K, at 51 (Dec. 31, 2012).
[5] Op cit.

each of its pension fund investment asset classes. That response shows that WPSC expects to earn a return of approximately [redacted] on its equity investments in common stocks.[6] Thus, the return that WPSC expects to earn on its own equity investments is [redacted] the return on common equity I recommend in this proceeding (supporting the reasonable nature of my recommendation.)

It is important to note that these long-term expected returns are for U.S. equity investments generally, which carry greater investment risk than that of an electric utility. In general, the beta coefficients (a measure of relative risk) of electric utility operations are substantially lower than that of the stock market. Therefore, given the long-term equity return expectation for large equity investors like WPSC, cited above, it is reasonable to believe the investor-expected return on common equity for utility operations (the cost of equity capital) is lower. Therefore, the Company's own equity return expectations support the reasonableness of my 8.75% equity cost estimate for WPSC.

Q. Are the equity return expectations for pension funds somehow different from equity return expectations used in determining the cost of capital?

A. No. Pension fund equity return expectations and the cost of common equity determined in utility rate proceedings are, fundamentally, the same thing. They are both the expected long-term return on a particular type of investment—common stocks. Both the portfolio manager and the utility common stock investor make estimates of the expected return that can be achieved by committing capital to a certain investment—the process of investing and basing the investment choice on the expected return is the same in both cases. Therefore, in assessing the reasonableness of an equity capital cost estimate, the expected equity returns used by the utility in its own retirement portfolio provides a useful benchmark of common stock investors' long-term return expectations.

Q. Isn't it reasonable to believe that pension fund return expectations are moderate in order to avoid overstatement of the future value and subsequent under-funding of the investment portfolio?

[6] *See* WPSC response to 2-CUB/Inter-05 (Confidential). p. 10 of 14 (PSC REF#: 186709).

A. Yes. Neither the companies that invest the monies in their pension funds nor their investment managers would employ equity return expectations that are too high for pension fund assets because that would overstate the expected future value of that fund. If the expected returns are overstated, the current funding requirement would be understated, and the firm would be left with unfunded pension liabilities that could add unnecessarily to its financial risk profile.

However—and this is the important caveat—neither the utility nor its investment advisors would under-estimate the pension fund return estimates either. Under-estimating the expected return would call for an unnecessarily *high* annual contribution every year to reach the future targeted amount of pension funds. Any unnecessarily large annual pension expense would reduce current profitability—an undesirable outcome for any company manager.

Further, if ultimate returns turn out to be higher than predicted through under-estimating the expected portfolio return, the firm will have funded its pension requirements with internally generated funds that could have been put to other uses such as plant construction or maintenance. Also, companies rely on the advice of their portfolio investment managers, who provide their most accurate equity return expectation, and have no interest in "shading" the return expectation in either direction.

Therefore, because there are negatives associated with either over- or under-stating expected pension portfolio returns, it is reasonable to assume that WPSC management seeks to accurately estimate its expected investment returns and believes that, over the long-term, the common equity return expectations for its pension fund investments are in the range cited above. Finally, the long-term return the Company expects to earn on its own equity investments confirms the reasonableness of my 8.75% equity return recommendation in this proceeding.

II. ECONOMIC ENVIRONMENT

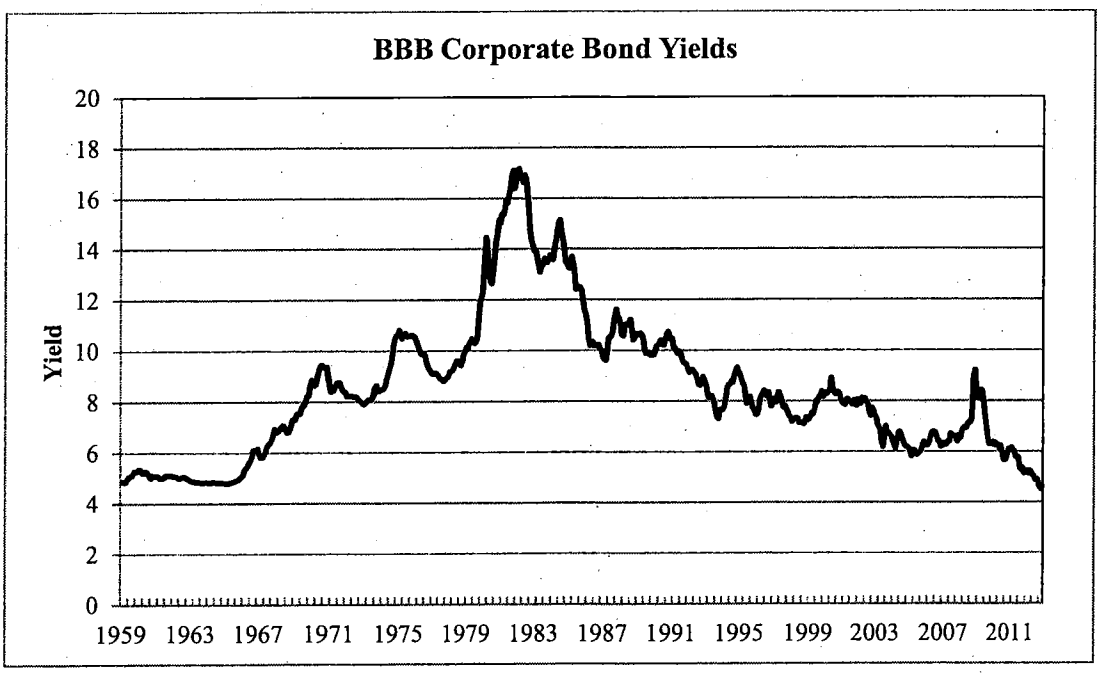
Q. Why is it important to review the economic environment in which an equity cost estimate is made?

A. The cost of equity capital is a forward-looking, or *ex ante*, concept. In seeking to estimate the cost of equity capital of a firm, it is necessary to gauge investor expectations with regard to the relative risk and return of that firm, as well as that for the particular risk-class of investments in which that firm resides. Because this exercise is, necessarily, based on understanding and accurately assessing investor expectations for the future, a review of the larger economic environment within which the investor makes his or her decision is most important. Investor expectations regarding the strength of the U.S. economy, the direction of interest rates and the level of inflation (factors that are determinative of capital costs) are key building blocks in the investment decision. The analyst and the regulatory body should review those factors in order to assess accurately investors' required return—the cost of equity capital to the regulated firm.

Q. What are the indications with regard to the cost of capital in the current economic environment?

A. As shown in Chart I, below, which shows the Moody's "BBB" corporate bond yield from 1959 through 2013, current capital costs are lower than they have been in fifty years.

Chart I



However, any review of the current economic environment and the current cost of capital must take into account what was the most significant disruption in the financial markets since the Great Depression in the 1930s. In the tumultuous economic environment that existed during the third and fourth quarters of 2008 and early 2009, the signals with regard to the cost of capital were difficult to discern. Stock prices fell dramatically, increasing dividend yields, which would indicate increasing capital costs if expected growth rates were constant. However, fundamental indicators of capital cost rates—long-term U.S. Treasury bond yields—declined, signaling that investors actually required and expected lower returns during that difficult economic time.

As shown in Chart II below, over the past decade there have been wide fluctuations in *short-term* interest rate levels as the Federal Reserve Board (the Fed) raised and lowered the Federal Funds rate to slow down and encourage (respectively) economic growth. However, *long-term* interest rates have ranged from 3.5% to 5% over most of that time, with a slow downward trend. As a result of that 2008/2009 economic downturn, long-term Treasury bond yields dipped, for a time, below the lower end of that historical range as the protection against default available with Treasury bonds caused investors to turn to U.S. government bonds as a "safe haven." As the economic downturn moderated and a modest recovery began to appear in 2010, long-term T-Bond yields returned to their historical trend.

More recently however, with renewed concerns about the international banking industry, centered primarily on the smaller economies in the European Union, long-term Treasury rates have again taken a dip below historical trends. That reduction in Treasury yields results, again, from investors turning to U.S. Treasuries as reliable and safe investments, effectively without default risk. According to the most recent Federal Reserve Statistical Release H.15, the average 30-year T-Bond yield in April 2013 was approximately 3%.[7]

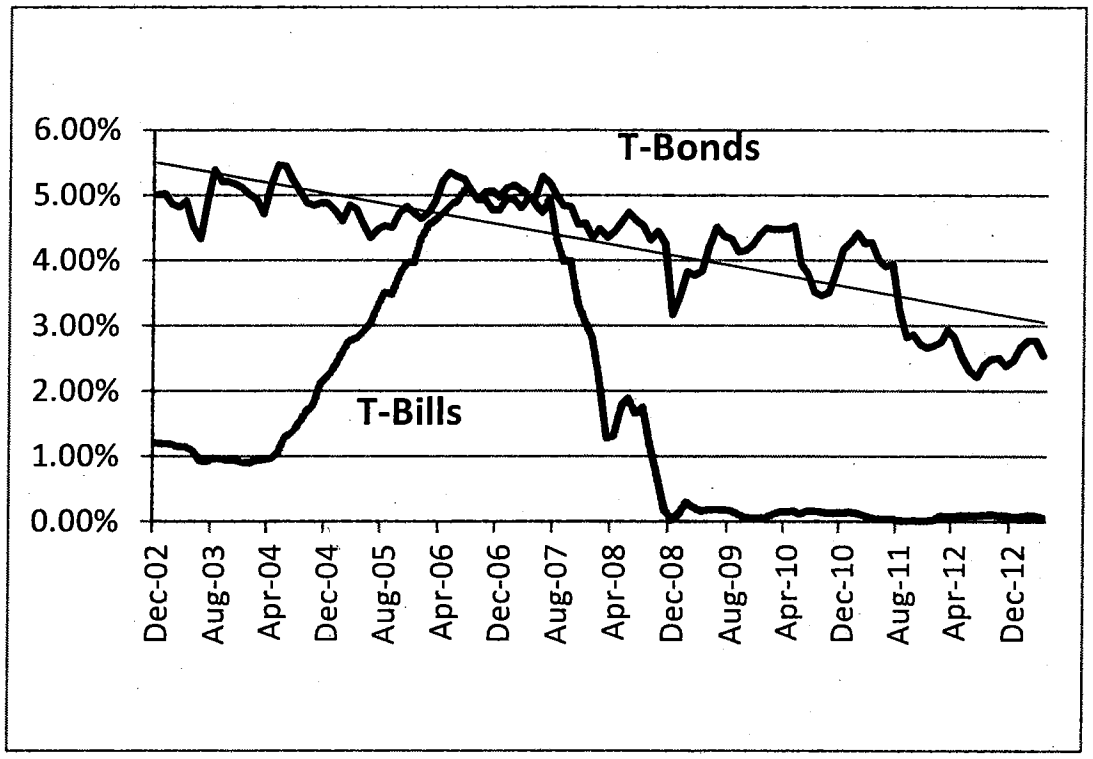
The interest rate data in Chart II also indicate that the Fed lowered short-term interest rates to near zero to attempt to lessen the impact of the recession and, continues to take a very accommodative stance regarding monetary policy, with short-term T-Bills yielding near zero. The Fed has also announced its intention to keep short-term rates low

[7] http://www.federalreserve.gov/Releases/H15/Current/, June 17, 2013.

until unemployment declines significantly. As a result, fundamental long-term capital costs have not increased as a result of the financial crisis in 2008/09 and, in fact, are currently somewhat below the long-term downward trend in capital costs begun prior to the financial crisis.

Chart II

Relative U.S. Treasury Interest Rate Changes



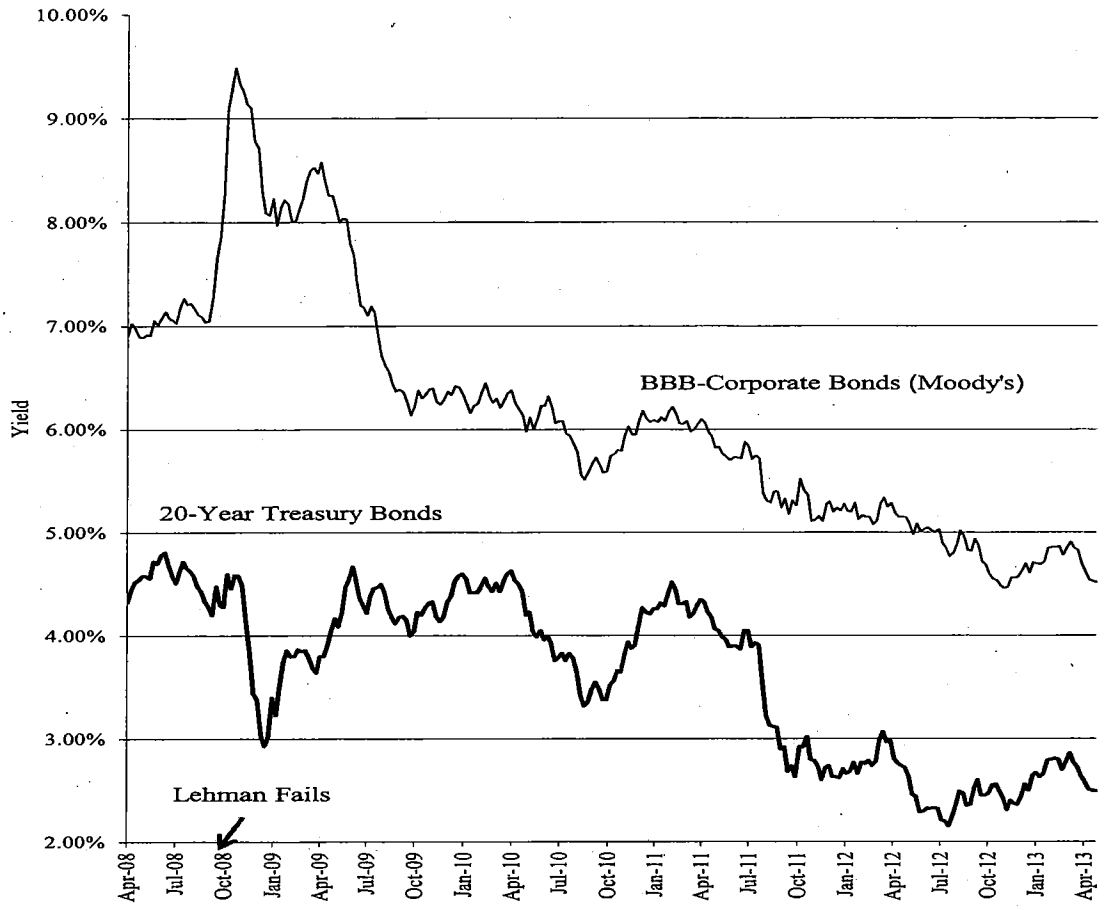
Because the market for U.S. Treasury securities remained liquid throughout the 2008/09 financial crisis and because the corporate liquidity problems existing during that crisis eventually subsided, it is reasonable to believe that the yields on long-term Treasuries are representative of investors' general long-term risk-free return expectations. Absent the recent downturn in T-Bond yields due to international banking concerns, the trend in 20-year T-Bond yields, as shown in Chart II, above, indicates a current "normalized" long-term risk-free yield expectation of approximately 3.0%. Also, over the past few months the yield difference between 30-year T-Bonds and 20-year T-Bonds has been approximately 40 basis points, indicating a current "normalized" long-term risk-free

rate of 3.40%. Therefore, this fundamental building block of capital costs (long-term T-Bond yields) provides an indication that in the current economic environment, capital costs are lower than they were prior to the economic troubles of late 2008 and early 2009.

