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Via Overnight Mail

March 5, 2012

RECEIVED
MAR 06 2012
PUBLIC SERVICE COMMISSION

Mr. Jeff Derouen, Executive Director
Kentucky Public Service Commission
211 Sower Boulevard
Frankfort, Kentucky 40602

Re: Case No. 2011-00401

Dear Mr. Derouen:

Please find enclosed the original and twelve (12) copies each of the DIRECT TESTIMONY AND EXHIBITS of STEPHEN G. HILL, STEPHEN J. BARON and the PUBLIC VERSION of the DIRECT TESTIMONY AND EXHIBITS OF LANE KOLLEN on behalf of KENTUCKY INDUSTRIAL UTILITY CUSTOMERS, INC. for filing in the above-referenced matter. I also enclose a copy of the CONFIDENTIAL PAGES to be filed under seal.

By copy of this letter, all parties listed on the Certificate of Service have been served. Please place this document of file.

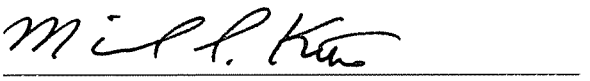
Very Truly Yours,

Michael L. Kurtz, Esq.
Kurt J. Boehm, Esq.
BOEHM, KURTZ & LOWRY

MLKkew
Attachment
cc: Certificate of Service

CERTIFICATE OF SERVICE

I hereby certify that a copy of the foregoing was served by mailing a true and correct copy via electronic mail (when available) and overnight mail, to all parties on this 5th day of March, 2012.



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COMMONWEALTH OF KENTUCKY

BEFORE THE PUBLIC SERVICE COMMISSION

In the Matter of:

THE APPLICATION OF KENTUCKY POWER	)	
COMPANY FOR APPROVAL OF ITS 2011	)	
ENVIRONMENTAL COMPLIANCE PLAN, FOR	)	
APPROVAL OF ITS AMENDED	)	
ENVIRONMENTAL COST RECOVERY	)	CASE NO. 2011-00401
SURCHARGE TARRIFF, AND FOR THE GRANT	)	
OF A CERTIFICATE OF CONVENIENCE AND	)	
NECESSITY FOR THE CONSTRUCTION AND	)	
ACQUISITION OF RELATED FACILITIES	)	

RECEIVED
MAR 06 2012
PUBLIC SERVICE COMMISSION

DIRECT TESTIMONY

OF

STEPHEN G. HILL

ON BEHALF OF

THE

KENTUCKY INDUSTRIAL UTILITY CUSTOMERS

MARCH 2, 2012

TABLE OF CONTENTS

DIRECT TESTIMONY

STEPHEN G. HILL

CASE NO. 2011-00401
KENTUCKY POWER COMPANY

APPENDICIES AND SCHEDULES

DIRECT TESTIMONY

STEPHEN G. HILL

CASE NO. 2011-00401
KENTUCKY POWER COMPANY

Appendix A - Education and Employment History, Stephen G. Hill
Appendix B - Utility Growth Rate Fundamentals
Appendix C - Individual Sample Company Growth Rate Analyses
Schedule 1 - Recent Capital Structures
Schedule 2 - Electric Utility Industry Common Equity Ratios
Schedule 3 - Electric Utility Sample Group Selection
Schedule 4 - DCF Growth Rate Parameters
Schedule 5 - DCF Growth Rates
Schedule 6 - Stock Prices, Dividends, Yields
Schedule 7 - DCF Cost of Equity Capital
Schedule 8 - CAPM Cost of Equity Capital
Schedule 9 - Proof (EPR < k < ROE; if M/B > 1.0)
Schedule 10 - Modified Earnings-Price Ratio Analysis
Schedule 11 - Market-to-Book Ratio Analysis
Schedule 12 - Overall Cost of Capital

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 on the Board of Directors of that national organization for several years. A more detailed account of my educational background and occupational experience appears in Appendix A.

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

A. Yes, I have testified previously before this Commission. In addition, over the past 30 years I have testified on cost of capital, corporate finance and capital market issues in more than 275 regulatory proceedings before the following regulatory bodies: West Virginia Public Service Commission, Pennsylvania Public Utilities Commission, the Oklahoma State Corporation Commission, Public Utilities Commission of the State of

California, Texas Public Utilities Commission, Maryland Public Service Commission, Public Utilities Commission of the State of Minnesota, Ohio Public Utilities Commission, Insurance Commissioner of the State of Texas, North Carolina Insurance Commissioner, Rhode Island Public Utilities Commission, City Council of Austin, Texas, Texas Railroad Commission, Arizona Corporation Commission, South Carolina Public Service Commission, Public Utilities Commission of the State of Hawaii, New Mexico Corporation Commission, Virginia Corporation Commission, Massachusetts Department of Public Utilities, State of Washington Utilities and Transportation Commission, Georgia Public Service Commission, Public Service Commission of Utah, Illinois Commerce Commission, Kansas Corporation Commission, Indiana Utility Regulatory Commission, Washington Utilities and Transportation Commission, Montana Public Service Commission, Public Service Commission of the State of Maine, Public Service Commission of Wisconsin, Vermont Public Service Board, Federal Communications Commission and 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 appearing on behalf of the Kentucky Industrial Utility Customers, Inc. (KIUC).

Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY?

A. In these proceedings, Kentucky Power Company (Kentucky Power, KPCO), a subsidiary of American Electric Power Company (AEP), is requesting a surcharge to recover the costs of planned environmental construction. The environmental surcharge allowed pursuant to Section 278.183 of the Kentucky Code includes "a reasonable return on

construction." Utility construction is normally undertaken using monies provided predominantly through the issuance of short-term debt, which is ultimately replaced with a mix of long-term capital. This means of financing utility construction is the most economical (least expensive) to the utility and to its customers as well. Therefore a reasonable or normal cost associated with utility construction is that of short-term debt.

The Companies have requested that the return aspect of the environmental surcharge be calculated using KPCO's overall cost of capital. That overall cost of capital requested by the Companies is based on an after-tax equity return of 10.50% and a capital structure consisting of 53.48% common equity and 46.52% debt.[1,2] According to the testimony of the Company's witness Lila Munsey, the return on equity requested by the Company is that determined in the settlement its most recent rate case (Docket No. 2010-00020).

My testimony presents the results of studies I have performed related to the determination of the cost of capital for the integrated electric utility operations of KPCO. That analysis shows that, by relying on a 10.50% return on equity capital, the Company has significantly overstated the current cost of common equity for integrated electric utility operations similar in risk to KPCO.

Moreover, in their requested overall return, the Companies have ignored the fact that the return recovery method utilized in the environmental surcharge mechanism, which allows recovery of costs during construction only two months after those costs are incurred, represents a very low-risk alternative to the normal used-and-useful regulatory paradigm. In a normal utility plant construction process, the company is not allowed to recover the costs associated with construction until that plant is "used and useful," in the same way an auto manufacturer is unable to recover the costs of building a new

[1] Testimony of Company witness Munsey, Exhibit LPM-3, ROE based on that approved in Docket No. 2010-00020, capital structure: 56.065% debt and 42.943% equity.

[2] On a pre-tax, ratemaking basis, the Company's requested equity return is 16.55% (10.50% ÷ (1-36.56% tax rate). A 36.56% tax rate is equivalent to the 1.5762 Gross Revenue Conversion factor used in Docket No. 2010-00020.

production facility until cars are rolling off the assembly line and the cars are sold.

The ability of KPCO to recover, through a surcharge to customers, the total cost of environmental construction just two months following cost incurrence, including a return and prior to the completion of the construction project represents a lower operational risk than normal rate base/rate of return utility operations. As a result, if the Commission elects to base its allowed return included in the environmental surcharge on the Company's overall return, the return on equity included in that overall return calculation should be at the lower end of a reasonable range in order to account for the lower risk afforded by the environmental surcharge.

Finally, it is especially important in these difficult economic times of high unemployment that, if the Companies are afforded low-risk treatment in the manner in which they are allowed to recover mandated environmental costs, then that lower operational risk should also provide a benefit for the Company's customers and be passed on by means of a lower allowed return in the surcharge.

In summary, if the Commission elects to use an overall return to calculate the Company's environmental surcharge, then KIUC recommends that the Commission recognize that the current cost of equity capital is below the 10.50% requested by the Companies and, further, that the allowed return be set at the lower end of a reasonable range to account for the low-risk nature of the manner in which environmental construction costs are recovered in Kentucky.

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

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 KPCO presented in the body of the testimony. This Exhibit was prepared by me and is correct to the best of my knowledge and belief. Also, I have provided four Appendices ("A" through "C"), which contain 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 KPCO'S ENVIRONMENTAL SURCHARGE IN THESE PROCEEDINGS.

A. My testimony is organized into three sections. First, I review the current economic environment in which my equity return estimate is made and evaluate the current state of that environment in light of the financial crisis underway during the Company's last rate proceedings.

Second, I review the Company's capital structure and the average capital structure existing in the electric utility industry in order to determine an appropriate capital structure for rate-making purposes.

Third, I evaluate the cost of equity capital for utility operations that are similar in risk to KPCO using Discounted Cash Flow (DCF), Capital Asset Pricing Model (CAPM), Modified Earnings-Price Ratio (MEPR), and Market-to-Book Ratio (MTB) analyses.

The current cost of equity capital for electric utility firms of similar risk to KPCO falls in a range of 9.00% to 9.75%. Moreover, because Kentucky law allows the Companies to recover investments in environmental plant during the construction phase with only a two-month lag, investment in environmental plant is low compared to normal utility plant investment. Therefore, the return afforded the Companies for their environmental surcharge should be in the lower end of that reasonable range, or 9.0%-9.375%.

Applying the mid-point of that 9.0%-9.375% equity capital cost range (9.2%) to KPCO's requested capital structure and embedded cost rates indicates overall capital costs of 7.41%. Those overall costs of capital afford the Companies the opportunity to achieve pre-tax interest coverage levels on their environmental plant investment of 2.87 times for KPCO, respectively. (See Exhibit__(SGH-1), Schedule 12) In other words,

allowed a 9.2% return on the equity portion of their investment in environmental plant, the Companies have the opportunity to earn an amount of net income on that plant that is approximately 2.87 times greater than the interest costs incurred. This level of interest coverage exceeds KPCO's average interest coverage over the 2008-2020 period, 2.13 times, according to data available in the Company's 2010 Annual Report published on AEP's website. [3] The overall return I am recommending, then, is sufficient to maintain the Company financial integrity and meets the requirements of *Hope* and *Bluefield*.

Q. IS THERE INDEPENDENT EVIDENCE IN THE RECORD IN THIS PROCEEDING THAT CONFIRMS THE REASONABLNESS OF YOUR EQUITY COST ESTIMATE FOR KPCO?

A. Yes. At page 31 of its 2010 S.E.C. Form 10-K, KEPCO's parent company, AEP, indicates that one-half of its pension fund retirement portfolio (totaling approximately $4 Billion) is comprised of investments in common equity. In addition, AEP informs its investors that over the long term it expects to earn a return on its equity investments of 9.0%. This expected return on equity is for common stocks in general or the broad market for stocks, not for utility stocks, which have lower risk than the market. This information confirms that investors' equity return expectations (and the cost of equity capital to a firm) are modest.

In addition, based on the Company's long-term return expectations for their own equity investments, my estimate for the cost of equity capital for companies similar in risk to KPCO of 9.0% to 9.75% is conservative. It is conservative because electric utilities are less risky investments than U.S. equities as a whole (which is the basis for the Company's return expectations). Therefore, if the Company's long-term equity return expectation of 9.0% for U.S. stocks is representative of investor expectations, then a reasonable expected return for electric utilities would be below that level. The

[3] http://www.aep.com/investors/financialfilingsandreports/edgar/kentuckypower.aspx

Company's expected return on its own equity investments in the U.S. stock market falls below my estimated range for the cost of equity capital for electric utilities, indicating that my equity cost estimate is, at the very least, reasonable, and should be considered conservative.

Q. MR. HILL, ISN'T IT REASONABLE TO BELIEVE THAT PENSION FUND RETURN EXPECTATIONS ARE MODERATE (LOWER) IN ORDER TO AVOID OVERSTATEMENT OF THE FUTURE VALUE AND SUBSEQUENT UNDER-FUNDING OF THE FUND?

A. Yes. Neither the Companies nor their investment managers would use equity return expectations that are too high for its 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, it is also reasonable to believe that the Company would not significantly 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 profitability—an undesirable outcome for any company. In addition, if ultimate returns turn out to be higher than predicted through under-estimating the portfolio return, the firm will, effectively, have funded its pension requirements with internally generated funds that could have been put to other uses such as production, distribution, or required environmental facilities. Also, the Company is relying on the advice of its portfolio investment mangers and that investment firm's assessment of long-term equity return expectations for the U.S., who would 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 KPCO management (as well as AEP 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 9.0% range, cited above.

