PECO ENERGY COMPANY
STATEMENT NO. 5

BEFORE THE
PENNSYLVANIA PUBLIC UTILITY COMMISSION

PENNSYLVANIA PUBLIC UTILITY COMMISSION

v.

PECO ENERGY COMPANY – ELECTRIC DIVISION

DOCKET NO. R-2010-2161575

DIRECT TESTIMONY

WITNESS: PAUL R. MOUL

SUBJECT: PECO'S OVERALL RATE OF RETURN INCLUDING CAPITAL STRUCTURE RATIOS, EMBEDDED COSTS OF DEBT AND PREFERRED STOCK AND THE COST OF EQUITY

DATED: MARCH 31, 2010

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GLOSSARY OF ACRONYMS AND DEFINED TERMS	
ACRONYM	**DEFINED TERM**
AFUDC	Allowance for Funds Used During Construction
β	Beta
b	represents the retention rate that consists of the fraction of earnings that are not paid out as dividends
b x r	Represents internal growth
CAPM	Capital Asset Pricing Model
CCR	Corporate Credit Rating
CE	Comparable Earnings
Company	PECO Energy Company
CTC	Competitive Transition Charge
CWIP	Construction Work in Progress
DCF	Discounted Cash Flow
FERC	Federal Energy Regulatory Commission
FOMC	Federal Open Market Committee
g	Growth rate
IGF	Internally Generated Funds
ITC	Intangible Transition Charge
Lev	Leverage modification
LT	Long Term
M&A	Merger and Acquisition
MLP	Master Limited Partnerships
OCI	Other Comprehensive Income
PECO	PECO Energy Company
PETT	PECO Energy Transition Trust
POLR	Provider of last resort
PUC	Pennsylvania Public Utility Commission
PUC	Public Utility Commission
PUHCA	Public Utility Holding Company Act
r	Represents the expected rate of return on common equity
Rf	Risk-free rate of return
Rm	Market risk premium

GLOSSARY OF ACRONYMS AND DEFINED TERMS	
ACRONYM	**DEFINED TERM**
RP	Risk Premium
s	Represents the new common shares expected to be issued by a firm
s x v	Represents external growth
S&P	Standard & Poor's
v	Represents the value that accrues to existing shareholders from selling stock at a price different from book value
ytm	Yield to maturity

DIRECT TESTIMONY
OF
PAUL R. MOUL

I. INTRODUCTION AND SUMMARY OF RECOMMENDATIONS

1. Q. Please state your name, occupation and business address.

A. My name is Paul Ronald Moul. My business address is 251 Hopkins Road, Haddonfield, New Jersey 08033-3062. I am Managing Consultant of the firm P. Moul & Associates, an independent financial and regulatory consulting firm. My educational background, business experience and qualifications are provided in Appendix A, which follows my direct testimony.

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

A. My testimony presents evidence, analysis, and a recommendation concerning the appropriate cost of common equity and overall rate of return that the Pennsylvania Public Utility Commission ("PUC" or the "Commission") should recognize in the determination of the revenues that PECO Energy Company ("PECO Energy" or the "Company") should be authorized to realize as a result of this proceeding. My analysis and recommendation are supported by the detailed financial data contained in PECO Exhibit PRM-1, which is a multi-page document divided into fourteen (14) schedules. Additional evidence, in the form of appendices, follows my direct testimony. The items covered in these appendices provide additional detailed information concerning the explanation and application of the various financial models upon which I rely. My testimony is based upon my first-hand knowledge of

PECO Energy, consisting of information obtained from meetings with the Company's management and Company-specific data that is widely disseminated within the financial community.

3. Q. Based upon your analysis, what is your conclusion concerning the appropriate rate of return on common equity for the Company in this case?

A. My conclusion is that the Company should be afforded an opportunity to earn a rate of return on common equity in the range of 11.50% to 11.75%. From this range, an 11.75% rate of return on common equity is proposed for this case. My analysis of the Company and its superior performance, as described in the testimony of Mr. Craig Adams, the Company's Senior Vice President and Chief Operating Officer, and other Company witnesses, justify a rate of return at the top of the range. As shown on Schedule 1, I have calculated an 8.95% overall cost of capital for the Company at December 31, 2010. This figure, which is the product of weighting the individual capital costs by the proportion of each respective type of capital, should establish a compensatory level of return for the use of capital and provide the Company with the ability to attract capital on reasonable terms.

4. Q. What background information have you considered in reaching your conclusion concerning the Company's cost of capital?