However, a review of corporate bond yield history indicates that, during the financial crisis of 2008/2009 declining yields were not the case with corporate bonds. Following the demise of Lehman Brothers and the near-collapse of the financial industry in the U.S. and abroad due to enormous debt obligations related to mortgage-backed securities and credit default swaps—even with the commitment of government support of the successor financial institutions—there was a temporary lack of liquidity in the corporate sector of the bond market. The banks, investment brokerage firms, and other institutional investors were holding on to capital in order to shore up their own balance sheets rather than re-injecting those monies into the financial system through lending (buying corporate debt). As a result, even though the Fed was driving down short-term Treasury rates to provide additional liquidity for the economy in general, that liquidity was not passed through to the corporate bond market and, with a lack of capital supply, corporate bond yields increased in late 2008 and early 2009. The relative movement of BBB-rated corporate bond yields and U.S. Treasury yields is shown in Chart III, on the next page.

Chart III

Financial Crisis: Bond Yield Changes



Following the failure of Lehman Brothers, as the full extent of the debt/derivative risk overhang in the financial industry became known, BBB-rated corporate bond yields increased, even as long-term Treasury yields remained relatively steady at about 4.5%. According to the database of the Federal Reserve, BBB-rated corporate bond yields rose dramatically by 250 basis points as the risk of default, and the nervousness of investors increased and, as a result the spread between corporate bonds and U.S. Treasuries widened to about 5%—well above the more normal 1.5% to 2%.

As liquidity began to be restored to the bond markets, initially through direct government intervention and subsequently through the return of modestly positive

economic growth, corporate bond yields declined substantially from the highs established in the fall of 2008. Over the past couple of years, investors' concerns have eased, the stock market has rebounded, and corporate bond yields have declined well below pre-crisis levels. As a result, the yield spread differential between corporate bonds and long-term Treasury securities, while still slightly elevated from historical levels, has declined to a more normal level. Therefore, because both the absolute level of the risk-free rate and the yield spread between Treasury bonds and corporate bonds have declined since the financial crisis, any concerns that the 2008/09 financial crisis implies continuing financial difficulty in the U.S. capital markets for utilities would be unfounded.

On balance, then, the fixed-income data available in the financial marketplace indicate that while there were technical difficulties in the corporate bond market that drove up yields for a period of time, those difficulties have not proven to be a long-term phenomenon and the high corporate bond yields experienced in the latter part of 2008 and early 2009 do not represent investors' long-term expectations. Those data also indicate that investors' required return for a risk-free investment and for corporate debt remains low by historical standards.

Q. What is the current expectation with regard to the economy and interest rates?

A. As Value Line[8] notes in its most recent Quarterly Review, the current expectation for the U.S. economy is that recovery from the recent economic recession is likely to continue at a moderate pace, which will allow core inflation to remain moderate. Moreover, the Fed is expected to keep interest rates low for at least the next two years.

> **Economic Growth**: As we peer over the current quarter, we see a sequester-induced "spring swoon." Our sense is that the biggest impact of the spending cuts will be felt in the present period. The inconsistent pattern of the economic issuances is partly a function of the massive cuts in defense spending.... Many expect that as the deficit has fallen more than expected, Washington is less likely to see the full sequester go into effect. Still, growth may falter in the period, likely easing into the 1%-2% range [Chart omitted]. Thereafter, we think fundamentals will improve further,

[8] Value Line is an independent investment research and financial publishing firm founded in 1931.

> particularly in housing, car sales, and employment [Chart omitted], and that the Fed, armed with a benign inflation outlook, will have plenty of flexibility and [will] stay supportive. But possible headwinds remain, in particular on the fiscal side, where the automatic spending cuts will exact a toll in the near term, as will expiring stimulus, and the further reduction in discretionary spending....
>
> **Inflation**: Here, unlike the spotty situation chronicled above, the news has been consistently favorable, with consumer prices under tight control and showing few signs of deviating from that orderly path. In fact, such stability has been the rule for the past half decade—a period of occasionally heightened turbulence in other areas....
>
> **Interest Rates**: The central bank has given itself plenty of room to maneuver. In fact, the Federal Open Market Committee's policy statement on May 1st noted: "The Committee is prepared to increase or reduce the pace of its purchases to maintain appropriate policy accommodation as the outlook for the labor market or inflation changes." This is the dual mandate of the Fed.... In all, the Federal Reserve is holding its federal funds target at 0% to 0.25%, and plans to keep such rates in this historically low range for as long as the jobless rate holds above 6.5%. We believe that will be the case until at least 2015 [Chart omitted]. After that, a slow rise in short- and long-term interest rates is likely, as the seemingly sustainable expansion becomes better able to evolve on its own, and the inevitable creep higher in inflation becomes a reality.[9]

In the most recent Quarterly Economic Review, cited above, Value Line projects long-term Treasury bond rates will average 3.1% through 2013 and 3.6% in 2014.[10] According to Value Line's Selection and Opinion, 30-year Treasury bond yields have averaged 3.19% over the most recent six weeks.[11] Therefore, the indicated expectation with regard to long-term interest rates is that they are expected to move slightly higher in the future, provided the economic recovery continues to advance at a moderate pace. Simply put, due to the moderate pace of the economy and relatively low core inflation, capital costs are low and are expected to remain low until the economy shows more rapid

[9] The Value Line Investment Survey, *Selection & Opinion*, at 944 (May 24, 2013).
[10] *Id.*, at 943.
[11] The Value Line Investment Survey, *Selection & Opinion*, "Selected Yields," (May 17 through June 21, 2013).

growth, which Value Line now expects to occur in the 2016-2018 period. If and when the long-awaited and often-predicted economic recovery does eventually appear, interest rates and capital costs are expected to increase moderately.

III. METHODS OF EQUITY COST EVALUATION

A. SAMPLE GROUP SELECTION

Q. Please explain why you analyzed the market data of several companies to estimate the cost of equity.

A. I have used the "similar sample group" approach to cost of capital analysis because it yields a more accurate determination of the cost of equity capital than the analysis of the data of only one company. Any form of analysis where the result is an estimate, such as growth in the DCF model, is subject to measurement error, i.e., error induced by the measurement of a particular parameter or by variations in the estimate of the technique chosen. When the technique is applied to only one observation (e.g., estimating the DCF growth rate for a single company) the estimate is referred to, statistically, as having "zero degrees of freedom." This means, simply, that there is no way of knowing if any observed change in the growth rate estimate is due to measurement error or to an actual change in the cost of capital. The degrees of freedom can be increased and exposure to measurement error reduced by applying any given estimation technique to a sample of similar-risk companies rather than one single company. Therefore, by analyzing a group of firms with similar characteristics, the estimated value (the growth rate and the resultant cost of capital) is more likely to equal the "true" value for that type of operation.

Q. How were the firms selected for your analysis?

A. For the purposes of estimating the market-based cost of equity capital for WPSC, I analyzed the market data of a select group of electric and combination electric and gas utility companies followed by The Value Line Investment Survey. According to the Company's 2012 S.E.C. Form 10-K, its revenues were generated primarily by its electric

utility operations (80.0%) and less by its gas utility operations (19.2%).[12] In addition, WPSC has a credit rating of "A-" and a senior secured bond rating of "A," according to Standard & Poor's.[13]

As shown on Ex.-CUB-Hill-2, Schedule 1, in order to select a group of utility companies that had similar risk characteristics to WPSC, I screened all of the companies followed by Value Line to remove those companies with dissimilar characteristics. From that large group of electric and combination electric and gas utility companies, I selected firms that derived 70% or more of their revenues from electric utility operations, did not have a recent dividend reduction, were not recently involved in a merger, had generation assets, had stable operations (a non-volatile book value), and had an investment-grade senior bond rating between "BBB" and "A."

The electric utility companies selected for my analysis as generally similar in risk to WPSC are: Southern Company (SO), ALLETE (ALE), Alliant Energy (LNT), American Electric Power (AEP), Cleco Corp. (CNL), Entergy (ETR), Westar Energy (WR), Wisconsin Energy (WEC), Edison International (EIX), IDACORP (IDA), Northwestern Corp. (NWE), PG&E Corporation (PCG), Pinnacle West Capital Corporation (PNW), Portland General (POR) and Xcel Energy (XLS).[14]

It is important to note that some of the companies included in the sample group have unregulated operations such as merchant generation operations, which are inherently more risky than are utility operations. That indicates that the cost of capital for the sample group should be somewhat higher than that appropriate for a lower-risk, pure-play electric utility operation like WPSC. In addition the average senior bond rating for the sample group is "BBB+", somewhat below that of WPSC's "A" rating, also lending a conservative element to my analysis of the cost of equity capital.

B. DISCOUNTED CASH FLOW MODEL

[12] 2012 Electric Utility Revenues ($1.212 B)/Total Utility Revenues ($1.499 B) = 80.8%. WPSC 2012 S.E.C. Form 10-K, p. 61.
[13] http://www.standardandpoors.com/prot/ratings/entityratings/en/us/?entityID=269598&sectorCode=UTIL
[14] In the Ex.-CUB-Hill-2, Schedules accompanying my analysis, the sample group companies are referred to by their stock ticker symbols, shown above in parentheses.

Q. Please describe the DCF model you used to arrive at an estimate of the cost of common equity capital for WPSC in this proceeding.

A. The DCF model relies on the equivalence of the market price of the stock (P) with the present value of the cash flows investors expect from the stock, and assumes that the discount rate equals the cost of capital. The total return to the investor, which equals the required return and the cost of equity capital according to this theory, is the sum of the dividend yield and the expected growth rate in the dividend.

The theory is represented by the equation,

$$k = D/P + g, \qquad (1)$$

where "k" is the equity capitalization rate (cost of equity, required return), "D/P" is the dividend yield (dividend divided by the stock price) and "g" is the expected sustainable growth rate.

Q. What growth rate ("g") did you adopt in developing your DCF cost of common equity for the Company in this proceeding?

A. The growth rate variable in the traditional DCF model is quantified, theoretically, as the dividend growth rate investors expect to continue into the indefinite future. The DCF model is actually derived by: 1) considering the dividend a growing perpetuity (i.e., a payment to the stockholder that grows at a constant rate indefinitely) and 2) calculating the present value (the current stock price) of that perpetuity. The model also assumes that the company whose equity cost is to be measured exists in a steady state environment, i.e., the payout ratio and the expected return are constant and the earnings, dividends, book value and stock price all grow at the same rate, forever.

While that assumption seems unrealistic because, in the short term, growth rates in those parameters (dividends, earnings and book value) can be quite different, over the long term it has proven to be true. For example, according to Value Line's published year-by-year retrospective of the Dow Jones Industrials Index (DJI) from 1920 through 2005, the average earnings, dividend and book value growth rates for the companies in

the DJI were 5.3%, 4.9% and 5.2%.[15] For utility companies, over the long term, average growth rates in earnings, dividends and book value are even closer. Moody's Public Utility Manual reports that, between 1947 and 1999,[16] average growth in earnings, dividend and book value growth of Moody's Electric Utilities was 3.34%, 3.22% and 3.66%, respectively. Therefore, the fundamental DCF assumption that earnings, dividends and book value are expected to grow, over the long-term, at the same sustainable rate of growth is reasonable and is an accurate representation of how firms actually grow over time.

However, even though the long-term fundamental assumptions of the DCF have proven to be sound, as with all mathematical models of real-world phenomena, the DCF theory does not precisely "track" reality in the shorter term. Payout ratios and expected equity returns, as well as earnings and dividend growth rates, do change over the short-term. Therefore, in order to properly apply the DCF model to any real-world situation and in this case, to find the long-term sustainable growth rate called for in the DCF theory, it is essential to understand the determinants of long-run expected dividend growth.

Q. Can you provide an example to illustrate the determinants of long-run expected dividend growth?

A. Yes, in Appendix A, I provide an example of the determinants of a sustainable growth rate on which to base a reliable DCF estimate. In addition, in Appendix A, I show how reliance on earnings growth rates alone, absent an examination of the underlying determinants of long-run dividend growth, can produce inaccurate DCF results.

Q. How have you developed an estimate of the expected growth rate for the DCF model?

A. While I have calculated both the historical and projected sustainable growth rate for a sample of utility firms with similar-risk operations to WPSC, I have not relied solely on that type of growth rate analysis. To estimate an appropriate DCF growth rate, I have also

[15] www.valueline.com, Dow Jones Long Term Chart (PDF).
[16] Moody's ceased publication of its Public Utility Manual in 2001.

utilized published data regarding both historical and projected growth rates in earnings, dividends, and book value for the sample group of utility companies. Through an examination of all of those data, which are available to and used by investors, I estimate investors' long-term internal growth rate expectations. To that long-term growth rate estimate, I add any additional growth that is attributable to investors' expectations regarding the on-going sale of stock for each of the companies under review.

Q. How have you calculated the DCF growth rates for the sample of comparable companies?

A. Ex.-CUB-Hill-2, Schedule 2 pages 1 through 5, shows the retention ratios, equity returns, sustainable growth rates, book values per share and number of shares outstanding for the comparable electric companies for the past five years. Also included in the information presented in Schedule 2 are Value Line's projected 2013, 2014 and 2016-2018 values for equity return, retention ratio, book value growth rates and number of shares outstanding.

In evaluating these data, I first calculate the five-year average sustainable growth rate, which is the product of the earned return on equity (r) and the ratio of earnings retained within the firm (b). For example, Schedule 2, page 1, shows that the five-year average sustainable growth rate for Southern Company (SO) is 3.28%. The simple five-year average sustainable growth value is used as a benchmark against which I measure the company's most recent growth rate trends. Recent growth rate trends are more investor influencing than are simple historical averages.

Continuing to focus on Southern Company, we see that sustainable growth has been higher in recent years than during the historical period indicating increasing growth. By the 2016-2018 period, Value Line projects Southern Company's sustainable growth will increase from the recent five-year average, to 3.46%. These forward-looking data indicate that investors can expect Southern Company to grow at a rate slightly higher than the growth rate that has existed, on average, over the past five years, but, overall, they point to relative growth rate stability for Southern Company.

Another factor to consider is that Southern Company's book value growth is expected to increase at a 4.5% level over the next five years, which is lower than the 5.5% growth rate level that existed over the past five years. This information indicates an

expectation for somewhat lower growth in the future. Also, as shown on Ex.-CUB-Hill-2, Schedule 3, page 2, Southern Company's dividend growth rate, which was 4% historically, is expected to continue at a 4.0% rate of growth in the future. The projected dividend growth shows stable growth expectations.