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 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. Because 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 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 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 a firm has paid all of its costs—operating costs (commodity supply costs, depreciation, equipment maintenance costs, salaries, fees, retirement obligations, property taxes), as well as income taxes and interest costs. That dollar amount of profit, divided by the book value of the common equity capital 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 the firm has $100 of equity capital on its books, the firm's earned return on equity (ROE), or it's profit, 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 market-based rate of return equity investors require for a particular risk-class of firms—in this case, electric utility operations. If the profit allowed in the ratemaking process, as a percent of the firm's equity capital, is set equal to the cost of equity capital (the investors' required market-based 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.

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 an expectational, 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, 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. Although three 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, there have been wide fluctuations in *short-term* interest rate levels over the past ten years 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 4.5% to 5.5% 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 investors turned to bonds as a safe haven. As the economic downturn moderated and a modest recovery began to appear, long-term T-bond yields returned to their historical trend.

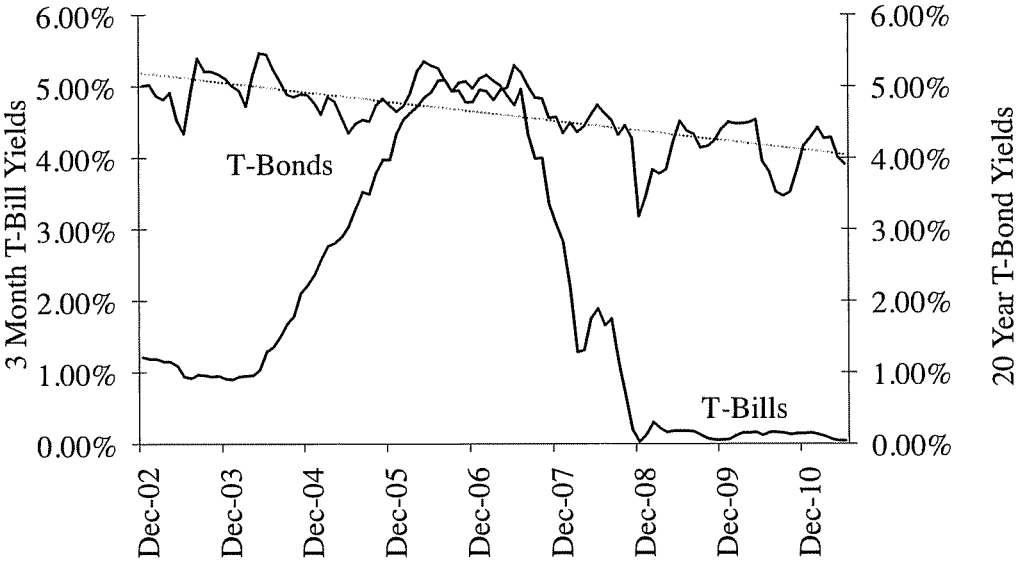
More recently, with new concerns about the international banking industry, centered primarily with the smaller economies in the European Union, long-term Treasury rates have again taken a dip below historical trends. That drop in Treasury yields results, again, from investors turning to U.S. Treasuries as reliable and safe investments. According to the most recent Federal Reserve Statistical Release H.15, the average 30-year T-Bond yield in November 2011 was only 3.0%.[4]

The interest rate data in Chart I on the next page 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 average 3-month T-Bill rate in December 2011 was only 0.01%.) 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.

[4] http://www.federalreserve.gov/Releases/H15/Current/, December 15, 2011.

Chart I.

Relative Interest Rate Changes



Data from Federal Reserve Statistical Release H.15

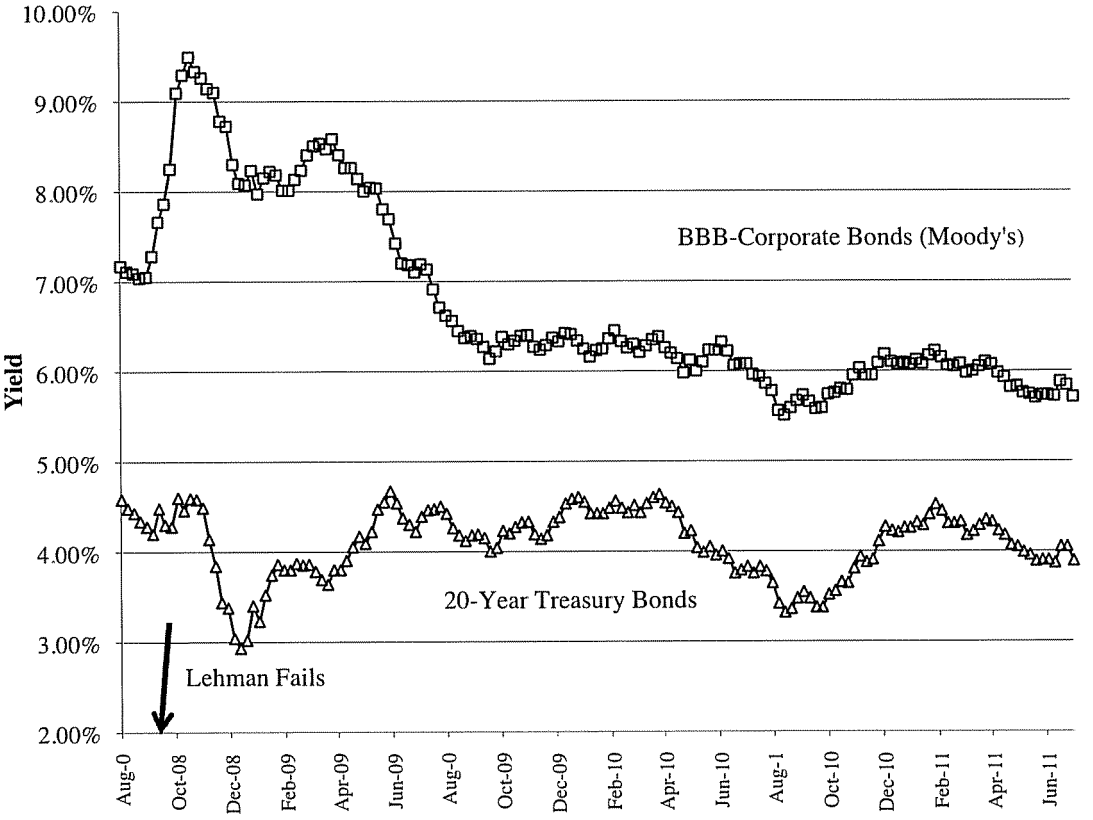
Because the market for U.S. Treasury securities remained liquid throughout the 2008/09 financial crisis and because the liquidity problems existing during that crisis eventually subsided, it is reasonable to believe that the yields on long-term Treasuries are representative of investors' general long-term risk-free return expectations. Absent the recent downturn in T-Bond yields due to international banking concerns, the trend in long-term T-Bond yields, as shown in Chart I, above, indicates a current "normative" long-term risk-free yield expectation of approximately 4%. 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, it is also important to note that 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 community 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 4%—approximately double the more normal 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 have declined substantially from the highs established in the fall of 2008. More recently, investors' concerns have eased, the stock market has rebounded (exceeding the 12,000 mark), and corporate bond yields have declined below pre-crisis levels. As a result, the yield spread differential between corporate bonds and long-term Treasury securities 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 concern that the 2008/09 financial crisis implies continuing financial difficulty for utilities would be an incorrect assessment.

Chart II also shows that bond yield spreads have increased somewhat since September of 2011 due to the European bank default concerns (the BBB Corporate-to-20-year T-Bond yield spread in November 2011 was approximately 2.5%; 50 basis points higher than normal). However, that increase is due to the decline in T-Bond yields, not an increase in corporate yields. In fact, BBB-rated corporate yields have also recently declined, just not as rapidly as long-term Treasuries.

For example, for BBB-rated utilities, Value Line reports that 25/30-year bonds are yielding an average of 4.84% over the most recent six-week period. One year ago, BBB-rated utility bonds were providing average yields of 5.97%—more than 100 basis points higher.[5] 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 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

[5] The Value Line Investment Survey, *Selection & Opinion*; the most recent six weekly editions: November 11 through December 16, 2011.

early 2009 do not represent investors' long-term expectations. Those data also indicate that investors' required return for a risk-free investment remains low by historical standards. Finally, those data available in the marketplace indicate that the most recent unease regarding international banking has had only a modest effect on bond yield spreads, which is due to the safe-haven aspect of U.S. Treasuries and not higher yields for corporate bonds. Therefore, the bond yield data available in the market place indicates that the risk-free rate of return, a fundamental element of all capital costs has declined from pre-crisis levels, corporate bond yields have declined well below pre-crisis levels, and indicate a lower cost of capital in the current economic environment.

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

A. As Value Line notes in its most recent Quarterly Economic Review, the current expectation for the U.S. economy is that recovery from the recent economic recession is likely to continue to be slow, but the economy will eventually expand at a moderate pace with the aid of accommodative Federal Reserve credit policy. Moreover, the Fed is expected to keep interest rates low until the economic recovery becomes more robust.

> **Economic Growth:** As noted the nation's economy pressed forward by 2.5% in the third quarter. Now, taken by itself, that was not a memorable performance, as it was still a percent, or so, below the rate generally seen as needed to measurably reduce the 9.0% jobless rate. More important, it is likely that this moderately better economic pace is not sustainable. In fact, we expect growth during the final three months of this year to be and the first half of 2012 to ease back to 2%, or less, as business investment, which was so potent in the recent period, figures to be more restrained, along with consumer spending and export demand. [Chart omitted]
>
> Looking our, our economic model assumes that Europe will suffer no worse than a mild recession and the China and

> much of Asia will stay on a modest growth trajectory. Over here, a further rise in industrial production [Chart omitted], modest retail improvement [Chart omitted], progressively better payroll numbers and a gradual decline in the unemployment rate [Chart omitted], and a belated turnaround in the troubled U.S. housing market, where pent-up demand is becoming a key variable [Chart omitted] are all probable next year.
>
> **Inflation:** Worries here are easing, although that is hard to tell those who shop for food, fill up their cars with gas, or heat or cool their homes. On the whole, inflation at the producer (or wholesale) and consumer levels are now showing moderating gains this year. Meanwhile, there could well be limited pressure from oil and food in 2012, as GDP growth probably will be muted. Also, with listless business and consumer demand in 2012, there figures to be a pullback in commodity process and limited wage growht. That should help to keep the so-called core rate of inflation, which excludes energy and food, under control.
>
> **Interest Rates:** Interest rates have trended mostly lower since August's "Quarterly Economic Review," with yields on the benchmark 10-year Treasury note easing from 2.17% to 2.00%. Six months ago, such yields were up at 3.18%. At the same time, the yield on the companion 30-year Treasury bond has fallen from 3.56% three months ago to 3.00% recently. Six months ago, the 30-year bond was yielding 4.30%. Concerns about Europe, China, and our own ability to sidestep a recession have led to this "flight to quality," pushing down yields in the process....Looking further out, we sense interest rates will stay near their historic lows until well into 2013. [Chart omitted] (The Value Line Investment Survey, *Selection & Opinion*, November 25, 2011, pp. 1889-1890.)

In that most recent Quarterly Economic Review cited above, Value Line projects long-term Treasury bond rates will average 3.9% through 2012 and 4.1% in 2013. According to Value Line's *Selection and Opinion,* 30-year Treasury bond yields have

averaged 3.01% over the most recent six weeks.[6] Therefore, the indicated expectation with regard to long-term interest rates is that they expected move somewhat 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, at which time interest rates and capital costs are expected to increase moderately.

III. CAPITAL STRUCTURE

Q. WHAT CAPITAL STRUCTURES IS THE COMPANY USING IN ITS FILING IN THIS CASE?

A. The Company is using its April 30, 2010 capital structure, including financing from accounts receivable and the embedded cost rates. That capital structure consisted of 43.943% common equity, 4.116% accounts receivable and 51.941% long-term debt. The Company had no short-term debt outstanding.

Q. IS THE CAPITAL STRUCTURE USED BY THE COMPANY SIMILAR TO THE MANNER IN WHICH IT HAS BEEN RECENTLY CAPITALIZED?

A. Yes. The capital structure data from the Company's response to Data Request AG-31 is shown on Schedule 1 attached to this testimony. Those data also show that KPCO's common equity ratio over the most recent five quarters approximately 45% of total capital. The capital structures shown on Schedule 1 do not include accounts receivable, making the average common equity ratio slightly higher than would obtain if that source of funding were considered. These data show that the Company's requested capital structure is representative of the manner in which KPCO is currently capitalized.

[6] The Value Line Investment Survey, *Selection & Opinion*, "Selected Yields," 11/11/11 through 12/16/11.

Q. HOW DOES KPCO'S RECENT CAPITAL STRUCTURE COMPARE TO THAT UTILIZED IN THE ELECTRIC UTILITY INDUSTRY TODAY?

A. KPCO is capitalized similarly to the electric utility industry on average. As shown on Schedule 2 attached to my testimony, the average common equity ratio of the electric utility industry is 46.3%, and the median is 45.6%. KPCO's recent average capital structue is similar to that used, on average, in the electric utility industry. For that reason, KPCO has average financial risk for an electric utility.