Projected earnings growth rate data available from Value Line indicate that investors can expect a slightly higher growth rate in the future (4.5%), compared to the sustainable growth rate projections, and higher than historical earnings growth (3.0%). The Institutional Brokers' Estimate System (I/B/E/S) and Zacks Investment Research (Zacks) (investor advisory services that poll sell-side institutional analysts for growth earnings rate projections) also project a slightly higher earnings growth rate for Southern Company—4.84% and 4.76%, respectively—over the next five years.

Southern Company's projected sustainable growth is expected to approach 3.5%, dividends are expected to increase at a 4.0% annual rate, and book value growth to increase at 4.5%. Per share earnings growth is expected to range from 4.5% to 4.8%, and Value Line's average earnings, dividends and book value growth projection for Southern Company is 4.33%. A long-term growth rate of 4.25% is a reasonable long-term growth rate expectation for Southern Company.

Q. Is the internal (b x r) growth rate the final growth rate you use in your DCF analysis?

A. No. An investor's long-term growth rate analysis does not end upon the determination of an internal growth rate. Investor expectations regarding growth from external sources (sales of stock) must also be considered and examined. For Southern Company, page 1 of Ex.-CUB-Hill-2, Schedule 2 shows that the number of outstanding shares increased at a 2.80% rate over the most recent five-year period. In addition, Value Line expects the number of shares outstanding to increase at a much lower rate through the 2016-2018 period, bringing the share growth rate to a 0.84% rate by that time. Weighing both historical and projected data, an expectation of share growth of 1.5% is reasonable for this company.

Because Southern Company is currently trading at a market price that is greater than book value, issuing additional shares will increase investors' growth rate

expectations. Multiplying the expected growth rate in shares outstanding by (1-(Book Value/Market Value))[17] increases the investor-expected growth rate for Southern Company by eighty-two basis points (0.78%). Therefore, the combined internal and external growth rate for Southern Company is 5.03% (4.25% internal growth and 0.78% external growth, see Ex.-CUB-Hill-2, Schedule 3, page 1).

I have included the details of my growth rate analyses for Southern Company as an example of the methodology I use in determining the DCF growth rate for each company in the electric industry sample. A description of the growth rate analyses of each of the companies included in my sample group is set out in Ex.-CUB-Hill-3. Schedule 3, page 1 of Ex.-CUB-Hill-2 shows the internal, external and resultant overall growth rates for the utility companies analyzed.

Q. Have you checked the reasonableness of your growth rate estimates against other, publicly available, growth rate data?

A. Yes. Page 2 of Ex.-CUB-Hill-2, Schedule 3 shows the results of my DCF growth rate analysis as well as 5-year historic and projected earnings, dividends and book value growth rates from Value Line, earnings growth rate projections from I/B/E/S and Zacks, the average of Value Line and I/B/E/S growth rates and the 5-year historical compound growth rates for earnings, dividends and book value for each company under study.

As shown on page 2 of Schedule 3, my DCF growth rate estimate for all the electric utility companies included in my analysis is 4.87%. This figure exceeds Value Line's projected average growth rate in earnings, dividends and book value for those same companies (4.23%), but is below the five-year historical average earnings, dividend and book value growth rate reported by Value Line for those companies (5.07%). My growth rate estimate for the similar-risk electric companies under review is above the I/B/E/S analysts' earnings growth rate projections—4.40% and similar to the average projected earnings growth estimate of those polled by Zacks (4.94%). Also, my growth rate estimate is similar to the projected dividend growth rate of the sample companies, 4.70%. Therefore, my average DCF growth rate is similar to or somewhat exceeds the

[17] Professor Myron Gordon is the originator of the DCF in regulation. This is Gordon's formula for "v" the accretion rate related to new stock issues. B=book value, M=market value. (M. J. Gordon, The Cost of Capital to a Public Utility, 30-33, MSU Public Utilities Studies, (East Lansing, Michigan, 1974).

growth rate data available to investors, and is likely to provide a reasonable assessment of investors' long-term sustainable growth rate expectations for the electric utility companies under review.

Q. Some analysts rely exclusively on analysts' earnings projections as the growth rate in the DCF; you have not done so. Can you explain why?

A. In my view, earnings growth rate projections are widely available, are used by investors and therefore deserve consideration in an informed, accurate assessment of the investor expected growth rate to be included in a DCF model. I do not believe, however, that projected earnings growth rates should be used as the *only* source of a DCF growth estimate. In other words, projected earnings growth rates are influential in, but not solely determinative of, investor expectations.

First, it is important to realize that, as I discuss in Appendix A, projected earnings growth rates may over- or understate the growth that can be sustained over time by the companies under review. This is important because long-term sustainable growth is required in an accurate DCF assessment of the cost of equity capital. The efficacy of projected earnings growth rates in any specific DCF analysis can only be determined through a study of the underlying fundamentals of growth—something that those who rely exclusively on analysts' earnings growth rate projections fail to do.

Second, the studies that support the use of analysts' earnings projections measure the ability of analysts' estimates to predict stock prices versus simple historical averages of other parameters. In that sort of simplistic comparison, analysts' projections perform better. However, I am aware of no cost of capital analyst that relies exclusively on historical average growth rates, nor is it reasonable to believe that any astute investor would do so. Therefore, while studies do indicate that analysts' earnings growth estimates are better indicators of stock prices than are simple historical averages of other growth rate parameters, those studies do not provide any basis for exclusive reliance on earnings growth projections in a DCF analysis.

Third, the sell-side institutional analysts that are polled by I/B/E/S and similar services offer relatively "rosy" expectations for the stock they follow—even when the analyst's actual expectations for the stock are not so sanguine. Simply put, some analysts

overstate growth expectations to make the stocks they want to sell look more attractive. Although claims are often made that the opinions of sell-side analysts are not affected by the profits made by the other parts of the business that actually trade those securities, the "Cinderella effect" (analysts' overstating stock expectations) is not a new phenomenon, and is recognized in academia. As the authors of a widely-used finance textbook note regarding the use of projected earnings growth rates in a DCF analysis:

> Estimates of this kind 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 omitted]. If so, such DCF estimates of the cost of equity should be regarded as upper estimates of the true figure. [footnote omitted]. *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.) [18]

As reported in an April 2010 article in McKinsey Quarterly, entitled "Equity Analysts: Still too Bullish," over the past 25 years the equity analysts polled by I/B/E/S (an investor service utilized by the Company's witness) have projected long-term earnings growth of 10% to 12% for unregulated companies, when actual (realized) growth has been about 6.0%.[19] Moreover, as Chan and Lakonishok note in "The Level and Persistence of Growth Rates," published in the Journal of Finance (Vol. LVIII, No. 2, April 2003, p. 643), "[t]here is no persistence in long-term earnings growth beyond chance, and there is low predictability even with a wide variety of predictor variables. Specifically, I/B/E/S growth forecasts are overly optimistic and add little predictive power." This concern regarding investors' use of analysts' growth estimates is also underscored by an investor's service sponsored by the Wall Street Journal:

> You should be careful when looking at analyst recommendations for several reasons. First of all, many analysts suffer from a conflict of interest between the firm

[18] Brealey, Meyers, Allen, Principles of Corporate Finance, 8th Ed., McGraw-Hill Irwin, Boston, MA, (2006), p. 67.
[19] McKinsey & Company is a global management consulting firm.

> that employs them and the company whose stock they track. Often times, an analyst will be responsible for issuing reports on a company that is a current or potential client of their employer (usually an investment bank). Since they know that their employer would like to keep the client's business, the analyst may be tempted to issue a rosier outlook for the stock than what it really deserves.[20]

Fourth, much of the academic work touted as support for reliance on earnings growth is based on data from the I/B/E/S database (now owned by Thomson); however, academic research recently published in the Journal of Finance indicates that there have been non-random, systematic errors in that database, which call into question the reliability of research (such as the research on the reliability of analysts' earnings estimates) based on those data. The researchers document that the historical contents of the I/B/E/S data base have been "quite unstable over time," and state:

> Data are the bedrock of empirical research in finance. When there are questions about the accuracy or completeness of a data source, researchers routinely go to great lengths to investigate measurement error, selection bias, or reliability. But what if the very contents of a historical database were to change, in error, over time? Such changes to the historical record would have important implications for empirical research. They could undermine the principle of replicability, which in the absence of controlled experiments is the foundation of empirical research in finance. They could result in over- or underestimates of the magnitude of empirical effects, leading researchers down blind alleys. Also to the extent that financial-market participants use academic research for trading purposes, they could lead to resource allocation.... We document that the historical contents of the I/B/E/S recommendations database have been quite unstable over time.[21]

Q. Does this conclude the growth rate portion of your DCF analysis?

A. Yes, it does.

[20] Investorguide.com, "University," Analysts and Earnings Estimates, www.investorguide.com/igustockanalyst.html.
[21] Lungqvist, Malloy, Marston, "Rewriting History," The Journal of Finance, Vol. 64, No. 4, August 2009, pp. 1935-1960.

Q. How have you calculated the dividend yields?

A. The dividend called for in the DCF model is the dividend investors expect over the coming year. Therefore, in calculating the dividend yield for each of the companies in my similar risk sample group I have utilized Value Line's projected year-ahead dividend.

The projected year-ahead dividends for each company were divided by a recent daily closing average stock price to obtain the DCF dividend yields. I use the most recent six-week period to determine an average stock price in a DCF cost of equity determination because I believe that period of time is long enough to avoid daily fluctuations and recent enough so that the stock price captured during the study period is representative of current investor expectations.

Ex.-CUB-Hill-2, Schedule 4 contains the market prices, annualized dividends and dividend yields of the utility companies under study. Ex.-CUB-Hill-2, Schedule 4 indicates that the average dividend yield for the sample group of electric companies is 3.79%.

Q. What is your cost of equity capital estimate for the electric utility companies, utilizing the DCF model?

A. Ex.-CUB-Hill-2, Schedule 5 shows that the average DCF cost of equity capital for the group of electric utilities is 8.66%.

C. CAPITAL ASSET PRICING MODEL

Q. Please describe the CAPM you used to arrive at an estimate for the cost of WPSC's equity capital.

A. The CAPM states that the expected rate of return on a security is determined by a risk-free rate of return plus a risk premium, which is proportional to the non-diversifiable (systematic) risk of a security. Systematic risk refers to the risk associated with movements in the macro-economy (the economic "system") and, thus, cannot be eliminated through diversification by holding a portfolio of securities. The beta coefficient (β) is a statistical measure that attempts to quantify the non-diversifiable risk

of the return on a particular security against the returns inherent in general stock market fluctuations. The formula is expressed as follows:

$$k = r_f + \beta(r_m - r_f), \qquad (2)$$

where "k" is the cost of equity capital of an individual security, "r_f" is the risk-free rate of return, "β" is the beta coefficient, "r_m" is the average market return and "$r_m - r_f$" is the market risk premium. The CAPM is used in my analysis, not as a primary cost of equity analysis, but as a check of the DCF cost of equity estimate. Although I believe the CAPM can be useful in testing the reasonableness of a cost of capital estimate, certain theoretical shortcomings of this model (when applied in cost of capital analysis) reduce its usefulness.

Q. Can you explain why the CAPM analysis should be applied to cost of capital estimation with caution?

A. Yes. The reasons why the CAPM should be used in cost of capital analysis with caution are set out below. It is important to understand that my caution with regard to the use of the CAPM in a cost of equity capital analysis does not indicate that the model is not a useful description of the capital markets or that it is not widely used, because it is. Rather, my caution recognizes that in the practical application of the CAPM to cost of capital analysis there are problems that can cause the results of that type of analysis to be less reliable than other, more widely accepted models such as the DCF.

There has been much comment in the financial literature regarding the strength of the assumptions that underlie the CAPM and the inability to substantiate those assumptions through empirical analysis. Also, there are problems with the key CAPM risk measure, beta, that indicate that the CAPM analysis is not a reliable primary indicator of equity capital costs.

Cost of capital analysis is a decidedly forward-looking, or *ex-ante*, concept. Beta is not. The measurement of beta is derived with historical, or *ex-post*, information. Therefore, the beta of a particular company, because it is usually derived with five years

of historical data in order to bolster statistical reliability, is slow to change to current (i.e., forward-looking) conditions, and some price abnormality that may have happened four years ago could substantially affect beta while, currently, being of little actual concern to investors.

In addition there are substantial differences of opinion with regard to the magnitude of the investor-expected market risk premium (the expected return difference between stocks and Treasury bonds). Those differences of opinion arise from different historical averaging methods (i.e., arithmetic versus geometric) as well as from the use of different time periods over which to measure the return differences between stocks and bonds.

As I will show below, those interpretational differences in the market risk premium are not inconsequential and can have a significant impact on the outcome of the CAPM. For these reasons, the CAPM should not be utilized in regulatory rate setting as a primary indicator of the cost of common equity. Rather, the CAPM should be used to temper the results of the DCF analysis, which is more widely used in regulation as the primary indicator of equity capital costs.

Q. What value have you chosen for a risk-free rate of return in your CAPM analysis?

A. As the CAPM is designed, the risk-free rate is that rate of return investors can realize with certainty. The nearest analog in the investment spectrum is the 13-week U. S. Treasury Bill. However, T-Bills can be heavily influenced by Federal Reserve policy, as they have been over the past three years. While longer-term Treasury bonds have equivalent default risk to T-Bills, those longer-term government securities carry maturity risk that the T-Bills do not have. When investors tie up their money for longer periods of time, as they do when purchasing a long-term Treasury bond, they must be compensated for future investment opportunities forgone as well as the potential for future changes in inflation. Investors are compensated for this increased investment risk by receiving a higher yield on T-Bonds. When T-Bills and T-Bonds exhibit a "normal" (historical average) spread of about 1.5% to 2%, the results of a CAPM analysis that matches a higher market risk premium with lower T-Bill yields or a lower market risk premium with higher T-Bond yields, are very similar.

As I noted in my previous discussion of the macro-economy, in an attempt to fend off a severe recession and to inject liquidity into the financial system, the Fed has acted vigorously over the past two years to lower short-term interest rates. Recently, T-Bills have produced an average yield near zero. Also, as I noted in my discussion of the current economic environment, the current yield for T-Bonds is influenced by an increased demand for secure investments (a flight to quality), and, absent that exaggerated demand, the long-term trend of T-Bond pricing would indicate a current yield of approximately 3.4%. Therefore, for purposes of a forward-looking CAPM analysis in this proceeding I will use 3.4% as the long-term risk-free rate.

Q. What market risk premium have you used in your CAPM analysis?

A. In their 2011 edition of Stocks, Bonds, Bills and Inflation, Morningstar indicates that the average market risk premium between stocks and T-Bills over the 1926–2009 time period is 6.0% (based on an arithmetic average), and 4.4% (based on a geometric average). I have, in prior analyses, used these values as an estimate of the market risk premium in the CAPM analysis.

As I noted previously, immediately following the 2008/2009 financial crisis and again last year, investor worries regarding the international financial system caused investors to be more concerned about default risk and seek the safety of risk-free investments. Because of that fact, the yields on long-term U.S. Treasury bonds declined more rapidly than did yields on corporate debt (see Chart III). For that reason, I believe it is reasonable to rely on the upper end of the historical risk premium range (6.0%) published by Ibbotson in calculating a current cost of equity capital. Therefore, I have the upper end of that long-term historical risk premium range in my CAPM equity cost estimate in this proceeding.

Q. What values have you chosen for the beta coefficients in the CAPM analysis?

A. Value Line reports beta coefficients for all the stocks it follows. Value Line's beta is derived from a regression analysis between weekly percentage changes in the market price of a stock and weekly percentage changes in the New York Stock Exchange

Composite Index over a period of five years. The average beta coefficient of the sample of electric companies is 0.67.

Q. What is your recommended cost of equity capital for the sample of electric companies using the capital asset pricing model analysis?

A. Ex.-CUB-Hill-2, Schedule 6 shows that the average Value Line beta coefficient for the group of electric companies under study is 0.67. The upper end of the range of market risk premiums published by Ibbotson of 6.0% would, upon the adoption of a 0.67 beta, become a sample group-specific market risk premium of 4.02% (0.66 x 6.0%). That risk premium added to the risk-free T-Bond rate of 3.4%, previously derived, yields a common equity cost rate estimate of 7.42%. This analysis indicates a cost of equity capital below the equity cost estimate provided by the standard DCF analysis.

While the CAPM analysis currently produces equity cost estimates that are historically low, it must be remembered that the current (marginal) cost of utility debt is also historically low. For example the Financial Industry Regulatory Authority (FINRA) reports that WPSC's long-term debt maturing in December 2036 (Coupon Rate = 5.50%) is currently trading at $112.00 for every $100 of face value for an effective yield of 4.7%.[22] Therefore, the CAPM equity cost estimate of 7.4%, while low by historical standards, is still nearly 300 basis points in excess of WPSC's current marginal cost of debt.

D. MODIFIED EARNINGS-PRICE RATIO ANALYSIS

Q. Please describe the MEPR analysis of the cost of common equity capital.

A. The earnings-price ratio is the expected earnings per share divided by the current market price. In cost of capital analysis, the earnings-price ratio (which is one portion of this analysis) can be useful in a corroborative sense, since it can be a good indicator of the proper range of equity costs when the market price of a stock is near its book value. When the market price of a stock is *above* its book value, the earnings-price ratio *understates* the cost of equity capital. Ex.-CUB-Hill-2, Schedule 7 contains mathematical

[22] http://finra-markets.morningstar.com/BondCenter/BondDetail.jsp?ticker=C372361&symbol=TEG3669400.

proof for this concept. The opposite is also true, i.e., the earnings-price ratio *overstates* the cost of equity capital when the market price of a stock is *below* book value.

Under current market conditions, the utilities under study have an average market-to-book ratio of 1.59 and, therefore, the average earnings-price ratio alone will understate the cost of equity for the sample groups. However, I do not use the earnings-price ratio alone as an indicator of equity capital cost rates. Because of the relationship among the earnings-price ratio, the market-to-book ratio and the investor-expected return on equity described mathematically in Ex.-CUB-Hill-2, Schedule 7, I have modified the earnings-price ratio analysis by including expected returns on equity for the companies under study. It is that modified analysis that I will use to assist in estimating an appropriate range of equity capital costs in this proceeding.

Q. Please explain the relationship among the earnings-price ratio, the expected return on equity, and the market-to-book ratio.

A. When the expected return (ROE) approximates the cost of equity, the market price of the utility approximates its book value and the earnings-price ratio provides an accurate estimate of the cost of equity. As the investor-expected return on equity for a utility (ROE) begins to exceed the investor-required return (the cost of equity capital), the market price of the firm will tend to exceed its book value. As explained above, when the market price exceeds book value, the earnings-price ratio understates the cost of equity capital. Therefore, when the expected equity return (ROE) exceeds the cost of equity capital, the earnings-price ratio will understate that cost rate.

Also, in situations where the expected equity return is below what investors require for that type of investment, market prices fall below book value. Further, when market-to-book ratios are below 1.0, the earnings-price ratio overstates the cost of equity capital. Thus, the expected rate of return on equity and the earnings-price ratio tend to move in a countervailing fashion around the cost of equity capital.

When market-to-book ratios are above one, the expected equity return exceeds and the earnings-price ratio understates the cost of equity capital. When market-to-book ratios are below one, the expected equity return understates and the earnings-price ratio exceeds the cost of equity capital. Further, as market-to-book ratios approach unity, the

expected return and the earnings price ratio approach the cost of equity capital. Therefore, the average of the expected book return and the earnings price ratio provides a reasonable estimate of the cost of equity capital.

These relationships represent general rather than precisely quantifiable tendencies but are useful in corroborating other cost of capital methodologies. The Federal Energy Regulatory Commission (FERC), in its generic rate of return hearings, found this technique useful and indicated that under the circumstances of market-to-book ratios exceeding unity, the cost of equity is bounded above by the expected equity return and below by the earnings-price ratio (e.g., 50 Fed Reg, 1985, p. 21822; 51 Fed Reg, 1986, pp. 361, 362; 37 FERC ¶ 61,287). The mid-point of these two parameters, therefore, produces an estimate of the cost of equity capital which, when market-to-book ratios are different from unity, is far more accurate than the earnings-price ratio alone.

Q. Is there other theoretical support for the use of an earnings-price ratio in conjunction with an expected return on equity as an indicator of the cost of equity capital?

A. Elton and Gruber, Modern Portfolio Theory and Investment Analysis (New York University, Wiley & Sons, New York, 1995, pp. 401-404) provide support for reliance on my modified earnings-price ratio analysis.

Elton and Gruber posit the following formula,

$$k = (1-b)E/(1-cb)P, \text{ where} \qquad (3)$$

"k" is the cost of equity capital, "b" is the retention ratio, "E" is earnings, "P" is market price and "c" is the ratio of the expected return on equity to the cost of equity capital (ROE/k). This formula shows that when ROE = k, "c" equals 1.0 and the cost of equity capital equals the earnings-price ratio. Moreover, in that case, ROE is greater than "k" (as it is in today's market), "c" is greater than 1.0, and the earnings-price ratio will understate the cost of equity. Also, the more that ROE exceeds "k" the more the earnings price ratio will understate "k." In other words, those two parameters, the earnings-price ratio and the expected return on equity (ROE) orbit around the cost of equity capital, with the cost

of equity as the locus, and fluctuate so that their mid-point approximates the cost of equity capital.

Assuming an industry average retention ratio of about 30% (i.e., 70% of earnings are paid out as dividends), the stochastic relationship between the expected return (ROE) and the earnings price ratio can be determined from Equation (3), above, as shown in Table I below. Most importantly, Equation (3) shows that the average of the earnings price ratio (EPR) and ROE (which is my MEPR analysis) will approximate "k", the cost of equity capital.

Table I

Support for the Modified Earnings-Price Ratio Analysis

Cost of Equity	Retention Ratio	ROE	ROE/k	Earnings Price Ratio	M.E.P.R. (ROE+EPR)/2
[1]	[2]	[3]	[4]=[3]/[1]	[5]	[6]=([3]+[5])/2
10.00%	35.00%	13.00%	1.3	8.38%	10.69%
10.00%	35.00%	12.00%	1.2	8.92%	10.46%
10.00%	35.00%	11.00%	1.1	9.46%	10.23%
10.00%	35.00%	10.00%	1.0	10.00%	10.00%
10.00%	35.00%	9.00%	0.9	10.54%	9.77%
10.00%	35.00%	8.00%	0.8	11.08%	9.54%
10.00%	35.00%	7.00%	0.7	11.62%	9.31%

[5] From Equation (3): $E/P = k(1-cb)/(1-b)$

As the data in Table I shows, the average of the expected return (ROE) and the EPR produces an estimate of the cost of common equity capital of sufficient accuracy to serve as a check of other analyses, which is how I use the model in my testimony.

Q. What are the results of your earnings-price ratio analysis of the cost of equity for the sample group?

A. Ex.-CUB-Hill-2, Schedule 8 shows the I/B/E/S projected 2014 per share earnings for each of the firms in the sample groups. Recent average market prices (the same market prices used in my DCF analysis), and Value Line's projected return on equity for 2013 and 2016-2018 for each of the companies are also shown.

The average earnings-price ratio for the electric sample group, 6.63%, is below the cost of equity for those companies due to the fact that their average market-to-book ratio is currently above unity (average electric utility M/B = 1.59). The sample electric companies' 2013 expected book (accounting) equity return averages 9.73%. For the electric sample group, then, the mid-point of the earnings-price ratio and the current equity return is 8.18%.

Ex.-CUB-Hill-2, Schedule 8, also shows that the average expected book equity return for the electric utilities over the next three- to five-year period increases slightly to 10.20%. The midpoint of the longer-term projected return on book equity (10.20%) and the current earnings-price ratio (6.63%) is 8.41%. That longer-term analysis provides another forward-looking estimate of the equity capital cost rate of electric utility firms. The results of this MEPR analysis also indicate that the DCF equity cost estimate, previously derived, may be slightly overstated (i.e., too high).

E. MARKET-TO-BOOK RATIO ANALYSIS

Q. Please describe your MTB analysis of the cost of common equity capital for the sample groups.

A. This technique of analysis is a derivative of the DCF model that attempts to adjust the capital cost derived with regard to inequalities that might exist in the market-to-book ratio. This method is derived algebraically from the DCF model and, therefore, cannot be considered a strictly independent check of that method. However, the MTB analysis is useful in a corroborative sense. The MTB seeks to determine the cost of equity using market-determined parameters in a format different from that employed in the DCF analysis. In the DCF analysis, the available data is "smoothed" to identify investors' long-term sustainable expectations. The MTB analysis, while based on the DCF theory, relies instead on point-in-time data projected one year and five years into the future and, thus, offers a practical corroborative check on the traditional DCF. The MTB formula is derived as follows:

Solving for "P" from Equation (1), the standard DCF model, we have

$$P = D/(k-g). \quad (4)$$

But the dividend (D) is equal to the earnings (E) times the earnings payout ratio, or one minus the retention ratio (b), or

$$D = E(1-b). \quad (5)$$

Substituting Equation (5) into Equation (4), we have

$$P = \frac{E(1-b)}{k-g}. \quad (6)$$

The earnings (E) are equal to the return on equity (r) times the book value of that equity (B). Making that substitution into Equation (4), we have

$$P = \frac{rB(1-b)}{k-g}. \quad (7)$$

Dividing both sides of Equation (7) by the book value (B) and noting from Equation (ii) in Appendix A that g = br+sv, we have

$$\frac{P}{B} = \frac{r(1-b)}{k-br-sv}. \quad (8)$$

Finally, solving Equation (8) for the cost of equity capital (k) yields the MTB formula:

$$k = \frac{r(1-b)}{P/B} + br + sv. \quad (9)$$

Equation (9) indicates that the cost of equity capital equals the expected return on equity multiplied by the payout ratio, divided by the market-to-book ratio plus growth. Ex.-CUB-Hill-2, Schedule 9 shows the results of applying Equation (9) to the defined parameters for the electric utility firms in the comparable sample. For the electric utility

sample group, page 1 of Ex.-CUB-Hill-2, Schedule 9 utilizes current year (2013) data for the MTB analysis while page 2 utilizes Value Line's 2016-2018 projections.

The MTB cost of equity for the sample of electric utility firms, recognizing a current average market-to-book ratio of 1.59 is 8.74% using the current year data and 8.84% using projected three- to five-year data. Those point-in-time estimates are slightly above my DCF equity cost estimate.

F. SUMMARY

Q. Please summarize the results of your equity capital cost analyses for the sample group of similar-risk electric utility companies.

A. My analysis of the cost of common equity capital for the sample group of integrated electric utility companies is summarized in Table II below.

Table II

Equity Cost Estimates

METHOD	Electric Utility Companies
DCF	8.66%
CAPM	7.42%
MEPR	8.18%/8.41%
MTB	8.74%/8.84%

For the electric and combination electric and gas utility sample group, the DCF results are 8.66%. In addition, the average of the corroborating cost of equity analyses (MEPR, MTB, and CAPM), indicates that the traditional DCF result is overstated. Averaging the lowest and highest results of the corroborative analyses for the electric companies produces an equity cost range of 8.11% to 8.22%, with a mid-point of 8.16%, about 50 basis points below the DCF result.

Therefore, weighing all the evidence presented herein (including the consideration that the next interest rate move by the Federal Reserve will probably be upward), my best

estimate of the cost of equity capital for a company like WPSC, facing similar risks as this group of electric utilities, ranges from 8.50% to 9.50%, with a mid-point of 9.00%.

Q. Within that current 8.5% to 9.5% range of the cost of common equity capital, what point-estimate is appropriate for WPSC?

A. The mid-point of that cost of equity range is 9.0%, and if WPSC were of average risk compared to the sample group of electric and gas utilities used to estimate the cost of equity, a 9.0% return on common equity would be reasonable. However, WPSC's equity risk is lower than that of the sample group for several reasons.

First, the Company's bond rating is higher than that of the group. WPSC's Issuer Rating from Standard & Poor's credit rating service is "A-," while that of the sample group is approximately "BBB+," one ratings notch lower. Second, the Company's common equity ratio (discussed subsequently) is approximately 51% of total capital while the average for the sample group is 47.7%.[23]

Third, the Company is seeking approval for a decoupling rate regime, which reduces its operating risk. That reduced risk should be recognized in a lower allowed return. Therefore, the equity return allowed the Company should be below the mid-point of the reasonable range. In my view, a 25 basis point reduction in the allowed return on equity is sufficient to recognize the reduced risks noted above, and an equity return of 8.75% for WPSC, with decoupling, would be appropriate at this time.

Q. You noted that decoupling reduces investment risk. Can you explain the relationship between regulatory decoupling and investors' perception of risk?

A. Yes. A decoupling mechanism is designed to separate revenues from volumetric sales. Because decoupling a utility's base revenues from sales has the effect of reducing the utility's exposure to revenue stream volatility caused by economic conditions, conservation, weather or any other operating condition that would normally cause revenue fluctuations, it lowers the risk of the utility. Lower operational risk for the utility equals lower risk for investors and should, in turn, equate to lower allowed rates of return on equity and/or lower equity ratios in the ratemaking capital structure.

[23] AUS Utility Reports, June 2013.