In my cost of equity capital analysis, which follows this discussion of capital structure, I select a sample group of 13 electric and combination electric and gas companies similar in risk to KPCO for my cost of equity analysis. According to the Februray 2012 edition of *AUS Utility Reports*, those companies have a current average common equity ratio of 45.6%—again similar to KPCO's common equity ratio. Therefore, because my cost of equity estimate is based on companies that have a similar amount of common equity and similar financial risk, the cost of common equity estimate obtained in this analysis is appropriate for KPCO.

Q. THE CAPITAL STRUCTURES YOU SHOW ON YOUR SCHEDULE 2 ARE THOSE OF THE PUBLICLY TRADED UTILITY HOLDING COMPANIES, NOT THE UTILITY SUBSIDIARIES, CORRECT?

A. Yes.

Q. WHY ARE THOSE CAPITAL STRUCTURES APPROPRIATE FOR COMPARISON WITH THE RATE-MAKING CAPITAL STRUCTURE OF KPCO— A REGULATED UTILITY SUBSIDIARY?

A. In this proceeding, the Commission will base the allowed return on equity for KPCO on the market-based cost of capital estimates of other similar-risk, publicly traded electric companies. The publicly traded companies are the parent holding companies, not the

individual regulated subsidiaries, and those publicly-traded parent companies (not the utility subsidiaries) are key to the cost of equity estimate. For example, in order to own an interest in a regulated utility, an investor must purchase shares of its parent company, and it is the financial risk inherent in the capital structure of that parent company to which the investor is exposed. Therefore, to assess the appropriate capital structure in a ratemaking proceeding (the capital structure that corresponds with the market-based cost of equity), we must turn to the capital structure of the publicly traded parent holding company, which is the capital structure of import to the investor that directly impacts the cost of common equity capital.

Q. WHICH CAPITAL STRUCTURE DO YOU RECOMMEND FOR DETERMINING THE RETURN PORTION OF THE ENVIRONMENTAL SURCHARGE AT ISSUE IN THIS PROCEEDING?

A. It is my understanding that this Commission has traditionally relied on the utility subsidiary's booked capital structure in determining an overall return for ratemaking purposes. For that reason, if this Commission elects to utilize an overall return (rather than the cost of short-term debt, which would more closely mirror the Company's actual capital costs during construction), because the Company's requested capital structure is very similar to the manner in which it has been recently capitalized, I recommend that KPCO's requested capital structure be used to determine the Company's overall return. That capital structure and embedded cost rates are shown on Company witness Munsey's Exhibit LPM-3, page 1.

Q. DOES THIS CONCLUDE YOUR DISCUSSION OF CAPITAL STRUCTURE?

A. Yes, it does.

IV. 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. As a basis for analysis, I analyzed the market data of electric and combination electric and gas companies with generation assets that also had at least 70% of revenues from electric operations, did not have a pending merger, did not have a recent dividend cut, had stable book values, and bond ratings between "A-" and "BBB-." The screening process for electric utilities is summarized on Schedule 3 attached to my testimony. All of the electric utilities followed by Value Line are shown, as well as the screening

parameters and the parameter values for each company. The electric utility companies selected for my analysis as similar in risk to KPCO are: FirstEnergy Corp. (FE), TECO Energy (TE), ALLETE (ALE), American Electric Power (AEP), Cleco Corp. (CNL), Entergy Corp. (ETR), Westar Energy (WR), Avista Corporation (AVA), Hawaiian Electric Industries (HE), PGE Corporation (PCG), Pinnacle West Capital Corp. (PNW), Portland General (POR), and UniSource Energy (UNS).[7]

B. 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 KPCO 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.

[7] In the Schedules accompanying this testimony, the sample group companies are referred to by their stock ticker symbols, shown here in parentheses.

Q. WHAT GROWTH RATE (g) DID YOU ADOPT IN DEVELOPING YOUR DCF COST OF COMMON EQUITY FOR THE COMPANIES 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%, respectively.[8] 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, average growth in earnings, dividend and book value growth of Moody's Electric Utilities was 3.34%, 3.22% and 3.66%, respectively.[9] 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

[8] www.valueline.com, Dow Jones Long Term Chart (PDF)

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

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 B, I provide an example of the determinants of a sustainable growth rate on which to base a reliable DCF estimate. In addition, in Appendix B, 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, I have not relied solely on that type of growth rate analysis. To estimate an appropriate DCF growth rate, I have also 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 ongoing 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. Exhibit_ (SGH-1), Schedule 4 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 Exhibit_ (SGH-1), Schedule 4, are Value Line's projected 2011, 2012 and 2014-2016 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, Exhibit_ (SGH-1), Schedule 4, page 2, shows that the five-year average sustainable growth rate for one of the sample companies (American Electric Power; AEP) is 4.74%. 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 simple historical averages. Continuing to focus on AEP as an example of the determination of a DCF growth rate, we see that sustainable growth has been relatively consistent throughout the historical period indicating stable growth. By the 2014—2016 period, Value Line projects AEP's sustainable growth will approximate the recent five-year average at 4.62%. These forward-looking data indicate that investors expect AEP to grow at a rate similar to the growth rate that has existed, on average, over the past five years.

At this point I should note that, while the five-year projections are given consideration in estimating a proper growth rate because they are available to and are used by investors, they are not given sole consideration. Without reviewing all the data available to investors, both projected and historic, sole reliance on projected information may be misleading. Value Line readily acknowledges to its subscribers the subjectivity necessarily presented in estimates of the future:

> "We have greater confidence in our year-ahead ranking system, which is based on proven price and earnings

momentum, than in 3- to 5-year projections." (Value Line Investment Survey, Selection and Opinion, June 7, 1991, p.854).

Another factor to consider is that AEP's book value growth is expected to increase at a 5% level over the next five years. This information tends to confirm the sustainable growth projections and shows growth rate stability for this company. Also, as shown on Exhibit_ (SGH-1), Schedule 5, page 2, which contains published growth rate information for each company, AEP's dividend growth rate, which was 2% historically, is expected to increase to a 4% rate of growth. While this shows higher growth, the projected level is below sustainable growth projections.

Earnings growth rate data available from Value Line indicate that investors can expect a similar growth rate in the future (4.5%), compared to the sustainable growth rate projections. IBES and Zacks (investor advisory services that poll institutional analysts for growth earnings rate projections) also project moderate earnings growth rate for AEP—3.23% and 4.0%, respectively—over the next five years.

AEP's projected sustainable growth is expected to approach 4.6%, and dividends are expected to increase at a 4% annual rate. Per share earnings growth is expected to range from 3.23% to 4.5%. A long-term growth rate of 4.25% is a reasonable expectation for AEP.

Q. IS THE INTERNAL (b x r) GROWTH RATE THE FINAL GROWTH RATE YOU USE IN YOUR DCF ANALYSIS?

A. No. An investor's sustainable growth rate analysis does not end upon the determination of an internal growth rate from earnings retention. Investor expectations regarding growth from external sources (sales of stock) must also be considered and examined. For AEP, page 2 of Exhibit_ (SGH-1), Schedule 4 shows that the number of outstanding shares increased at a 4.93% rate over the most recent five-year period, due primarily to an equity

issuance in 2009. Prior to 2009, AEP's shares outstanding grew at about a 1% rate. However, Value Line expects the number of shares outstanding to increase at a slower rate through the 2014—2016 period, bringing the share growth rate to a 0.79% rate by that time, due to a large issuance expected this year. An expectation of share growth of 1.75% is reasonable for this company.

Because AEP is currently trading at a market price that is 34% 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))[10] increases the investor-expected growth rate for AEP by 0.45%. Therefore, the combined internal and external growth rate for AEP is 4.70% (4.25% internal growth and 0.45% external growth).

I have included the details of my growth rate analyses for AEP 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 groups is set out in Appendix D. Exhibit_ (SGH-1), Schedule 5, page 1, attached to this testimony 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 OTHER PUBLICLY AVAILABLE, GROWTH RATE DATA?

A. Yes. Page 2 of Exhibit_ (SGH-1), Schedule 5, shows the results of my DCF growth rate analysis as well as five-year historic and projected earnings, dividends, and book value growth rates from Value Line; earnings growth rate projections from Reuters, the average of Value Line and IBES growth rates; and the five-year historical compound growth rates

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

for earnings, dividends and book value for each company under study.

My average DCF growth rate estimate for all the electric utility companies included in my analysis is 5.00%. This figure is above Value Line's projected average growth rate in earnings, dividends, and book value for those same companies (4.81%) and is also approximately equal to 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 electric companies under review is below Value Line's earnings growth rate projections—6.15%—but above the average earnings projections of IBES and Zacks (4.09% and 4.39%, respectively). Also, my growth rate estimate is above the projected dividend growth rate of the sample companies, 4.04%.

Q. SOME ANALYSTS RELY SOLELY 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 and used by investors and therefore they 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 C, 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 IBES 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.) (Brealey, Meyers, Allen, Principles of Corporate Finance, 8th Ed., McGraw-Hill Irwin, Boston, MA, (2006), p. 67)

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, IBES 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 that employs them and the company whose stock they track. Oftentimes, 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." (Investorguide.com, "University," Analysts and Earnings Estimates, www.investorguide.com/igustockanalyst.html)

Fourth, much of the academic work touted as support for reliance on earnings growth is based on data from the IBES database (now owned by Thomson); however, academic research recently published in the *Journal of Finance* indicates that there have been nonrandom, 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 IBES 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. (Lungqvist, Malloy, Marston, "Rewriting History," *The Journal of Finance*, Vol. 64, No. 4, August 2009, pp. 1935-1960)

Fifth, widely-used investor services such as Value Line publish three- to fie-year dividend and book value growth rate projections for each company it follows. Investors have equal access to all three growth rates (earnings, dividends and book value) and, it would be reasonable to assume, utilize all three when making a determination of long-term sustainable growth. Also, the Efficient Market Hypothesis (a fundamental tenet of modern finance) holds that all published material is considered by investors and is, therefore, included in stock prices, indicating that to properly evaluate the cost of capital, other growth rates besides earnings should be considered. Moreover, as noted previously, the DCF model assumes that earnings, dividends and book value all grow at the same rate. Therefore, the use of the average of those three projected growth rate parameters published in Value Line would provide a more balanced growth rate analysis than an earnings growth-only DCF model.

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

A. Yes, it does.

Q. HOW HAVE YOU CALCULATED THE DIVIDEND YIELDS?

A. I have estimated the next quarterly dividend payment of each firm analyzed and annualized them for use in determining the dividend yield. If the quarterly dividend of any company was expected to be raised in the next quarter (1st or 2nd quarter 2012), I increased the current quarterly dividend by (1+g). Because some of the sample companies had recently increased dividends or were not expected to increase dividends at all during 2012, for the utility companies in the sample groups, a dividend adjustment was necessary only for TECO, ALLETE, Westar, Avista and UniSource.

The nest quarter annualized 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.

Exhibit_ (SGH-1), Schedule 6 contains the market prices, annualized dividends and dividend yields of the utility companies under study. Exhibit_ (SGH-1), Schedule 6 indicates that the average dividend yield for the sample group of electric companies is 4.55%. The year-ahead dividend yield projection published by Value Line for the electric utility sample group is 4.59% (Value Line, *Summary & Index*, February 3, 2012). By that measure, my dividend yield calculation is representative of investor year-ahead expectations.

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

A. Exhibit_ (SGH-1), Schedule 7 shows that the average DCF cost of equity capital for the group of electric utilities is 9.55%.

C. 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 KPCO'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 obtain 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.

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 recession and inject liquidity into the financial system, the Fed has acted vigorously since the financial crisis to lower short-term interest rates. Over the most recent six-week period, T-Bills have produced an average yield of only 0.02%. During that time period Treasury Bonds have been priced to yield 3.00% (data from Value Line *Selection & Opinion*, six most recent weekly editions (12/30/11 through 2/3/12)). However, as I noted in Section II, 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 4%. Therefore, for purposes of a forward-looking CAPM analysis in this proceeding I will use 4.00% as the long-term risk-free rate.

Q. DO YOU BELIEVE THE USE OF A LONG-TERM TREASURY BOND RATE IS APPROPRIATE IN THE CAPM?

A. In the current economic environment, with short-term Treasury Bills yielding a near zero return, the use of a long-term Treasury bond would provide a more accurate indication of the risk-free return investors require and produces a more accurate estimate of investors' cost of equity. Therefore, in this testimony, I will present the CAPM cost of equity results using only long-term Treasury bond yields. With that measure of the risk-free rate, I use the corresponding measure of the market risk premium (*i.e.*, those based on the difference between stock returns and long-term Treasury bond returns).

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

A. The market risk premium is the difference between the return investors expect on stocks and the return they expect on a risk-free rate of return such as a U.S. Treasury bond. The "traditional" view, supported primarily by the earned return data over the past 80 years published by Morningstar (formerly Ibbotson Associates), is based on the historical difference between the returns on stocks and the returns on bonds. That view assumes that the returns actually earned by investors over a long period of time are representative of the returns they expect to earn in the future.