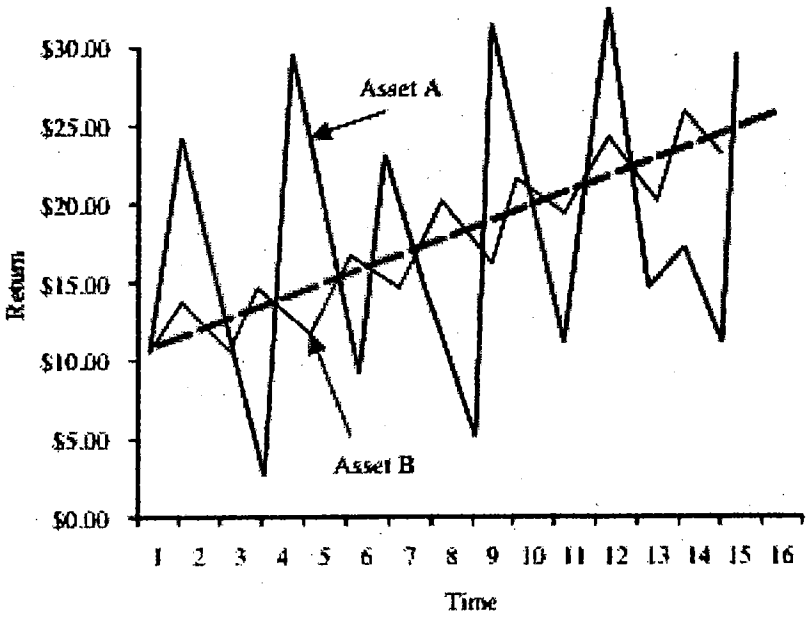
Q. What is the relationship between revenue volatility and investment risk?

A. An investor purchases a financial asset with an expectation that the asset will produce a future stream of income, generating an expected rate of return. The risk of investing in any asset is directly related to the possibility that actual, realized returns will deviate from expected returns. The greater the potential for actual returns to deviate from expected returns, the higher the risk. Conversely, the more certain an investor can be that the returns expected will be realized, the lower the risk.

One measure of the risk of a financial asset, then, is the volatility or variability of the income stream it generates. Chart IV, below, shows the income streams generated by two financial assets, "Asset A" and "Asset B." Both of the assets have, over time, provided a trend of increasing returns. In fact, the trend line of the returns (shown as the dashed line in Chart IV) is exactly the same for both investments. Therefore, given that conditions in the future could be expected to resemble those of the past, investors would, on average, expect that the dollar returns produced by each investment to be the same in future periods. However, the risk of the two assets is not the same.

Chart IV

Volatility and Risk



Asset A has shown much wider swings in return, much greater volatility, than has Asset B. Therefore, even though Asset A has the same expected future return stream as Asset B, there is a much lower probability that the actual return realized from an investment in Asset A will equal the expected return. Asset A, then, is a riskier investment than Asset B, which, in all probability, will provide a return to investors that more closely approximates the expected return.

When an investor purchases a share of utility stock, he or she is purchasing an expected future stream of revenue and income in the form of dividends and growth in that dividend, or capital appreciation when the stock is sold. That dividend expectation is, in turn, dependent on the revenues and earnings of the utility and the dividend payout ratio determined by management. If the revenues and earnings are steady and show little fluctuation, the dividend is more secure and the investor sees the utility as being less risky than an otherwise similar investment whose dividend is based on a volatile earnings stream. The fact that the income stream volatility of a financial asset is directly related to its investment risk is neither controversial nor difficult to comprehend, and that concept is fundamental to assessing the risk impact of decoupling. A decoupling mechanism like that proposed by WPSC works to reduce the revenue and income stream volatility of the utility's operations and, thus, its operating risk.

Q. Please explain how a decoupling mechanism works to reduce a utility's revenue volatility.

A. A decoupling mechanism separates utility revenues from unit sales—kWh in the case of an electric utility and Mcf or dekatherms in the case of a gas utility—and targets, instead, an overall revenue requirement. Under a decoupling ratemaking regime, if customer consumption is below the expected amount and revenues do not meet the projected level, the utility is allowed to increase unit rates in order to produce the projected revenue level. If, on the other hand, revenues exceed the target level, the utility is required to return to customers the amount of revenues that exceed the target level.

However, in the decoupling ratemaking regime, there is no mechanism for discerning the source of the change in customer usage. The reduction in usage may come from conservation, or it may come from lower customer usage due to factors unrelated to

conservation, e.g., economic downturns, price elasticity effects on demand, changes in the firm's customer mix, technological changes, or weather-related factors. Because there is no practical way to distinguish the various factors that may affect customer usage, all the factors that could impact unit sales are necessarily included in the decoupling/make-whole process. In effect, decoupling acts as a regulatory pass-through rate adjustment for factors that cause revenue volatility, much like a fuel-adjustment clause for variations in fuel costs. Therefore, the decoupling process can operate as a buffer for the utility, sheltering its stockholders from fluctuations in revenues and, ultimately, moderating swings in operating earnings from causes that might otherwise arise from unfavorable conditions.

If, through a decoupling ratemaking process, the utility is made whole for operational variables that could negatively affect revenues and earnings, the potential for volatility is reduced. Investors and investor advisory services are aware that a reduction in the income stream volatility reduces the overall investment risk of a utility operation. Therefore, the reduction of a utility's revenue and income volatility, and the risk associated with those factors indicates that a utility operating under a decoupling mechanism has a lower investor-required return on equity than an otherwise equivalent utility operating under traditional regulation (i.e., without a decoupling mechanism).

Decoupling lowers a utility's operating risk and unless that lower operating risk is reflected in rates through a reduction in the authorized rate of return or some other appropriate measure, decoupling will produce a windfall for utility investors. Instituting a decoupling program for utilities without a concomitant downward adjustment to the allowed equity return, then, would create utility rates that exceed costs. Such rates would exceed just and reasonable levels and also would encourage an economically inefficient allocation of resources. Therefore, the allowed return on equity for a utility that is entering a regulatory framework in which revenues are decoupled from volumetric sales must be lower than that appropriate for the same utility under traditional regulation.

Q. Is there regulatory support for recognizing reduced volatility by lowering the allowed return on equity?

A. Yes. In Opinion No. 281 [40 FERC ,¶61,117 (July 31, 1987), Allegheny Generating Company, FERC Docket Nos. EL86-37 and EL86-38], FERC ordered that the cost of equity capital of a FERC-regulated generation subsidiary of an investor-owned utility be set below the cost of equity capital for the utility. FERC determined that, due to the reduced risk of the generating subsidiary, the allowed return should be set at a point below the average cost of equity for similar-risk investor-owned electrics and above BBB-rated utility bond yields. The reason for the reduction in the cost of equity award in that proceeding was the fact that the generation subsidiary collected rates under a FERC tariff in which the return on equity was collected each month as an expense and, as a result, showed considerably less variability than the equity return of its parent company. In the current market environment, in which the cost of equity capital is approximately 9% and the current yield on BBB-rated utility debt is approximately 4.5%, the FERC's method would produce a return on equity of 6.75% [(9% + 4.5%)/2)].

Of course my recommendation in this proceeding—an equity return reduction of 25 basis points—is far more moderate than that set out in the FERC methodology described above. Nevertheless there is precedent for regulators recognizing reduced income stream volatility through a reduction in the allowed return.

Q. Have other regulatory commissions lowered allowed returns to recognize the lower risks of a decoupling rate regime?

A. Yes. According to a December 2012 report by Pamela Morgan of Graceful Systems, the Commissions that have awarded an explicit reduction in the allowed return on common equity have done so within a range of 10 to 50 basis points.[24] However, that same report points out that most of the decoupling decisions—even those where risk reduction is recognized by the parties in the proceeding—do not include an explicit reduction:

> Just over half of the time a utility has adopted decoupling, it has been as the result of commission approval of multi-party settlement agreements. It is impossible to know what the settling parties discussed in the course of reaching a settlement but one can conclude that the level of benefits to

[24] Morgan, P., "A Decade of Decoupling for US Energy Utilities: Rate Impacts, Designs and Observations," Graceful Systems, LLC, December 2012, p. 14.

> the utility and customers satisfied all signing parties. Settlements resolved the issue in favor of no ROE reduction in Arkansas, Colorado, Georgia, Idaho, Indiana, Maryland (for Washington Gas Light), Michigan (for Upper Peninsula Power), New Jersey, New York, North Carolina, Ohio, Oregon, Utah, Washington, and Wisconsin. In virtually all these cases, the commission's consideration of the issue is limited to a determination whether the settlement in its entirety is in the public interest.
>
> The next most common reason for the lack of an ROE reduction is Commission rejection of making such an adjustment separately from all of the other considerations that result in an ROE decision. In Massachusetts, Connecticut and Hawaii, the Commissions found that decoupling reduces the utility's business risk but declined any specific quantification and considered this along with model results, comparisons to proxy companies, and other considerations such as management quality and public policy changes in choosing an ROE within the range to which experts had testified.[25]

The Morgan study also points out that only about half of the regulatory jurisdictions in the U.S. have implemented decoupling (30 states have no electric decoupling and 27 states have no gas decoupling). Also, for those jurisdictions that have implemented decoupling, not all of the utilities in the jurisdiction operate under a decoupling mechanism. Finally, the Morgan study of decoupling also notes that, while decoupling causes rate adjustments that are both up and down, across all electric and gas utilities 63% of all adjustments were surcharges and 37% were refunds. Therefore, the shift in risk from the utility to the ratepayer, on average, causes rates to increase.

Q. Is there also a recent study that shows that decoupling actually increases risk to the utility—the exact opposite of what logic dictates?

A. Yes, there is such a study but it is not reliable for many reasons. In March of 2011, The Brattle Group published a study entitled "The Impact of Decoupling on the Cost of Capital, An Empirical Investigation." In that study they estimate the cost of capital of gas utilities during the 2005-2010 period to determine if decoupling had an impact. The study

[25] Op cit, pp. 14-15.

concludes that, if there is an impact on the cost of equity, it is upward not downward, meaning the decoupling actually increases the risk of a utility operation.

Simply put, the Brattle Group study is not a reliable indication of the cost of equity capital impact of decoupling. There are several reasons why the study is not reliable:

1. The conclusion of the study, i.e., that decoupling increases the cost of equity, is illogical on its face. Any first-year finance student would be able to confirm that investment risk is directly related to the volatility of the income stream of that investment, because that concept is a basic tenet of finance. Yet, the Brattle Group study concludes that a reduction in volatility due to decoupling actually raises risk and investors' required returns. That conclusion, and the study, should be disregarded on that basis alone.[26]
2. The conclusions of the study by the Brattle Group are based on the cost of equity estimates presented in testimony by the members of the Brattle Group who did the study and, thus, do not serve as independent, unbiased, estimates subject to arms-length analysis.
3. The study is based on equity cost estimates for gas utilities, and the market-traded companies included in the study were allowed to have as much as 50% of the earnings provided by unregulated operations. Attempting to discern small movements in cost of capital estimates for regulated operations is very difficult when the entity being examined also contains unregulated operations which are affected by different factors than the regulated operations.
4. The Brattle Group cost of equity study period encompasses the recent 2008/2009 "financial crisis." Any attempt to discern subtle movements in equity capital costs due to one particular aspect of regulation during that period would have to be characterized as difficult, at best.
5. The study includes gas companies that have varying amounts of decoupling as well as varying types of decoupling (some have full decoupling, some have weather-related decoupling, some have decoupling related to conservation

[26] Realizing the incongruity of their conclusion that reduced volatility *raises* risk and the cost of capital the Brattle authors hypothesize that perhaps decoupling is "a signal that the company faces some additional source of risk." The authors don't attempt to isolate that unnamed additional risk. (Brattle study, p. 11)

initiatives), not all of which carry the same risk-reducing aspects. In fact, the study shows that 63% of the regulated subsidiaries included in the Brattle Group sample had no decoupling at all. The study, therefore, attempts to draw conclusions regarding decoupling risk from a group of companies that were largely not decoupled.

6. The cost of capital estimates are based on a multi-stage DCF method that includes sole consideration of projected earnings growth for the first five years, a five-year transition period and perpetual growth at the assumed rate of Gross Domestic Product (GDP) growth in the U.S. as the final long-term growth rate. Such a model will usually overstate the actual cost of equity because projected earnings growth rates overstate investor long-term expectations. The same is true for GDP growth as a proxy for long-term utility growth rates. Historically, GDP growth has outpaced electric utility earnings, dividend and book value growth. Therefore, the cost of equity estimates utilized in the study by the Brattle Group are likely to be inaccurate and would not be useful for determining movements in that parameter due to changes in utility operating risk.
7. Finally, the ultimate capital cost measure used by the Brattle Group was the overall after-tax weighted-average cost of capital (ATWACC) rather than the cost of equity. Moreover, the ATWACC calculated by the Brattle Group is based on market-value capital structures and, because utility stock prices substantially exceed book values, that measure serves to exaggerate the cost of capital. Rate base/rate of return regulation is based on book values, not market values and the use of the latter in attempting to discern capital cost differences that may arise from changes in regulatory business risk is improper and would lead to an unreliable result.

In summary, the illogical result of the Brattle Group study does not provide a reliable basis for this Commission to assess the equity cost impact of decoupling.

IV. CAPITAL STRUCTURE / OVERALL COST OF CAPITAL

Q. What capital structure does the Company request for ratemaking purposes?

A. According to the testimony of Company witness Gast, the Company's projected capital structure for the 2014 test year has been adjusted to include off-balance sheet obligations related to purchased power and the long-term debt of WPSC leasing. With that additional debt the projected 2014 ratemaking capital structure is similar to the Company's actual 2012 capitalization.[27]

The primary difference between the Company's actual 2012 adjusted capital structure and that projected for 2014 is the amount of long-term debt used by the Company, which increases over $400 Million. Because debt capital is substantially less costly than common equity capital, that increase in long-term debt is favorable for ratepayers.

The Company's projected 2014 test year capital structure consists of 51.11% common equity, 1.90% preferred stock, 43.69% long-term debt (including debt equivalents) and 3.30% short-term debt.

Q. How does WPSC's 2014 capital structure compare to that utilized in the electric utility industry today?

A. WPSC's 2014 test year capital structure contains much more common equity than is employed, on average, in the electric utility industry today. As shown on Ex.-CUB-Hill-2, Schedule 10, the average common equity ratio of the market-traded companies in the electric and combination gas and electric utility industry is 46.4%. WPSC's 2014 test year capital structure contains considerably more common equity (51.11%) than the electric industry on average. Therefore, WPSC has lower financial risk than average for an electric utility and, for that reason, the equity return awarded the Company should be at the lower end of a reasonable range for firms of otherwise similar risk.

Q. Is the Company's requested capital structure and embedded cost rates reasonable for ratemaking purposes?

A. Yes. Given that the Company has utilized a forward test-year capitalization that is similar to its recent actual capital structure and the Commission accepted the Company's capital

[27] *See* Ex.-WPSC-Gast-1, Schedule 6, page 1.

structure for ratemaking purposes in the last rate proceeding, WPSC's requested capital structure is reasonable for ratemaking purposes. It is important to note, however, that the common equity ratio utilized in that capital structure is significantly in excess of that utilized on average in the market-traded electric utility industry (the companies used to estimate the cost of common equity). Therefore, WPSC will, going forward, have lower financial risk than the electric utility industry on average and should, as noted previously, be granted a lower-than-average return on common equity.

Q. Does this conclude your discussion of capital structure?

A. Yes, it does.

Q. Given the Company's capital structure and embedded cost rates in combination with your recommended return on common equity of 8.75%, what is the overall cost of capital for WPSC?

A. Ex.-CUB-Hill-2, Schedule 11 shows that an allowed return on common equity of 8.75%, operating through the Company's requested capital structure (51.11% common equity, 1.90% preferred stock, 3.30% short-term debt, and 43.69% long-term debt) and embedded costs rates, produces an overall cost of capital of 6.72%. Schedule 11 also shows that a 6.72% overall return affords the Company an opportunity to achieve a pre-tax interest coverage of 4.59 times.

That level of interest coverage (4.59x) is similar to but somewhat below recent historical average interest coverage for the Company and, therefore, will continue to support the Company's credit profile.[28] Also, the interest coverage level that results from the overall cost of capital I recommend is substantially higher than the average pre-tax interest coverage for Company witness Moul's group of similar-risk sample companies over the 2009-2011 period (3.19x).[29] Therefore, the current cost of equity and the overall return based on that equity cost rate fulfills the regulatory requirements of providing the Company the opportunity to earn a return that is commensurate with the

[28] The Company reports in its 2011 S.E.C. Form 10-K, Exhibit 12 (the most recent publication for which interest coverage data are available) that its pre-tax coverage of interest expense from 2009 to 2011 averaged 4.72 times [2009 (4.33x), 2010 (4.86x) and 2011 (4.97x)]. *See, also*, Ex.-WPSC-Moul-2, Schedule 2, page 1.
[29] *See* Ex.-WPSC-Moul-2, Schedule 3, p. 1.

risk of the operation while maintaining the Company's ability to attract capital.

V. COMMENTS ON COMPANY COST OF CAPITAL TESTIMONY

A. LEVERAGE ADJUSTMENT

Q. In his testimony in this proceeding, Company witness Moul indicates that when utility market prices exceed book values, a risk difference exists between market-value capital structures and book-value capital structures, and market-based cost of equity estimates should be adjusted upward to account for that risk difference. Is that correct?

A. That is Mr. Moul's testimony, but the logic on which his testimony is based is not correct. As I will demonstrate below, Mr. Moul's upward adjustments to the market-based cost of equity for what he characterizes as leverage/financial risk differences created by market prices above book value are without theoretical foundation. There is no support in the literature of financial economics for comparing leverage differences between market-value and book-value capital structures, which is how Mr. Moul calculates leverage differences. The only reference Mr. Moul cites for the formulas used in his leverage adjustment, (Miller/Modigliani) does not support his comparison of market-value and book-value capital structures.

There simply is no difference in financial risk when the market-value capital structure of a firm is different from its book-value capital structure. Financial risk is a function of the interest payments on the debt issued by the firm. That is, a firm's debt payments create financial risk and when the amount of debt used to finance plant investment increases relative to common equity the financial risk increases. Whether the capital structure is measured with market values or book values, the debt interest payments do not change and, therefore, financial risk does not change. As a result, market-value capital structures are useful as indicators of financial risk only when they are compared with other market-value capital structures (as Miller and Modigliani do in their treatise), and Mr. Moul's mixed-metaphor comparison of market-value and book-value capital structures has no economic meaning or impact on the cost of equity capital.

Finally, although Mr. Moul cites instances in which one public utility commission (the Pennsylvania Public Utilities Commission) has approved his leverage/risk adjustment in the past, it is important to note that that same Pennsylvania Commission has more recently rejected "financial risk adders" in Docket No. R-00061366 (Metropolitan Edison (Met Ed), Pennsylvania Electric, Opinion and Order, January 11, 2007, p. 136). The "financial risk adders" in that Met Ed case were based on the leverage/risk difference between market-value capital structures and book value capital structures, just as Mr. Moul's are. In addition, in Docket No. R-00072711, Aqua Pennsylvania, Inc., July 17, 2008, at pages 35 through 39, the Pennsylvania Commission specifically rejected Mr. Moul's leverage/risk analysis—the same leverage/financial risk adjustment Mr. Moul uses in his testimony in this proceeding. The Pennsylvania cases Mr. Moul cites in his testimony are all prior to the two decisions noted above.

Equity cost estimation methods based on the current market price (such as the DCF and CAPM) provide the most accurate representation of investors' return expectations that should be applied to a book value rate base—as they have been for many decades in regulation. Those market-based equity cost estimates need no artificial adjustment for the imaginary risk differences cited by Mr. Moul.

Q. When you use the terms "book value capital structures" and "market value capital structures," what do you mean?

A. Book value capital structures are based on the actual mix of capital used by the firm and are calculated based on the dollar amount of each form of capital (common equity, preferred stock, and long-term debt) appearing on the books (balance sheet) of the firm. The market value capital structure is the mix of capital used by a firm in which the amounts of capital are measured based on their market value.

For example, for common equity capital, the total dollar amount of equity, measured on a market basis, is the number of shares of equity outstanding times the current market price. Mr. Moul obtains an estimate of the market value of debt from a portion of each company's S.E.C. Form 10-K in which it is required to report the "fair value" (market value) of its financial assets. Unless current interest rates are very different from embedded debt costs, the fair value of a firm's debt will approximate its

book value. Therefore, the primary factor that makes the market value capital structure of utilities different from book value is the difference between the market price of the utility's common stock and its book value.

Q. Does Mr. Moul claim that when market prices are above book value and rates are set with market-based (i.e., unadjusted) equity cost estimates, there is a mis-match between the allowed return and financial risk?

A. Yes, that is Mr. Moul's claim. Mr. Moul states, "The utility's risk-adjusted cost of equity will necessarily be lower with the market value capital structure than it is relative to the book value capital structure." (Direct-WPSC-Moul-22)

Q. Is the application of market-based cost of equity estimates to a book value capital structure (and rate base) standard regulatory practice in the United States?

A. Yes. That has certainly been my experience over my 30 years as an expert witness.

> In the context of rate making for regulated utilities, it is almost universal practice to employ a hybrid computation consisting of embedded cost of debt and a market-based cost of equity, with costs of debt and equity both weighted at their respective book values in the determination of the WACC [weighted-average cost of capital].[30]

Moreover, even though Mr. Moul began to employ his leverage/risk adjustment in 1997, and one utility commission, for a period of time, utilized that adjustment, Mr. Moul notes in his testimony that the last time that one commission utilized that adjustment was 2007 (Direct-WPSC-Moul-22). As I noted previously, since that time that one utility commission (Pennsylvania) has rejected Mr. Moul's leverage/risk adjustment. Moreover, since 2007 Mr. Moul has testified in at least 20 regulatory jurisdictions, and no regulatory jurisdiction (including Pennsylvania) has specifically accepted and utilized Mr. Moul's "leverage/risk" adjustment.[31]

[30] Morin, R., Regulatory Finance, Utilities' Cost of Capital, Public Utilities Reports, 1994, p. 411.
[31] *See* WPSC response to 2-CUB/Inter-09 (PSC REF#: 186597).

Q. In other words, the ratemaking procedure that Mr. Moul recommends against—applying market-based equity cost estimates (without adjustment) directly to book value capital structures—is standard regulatory practice?

A. Yes. Although, according to Mr. Moul, when market prices are above book value that universal practice will result in a "mis-match" so that investors will be unable to earn their required (higher) return. When investors are unable to earn their required returns, utilities will not be able to attract capital. Unfortunately, the Company witness has not made the case, or provided any evidence to show that in all the jurisdictions in which Mr. Moul's leverage/risk adjustment has been rejected, as well as all the others where it has not been considered, utilities are unable to attract the capital necessary to fulfill their regulatory obligation to serve. Absent such a showing, it is reasonable to believe that the standard regulatory practice (applying market-based cost of equity estimates to book value capital structures) enables investors to realize the returns they require and, concomitantly, enables regulated utilities to attract capital. Standard regulatory practice should be applied here in Wisconsin as well—Mr. Moul's financial/risk adjustment, his "financial risk adder" should be rejected.

Q. The Company claims that there are financial risk differences between the companies in Mr. Moul's sample group and WPSC. Are there any significant financial risk differences?

A. While there are financial risk differences, they trend in the opposite direction Mr. Moul indicates. That is, rather than having lower financial risk than WPSC (which would require the upward adjustment to the market-based cost of equity Mr. Moul champions), the companies in Mr. Moul's sample group have *higher* financial risk—and a *reduction* in the market-based cost of equity is appropriate for WPSC, not an increase. Table III, below, shows the actual capital structure data contained in Mr. Moul's Testimony.

Table III

Book Value Capital Structure of Mr. Moul's Sample Companies and WPSC

ELECTRIC GROUP-2011	Common Equity	Preferred Stock	Long-term Debt	Total Capital
Percentage	**46.4%**	0.6%	53.0%	100.00%

Ex.-WPSC-Moul-2, Sch3.

WPSC-2011	Common Equity	Preferred Stock	Long-term Debt	Total Capital
Percentage	**53.6%**	2.5%	43.9%	100.00%

Ex.-WPSC-Moul-2, Sch2.

Mr. Moul's own data show that the book value capital structure of his sample of integrated electric companies shows an average common equity ratio of 46.4%. WPSC's year-end 2011 common equity ratio was 53.6%, seven percentage points higher. Therefore, if there is any substantial difference in financial risk, it is that the sample group, with a lower total equity ratio has higher financial risk than WPSC, and, if any adjustment to the cost of capital for the sample group is appropriate, it should be a *downward* adjustment because WPSC has lower financial risk. Mr. Moul's claim that WPSC has higher financial risk because the market-value capital structure of his sample group has a higher equity ratio than the book value capital structure, besides being unsupported theoretically, is clearly incorrect, as shown by the data available in his own testimony.

Q. Why, then, does the Company claim that there are financial risk differences that increase its required return on equity?

A. The Company cost of capital witness is making an improper comparison between market value capital structures and book value capital structures in order to claim that a financial risk difference exists. When utility common equity market prices are above book value, the capital structure measured with market values will have a higher equity percentage

and lower debt percentages than the capital structure measured with book value. That does not mean, as Mr. Moul claims, that those different capital structure measures signify any difference whatsoever in financial risk.

Q. Please explain why Mr. Moul's "leverage" adjustment is theoretically unsound.

A. The authority cited in Mr. Moul's testimony for the upward adjustment to the cost of capital—theoretical work in the field of financial economics by Miller and Modigliani (MM)[32] —does not support the leverage adjustment Mr. Moul applies to the cost of equity. Simply stated, MM's theoretical financial work, which measures risk differences between different firms imparted by leverage (the use of debt), is based *only* on market values and makes no reference whatsoever to book value capital structures. In fact, the formulas created in those studies, and extracted by Mr. Moul for his purposes here, cannot be derived through the use of accounting-based or book value capital structures and, thus, have no meaning in reference to book value capital structures.

Book values of equity and debt are never mentioned in the MM treatise cited by Mr. Moul. Other financial texts confirm that the capital structure ratios which should be used in the MM leverage adjustment equations are market-based capital structure ratios, not book value-based capital structure ratios (e.g., Brigham, E. F., Intermediate Financial Management, 5th Ed, 1996, Dryden Press, Fort Worth TX, pp. 364-374).

The theoretical treatise used by Mr. Moul is designed to compare only market-value leverage/risk differences between one firm and another firm (or group of firms), or leverage differences between capital structures of the same firm at different points in time. Financial theory very clearly requires that those leverage comparisons be made on the same basis—market value capital structure.

Mr. Moul's analysis, on the other hand, is applied to differences that happen to exist between the market value capital structure and the book value capital structure of utility companies. In making that comparison, Mr. Moul effectively assumes that one firm or group of firms can, at one point in time, have two levels of financial risk. That is an impossibility.

[32] Direct-WPSC-Moul-24.

Q. Why is it impossible for one company to have two levels of financial risk?

A. There can be no "difference" in financial risk for one company or type of company at one point in time, regardless of the relationship between market price and book value. Yet, that is the crux of Mr. Moul's "leverage" adjustment.

Financial risk is created by the impact of interest payments on the volatility of a firm's income stream. As the amount of interest expense increases relative to the operating income available to pay that debt service, the volatility of the income available to stockholders (a residual that flows to stockholders after interest payments are met) increases, thus creating more risk for the stockholders. Mr. Moul, himself, has provided a definition of financial risk in his prior testimony:

> Financial risk results from a firm's use of borrowed funds (or similar sources of capital with fixed payments) in its capital structure, i.e., financial leverage.[33]

Financial risk is a function of the amount of fixed charges or debt expense incurred by the firm and the impact of those fixed charges on the variability of the income available to the stockholder. Therefore, unless the actual amount of borrowed funds increases, causing the dollar amount of "fixed charges to the total income of the company" to increase, financial risk cannot increase. Because of that fact, one company (or group of companies) at one point in time cannot have two levels of financial risk because the amount of fixed charges (the debt costs) are the same.

Market value capital structure and book value capital structure are merely different ways to measure the capital structure of a company; they do not represent differences in the level of fixed charges incurred. Most importantly, differences in market-value and book-value capital structure cannot, therefore, reflect differences in financial risk for one company or group of companies at any one point in time.

Q. Can you provide an example to show that the financial risk does not change when there is a difference between market price and book value?

[33] Pa. P.U.C. Docket No. R-2012-2290597, PPL Electric Utilities Corporation, Direct Testimony of Paul Moul, Appendix C, p. C-2, ll. 4-6.

A. Yes. For example, assume that Utility X has $100 of debt that has a 6% cost rate, and $100 of equity on its books. The book value capital structure is 50% equity/50% debt. Assume further that Utility X's market price is double its book value. The market valuation would then be $200 equity and $100 debt (we assume here for simplicity that the market value of debt is equal to book value). The market value capital structure is 67% equity and 33% debt. There is no difference in financial risk here because, no matter how one measures the capital structure, the company has the same fixed charges to pay—6% of $100 of debt capital. The fixed cost of the debt is what creates the financial risk and that factor, for one company at one point in time, cannot create two levels of financial risk. Thus, it is not logical to assume that one company or sample group of companies at one point in time has two levels of financial risk. However, that is the crux of Mr. Moul's "leverage/risk" adjustment.

Mr. Moul's position on the measurement of a firm's capital structure is tantamount to saying that 12 inches is longer than one foot because 12 is a larger number than 1. However, there is no difference in the factor being measured—one foot is the same length no matter what units are used to measure it—inches, centimeters, or light years. Similarly, there is one level of financial risk inherent in the capital structure of any firm at one point in time, no matter how that capital structure is measured—market values or book values.

A Hearing Examiner in the Virginia Corporation Commission recognized that differences between market value capital structures and book value capital structures do not connote difference in financial risk. In a Virginia-American Electric rate proceeding (Case No. PUE-2002-00375), the Virginia Hearing Examiner opined regarding Mr. Moul's "leverage" adjustment, "[t]he underlying risk of a utility does not vary when viewed from the perspective of market valuation or the perspective of book valuation. All that changes is the perspective."