For example, the current Morningstar data show that investors have earned a return of 11.8% on stocks and 5.8% on long-term Treasury bonds since 1926.[11] Therefore, based on those historical data, it is assumed that investors will require a risk premium in the future of 6.0% above the long-term risk-free rate to invest in stocks [11.8% - 5.8% = 6.0%]. With a current long-term T-Bond yield of approximately 4.00%, that assumption indicates an investor expectation of a 10.00% return for the stock market

[11] Ibbotson SBBI 2010 Valuation Yearbook, p. 23.

in general [4.00% + 6.0% = 10.00%]. However, current research indicates that there are aspects of the Morningstar historical data set that, when examined, point not only to lower historical risk premiums than those reported by Morningstar, but also lower expected risk premiums.

Q. HAS THE RESEARCH YOU MENTION FOUND ITS WAY INTO TODAY'S FINANCE TEXTBOOKS?

A. Yes. In the 2006 edition of their widely used finance textbook, Brealey and Meyers discuss the findings of many different recent studies regarding the market risk premium.[12] Importantly, in prior editions of their textbooks Brealey et al. cited the Morningstar historical data; now they do not. Instead they cite the risk premium work of Dimson, Staunton and Marsh, authors of *Triumph of the Optimists*, in which they review a longer-term data set than that used by Morningstar and conclude that market risk premiums expected in the future are below historical averages.[13]

The textbook authors conclude, based on a review of the recent evidence regarding the market risk premium, that a reasonable range of arithmetic equity premiums above *short-term* Treasury Bills is 5% to 8%.[14]

Because the long-term historical difference in the return between T-Bonds and T-Bills has been approximately 1.2%, Brealey and Meyers' textbook indicates a long-term market risk premium relative to T-Bonds ranging from 3.8% to 6.8% [5% - 1.2% = 3.8%; 8% - 1.2% = 6.8%].[15] The mid-point of that 3.8% to 6.8% reasonable risk premium range is 5.3%. Although 5.3% is higher than other risk premium estimates, that average market risk premium added to a current T-Bond yield of 4.00%, indicates a current equity

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[12] Brealey, R., Meyers, S., Allen, F., *Principles of Corporate Finance*, 8th Edition, McGraw-Hill, Irwin, Boston MA, 2006.

[13] Dimson, E., Staunton, M., March, P., *Triumph of the Optimists: 101 Years of Global Investment Returns*, Princeton University Press, Princeton, NJ, 2002.

[14] Op cit, p. 154.

[15] Op cit, pp. 149, 222.

return expectation for U.S. equities of 9.3%. Because utility stocks are less risky than the market as a whole, an appropriate return on equity for utilities would, therefore, be lower, according to CAPM theory.

Q. WHAT HAVE YOU CHOSEN AS THE MARKET RISK PREMIUM FOR THE CAPM ANALYSIS?

A. In its 2010 edition of *Stocks, Bonds, Bills and Inflation*, Ibbotson Associates indicates that the average market risk premium between stocks and T-Bonds 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 testimony, used these long-term historical average values as estimates of the market risk premium in the CAPM analysis.

As I have noted above, recent research in the field of financial economics has shown that the market risk premium data published by Morningstar is likely to overstate investor-expected market risk premiums. Current finance textbooks (Brealey and Meyers) indicate that the long-term arithmetic average market risk premium ranges from 3.8% to 6.8%. The midpoint of Brealey and Meyer's long-term risk premium range is 5.3%, which falls within the 4.4% to 6.0% range published by Morningstar. For purposes of determining the CAPM cost of equity in this proceeding I will use the mid-point of the long-term risk premium range set out in the most recent Brealey and Meyer's text—5.3%—as well as the published Morningstar market risk premiums to develop a range of CAPM equity cost estimates.

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 0.72.

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

A. Exhibit_ (SGH-1), Schedule 8 shows that the average Value Line beta coefficient for the group of electric companies under study is 0.72. The upper end of the range of market risk premiums published by Ibbotson of 6.0% would, upon the adoption of a 0.72 beta, become a sample group premium of 4.31% (0.72 x 6.0%). That nonspecific risk premium added to the risk-free T-Bond rate of 4.00%, previously derived, yields a common equity cost rate estimate of 8.32%. Using the geometric long-term market risk premiums published by Morningstar (4.4%) and the mid-point of the Brealey and Meyer's range (5.3%) the resulting CAPM equity cost estimates range from 7.16% to 7.81%. This analysis, even at the high end (8.32%) indicates a cost of equity capital well below the standard DCF analysis.

D. MODIFIED EARNINGS-PRICE RATIO ANALYSIS

Q. PLEASE DESCRIBE THE MODIFIED EARNINGS-PRICE RATIO (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. Exhibit_ (SGH-1), Schedule 9 contains mathematical 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 1.42, 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 Exhibit_ (SGH-1), Schedule 9, 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 on equity (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 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 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, 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 midpoint 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.

The Elton and Gruber posit the following formula,

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

where "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, as I note in my Direct Testimony 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 EPR and ROE (which is my MEPR analysis) will approximate "k", the cost of equity capital.

Table I.

SUPPORT FOR THE MODIFIED EARNINGS PRICE RAITO 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 earnings price ratio (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. Exhibit_ (SGH-1), Schedule 10 shows the Zacks projected 2012 per share earnings for each of the firms in the sample group. Recent average market prices (the same market prices used in my DCF analysis), and Value Line's projected return on equity for 2012 and 2014—2016 for each of the companies are also shown.

The average earnings-price ratio for the electric sample group, 7.23%, 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 = 1.42). The sample electric Company's 2012 expected book (accounting) equity return averages 9.85%. For the

electric sample group, then, the midpoint of the earnings-price ratio and the current equity return is 8.54%.

Exhibit_ (SGH-1), Schedule 10, also shows that the average expected book equity return for the electric utilities over the next three- to five-year period increases slightly to 10.38%. The midpoint of the longer-term projected return on book equity (10.38%) and the current earnings-price ratio (7.23%) is 8.81%. 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 overstated.

E. MARKET-TO-BOOK RATIO ANALYSIS

Q. PLEASE DESCRIBE YOUR MARKET-TO-BOOK (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 C that g = br+sv,

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

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. Exhibit_ (SGH-1), Schedule 11 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 Schedule 11 utilizes current year (2012) data for the MTB analysis while page 2 utilizes Value Line's longer-term, 2014-2016 projections.

The MTB cost of equity for the sample of electric utility firms, recognizing a current average market-to-book ratio of 1.42, is 9.32% using the current year projections and 9.33% using projected three- to five-year data. Those point-in-time estimates are slightly below my DCF equity cost estimate.

F. SUMMARY

Q. PLEASE SUMMARIZE THE RESULTS OF YOUR EQUITY CAPITAL COST ANALYSES FOR THE SAMPLE GROUP OF ELECTRIC UTILITY COMPANIES SIMILAR IN RISK TO KPCO.

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

Table II.

Equity Cost Estimates

METHOD	Electric Utility Companies
DCF	9.55%
CAPM	7.81%/8.32%
MEPR	8.54%/8.81%
MTB	9.32%/9.35%

For the electric utility sample group, the DCF results are 9.55%. In addition, the corroborating cost of equity analyses (MEPR, MTB, and CAPM), indicate that the traditional DCF result may be overstated. Averaging the lowest and highest results of all the corroborative analyses for the electric companies produces an equity cost range of 8.56% to 8.82%, with a midpoint of 8.69%, 86 basis points below the DCF result OF 9.55%. 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 companies like KPCO, facing similar risks as this group of electric utilities, ranges from 9.00% to 9.75%, with a mid-point of 9.375%.

However, the Company's operating risk under the environmental surcharge is less than that under traditional regulation due, primarily, to the very short time between expenditure of capital and recovery from ratepayers. Therefore, a reasonable estimate of the current cost of equity capital for KPCO would be in the lower portion of a reasonable range of otherwise similar-risk companies, or in this instance 9.0% to 9.375%. The mid-point of the lower portion of a reasonable range would be 9.1875%, rounded to 9.20%. Therefore, if the Commission elects to use the overall cost of capital to determine the rate of return recovered on KPCO's environmental plant investment, I recommend the use of an equity return that recognizes the lower risk of Kentucky's environmental surcharge mechanism, 9.20%.

Q. IS AN EXPLICIT FLOTATION COST ALLOWANCE NECESSARY IN ORDER FOR THE COMPANY TO BE ABLE TO RAISE EQUITY CAPITAL IN THE FINANCIAL MARKETS?

A. No. An explicit adjustment to the allowed return on common equity for flotation costs is unwarranted.

First, it is often stated that stock flotation costs are like those associated with bonds and, because the costs of issuance are included in the embedded cost rate of debt, similar costs should be included in the cost of common equity. However, that concept is inapt because bonds have a fixed (contractual) cost and common stock does not. Moreover, even if it were true, the current relationship between the electric utility sample group's stock price and its book value would indicate the need for a flotation cost *reduction* to the market-based cost of equity, not an increase.

For example, when a bond is issued at a price that exceeds its face (book) value, and that difference between market price and book value is greater than the costs incurred during the issuance, the embedded cost of that debt (the cost to the company) is *lower* than the coupon rate of that debt.

In the current economic environment for the electric utility common stocks studied to determine the cost of equity in this proceeding, those stocks are selling at a market price 42% above book value. (See Exhibit_ (SGH-1), Schedule 5, p. 1) The difference between the market price of electric utility stock and book value is larger than any issuance expense the companies might incur. If common equity flotation costs were considered to be like the flotation costs of bonds and if an explicit adjustment to the cost of common equity were, therefore necessary, then the adjustment should be downward, not upward.

Second, flotation cost adjustments are often predicated on the prevention of the dilution of stockholder investment. However, the reduction of the book value of stockholder investment due to issuance expenses can occur only when the utility's stock is selling at a market price at or below its book value. As noted, the companies under review are selling at a substantial premium to book value. Therefore, every time a new share of that stock is sold, existing shareholders realize an *increase* in the per share book value of their investment. No dilution occurs, even without any explicit flotation cost allowance.

Third, the vast majority of the issuance expenses incurred in any public stock offering are "underwriter's fees" or "discounts." Underwriter's fees/discounts are not out-of-pocket expenses for the issuing company. On a per-share basis, they represent only the difference between the price the underwriter receives from the public and the price the utility receives from the underwriter for its stock. As a result, underwriter's fees are not an expense incurred by the issuing utility and recovery of such "costs" should not be included in rates.

In addition, the amount of the underwriter's fees are prominently displayed on the front page of every stock offering prospectus and, as a result, the investors who participate in those offerings (*e.g.*, brokerage firms) are quite aware that a portion of the price they pay does not go to the company but goes, instead, to the underwriters. By electing to buy the stock with that understanding, those investors have effectively accounted for those issuance costs in their risk-return framework by paying the offering price. Therefore, they do not need any additional adjustments to the allowed return of the regulated firm to "account" for those costs.

Fourth, research has shown that a specific adjustment for issuance expenses is unnecessary.[16] There are other transaction costs which, when properly considered, eliminate the need for an explicit issuance expense adjustment to equity capital costs. The transaction cost that is improperly ignored by the advocates of issuance expense adjustments is brokerage fees. Issuance expenses occur with an initial issue of stock in a primary market offering. Brokerage fees occur in the much larger secondary market where pre-existing shares are traded daily. Brokerage fees tend to increase the price of the stock to the investor to levels above that reported in the *Wall Street Journal*; i.e., the market price analysts use in a DCF analysis. Therefore, if brokerage fees were included in a DCF cost of capital estimate they would raise the effective market price, lower the

[16] "A Note on Transaction Costs and the Cost of Common Equity for a Public Utility," Habr, D., *National Regulatory Research Institute Quarterly Bulletin*, January 1988, pp. 95-103.

dividend yield and lower the investors' required return. Under a symmetrical treatment, if transaction costs that, supposedly, raise the required return (issuance expenses) are included, then those costs that lower the required return (brokerage fees) should also be included. As shown by the research noted above, those transaction costs essentially offset each other and no specific equity capital cost adjustment is warranted.

An explicit increase to the market-based cost of equity for flotation costs is unnecessary.

Q. WHAT OVERALL COST OF CAPITAL FOR KPCO'S UTILITY OPERATIONS RESULTS FROM THE APPLICATION OF AN ALLOWED EQUITY RETURN OF 9.2%?

A. As shown on Schedule 11, allowing an equity return of 9.2%, would produce an overall cost of capital of 6.99% for Kentucky Utilities using the Company's requested capital structure and embedded cost rates. In addition, Schedule 12 shows that a 9.2% return on equity allows the Companies the opportunity to earn a pre-tax return on common equity that is 2.87 greater than its interest costs. As previously noted, this level of interest coverage exceeds that realized by KPCO over the past three years and, therefore, provides the Company an opportunity to support its financial position, as required by *Hope* and *Bluefield*.