Also, the West Virginia Public Service Commission, in a January 2, 2004 decision strongly rejected Mr. Moul's "leverage" adjustment. That Commission viewed Mr. Moul's adjustment to the cost of equity based on market values as an attempt to supplant original cost rate base regulation with fair value regulation, and rejected the adjustment.

> Additional examples of the Company witness raising his sights above what a reasonable analysis produces can be found in the market value adjustments that he makes. His electric group DCF analysis would be only 8.98%; however, he leverages this number up by 54 basis points, or .54%, to reflect the fact that stockholders pay market prices for stock and those market prices may exceed the book value of a utility's rate base. Thus, the Company asks us to effectively depart from our long-standing use of an original cost rate base. We could do this by simply applying the derived rate of return, before market price leveraging, to an inflated rate base that exceeds book value or, in the alternative chosen by the Company, we can continue to use original cost rate base and apply an inflated rate of return to that rate base.[34]

Mr. Moul's use of a market-based capital structure to produce a ratemaking cost of equity, as noted by the West Virginia Commission, would require regulators to set rates on something other than original cost (book value).

Q. You noted previously that the Pennsylvania commission, which, at one time, adopted Mr. Moul's "leverage" adjustment, rejected financial risk adders in a 2007 rate case. Were those "financial risk adders" based on the same principle as that used by Mr. Moul in this proceeding?

A. Yes. Although they are applied slightly differently, the basis for Mr. Moul's leverage/risk adjustment in this proceeding and the "financial risk adders" sought in the Pennsylvania Met Ed rate proceeding (Docket No. R-00061366) are the same—the apparent leverage difference between market-value capital structures and book value capital structures. As I have shown in detail above, those apparent differences in leverage are illusory and are unsupported in either a theoretical or practical sense.

In the Met Ed proceeding, the Company calculated the overall cost of capital of the utility sample group using a market-value capital structure and then applied that same overall cost of capital to the book-value (ratemaking) capital structure, and in so doing,

[34] W.V.P.S.C. Case No. 03-0353-W-42T, West Virginia-American Electric Works, January 2, 2004, p. 18. This West Virginia decision was appealed, but the appeal was dropped by the Company following the settlement of a subsequent case.

determined an "appropriate" cost of common equity (which was significantly above that indicated by the Company's DCF analysis). As noted previously, in that Met Ed Order cited above, the Pennsylvania Commission eliminated any consideration of the "financial risk adders" due to the use of market-value capital structures from consideration in determining the appropriate return on common equity.

In this proceeding, Mr. Moul similarly cites the leverage differences between the market-value capital structure of his sample group and the regulatory or book-value capital structure requested by WPSC as rationale for a "risk adder", i.e., an upward adjustment to the allowed return on common equity. While Mr. Moul makes the adjustment directly to the cost of equity using the formulas shown in his testimony and does not make the adjustment through the overall cost of capital, as did Met Ed, the *basis for the adjustment is exactly the same*—the difference between the market value capital structure and the book value capital structure and the difference in investment risk that those capital structures supposedly illustrate. That adjustment and the cost of equity "financial adder" it created was rejected by the Pennsylvania Commission in the Med Ed case and should be rejected in this proceeding as well.

Finally, in a more recent decision in Docket No. R-00072711, Aqua Pennsylvania, Inc., July 17, 2008 (at pp. 35 through 39), the Pennsylvania Commission specifically rejected Mr. Moul's leverage/risk adjustment—the same adjustment he recommends in this proceeding. In rejecting Mr. Moul's leverage/risk adjustment in the Aqua Pennsylvania case the Commission cited its rejection of the similar financial adder in the prior Met Ed Order.

Q. What leverage/risk "financial adders" are included in Mr. Moul's cost of equity estimates for WPSC in this proceeding?

A. Mr. Moul's DCF results are increased by 75 basis points (0.75%) for leverage/financial risk. Without those adjustments, Mr. Moul's DCF results are 9.69% for his electric sample group.

Mr. Moul's CAPM results are increased by 87 basis points (0.87%) as a result of his leverage adjustment. As I have explained, neither of those leverage adjustments is necessary or theoretically sound.

Q. Does this conclude your comments regarding Mr. Moul's "leverage adjustment"?

A. Yes, it does.

B. EQUITY COST ESTIMATION METHODS

Q. What methods has Company witness Moul used to estimate the cost of equity capital for WPSC in this proceeding?

A. Mr. Moul has based his equity return recommendation for WPSC's utility operations on a DCF analysis of a sample of combination electric and gas companies and another broader group of companies. In addition, Mr. Moul presents the results of Risk Premium, CAPM and Comparable Earnings analyses as support for his recommendation that the Company be allowed to earn a return on equity capital of 11.25%.

1. Mr. Moul's DCF Analysis

Q. What comments do you have regarding the mechanics of Mr. Moul's DCF analysis?

A. Mr. Moul uses a "generic" approach to calculating his DCF dividend yield in which the current annualized dividend is assumed to be increased half-way during the coming year. This is accomplished by multiplying the current annualized dividend by one plus one-half the growth rate he determines to be appropriate for his DCF analysis. While that methodology can produce accurate results, it can also overstate the expected dividend if a) the dividend was recently increased before the time of analysis, in which case it would not be raised half-way through the year and b) if the dividend were not expected to be raised at all.

In addition, Mr. Moul employs other dividend yield calculations that "grow" the dividend quarterly, ostensibly to account for the investors "time value of money." That methodology also leads to overstated dividend yields.

At Direct-WPSC-Moul-26, Mr. Moul indicates the result of his DCF dividend yield analysis for his sample group of integrated electrics is 4.19%. According to Value Line, a source of investor information used by Mr. Moul, that dividend yield is

overstated. Value Line's recent (June 23, 2013, Summary & Index) year-ahead dividend projection for the utilities included in Mr. Moul's sample group is 3.82%—37 basis points below Mr. Moul's DCF calculated dividend yield.

Q. What are your comments regarding Mr. Moul's DCF growth rate analysis?

A. Although, to his credit, Mr. Moul presents both historical and projected growth rates in earnings, dividends, and book value, Mr. Moul's growth rate analysis ultimately relies heavily on earnings growth rate projections. As I discuss in more detail in Appendix A attached to this testimony, which describes the determinants of long-term growth for utilities, exclusive reliance on earnings growth can lead to inaccurate equity cost estimates. Also as I discussed in more detail in the growth rate portion of my DCF analysis, earnings growth rates tend to be exaggerated and, while I have no problem with the consideration of earnings growth rate projections in determining DCF growth, they should not be afforded the heavy weighting afforded by Mr. Moul.[35]

Based on the DCF assumption that earnings, dividends and book value will, over time, grow at approximately the same rate, a review of the average projected growth rate in all three of those parameters can provide a reliable indication of investor-expected long-term growth required in the DCF. Reviewing those data published in the Value Line editions for the companies comprising Mr. Moul's electric sample group indicates that his DCF growth rate is overstated. As shown in Table IV below, the average projected growth rate in earnings, dividends and book value published by Value Line for Mr. Moul's sample group is 4.98%, while Mr. Moul's DCF growth rate estimate (based primarily on projected earnings growth was 5.50%—52 basis points higher.

[35] On Direct-WPSC-Moul-20, Mr. Moul testifies that Professor Gordon, the originator of the DCF, indicates that earnings are the "best measure" of the DCF growth rate, and cites a Gordon article. However, Dr. Gordon's study compared projected earnings growth only with historical measures of growth, and he (Gordon) concludes that a sustainable growth rate (b x r) analysis would produce results "as good or better than those obtained with analysts' forecasts of growth."

Table IV

Value Line Growth Rate Projections for Moul's Sample Group

	Value Line Projected Growth Rates		
	Earnings	Dividends	Book Value
Alliant Energy	6.50%	5.50%	3.50%
Black Hills	7.00%	2.00%	1.50%
CMS Energy	7.00%	10.00%	4.50%
DTE Energy	5.00%	4.00%	4.00%
Integrys	6.00%	0.50%	2.50%
MGE Energy	5.50%	3.50%	5.00%
Vectren	5.50%	2.50%	3.50%
Wisconsin Energy	6.50%	13.50%	4.00%
Xcel Energy	6.00%	5.00%	4.50%
Average	6.11%	5.17%	3.67%
Overall Average		4.98%	

Data from Ex.-WPSC-Moul-2, Schedule 7, p. 1.

Those projected data from Value Line indicate a DCF growth rate approximately 52 basis points below the 5.50% used by Mr. Moul.

Mr. Moul's DCF result for his sample companies averages 9.69% without "financial risk adders." When combined with an overstatement in the expected growth rate of 52 basis points as well as an overstatement in dividend yield of another 37 basis points, Mr. Moul's DCF results in an equity cost estimate of 8.8%. That result supports the reasonableness of the 8.5% to 9.5% range of equity cost estimates I recommend.

2. Mr. Moul's Risk Premium Analysis

Q. What are your comments on the mechanics of Mr. Moul's risk premium analysis?

A. A fundamental precept on which the risk premium methodology is based is that the higher risk of stocks over bonds requires an incrementally higher return for those stocks in order for investors to be compensated for assuming the higher risk (e.g., see Direct-WPSC-Moul-26). Although that is generally true, it is most important to realize that, given a current bond yield of about 4.5% for BBB-rated utilities, an equity return of 8%, 10% or even 50% would fulfill the requirement of providing "a premium" over debt

costs. The real issue with a risk premium analysis is determining the premium with any precision. It is not a directly observable phenomenon.

There are two other fundamental tenets on which risk premium-type analyses are grounded which, when examined, indicate that this equity cost estimation methodology should not be given primary consideration in setting allowed rates of return. First, since risk premium analyses look backward in time, they assume "past is prologue." In other words, the investors' expectations for the future are assumed to mirror the average results they have experienced in the past. Second, implicit in the use of an average historical return premium of equities over debt is the assumption that the risk premium is constant over time. Neither of these assumptions on which the risk premium analysis rests is true.

Over time, risk premiums (the differences in historical returns between stock and bonds) vary greatly from period to period. The practical impact of the volatility of historical risk premium data is that with the selection of any particular period over which to average the historical data, virtually any risk premium result can be produced. The extreme volatility of the data that forms the basis of Mr. Moul's risk premium analysis is shown on his Schedule 10, page 2. Mr. Moul's Schedule 10 depicts the yearly return for "large common stocks" and the yearly return on "corporate bonds" from 1927 through 2011. The annual risk premiums fluctuate between +47.23% and -45.78%.

In addition, the use of historical earned return data (such as that used by Mr. Moul) to estimate current equity capital costs has been questioned in the financial literature:

> There are both conceptual and measurement problems with using I&S [Ibbotson and Sinquefield, now Morningstar] data for purposes of estimating the cost of capital. Conceptually, there is no compelling reason to think that investors expect the same relative returns that were earned in the past. Indeed, evidence presented in the following sections indicates that relative expected returns should, and do, vary significantly over time. Empirically, the measured historic premium is sensitive both to the choice of estimation horizon and to the end points. These choices are

essentially arbitrary, yet they can result in significant differences in the final outcome.[36]

Finally, there has been substantial research in the financial literature in recent years that shows the current expected risk premium embodied in stock prices today is lower than that which has existed, on average, over the long-term historical period studied by Mr. Moul. That is, the expected risk premium is not equal to long-term historical averages as Mr. Moul assumes and, in fact, forward-looking risk premiums—and investor-expected returns—are lower.

Q. What are your comments regarding Mr. Moul's particular application of the risk premium analysis?

A. Mr. Moul has changed his Risk Premium analysis methodology. The Company witness and I have testified in many cases together over the years and for many years, and as recently as March 2012 in testimony on behalf of PPL Utilities, Mr. Moul utilized the long-term return difference between utility stocks and utility bond yields as the measure of the Risk Premium. Although he does not discuss his methodological change, his Risk Premium analysis is now different, the risk premium with his new method is increased and the Risk Premium equity cost estimate is higher.

In his March 2012 testimony on behalf of PPL Utilities, Mr. Moul's Risk Premium data indicated that over the long-term, the return on the S&P Utilities exceeded bond returns by 3.47% to 5.52% (the geometric and arithmetic means). That risk premium added to a current A-rated utility bond yield of 4.14%,[37] would produce an equity cost estimate of 7.61% to 9.66%. However, in his current analysis, in an interest rate environment not so different from that which existed during 2012, Mr. Moul, through his new Risk Premium analysis has determined that the appropriate risk premium is now 7%--substantially higher than the electric utility risk premium he utilized just one year ago.

[36] "The Risk Premium Approach to Measuring a Utility's Cost of Equity," Brigham, Shome and Vinson, Financial Management, Spring 1985, p. 34.
[37] Value Line, *Summary & Opinion*, six recent weekly editions, May 17, through June 21, 2013.

Q. What has caused Mr. Moul's risk premium estimate to increase?

A. In his original Risk Premium analysis, Mr. Moul examined the historical returns of electric utilities and compared those returns to utility bond returns. The new Risk Premium analysis presented in his testimony in this proceeding is based on the Ibbotson/Morningstar SBBI yearbook data, which is based on broad market index returns, not on utilities.

As this Commission is aware, utility stocks are less risky than the broad market in general and, as a result, utilities have lower beta coefficients (an indicator of relative investment risk). For example, the average beta coefficient of the sample group of electric utilities selected by Mr. Moul to be similar in risk to WPSC is 0.73. The beta coefficient for the stock market is, by definition, 1.0. That means that the market price movement of electric utility stocks is only 73% of that of the market and, thus, electric utility stocks can be considered to be 73% as risky as common stocks in the market in general.

Adjusting Mr. Moul's 7% Risk Premium (which is appropriate only for the market in general) by the beta of his electric utility stocks (0.73) would indicate an electric-utility risk premium of 5.11% [7.0% x 73%]. Adding that electric utility-specific risk premium to the recent average yield for A-rated utilities (4.19%) produces an equity capital cost indication of 9.30%--a result more in line with Mr. Moul's prior work on the subject and a result more in line with the current cost of equity for electric utilities as determined by the DCF analysis.

Q. Are there other concerns regarding Mr. Moul's risk premium analysis?

A. Yes, there are additional overstatements included in Mr. Moul's Risk Premium analysis. The first additional overstatement follows from Mr. Moul's use of projected utility bond yields based on a projected Treasury Bond yield of approximately 3.5%, when currently, Treasury Bonds are yielding 3.2%.[38] If investors all believed that Treasury Bonds should be trading at a price to yield 3.5%, the current price would decline so that the yield was 3.5%; but that is not investors' current expectation and T-Bond yields are 3.2%, not 3.5%. Current yields are expectational, and provide the best estimate of

[38] Value Line *Selection & Opinion* six recent weekly editions, May 17 through June 21, 2013.

investors' current return requirements. Mr. Moul overstates the current cost of capital by using projected bond yields. Mr. Moul uses current stock prices in his DCF models, not projections. He does so because current stock prices provide the best indication of investors' current expectations for the future. If he were logically consistent in his analyses he would use current Treasury Bond yields, and his Risk Premium results would be 30 basis points lower.

The second additional overstatement relates to Mr. Moul's estimate of an A-rated utility bond yield. In determining the "yield spread" between utility A-rated bonds and U.S. Government debt, Mr. Moul uses 20-year T-Bonds as the proxy for U.S. Government yields (see Ex.-WPSC-Moul-2, Schedule 9, page 3). However, when adding back that yield spread (determined with 20-year T-Bonds) to estimate an A-rated bond yield, Mr. Moul uses 30-year T-Bonds as the base measure. According to the Federal Reserve statistical release H.15, over the past three years, 30-year T-Bond yields have exceeded 20-year T-Bond yields by 33 basis points. Therefore, in addition to overstating current yields by 30 basis points, Mr. Moul has overstated the yield spread by another 33 basis points.

In summary, Mr. Moul's Risk Premium analysis results in a cost of equity estimate that is overstated and not reliable for ratemaking purposes.

3. Mr. Moul's CAPM Analysis

Q. What are your comments regarding Mr. Moul's CAPM analysis?

A. In his CAPM analysis Mr. Moul used betas that are unnecessarily adjusted for differences in leverage between market capital structures and book value capital structures. As I have described in detail above, that "leverage" adjustment is theoretically unsound. Mr. Moul's "leverage" adjustment to his CAPM analysis causes the result to be overstated by 87 basis points. Rather than the CAPM equity cost estimate of 10.72% reported by Mr. Moul (Ex.-Moul-2, Schedule 1, p. 1), then, the result of his CAPM analysis is 9.85% absent his unnecessary "leverage" adjustment.

Second, it is important to recall that beta is a relatively poor measure of risk. Mr. Moul has testified to that fact in prior testimony:

> The beta coefficient ("β"), the one input in the CAPM application, which specifically applies to an individual firm, is derived from a statistical application, which regresses the returns on an individual security (dependent variable) with the returns on the market as a whole (independent variable). The beta coefficients for utility companies typically describe a small proportion of the total investment risk because the coefficients of determination ($R2$) are low.[39]

Q. Are there other unnecessary upward adjustments included in Mr. Moul's CAPM cost of equity estimate?

A. Yes. Mr. Moul has utilized three market risk premiums for his CAPM analysis, all of which are substantially overstated. Mr. Moul shows what the overall average difference in the return of stocks and long-term Treasury bonds has been over the past 80 years in his Ex.-WPSC-Moul-2, Schedule 10, page 1. That difference is approximately 6.6%, based on the 2012 Stocks, Bonds, Bills, and Inflation (SBBI) Classic Yearbook, published by Ibbotson. However, even though that's been the long-term average through all sorts of economic boom and bust cycles (including world wars), the market risk premiums Mr. Moul uses in his CAPM in this proceeding average 8.70%—more than 200 basis points higher.

Two of Mr. Moul's risk premium estimates are based on DCF analyses of broad stock indexes and are based on projected earnings estimates. As I noted previously, research has shown that projected earnings growth rates for unregulated firms substantially overstate the actual, realized growth rates. Research published by McKinsey and Company show that projected earnings growth rates are almost double the growth rates ultimately realized by the type of unregulated firms included in Mr. Moul's market index groups.[40] Because Mr. Moul's DCF equity cost estimate for the market indices is overstated, so, too, is his estimate of the market risk premium.

The third market risk premium provided by Mr. Moul only considers a portion of the historical data. Drawing the difference between common stock returns and long-term

[39] Pa. P.U.C. Docket No. R-2012-2290597, PPL Electric Utilities Corporation, Direct Testimony of Paul Moul, Appendix H, p. H-3.
[40] McKinsey & Company is a global management consulting firm.

Treasury yields for only some of the years since 1926, and not all of them, allows Mr. Moul to produce a risk premium of 8.57% when the average, using the entire historical record, is 6.6%.

The years Mr. Moul has selected include every year from 1926 through 1965 and also include 2008, 2010 and 2011. Therefore, the market data Mr. Moul believes is indicative of the future includes the great depression, World War II and the post-war boom in the 1950s but does not include the late 1960s, 1970s, 1980s, 1990s or most of the 2000s. Picking and choosing years from the historical data base does not provide a balanced picture of the economic history of the U.S. and does not provide a reliable basis for analyzing investor expectations for the future.

Using the average difference between stocks and Treasury bonds over the entire historical record from 1926 indicates a market risk premium of 6.6%, according to Mr. Moul's data. Combining that market risk premium with the 0.73 average beta of his similar risk sample group published by Value Line provides a utility-specific market risk premium of 4.79%. Adding that utility-specific market risk premium to Mr. Moul's risk-free rate for long-term Treasury bonds, 3.5%, produces a CAPM equity cost estimate of 8.29%. That result is similar to but somewhat below my DCF equity cost estimate of 8.66%.

4. Mr. Moul's Comparable Earnings Analysis

Q. What are your comments regarding Mr. Moul's comparable earnings analysis?

A. The Comparable Earnings (CE) analysis presented by Company witness Mr. Moul is based on the accounting returns of a group of unregulated, competitive companies. Although proponents of Comparable Earnings analyses often claim that such an analysis is a type of market-based analysis because the returns being measured are earned in competitive markets, that type of analysis is based on accounting returns, not on returns expected by investors in the capital marketplace. Moreover, it is the latter—investors' required market return—we seek in setting profit levels for regulated firms. Only through setting regulated rates with market-based cost of equity capital can the goals of maximizing economic efficiency and balancing the interests of investors and ratepayers

be met. Comparable Earnings is simply not a market-based equity cost estimation methodology.

While, as I have noted previously in my testimony, historical and projected accounting rates of return for utility operations, in conjunction with current market prices and book values, can provide useful information which can be used to indicate an appropriate range for the cost of equity, accounting data alone is not indicative of investors' required return with unregulated, competitive firms. It is that fact, along with the development of market-based equity cost estimation techniques in the 1960s and 1970s (e.g., DCF and CAPM), which led regulators to use market-based equity cost models to supplant the Comparable Earnings methodology. It has been my experience over the past thirty years that Comparable Earnings is rarely used in regulatory proceedings as a procedure on which to base the allowed cost of equity capital.

Moreover, a comparable earnings standard of ratemaking actively ignores the actions of capital markets and the information that may be gleaned from those markets in estimating the cost of capital. For example, if interest rates rise or fall by substantial amounts, the opportunity cost of capital and the allowed profitability of utilities should also change, generally, in the same direction. However, if the focus of cost of capital becomes accounting returns, no particular change would be warranted by a shift in interest rate levels. Moreover, if interest rates jumped up by, say, 2%, capital costs for the utility would rise and, with higher costs the utility's profitability would be impaired, that is, the return on book value would fall. If, in that situation, regulators set equity returns by considering future accounting returns, they would recommend that the utility's profit levels be lowered as a result of an increase in interest rates. Clearly, cost of capital regulation dependent on accounting returns would be economically inefficient, would send the wrong signals to both management and stockholders and fail to ensure financial integrity for the utility over the long term. Setting allowed rates of return by relying on either actual or projected accounting returns (returns on book value) is not a reasonable ratemaking strategy.

Finally, even though Mr. Moul's sample selection process purports to consider companies of similar risk, one key risk element omitted from his Comparable Earnings sample selection process is the level of competition to which the firms are exposed. For

example, it is difficult to believe that investors consider regulated electric distribution utility operations to be similar in risk to that of a drug company (Hershey Co., Kroger; see Ex.-WPSC-Moul-2, Schedule 12, page 2).

For example, when a WPSC ratepayers flips on a light there are no choices as to who will deliver the electricity to power that light, but when a customer is in the checkout line of the local grocery store (perhaps Kroger's, perhaps not) there are many different types of candy to choose from—not just the ones manufactured by Hershey Co. It is reasonable to believe, therefore, that the sample group on which Mr. Moul's Comparable Earnings results are based has a risk profile that is greater than that of WPSC's electric utility operations, and the results of that analysis substantially overstate the Company's actual cost of equity.

Mr. Moul's Comparable Earnings analysis does not identify the market-based cost of equity capital, and is based on a sample group of firms that are unlikely to be similar in overall investment risk to WPSC. This Commission should place little, if any, reliance on Mr. Moul's Comparable Earnings results.

Q. Does this conclude your direct testimony?

A. Yes, it does.

UTILITY GROWTH RATE FUNDAMENTALS

Q. Please provide an example that describes the determinants of long-term sustainable growth.

A. Assume that a hypothetical regulated firm had a first period common equity or book value per share of $10, the investor-expected return on that equity was 10% and the stated company policy was to pay out 60% of earnings in dividends. The first period earnings per share are expected to be $1.00 ($10/share book equity x 10% equity return) and the expected dividend is $0.60. The amount of earnings not paid out to shareholders ($0.40), the retained earnings, raises the book value of the equity to $10.40 in the second period. The table below continues the hypothetical for a five year period and illustrates the underlying determinants of growth.

Table A

	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	GROWTH
BOOK VALUE	$10.00	$10.40	$10.82	$11.25	$11.70	4.00%
EQUITY RETURN	10%	10%	10%	10%	10%	-
EARNINGS/SH.	$1.00	$1.040	$1.082	$1.125	$1.170	4.00%
PAYOUT RATIO	0.60	0.60	0.60	0.60	0.60	-
DIVIDENDS/SH.	$0.60	$0.624	$0.649	$0.675	$0.702	4.00%

We see that under steady-state conditions, the earnings, dividends and book value all grow at the same rate. Moreover, the key to this growth is the amount of earnings retained or reinvested in the firm and the return on that new portion of equity. If we let "b" equal the retention ratio of the firm (1 – the payout ratio) and let "r" equal the firm's expected return on equity, the DCF growth rate "g" (also referred to as the internal or sustainable growth rate) is equal to their product, or

$$g = br. \qquad (i)$$

Professor Myron Gordon, who developed the Discounted Cash Flow technique and first introduced it into the regulatory arena, has determined that Equation (i) embodies the underlying fundamentals of growth and, therefore, is a primary measure of growth to be used in the DCF model. Professor Gordon's research also indicates that analysts' growth rate projections are useful in estimating investors' expected sustainable growth.

I should note here that the above hypothetical does not allow for the existence of external sources of equity financing, i.e., sales of common stock. Stock financing will cause investors to expect additional growth if the company is expected to issue new shares at a market price that exceeds book value. The excess of market over book would inure to current shareholders, increasing their per share equity value. Therefore, if the company is expected to continue to issue stock at a price that exceeds book value, the shareholders would continue to expect their book value to increase and would add that growth expectation to that stemming from earnings retention or internal growth. Conversely, if a company were expected to issue new equity at a price below book value, that would have a negative effect on shareholder's current growth rate expectations. In such a situation, shareholders would perceive an overall growth rate less than that produced by internal sources (retained earnings). Finally, with little or no expected equity financing or a market-to-book ratio near unity, investors would expect the sustainable growth rate for the company to equal that derived from Equation (i), "g = br." Dr. Gordon[41] identifies the growth rate which includes both expected internal and external financing as:

$$g = br + sv, \qquad \text{(ii)}$$

where,

g = DCF expected growth rate,
r = return on equity,
b = retention ratio,
v = fraction of new common stock

[41]Gordon, M.J., The Cost of Capital to a Public Utility, MSU Public Utilities Studies, East Lansing, Michigan, 1974, pp., 30–33.

sold that accrues to the current shareholder,
s = funds raised from the sale of stock as a fraction of existing equity.

Additionally,

$$v = 1 - BV/MP, \qquad \text{(iii)}$$

where,

MP = market price,
BV = book value.

I have used Equation (iii) as the basis for my examination of the investor expected long-term growth rate (g) in this proceeding.

Q. In your previous example, earnings and dividends grew at the same rate (br) as did book value. Would the growth rate in earnings or dividends, therefore, be suitable for determining the DCF growth rate?

A. No, not necessarily. Rates of growth derived from earnings or dividends alone can be unreliable due to extraneous influences on those parameters such as changes in the expected rate of return on common equity or changes in the payout ratio. That is why it is necessary to examine the underlying determinants of growth through the use of a sustainable growth rate analysis.

If we take the hypothetical example previously stated and assume that, in year three, the expected return on equity rises to 15%, the resultant growth rate for earnings and dividends far exceeds that which the company could sustain indefinitely. The potential error in using those growth rates to estimate "g" is illustrated in the following table.

Table B

	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	GROWTH
BOOK VALUE	$10.00	$10.40	$10.82	$11.47	$12.157	5.00%
EQUITY RETURN	10%	10%	15%	15%	15%	10.67%
EARNINGS/SH.	$1.00	$1.040	$1.623	$1.720	$1.824	16.20%
PAYOUT RATIO	0.60	0.60	0.60	0.60	0.60	-
DIVIDENDS/SH.	$0.60	$0.624	$0.974	$1.032	$1.094	16.20%

What has happened is a shift in steady-state growth paths. For years one and two, the sustainable rate of growth (g=br) is 4.00%, just as in the previous hypothetical. Then, in the last three years, the sustainable growth rate increases to 6.00% (g=br = 0.4x15%). If the regulated firm were expected to continue to earn a 15% return on equity and retain 40% of its earnings, then a growth rate of 6.0% would be a reasonable estimate of the long-term sustainable growth rate. However, the compound annual growth rate for dividends and earnings exceeds 16% which is the result only of an increased equity return rather than the intrinsic ability of the firm to grow continuously at a 16% annual rate. Clearly, this type of estimate of future growth cannot be used with any reliability at all. In the case of the hypothetical, to utilize a 16% growth rate in a DCF model would be to expect the company's return on common equity to increase by 50% every five years into the indefinite future. This would be a ridiculous forecast for any regulated firm and underscores the importance of utilizing the underlying fundamentals of growth in the DCF model.

It can also be demonstrated that a change in our hypothetical regulated firm's payout ratio makes the past rate of growth in dividends an unreliable basis for predicting "g." If we assume our regulated firm consistently earns its expected equity return (10%) but in the third year, changes its payout ratio from 60% to 80% of earnings, the results are shown in the table below.

Table C

	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	GROWTH
BOOK VALUE	$10.00	$10.40	$10.82	$11.036	$11.26	3.01%
EQUITY RETURN	10%	10%	10%	10%	10%	-
EARNINGS/SH.	$1.00	$1.040	$1.082	$1.104	$1.126	3.01%
PAYOUT RATIO	0.60	0.60	0.80	0.80	0.80	7.46%
DIVIDENDS/SH.	$0.60	$0.624	$0.866	$0.833	$0.900	10.67%

What we see here is that, although the company has registered a high dividend growth rate (10.67%), it is, again, not at all representative of the growth that could be sustained indefinitely, as called for in the DCF model. In actuality, the sustainable growth rate has declined from 4.0% the first two years to only 2.0% (g=br = 0.2x10%) during the last three years due to the increased payout ratio. To utilize a 10% growth rate in a DCF analysis of this hypothetical regulated firm would 1) assume the payout ratio of the firm would continue to increase 33% every five years into the indefinite future, 2) lead to the highly implausible result that the firm intends to consistently pay out more in dividends than it earns and 3) grossly overstate the cost of equity capital.