Q. DOES THIS CONCLUDE YOUR ANALYSIS OF THE COST OF EQUITY CAPITAL, MR. HILL?

A. Yes, it does.

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

A. Yes, it does.

COMMONWEALTH OF KENTUCKY
BEFORE THE PUBLIC SERVICE COMMISSION

IN THE MATTER OF: THE APPLICATION OF KENTUCKY POWER COMPANY FOR APPROVAL OF ITS 2011 ENVIRONMENTAL COMPLIANCE PLAN, FOR APPROVAL OF ITS AMENDED ENVIRONMENTAL COST RECOVERY SURCHARGE TARIFF, AND FOR THE GRANT OF A CERTIFICATE OF PUBLIC CONVENIENCE AND NECESSITY FOR THE CONSTRUCTION AND ACQUISITION OF RELATED FACILITIES	:	**Case No. 2011-00401**

AFFIDAVIT OF STEPHEN G. HILL

STATE OF WEST VIRGINIA)

COUNTY OF PUTNAM)

Comes the Affiant, and being duly sworn, deposes and states that the attached is his sworn testimony and that the statements contained are true and correct to the best of his knowledge, information and believe.

Stephen G. Hill

Sworn to and signed before me by Stephen G. Hill this 1st day of March, 2012.

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

Notary Public

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)

PRIOR EXPERIENCE

Mr. Hill, is a Certified Rate of Return Analyst, doing business as Hill Associates. He has testified in more than 270 regulatory proceedings over the past twenty eight years on cost of capital, financial, economic, and corporate governance issues related to regulated industries. He has provided testimony in electric, gas, telephone, and water utility rate proceedings as well as in proceedings related to utility diversification, deregulation, and financial policy. In those cases, he has testified on behalf of consumer advocates, attorneys general and utility commissions. In addition, he has testified on cost of capital issues in auto, homeowners and workers' compensation insurance rate proceedings. Mr. Hill has also been an advisor to the Arizona Corporation Commission on matters of utility finance in bankruptcy proceedings.

Mr. Hill has testified before 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 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.

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 the benefit of 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 identifies the growth rate,[1] 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 4.0%, just as in the previous hypothetical. Then, in the last three years, the sustainable growth rate increases to 6.0% (g = br = 0.4 x 15%). If the regulated firm was 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% ($g = br = 0.2 \times 10\%$) 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

FE – First Energy - FE's sustainable growth rate has averaged 6.10% over the most recent five-year period (2006-2010). In the most recent year, the company's sustainable growth was below that five-year average indicating a declining trend. Value Line (VL) expects FE's sustainable growth to continue near that more recent growth rate level and reach approximately 3.9% by the 2014-2016 period. However, countering the lower growth indication, FE's book value growth rate is expected to be 5.0% over the next five years, higher than the historical growth of 1.0%, and above sustainable growth projections. FE's earnings per share are projected to increase at a 0.5% (VL) rate, while Zacks and IBES publish growth rate expectations for this company of 1% and 1.85%, respectively. Over the past five years, FE's earnings growth was 9.0% but its dividends increased at a 5% rate, according to Value Line. Also, dividends are expected to grow at a 0.5% rate over the next three to five-year period, moderating long-term growth expectations. Investors can reasonably expect long-term sustainable growth rate in the future to be lower than the past; a growth rate of **4.0%** is reasonable for FE.

Regarding share growth, FE's shares outstanding increased at a negative 1.14% rate over the past five years. A large number of shares was issued in the acquisition of Allegheny Energy in 2011. Following that increase in the number of shares outstanding (which would not be expected to be continuing in nature), FE's shares are not expected to increase. An expectation of share growth of **0%** for this company is reasonable.

TE – TECO Energy - TE's sustainable growth rate averaged 2.97% over the five-year historical period, with higher results in 2010. Absent negative results in 2008, the historical average growth was 3.79%. VL projects that the internal growth will, rebound through 2014-16, bringing sustainable growth to 5.6%. TE's book value, which increased at a 5% rate during the most recent five years, is expected to maintain that 5% rate in the future. That projected book value growth rate is slightly lower, but similar to growth indicated by the sustainable growth measure. TE's earnings per share are projected to increase at 10.5% (VL) to 4.9% (IBES), and 4.67% (Zack's) rates. Value Line's earnings growth expectation is predicated on the assumption of a 30% increase in TE's ROE. That growth rate would not be sustainable unless it is assumed that TE's ROE will increase 30% every five years into the indefinite future—an unlikely scenario. TE's dividends are expected to grow at a 4.5% rate, up considerably from negative 5% historically but below earnings growth expectations. Historically TE's earnings grew at a 12.5% rate, according to Value Line. The compound earnings growth over the past five years was only 2.13%, however. The projected sustainable growth indicate that investors can expect the growth from TE in the future to be higher than that which has existed in the past, and projected dividend growth confirms higher growth, but are below average earnings growth

projections. Investors can reasonably expect a sustainable growth rate of **5.25%** for TE—well above historical averages.

Regarding share growth, TE's shares outstanding showed a 0.64% rate of increase over the past five years. TE's growth rate in shares outstanding is expected to show a 0.47% rate of increase through 2014-16. An expectation of share growth of **0.5%** for this company is reasonable.

ALE – ALLETE – ALE's sustainable growth rate has averaged 3.38% over the most recent five-year period, with much lower growth in the most recent year. VL expects ALE's sustainable growth to continue at a rate near historical averages and reach 3.8% by the 2014-16 period. ALE's book value growth rate is expected to be 3.5% over the next five years, lower than the 5% rate of growth experienced over the past five years. ALE's earnings per share are projected to increase at 6% according to Value Line, while IBES and Zack's project somewhat lower growth (5% IBES and Zacks). Value Line also projects a 2% growth in dividends, below the sustainable growth indications. Also Value Line shows historical earnings growth of 3.5% for this company. Investors can reasonably expect lower growth rate in the future, but not as high as the current earnings growth rate estimates—**3.75%** for ALE is reasonable.

Regarding share growth, ALE's shares outstanding increased at approximately a 4% rate over the past five years, due to an equity issuance in 2009. The number of shares is expected to grow at a 2.24% rate through 2014-16. An expectation of share growth of **3%** for this company is reasonable.

AEP- American Electric Power- AEP's sustainable growth rate has averaged 4.74% over the most recent five-year period. VL expects AEP's sustainable growth to decrease slightly to a level of 4.62% by the 2014-2016 period; showing overall stability. AEP's book value growth rate is expected to increase at a 5% rate over the next five years, equal to the 5% book value growth over the past five years. Both sustainable growth and book value growth point to relative growth rate stability for this company. AEP's earnings per share are projected to increase at 4.5% (VL), to 3.23% (IBES) and 4% (Zack's)—all below the indicated projected internal growth rate, but in relatively close agreement. Also, AEP's dividends are expected to grow at 4.0%. The average projected earnings, dividends and book value for this company is 4.50%. Investors can reasonably expect a sustainable growth rate in the future of **4.25%** for AEP.

Regarding share growth, AEP's shares outstanding increased at a 4.93% 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. The number of shares outstanding in 2014-2016 is expected to show about a 0.79% increase from 2010 levels. An expectation of share growth of **1.75%** for this company is reasonable.

CNL – Cleco Corp. - CNL's sustainable growth rate averaged 4.10% for the five-year period, with the results in the most recent year above that average. VL expects sustainable growth to continue at a near-4% level through the 2014-16

period. CNL's book value growth is expected to increase at a 6.5% rate, well below the historical level of 11.0%, established during the building of a new generating plant, but above sustainable growth indications. CNL's earnings per share are projected to show 6.0% growth over the next five years, according to Value Line (IBES projects 3% earnings growth & Zacks earnngs projections were not available for this company). Historically CNL's earnings increased at a 7.5% rate, according to Value Line. CNL's dividend growth, which has held to 0.5% over the past five years is expected to expand to 9.5% 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, at lower overall levels than indicated by 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 1.26% rate over the past five years. The growth in the number of shares is expected by VL to be 0.06% through 2014-16. An expectation of share growth of **0.5%** for this company is reasonable.

ETR – Entergy Corp. - ETR's internal sustainable growth rate has averaged 7.79% over the most recent five-year period (2006-2010). Sustainable growth is expected to decline to about 4.85% by the 2014-2016 period. However, ETR's book value growth rate is expected to be 5.5% over the next five years—an increase from the 4% rate of growth experienced over the past five years—pointing to higher growth expectations for the future. The projected and historical book value growth (5.5% and 4%) bracket the projected sustainable growth, 4.85%, for this company. ETR's earnings per share are projected to increase at a rate of from 0.5% (VL), 2% (Zack's) to negative 3.5% (IBES). ETR's dividends are expected to grow at a 2.0% rate, down from an historical rate of 10.5%-- a substantial decline, moderating long-term growth expectations. Over the past five years, ETR's earnings grew at a 10% rate according to Value Line. Five-year historical compound earnings growth was lower, at 6.66%. Value Line's average earnings, dividend and book value growth rate for this company is 2.67%. These data indicate that investors can reasonably expect a sustainable growth rate in the future below past averages. Therefore, **4.75%** is a reasonable long-term growth expectation for ETR.

Regarding share growth, ETR's shares outstanding grew at a –3.09% rate over the past five years. The number of shares outstanding is projected by VL to decrease at a 0.77% rate through 2014-16. An expectation of share growth of **0%** for this company is reasonable.

WR – Westar Energy, Inc.- WR's sustainable growth rate has averaged 2.51% over the most recent five-year period, with lower growth in recent years. However, Value Line expects WR's sustainable growth to increase to 4% by the 2014-2016 period. However, WR's book value growth rate is expected to be

2.5% over the next five years, down substantially from the 6% rate of growth experienced over the past five years, and below sustainable growth projections. Also, WR's earnings per share are projected to increase at a rate of from 8.5% (Value Line), to 5.2% (IBES), to 6.09% (Zack's). The 8.5% earnings growth projected by Value Line includes the assumption that ROE will increase 33%. Over the past five years, WR's earnings growth was 1% according to Value Line. Compound 5-year historical earnings growth over the past five years for WR was negative 1.4%. Historically, dividends grew at a 7% rate, and 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 4.67%. Investors can reasonably expect a higher sustainable growth over the long term — **4.5%** for WR is reasonable.

Regarding share growth, WR's shares outstanding increased at about a 6.4% rate over the past five years. The number of shares is expected to increase at a 2.68% rate through 2014-16. An expectation of share growth of **3.25%** for this company is reasonable.

AVA – Avista Corporation - AVA's sustainable growth rate has averaged 3.3% over the most recent five-year period (2006-2010). However, VL expects AVA's sustainable growth to decline below that historical growth rate level, and to reach 2.7% by the 2014-2016 period. AVA's book value growth rate is expected to be 3.0% over the next five years, also below the 4% rate of growth experienced over the past five years—indicating lower growth for this company. AVA's earnings per share are projected to increase at 4.5% (Value Line), 4.5% (IBES), and 4.67% (Zack's) rate. The company's dividends are expected to show 9% growth over the next five years, increasing long-term growth expectations. Investors can reasonably expect a sustainable growth rate in the future of **4.5%** for AVA.

Regarding share growth, AVA's shares outstanding grew at a 2.13% rate over the past five years. The number of shares is projected by VL to show a 1.32% rate of increase through the 2014-16 period. An expectation of share growth of **1.5%** for this company is reasonable.

HE – Hawaiian Electric - HE's sustainable growth rate has averaged -0.7% over the most recent five year period (2006-2010). However, VL expects HE's sustainable growth to increase from that historical growth rate level to reach approximately 3.7% by the 2014-2016 period. HE's book value growth rate is expected to be 3.5% over the next five years, up significantly from the 1% rate of growth experienced over the past five years. HE's earnings per share are projected to increase at an 11.0% (Value Line) to 8.03% (Zack's) to 13.1% (IBES) rate. Underlying those 3- to 5-year earnings growth projections is the assumption of the earned return increasing 60% from 6.7% in 2008-2010 to 10.5% in 2014-2016. That sort of increase in earned return is not sustainable for the indefinite future (i.e., it is unlikely that the earned ROE could continue to increase 60% every five years), and those earnings projections would not represent investors' expectations of the long-term sustainable rate of growth required in the DCF. HE's dividends are expected to show 1% growth over the next five years, moderating long-term

growth expectations. Over the past five years, HE's earnings grew at a -6% rate, according to Value Line, while its dividends showed no increase, though the company maintained its dividend payment to investors. Investors can reasonably expect a sustainable growth rate in the future of **4.00%** for HE.

Regarding share growth, HE's shares outstanding grew at a 3.83% rate over the past five years due mainly to an equity issuance in 2008. Prior to that, the shares outstanding grew at a 1.5% rate. The number of shares is projected by VL to show a 3.04% rate of increase through the 2014-16 period. An expectation of share growth of **3.0%** for this company is reasonable.

PCG – PGE Corporation – PCG's sustainable growth rate has averaged 5.45% over the most recent five-year period, with 3.4% growth in the most recent year. VL expects PCG's sustainable growth to reach 5.5% through the 2014-16 period, showing stable growth. PCG's book value growth rate is expected to be 5.0% over the next five years, down substantially from the 10.5% rate of growth experienced over the past five years indicating moderating growth in the future. Projected book value growth is, however, similar to sustainable internal growth projections. Also, PCG's earnings per share are projected to increase at 5% according to Value Line (1.45% IBES and 4.27% Zacks). Value Line also projects a 3.0% growth in dividends, which are recovering from a dividend omission during the previous five years, but are below the sustainable growth indications. Investors can reasonably expect a stable sustainable growth rate in the future, but not as high as the current earnings growth rate estimates— **5.25%** for PCG is reasonable.

Regarding share growth, PCG's shares outstanding increased at approximately a 3.2% rate over the past five years. The number of shares is expected to grow at a 1.46% rate through 2014-16. An expectation of share growth of **2.0%** for this company is reasonable.

PNW — Pinnacle West - PNW's sustainable growth rate has averaged 1.84% over the most recent five-year period with higher growth in the most recent year. VL expects PNW's sustainable growth to rise above that historical average growth rate level to almost 3% by the 2014-2016 period. PNW's book value growth rate is expected to be 2.5% over the next five years, greater than the 0.5% rate of book value growth experienced over the past five years. PNW's earnings per share are projected to increase at a 6% (VL) to 5.6% (IBES) to 5.33% (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 much more moderate long-term growth rate expectations. Over the past five years, PNW's earnings growth was 0.5% while its dividends increased at a 3% 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 **3.5%** for PNW.

Regarding share growth, PNW's shares outstanding increased at a 2.13% rate over the past five years. The number of shares outstanding in 2014-2016 is expected to show a 2.49% increase from 2010 levels. An expectation of share growth of **2.25%** for this company is reasonable.

POR – Portland General- POR's sustainable growth rate has averaged 3.05% over the most recent five-year period. Value Line expects POR's sustainable growth to increase to 4.2% by the 2014-2016 period. POR's book value growth rate is expected to be 3.0% over the next five years, below sustainable growth projections, but above historical book value growth (2%). Also, POR's earnings per share are projected to increase at a rate of from 7.5% (Value Line), to 5.9% (IBES), to 5.0% (Zack's). Value Line reports historical earnings, and book value growth for this company of 7.5%, and 2%. The average Value Line projected earnings, dividend and book value growth is 4.5%. Investors can reasonably expect a higher sustainable growth over the long term — **4.25%** for POR is reasonable.

Regarding share growth, POR's shares outstanding increased at about a 4.8% rate over the past five years, due to an equity issuance in 2009. Prior to that annual share growth was very low (0.04%). The number of shares is expected to increase at a 0.25% rate through 2014-16. An expectation of share growth of **1.0%** for this company is reasonable.

UNS – UniSource Energy - UNS's sustainable growth rate has averaged 4.05% over the most recent five-year period, including a negative year in 2008. Value Line expects UNS's sustainable growth to increase to approximately 4.95% by the 2014-2016 period. Also, UNS's book value growth rate is expected to be 5% over the next five years, similar to the 4.5% rate of growth experienced over the past five years, and approximately equal to sustainable growth projections. UNS's earnings per share are projected to increase at a rate of from 9.5% (Value Line), to 3% (IBES) and 2.6% (Zack's)—a wide range. Over the past five years, UNS's earnings growth was 8.5% according to Value Line. Historically, dividends grew at a 13% rate, but Value Line expects that rate to decline to 9% over the next five years. Investors can reasonably expect a higher sustainable growth over the long term — **5.5%** for UNS is reasonable.

Regarding share growth, UNS's shares outstanding increased at a 0.95% rate over the past five years. The number of shares is expected to increase at a 0.79% rate through 2014-16. An expectation of share growth of **0.75%** for this company is reasonable.

Exhibit _(SGH-1)
Schedule 1

KENTUCKY POWER COMPANY
RECENT CAPITAL STRUCURES
9/30/10-9/30/11

AMOUNT (000)

Type of Capital	**9/30/10**	**12/31/10**	**3/31/11**	**6/30/11**	**9/30/11**	AVERAGE
Common Equity	$434,919	$446,216	$458,221	$456,789	$460,487	$451,326
Short-term Debt	$0	$10	$0	$0	$0	$2
Long-term Debt	$548,847	$548,888	$548,930	$548,972	$549,013	$548,930
Total Capital	$983,766	$995,114	$1,007,151	$1,005,761	$1,009,500	$1,000,258

PERCENT

Type of Capital	**12/31/09**	**12/30/10**	**3/31/11**	**3/31/11**	**3/31/11**	AVERAGE
Common Equity	44.21%	44.84%	45.50%	45.42%	45.62%	45.12%
Short-term Debt	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Long-term Debt	55.79%	55.16%	54.50%	54.58%	54.38%	54.88%
Total	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%

Data from Company response to AG-31.

KENTUCKY POWER COMPANY
ELECTRIC UTILITY INDUSTRY COMMON EQUITY RATIOS

ELECTRIC COMPANIES	EQUITY RATIO
ALLETE, Inc. (NYSE-ALE)	54.9
American Electric Power Co. (NYSE-AEP)	45.2
Central Vermont Public Serv. Corp. (NYSE-CV)	51.9
Cleco Corporation (NYSE-CNL)	50.4
Edison International (NYSE-EIX)	42.9
El Paso Electric Company (NYSE-EE)	48.4
FirstEnergy Corporation (ASE-FE)	42.4
Great Plains Energy Incorporated (NYSE-GXP)	43.5
Hawaiian Electric Industries, Inc. (NYSE-HE)	48.0
IDACORP, Inc. (NYSE-IDA)	51.8
Nextera Energy (NYSE-NEE)	39.8
Otter Tail Corporation (NDQ-OTTR)	56.0
Pinnacle West Capital Corp. (NYSE-PNW)	49.1
PNM Resources, Inc. (NYSE-PNM)	44.9
Portland General Electric (NYSE-POR)	47.9
Progress Energy Inc. (NYSE-PGN)	44.1
Southern Company (NYSE-SO)	47.9
Westar Energy, Inc. (NYSE-WR)	44.8
INDUSTRY AVERAGE	**46.3**
INDUSTRY MEDIAN	**45.6**

Data from AUS Utility Reports, February 2012, pp. 8, 12.

COMBINATION GAS & ELECTRIC COMPANIES	EQUITY RATIO
Alliant Energy Corporation (NYSE-LNT)	51.7
Ameren Corporation (NYSE-AEE)	52.1
Avista Corporation (NYSE-AVA)	46.3
Black Hills Corporation (NYSE-BKH)	39.8
CenterPoint Energy (NYSE-CNP)	31.7
CH Energy Group, Inc. (NYSE-CHG)	47.7
Chesapeake Utilities Corporation (NYSE-CPK)	60.8
CMS Energy Corporation (NYSE-CMS)	29.2
Consolidated Edison, Inc. (NYSE-ED)	51.7
Constellation Energy Group, Inc. (NYSE-CEG)	60.4
Dominion Resources, Inc. (NYSE-D)	37.3
DTE Energy Company (NYSE-DTE)	46.4
Duke Energy Corporation (NYSE-DUK)	54.5
Empire District Electric Co. (NYSE-EDE)	49.5
Entergy Corporation (NYSE-ETR)	41.5
Exelon Corporation (NYSE-EXC)	49.6
Integrys Energy Group (NYSE-TEG)	56.0
MDU Resources Group, Inc. (NYSE-MDU)	65.9
MGE Energy, Inc. (NYSE-MGEE)	60.2
NiSource Inc. (NYSE-NI)	39.7
Northeast Utilities (NYSE-NU)	44.4
Northwestern Corporation (NYSE-NWE)	44.2
NSTAR (NYSE-NST)	44.3
NV Energy (NYSE-NVE)	40.1
OGE Energy Corp. (NYSE-OGE)	45.6
Pepco Holdings, Inc. (NYSE-POM)	47.3
PG&E Corporation (NYSE-PCG)	48.0
PPL Corporation (NYSE-PPL)	36.5
Public Service Enterprise Group (NYSE-PEG)	53.7
SCANA Corporation (NYSE-SCG)	42.3
SEMPRA Energy (NYSE-SRE)	45.9
TECO Energy, Inc. (NYSE-TE)	42.4
UGI Corporation (NYSE-UGI)	44.1
UIL Holdings Corporation (NYSE-UIL)	39.1
UniSource Energy Corporation (NYSE-UNS)	32.1
Unitil Corporation (ASE-UTL)	33.7
Vectren Corporation (NYSE-VVC)	42.9
Wisconsin Energy Corporation (NYSE-WEC)	43.4
Xcel Energy Inc. (NYSE-XEL)	45.6

KENTUCKY POWER COMPANY
ELECTRIC UTILITY SAMPLE GROUP SELECTION

	Company Name	Revenues % Electric	Pending Merger?	Recent Div. Cut?	Generation Assets?	Stable Book Value?	Bond Rating S&P	Bond Rating Moody's	Selected
	SCREEN	≥70%	no	no	yes	yes	A- to BBB-		
EAST									
e+g	CH Energy	55	no	no	yes	yes	A	A3	
e	Central Vermont P. S.	100	yes	no	yes	yes	NR	Baa1	
e+g	Consolidated Edison	69	no	no	no	yes	A-	A3/Baa1	
e+g	Constellation Energy	17	yes	yes	yes	yes	BBB+	Baa2	
e+g	Dominion Resources	48	no	no	yes	yes	A	Baa1/Baa2	
e+g	Duke Energy	73	yes	no	yes	yes	A-	A2	
e+g	Exelon Corp.	50	yes	no	yes	yes	A-	A2/A3	
e	FirstEnergy Corp.	75	no	no	yes	yes	BBB	Baa1	√
e	NextEra Energy	72	no	no	yes	yes	A	Aa3	
e+g	Northeast Utilities	86	yes	no	yes	yes	BBB+	A3	
e+g	NSTAR	85	yes	no	no	yes	AA-/A+	A1	
e	PPL Corporation	54	no	no	yes	yes	A-	A3	
e+g	Pepco Holdings, Inc.	73	no	no	no	yes	A	A3	
e	Progress Energy	100	yes	no	yes	yes	A/A-	A1/A2	
e+g	Public Service Ent. Gp.	44	no	no	yes	yes	A-	A2	
e+g	SCANA Corp.	54	no	no	yes	yes	A-	A3	
e	Southern Company	99	no	no	yes	yes	A	A2/A3	
e+g	TECO Energy	75	no	no	yes	yes	BBB	Baa1	√
e	UIL Holdings Corp.	54	no	no	no	yes	NR	Baa2	
CENTRAL									
e	ALLETE	91	no	no	yes	yes	A-	Baa1	√
e+g	Alliant Energy	73	no	no	yes	yes	A-/BBB+	A2/A3	
e+g	Ameren Corp.	86	no	yes	yes	yes	BBB-	Baa2	
e	American Eelectric Power	93	no	no	yes	yes	BBB	Baa2	√
e+g	CMS Energy Corp.	59	no	yes	yes	yes	BBB+	A3	
e+g	CenterPoint Energy	26	no	no	no	yes	BBB+	A3	
e	Cleco Corporation	97	no	no	yes	yes	BBB	Baa2	√
e+g	DTE Energy	58	no	no	yes	yes	A	A2	
e+g	Empire District Electric	91	no	yes	yes	yes	BBB+	A3	
e+g	Entergy Corp.	77	no	no	yes	yes	A-/BBB+	Baa1	√
e	Great Plains Energy	100	no	yes	yes	yes	BBB	Baa2	
e+g	ITC Holdings	100	no	no	no	no	A-	A1	
e+g	Intergrys Energy	27	no	no	yes	yes	A-/BBB+	A2/A3	
e+g	MGE Energy	68	no	no	yes	yes	AA-	A1	
e+g	OGE Energy Corp.	57	no	no	yes	yes	BBB +	Baa1	
e	Otter Tail Corp.	29	no	no	yes	yes	BBB-/BB+	Baa2	
e+g	Vectren Corp.	28	no	no	yes	yes	A-	A2	
e	Westar Energy	100	no	no	yes	yes	BBB+	Baa1	√
e+g	Wisconsin Energy	70	no	no	yes	yes	A-	A1	
WEST									
e+g	Avista Corp.	52	no	no	yes	yes	A-	Baa1	√
e+g	Black Hills Corp.	46	no	no	yes	yes	BBB+	A3	
e	Edison International	82	no	no	yes	yes	BBB+	A1	
e	El Paso Electric	63	no	yes	yes	yes	BBB	Baa2	
e	Hawaiian Electric	91	no	no	yes	yes	BBB-	Baa2	√
e	IDACORP, Inc.	100	no	no	yes	yes	A-	A2	
e+g	NV Energy Inc.	94	no	yes	yes	yes	BBB	Ba2	
e+g	PG&E Corp.	78	no	no	yes	yes	BBB	A3	√
e	PNM Resources	77	no	yes	yes	yes	BBB/BBB-	Baa2	
e	Pinnacle West Capital	99	no	no	yes	yes	BBB-	Baa2	√
e	Portland General	99	no	no	yes	yes	A-	A3	√
e+g	Sempra Energy	27	no	no	yes	yes	A+	Aa3	
e	UniSource Energy	84	no	no	yes	yes	BBB+	NR	√
e+g	Xcel Energy, Inc.	82	no	no	yes	yes	A	A3	

e= electric company; e+g=combination electric and gas company
Data from Value Line Ratings and Reports, Nov. 25,Dec. 23, 2011 and Feb. 3, 2012; AUS Utility Reports, Feb. 2012.
Avista and TECO selected for sample size and because total regulated revenues equalled 98% and 75% of total revenues, respectively.

KENTUCKY POWER COMPANY
DCF GROWTH RATE PARAMETERS
ELECTRIC UTILITIES

COMPANY	INTERNAL GROWTH				EXTERNAL GROWTH	
FE	RETENTION RATIO	EQUITY RETURN	"g"	BOOK VALUE ($/SHARE)	SHARES OUTST (MILLIONS)	SHARE GROWTH
2006	0.5157	13.9%	7.17%	28.30	319.21	
2007	0.5142	14.6%	7.51%	29.45	304.84	
2008	0.4977	16.2%	8.06%	27.17	304.84	
2009	0.3373	11.9%	4.01%	28.08	304.84	
2010	0.3231	11.6%	3.75%	28.03	304.84	
AVERAGE GROWTH			6.10%	1.00%		-1.14%
2011	0.1200	07.5%	0.90%		418.22	37.19%
2012	0.3529	10.5%	3.71%		418.22	17.13%
2014-2016	0.3867	10.0%	3.87%	5.00%	418.22	6.53%

COMPANY	INTERNAL GROWTH				EXTERNAL GROWTH	
TE	RETENTION RATIO	EQUITY RETURN	"g"	BOOK VALUE ($/SHARE)	SHARES OUTST (MILLIONS)	SHARE GROWTH
2006	0.3504	14.1%	4.94%	8.25	209.50	
2007	0.3858	13.2%	5.09%	9.56	210.90	
2008	-0.0390	08.1%	-0.32%	9.43	212.90	
2009	0.2000	10.3%	2.06%	9.75	213.90	
2010	0.2743	11.2%	3.07%	10.10	214.90	
AVERAGE GROWTH			2.97%	5.00%		0.64%
2011	0.3462	12.5%	4.33%		216.00	0.51%
2012	0.3862	13.0%	5.02%		217.00	0.49%
2014-2016	0.4000	14.0%	5.60%	5.00%	220.00	0.47%

COMPANY	INTERNAL GROWTH				EXTERNAL GROWTH	
ALE	RETENTION RATIO	EQUITY RETURN	"g"	BOOK VALUE ($/SHARE)	SHARES OUTST (MILLIONS)	SHARE GROWTH
2006	0.4765	11.6%	5.53%	21.90	30.40	
2007	0.4675	11.8%	5.52%	24.11	30.80	
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	
AVERAGE GROWTH			3.38%	5.00%		4.17%
2011	0.3283	09.0%	2.95%		37.00	3.35%
2012	0.3208	09.0%	2.89%		38.20	3.30%
2014-2016	0.4000	09.5%	3.80%	3.50%	40.00	2.24%

KENTUCKY POWER COMPANY
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
2006	0.4755	12.0%	5.71%	23.73	396.67	
2007	0.4476	11.4%	5.10%	25.17	400.43	
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	
AVERAGE GROWTH			4.74%	5.00%		4.93%
2011	0.4127	10.5%	4.33%		484.00	0.66%
2012	0.4154	10.5%	4.36%		488.00	0.74%
2014-2016	0.4400	10.5%	4.62%	5.00%	500.00	0.79%

COMPANY	INTERNAL GROWTH				EXTERNAL GROWTH	
CNL	RETENTION RATIO	EQUITY RETURN	"g"	BOOK VALUE ($/SHARE)	SHARES OUTST (MILLIONS)	SHARE GROWTH
2006	0.3382	08.3%	2.81%	15.22	57.57	
2007	0.3182	07.8%	2.48%	16.85	59.94	
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	
AVERAGE GROWTH			4.10%	11.00%		1.26%
2011	0.5429	10.5%	5.70%		60.70	0.28%
2012	0.4792	09.5%	4.55%		60.70	0.14%
2014-2016	0.4182	09.5%	3.97%	6.50%	60.70	0.06%

COMPANY	INTERNAL GROWTH				EXTERNAL GROWTH	
ETR	RETENTION RATIO	EQUITY RETURN	"g"	BOOK VALUE ($/SHARE)	SHARES OUTST (MILLIONS)	SHARE GROWTH
2006	0.5970	13.8%	8.24%	40.45	202.67	
2007	0.5393	14.4%	7.77%	40.71	193.12	
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	
AVERAGE GROWTH			7.79%	4.00%		-3.09%
2011	0.5514	14.5%	7.99%		176.00	-1.54%
2012	0.4467	11.0%	4.91%		176.00	-0.77%
2014-2016	0.4615	10.5%	4.85%	5.50%	171.00	-0.88%

KENTUCKY POWER COMPANY
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
2006	0.4787	10.7%	5.12%	17.62	87.39	
2007	0.4130	09.2%	3.80%	19.14	95.46	
2008	0.1145	06.2%	0.71%	20.18	108.31	
2009	0.0625	06.2%	0.39%	20.59	109.07	
2010	0.3111	08.2%	2.55%	21.25	112.13	
AVERAGE GROWTH			2.51%	6.00%		6.43%
2011	0.2686	08.0%	2.15%		117.50	4.79%
2012	0.3053	08.0%	2.44%		120.00	3.45%
2014-2016	0.4000	10.0%	4.00%	2.50%	128.00	2.68%

COMPANY	INTERNAL GROWTH				EXTERNAL GROWTH	
AVA	RETENTION RATIO	EQUITY RETURN	"g"	BOOK VALUE ($/SHARE)	SHARES OUTST (MILLIONS)	SHARE GROWTH
2006	0.6122	08.0%	4.90%	17.46	52.51	
2007	0.1667	04.2%	0.70%	17.27	52.91	
2008	0.4926	07.4%	3.65%	18.30	54.49	
2009	0.4873	08.3%	4.04%	19.17	54.84	
2010	0.3939	08.2%	3.23%	19.71	57.12	
AVERAGE GROWTH			3.30%	4.00%		2.13%
2011	0.3714	08.5%	3.16%		58.50	2.42%
2012	0.3444	08.5%	2.93%		59.50	2.06%
2014-2016	0.3000	09.0%	2.70%	3.00%	61.00	1.32%

COMPANY	INTERNAL GROWTH				EXTERNAL GROWTH	
HE	RETENTION RATIO	EQUITY RETURN	"g"	BOOK VALUE ($/SHARE)	SHARES OUTST (MILLIONS)	SHARE GROWTH
2006	0.0677	09.9%	0.67%	13.44	81.46	
2007	-0.1171	07.2%	-0.84%	15.29	83.43	
2008	-0.1589	06.5%	-1.03%	15.35	90.52	
2009	-0.3626	05.8%	-2.10%	15.58	92.52	
2010	-0.0248	07.7%	-0.19%	15.67	94.69	
AVERAGE GROWTH			-0.70%	1.00%		3.83%
2011	0.1733	09.0%	1.56%		96.00	1.38%
2012	0.2706	10.0%	2.71%		98.00	1.73%
2014-2016	0.3500	10.5%	3.68%	3.50%	110.00	3.04%

KENTUCKY POWER COMPANY
DCF GROWTH RATE PARAMETERS
ELECTRIC UTILITIES

COMPANY	INTERNAL GROWTH				EXTERNAL GROWTH	
PCG	RETENTION RATIO	EQUITY RETURN	"g"	BOOK VALUE ($/SHARE)	SHARES OUTST (MILLIONS)	SHARE GROWTH
2006	0.5217	12.7%	6.63%	22.44	348.14	
2007	0.4820	11.8%	5.69%	24.18	353.72	
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	
AVERAGE GROWTH			5.45%	10.50%		3.22%
2011	0.3500	09.5%	3.33%		406.00	2.72%
2012	0.3831	09.5%	3.64%		420.00	3.09%
2014-2016	0.5000	11.0%	5.50%	5.00%	425.00	1.46%

COMPANY	INTERNAL GROWTH				EXTERNAL GROWTH	
PNW	RETENTION RATIO	EQUITY RETURN	"g"	BOOK VALUE ($/SHARE)	SHARES OUTST (MILLIONS)	SHARE GROWTH
2006	0.3596	09.2%	3.31%	34.48	99.96	
2007	0.2905	08.5%	2.47%	35.15	100.49	
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	
AVERAGE GROWTH			1.84%	0.50%		2.13%
2011	0.2759	08.5%	2.34%		109.25	0.44%
2012	0.3636	09.0%	3.27%		110.00	0.56%
2014-2016	0.3286	09.0%	2.96%	2.50%	123.00	2.49%

COMPANY	INTERNAL GROWTH				EXTERNAL GROWTH	
POR	RETENTION RATIO	EQUITY RETURN	"g"	BOOK VALUE ($/SHARE)	SHARES OUTST (MILLIONS)	SHARE GROWTH
2006	0.4035	05.8%	2.34%	19.58	62.50	
2007	0.6009	11.0%	6.61%	21.05	62.53	
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	
AVERAGE GROWTH			3.05%	2.00%		4.77%
2011	0.4564	09.0%	4.11%		75.35	0.04%
2012	0.4600	08.5%	3.91%		75.50	0.12%
2014-2016	0.4667	09.0%	4.20%	3.00%	76.25	0.25%

KENTUCKY POWER COMPANY
DCF GROWTH RATE PARAMETERS
ELECTRIC UTILITIES

COMPANY	INTERNAL GROWTH				EXTERNAL GROWTH	
UNS	RETENTION RATIO	EQUITY RETURN	"g"	BOOK VALUE ($/SHARE)	SHARES OUTST (MILLIONS)	SHARE GROWTH
2006	0.5459	10.6%	5.79%	18.59	35.19	
2007	0.4194	08.5%	3.56%	19.54	35.32	
2008	-1.4615	02.1%	-3.07%	19.16	35.46	
2009	0.5688	13.9%	7.91%	20.94	35.85	
2010	0.4468	13.6%	6.08%	22.46	36.54	
AVERAGE GROWTH			4.05%	4.50%		0.95%
2011	0.4105	12.0%	4.93%		37.00	1.26%
2012	0.3481	11.0%	3.83%		37.00	0.63%
2014-2016	0.3971	12.5%	4.96%	5.00%	38.00	0.79%

Data from Value Line Ratings and Reports, November 4, December 23, 2011 and February 3, 2012.

KENTUCKY POWER COMPANY

DCF GROWTH RATES
ELECTRIC UTILITIES

COMPANY	br	+	sv=g*(1-(1/(M/B)))		=	g
FE	4.00%	+	0.00%	(1 - (1/ 1.34)))	=	4.00%
TE	5.25%	+	0.50%	(1 - (1/ 1.77)))	=	5.47%
ALE	3.75%	+	3.00%	(1 - (1/ 1.45)))	=	4.68%
AEP	4.25%	+	1.75%	(1 - (1/ 1.34)))	=	4.70%
CNL	6.00%	+	0.50%	(1 - (1/ 1.57)))	=	6.18%
ETR	4.75%	+	0.00%	(1 - (1/ 1.40)))	=	4.75%
WR	4.50%	+	3.25%	(1 - (1/ 1.27)))	=	5.20%
AVA	4.50%	+	1.50%	(1 - (1/ 1.25)))	=	4.80%
HE	4.00%	+	3.00%	(1 - (1/ 1.62)))	=	5.14%
PCG	5.25%	+	2.00%	(1 - (1/ 1.38)))	=	5.80%
PNW	3.50%	+	2.25%	(1 - (1/ 1.37)))	=	4.11%
POR	4.25%	+	1.00%	(1 - (1/ 1.13)))	=	4.37%
UNS	5.50%	+	0.75%	(1 - (1/ 1.58)))	=	5.78%

Average Market-to-Book Ratio = 1.42

FE	=	First Energy Corp.
TE	=	TECO Energy
ALE	=	ALLETE
AEP	=	American Electric Power
CNL	=	Cleco Corporation
ETR	=	Entergy Corp.
WR	=	Westar Energy
AVA	=	Avista Corporation
HE	=	Hawaiian Electric
PCG	=	PGE Corporation
PNW	=	Pinnacle West Capital
POR	=	Portland General
UNS	=	UniSource Energy

g*= expected growth in number of shares outstanding

KENTUCKY POWER COMPANY

GROWTH RATE COMPARISON
ELECTRIC UTILITIES

COMPANY	DCF Growth	Value Line Projected EPS	Value Line Projected DPS	Value Line Projected BVPS	Zacks EPS	Value Line Historic EPS	Value Line Historic DPS	Value Line Historic BVPS	Zacks & VL AVGS.	5-yr Compound Hist. EPS	5-yr Compound Hist. DPS	5-yr Compound Hist. BVPS
FE	4.00%	0.50%	0.50%	5.00%	1.00%	9.00%	5.00%	1.00%	3.14%	-8.13%	3.53%	2.52%
TE	5.47%	10.50%	4.50%	5.00%	4.67%	12.50%	-5.00%	5.00%	5.31%	2.13%	2.26%	5.04%
ALE	4.68%	6.00%	2.00%	3.50%	5.00%	3.50%	17.50%	5.00%	6.07%	-0.88%	4.19%	5.26%
AEP	4.70%	4.50%	4.00%	5.00%	4.00%	2.00%	2.00%	5.00%	3.79%	1.95%	4.28%	5.08%
CNL	6.18%	6.00%	9.50%	6.50%	n/a	7.50%	0.50%	11.00%	6.83%	12.49%	4.47%	9.22%
ETR	4.75%	0.50%	2.00%	5.50%	2.00%	10.00%	10.50%	4.00%	4.93%	6.66%	8.98%	4.76%
WR	5.20%	8.50%	3.00%	2.50%	6.09%	1.00%	7.00%	6.00%	4.87%	-1.42%	5.49%	4.73%
AVA	4.80%	4.50%	9.00%	3.00%	4.67%	11.50%	10.00%	4.00%	6.67%	3.55%	14.05%	3.11%
HE	5.14%	11.00%	1.00%	3.50%	8.03%	-6.00%	0.00%	1.00%	2.65%	2.43%	0.00%	3.61%
PCG	5.80%	5.00%	3.00%	5.00%	4.27%	7.00%	0.00%	10.50%	4.97%	0.29%	6.63%	5.66%
PNW	4.11%	6.00%	2.00%	2.50%	5.33%	0.50%	3.00%	0.50%	2.83%	-1.76%	0.68%	0.16%
POR	4.37%	7.50%	3.00%	3.00%	5.00%	7.50%	0.00%	2.00%	4.00%	11.33%	9.28%	2.36%
UNS	5.78%	9.50%	9.00%	5.00%	2.60%	8.50%	13.00%	4.50%	7.44%	9.03%	14.87%	4.67%
		6.15%	4.04%	4.23%		5.73%	4.88%	4.58%		2.90%	6.06%	4.32%
AVERAGES	5.00%		4.81%		4.39%		5.06%		4.88%		4.42%	

IBES growth rates: FE-1.85%, TE-4.93%, ALE-5.0%, AEP-3.23%, CNL-3.0%, ETR-(3.5%), WR-5.2%, AVA-4.5%, HE-13.1%, PCG-1.45%, PNW-5.59%,POR-5.88%, UNS-3.0%.

Exhibit__(SGH-1)
Schedule 6

KENTUCKY POWER COMPANY

STOCK PRICE, DIVIDENDS, YIELDS
ELECTRIC UTILITIES

COMPANY	AVG. STOCK PRICE 12/14/11-1/27/12 (PER SHARE)		ANNUALIZED DIVIDEND (PER SHARE)	DIVIDEND YIELD
FE	$42.90		$2.20	5.13%
TE	$18.69	*	$0.91	4.85%
ALE	$41.03	*	$1.86	4.54%
AEP	$40.86		$1.88	4.60%
CNL	$37.15		$1.25	3.37%
ETR	$71.68		$3.32	4.63%
WR	$28.26	*	$1.35	4.76%
AVA	$25.40	*	$1.15	4.54%
HE	$25.94		$1.24	4.78%
PCG	$40.86		$1.82	4.45%
PNW	$47.61		$2.10	4.41%
POR	$24.87		$1.06	4.26%
UNS	$36.90	*	$1.78	4.82%
			AVERAGE	**4.55%**

*Dividend yield adjusted by (1+g) derived on CA-405.

Exhibit__(SGH-1)
Schedule 7

KENTUCKY POWER COMPANY

DCF COST OF EQUITY CAPITAL
ELECTRIC UTILITIES

COMPANY	DIVIDEND YIELD FROM DOD-211	GROWTH RATE FROM DOD-209	DCF COST OF EQUITY CAPITAL
FE	5.13%	4.00%	9.13%
TE	4.85%	5.47%	10.32%
ALE	4.54%	4.68%	9.22%
AEP	4.60%	4.70%	9.30%
CNL	3.37%	6.18%	9.55%
ETR	4.63%	4.75%	9.38%
WR	4.76%	5.20%	9.96%
AVA	4.54%	4.80%	9.34%
HE	4.78%	5.14%	9.92%
PCG	4.45%	5.80%	10.26%
PNW	4.41%	4.11%	8.52%
POR	4.26%	4.37%	8.63%
UNS	4.82%	5.78%	10.59%
		OVERALL AVERAGE	**9.55%**
		STANDARD DEVIATION	**0.63%**

KENTUCKY POWER COMPANY

CAPM COST OF EQUITY CAPITAL
ELECTRIC UTILITIES

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

[rf]* = 4.00%
[rm - rf]† = 4.4% (geometric mean)
[rm - rf]† = 6.0% (arithmetic mean)
[rm - rf]†† = 5.30%
Average Beta = 0.72

k = 4.00% + 0.72 (4.40%/5.30%/6.0%)
k = 4.00% + 3.16%/3.81%/4.31%
k = **7.16%/7.81%/8.32%**

*Current T-Bond yields, six-week average yield from Value Line Selection & Opinion (5/9/08-6/13/08)
†Geometric and arithmetic market risk premiums from 2010 Ibbotson m SBBI Valuation Yearbook, p. 23.
†† Mid-point long- and short-term market risk premium from Brealey, R., Meyers, S., Allen, F., Principles of Corporate Finance, 8th Edition, McGraw-Hill, Irwin, Boston MA, 2006, pp. 149, 154, 222.

KENTUCKY POWER COMPANY

PROOF

If market price exceeds book value,
the market-to-book ratio is greater than 1.0,
and the earnings-price ratio understates the cost of capital.

MP = market price
BV = book value
i = cost of equity capital
r = earned return
E = earnings

1. At $MP = BV, i = r = \frac{E}{MP}$.
2. $E = rBV$.
3. Then, $\frac{E}{MP} = \frac{rBV}{MP}$.
4. When $BV < MP$, *i.*e., $\frac{BV}{MP} < 1$, then,
   a. $\frac{E}{MP} < r$, since $\frac{E}{MP} = \frac{rBV}{MP} < r$, because $\frac{BV}{MP} < 1$;
   b. $i < r$, since at $\frac{BV}{MP} = 1, i = \frac{E}{MP} = \frac{rBV}{MP}$, but if $\frac{BV}{MP} < 1$, then $i < r$; and
   c. $\frac{E}{MP} < i$, since at $\frac{BV}{MP} = 1, i = \frac{E}{MP} = \frac{rBV}{MP}$, but if $\frac{BV}{MP} < 1$, then $\frac{E}{MP} < i$, because,
      1) $\frac{BV}{MP} < 1$, through MP increasing, and, if so, $\frac{E}{MP}$ decreases, therefore, $\frac{E}{MP} < i$, or
      2) $\frac{BV}{MP} < 1$, through BV decreasing, and, if so, given $E = rBV$, $\frac{E}{MP}$ decreases, therefore, $\frac{E}{MP} < i$.
5. Ergo, $\frac{E}{MP} < i < r$, the earnings-price ratio is lower than the cost of capital, which is lower than the earned return.

KENTUCKY POWER COMPANY

MODIFIED EARNINGS-PRICE RATIO ANALYSIS
ELECTRIC UTILITIES

COMPANY	Zack's 2012 Earnings (Per Share) [1]	Market Price (Per share) [2]	Earnings-Price Ratio [3]=[1]/[2]	Current R.O.E. 2012 [4]	Projected R.O.E. 2014-2016 [5]
FE	$3.25	$42.90	7.58%	10.50%	10.00%
TE	$1.39	$18.69	7.44%	13.00%	14.00%
ALE	$2.61	$41.03	6.36%	9.00%	9.50%
AEP	$3.29	$40.86	8.05%	10.50%	10.50%
CNL	$2.45	$37.15	6.59%	9.50%	9.50%
ETR	$5.80	$71.68	8.09%	11.00%	10.50%
WR	$1.96	$28.26	6.93%	8.00%	10.00%
AVA	$1.77	$25.40	6.97%	8.50%	9.00%
HE	$1.72	$25.94	6.63%	10.00%	10.50%
PCG	$3.19	$40.86	7.81%	9.50%	11.00%
PNW	$3.36	$47.61	7.06%	9.00%	9.00%
POR	$1.93	$24.87	7.76%	8.50%	9.00%
UNS	$2.48	$36.90	6.72%	11.00%	12.50%
		OVERALL AVERAGE	7.23%	9.85%	
		CURRENT M.E.P.R.	**8.54%**		
		OVERALL AVERAGE	7.23%		10.38%
		PROJECTED M.E.P.R.		**8.81%**	

KENTUCKY POWER COMPANY

MARKET-TO-BOOK RATIO ANALYSIS
ELECTRIC UTILITIES

$k = R.O.E.(1-b)/(M/B) + g$
[2012]

COMPANY									MARKET-TO-BOOK COST OF EQUITY
FE	k= 10.5%	(1-	0.3529	)/	1.34	+	4.00%	=	9.08%
TE	k= 13.0%	(1-	0.3862	)/	1.77	+	5.47%	=	9.97%
ALE	k= 9.0%	(1-	0.3208	)/	1.45	+	4.68%	=	8.90%
AEP	k= 10.5%	(1-	0.4154	)/	1.34	+	4.70%	=	9.27%
CNL	k= 9.5%	(1-	0.4792	)/	1.57	+	6.18%	=	9.33%
ETR	k= 11.0%	(1-	0.4467	)/	1.40	+	4.75%	=	9.09%
WR	k= 8.0%	(1-	0.3053	)/	1.27	+	5.20%	=	9.56%
AVA	k= 8.5%	(1-	0.3444	)/	1.25	+	4.80%	=	9.26%
HE	k= 10.0%	(1-	0.2706	)/	1.62	+	5.14%	=	9.66%
PCG	k= 9.5%	(1-	0.3831	)/	1.38	+	5.80%	=	10.04%
PNW	k= 9.0%	(1-	0.3636	)/	1.37	+	4.11%	=	8.29%
POR	k= 8.5%	(1-	0.4600	)/	1.13	+	4.37%	=	8.43%
UNS	k= 11.0%	(1-	0.3481	)/	1.58	+	5.78%	=	10.31%
								OVERALL AVERAGE	**9.32%**
								STANDARD DEVIATION	**0.60%**

Note: Equity returns and retention ratios based on Value Line current year projections.

KENTUCKY POWER COMPANY

MARKET-TO-BOOK RATIO ANALYSIS
ELECTRIC UTILITIES

$k = R.O.E.(1-b)/(M/B) + g$
[2014-2016]

COMPANY									MARKET-TO-BOOK COST OF EQUITY
FE	k=	10.0%	(1-	0.3867	)/	1.34	+	4.00%	=	8.58%
TE	k=	14.0%	(1-	0.4000	)/	1.77	+	5.47%	=	10.21%
ALE	k=	9.5%	(1-	0.4000	)/	1.45	+	4.68%	=	8.61%
AEP	k=	10.5%	(1-	0.4400	)/	1.34	+	4.70%	=	9.07%
CNL	k=	9.5%	(1-	0.4182	)/	1.57	+	6.18%	=	9.70%
ETR	k=	10.5%	(1-	0.4615	)/	1.40	+	4.75%	=	8.78%
WR	k=	10.0%	(1-	0.4000	)/	1.27	+	5.20%	=	9.91%
AVA	k=	9.0%	(1-	0.3000	)/	1.25	+	4.80%	=	9.85%
HE	k=	10.5%	(1-	0.3500	)/	1.62	+	5.14%	=	9.37%
PCG	k=	11.0%	(1-	0.5000	)/	1.38	+	5.80%	=	9.78%
PNW	k=	9.0%	(1-	0.3286	)/	1.37	+	4.11%	=	8.52%
POR	k=	9.0%	(1-	0.4667	)/	1.13	+	4.37%	=	8.61%
UNS	k=	12.5%	(1-	0.3971	)/	1.58	+	5.78%	=	10.54%
									OVERALL AVERAGE	**9.35%**
									STANDARD DEVIATION	**0.70%**

Note: Equity returns and retention ratios based on Value Line three- to five-year projections.

KENTUCKY POWER COMPANY
OVERALL COST OF CAPITAL

Type of Capital	AMOUNT [1]	PERCENT [2]	COST RATE [3]	WT. AVG. COST RATE [4]=[2]x[3]
Common Equity	$465,314,088	43.94%	9.20%	4.04%
Short-term Debt	$0	0.00%	0.83%	0.00%
A/R Financing	$43,588,933	4.12%	1.22%	0.05%
Long-term Debt	$550,000,000	51.94%	6.48%	3.37%
Totals	$1,058,903,021	100.00%		**7.41%**

PRE-TAX INTEREST COVERAGE* = 2.87x

*Assuming the Company experiences, prospectively, a combined income tax rate of 36.6%, the pre-tax overall return would be 9.79% [7.41%-(3.37+0.05%) = 4.04%/(1-36.5%) = 6.38%+(3.37+0.05%) That pre-tax overall return (9.79%), divided by the weighted cost of debt (3.37+0.05%), indicates a pre-tax interest coverage level of 2.87 times.