A. The Company is a wholly owned subsidiary of Exelon Corporation ("Exelon"). The common stock of Exelon is traded on the New York Stock Exchange. Exelon is a component of the S&P 500 Composite Index. PECO Energy provides electric delivery service to approximately 1.6 million electric customers in both the City of

Philadelphia and the surrounding counties. The Company also provides natural gas distribution service to approximately 487,000 customers located in the suburban counties surrounding the City of Philadelphia. Deliveries of electricity to the Company's customers in 2009 was comprised of approximately 33% to residential customers, approximately 22% to small commercial and industrial customers, 41% to large commercial and industrial customers, and 4% to street lighting, railroads, and sales for resale. With large commercial and industrial customers representing 41% of sales, the energy needs of just 0.2% of all customers can have a significant impact on the Company's operations. PECO Energy obtains and, going forward will obtain, all of its electric energy from third parties.

5. Q. How have you determined the cost of common equity in this case?

A. The cost of common equity is established using capital-market and financial data relied upon by investors to assess the relative risk, and hence the cost-of-equity, for an electric- delivery utility. In this regard, I employed four (4) well-recognized measures of the cost-of-equity: the Discounted Cash Flow ("DCF") model, the Risk Premium ("RP") analysis, the Capital Asset Pricing Model ("CAPM"), and the Comparable Earnings ("CE") approach.

6. Q. In your opinion, what factors should the Commission consider when determining the Company's cost of capital in this proceeding?

A. The Commission should consider the ratesetting principles that I have set forth in Appendix B. In this regard, the Commission's rate of return allowance must be set to cover the Company's interest and dividend payments, provide a reasonable level of

earnings retention, produce an adequate level of internally generated funds to meet capital requirements, be commensurate with the risks to which the Company's capital is exposed, support reasonable credit quality, and allow the Company to raise capital on reasonable terms.

7. Q. What data have you used to apply each model of estimating the cost-of-equity?

A. The models that I used to measure the cost of common equity for the Company were applied with market and financial data developed from my proxy group of seven (7) electric companies. The criteria that I used to assemble this proxy group will be described later in my testimony. The companies that comprise the proxy group are identified on page 2 of Schedule 3. I will refer to these companies as the "Electric Group" throughout my testimony.

8. Q. How have you performed your cost-of-equity analysis with the market data for the Electric Group?

A. I have applied the models/methods for estimating the cost-of-equity using the average data for the Electric Group. I have not measured separately the cost-of-equity for the individual companies within the Electric Group because the determination of the cost-of-equity for an individual company has become increasingly problematic. By employing group average data, I have helped to minimize the effect of extraneous influences on the market data for an individual company.

9. Q. Please summarize your cost-of-equity analysis.

A. My cost-of-equity determination was derived from the results of the methods/models

identified above. In general, the use of more than one method provides a superior foundation to arrive at the cost-of-equity. At any point in time, any single method can provide an incomplete measure of the cost-of-equity depending upon extraneous factors that may influence market sentiment. The specific application of these methods/models will be described later in my testimony. The following table provides a summary of the indicated costs-of-equity using each of these approaches.

	Electric Group
DCF	11.80%
RP	11.50%
CAPM	10.80%
CE	13.30%
Average	11.85%
Median	11.65%
Mid-point	12.05%

Based on the foregoing, I recommend that the Commission set the Company's rate of return on common equity at 11.75%. My recommendation reflects the exemplary performance of the Company's management. As described in the testimony of other Company witnesses, PECO has undertaken many initiatives that have produced high-quality service. My recommended common equity allowance of 11.75% makes no provision for the prospect that the rate of return may not be achieved due to unforeseen events, such as unexpected spikes in the cost of purchased products and other expenses. To obtain new capital and retain existing capital, the rate of return on common equity must be high enough to satisfy investors' requirements.

II. ELECTRIC UTILITY RISK FACTORS

10. Q. Please identify some of the factors that make the electric utility industry generally different today than it was in the past.

A. Today, electric utilities generally are faced with meaningful changes in the fundamentals that affect their operations, while cost-of-service pricing continues to dominate much of their business profile. On the national level, the passage of the National Energy Policy Act ("EPACT") and the issuance of FERC Order Nos. 888 and 889 and Order No. 2000 initiated sweeping changes that fundamentally altered the structure of the electric-utility business. EPACT removed certain impediments to the construction of non-utility generators ("NUGs") by utility affiliates and by independent developers. Order Nos. 888 and 889 have provided these generators, as well as other utilities, with the ability to sell their energy directly to wholesale customers, as well as to end-use customers in states with retail competition, like Pennsylvania. Order No. 2000 encouraged the formation of Regional Transmission Organizations ("RTO") that offer non-discriminatory transmission service. PECO Energy is part of the PJM Interconnection, LLC. Although generation in some parts of the U.S. has become a non-regulated competitive business, the transmission and distribution of electricity will likely continue under some form of rate regulation. The passage of the EPACT further highlights the emphasis being placed upon the reliability and structure of the electric-utility industry.

11. Q. What changes have occurred in Pennsylvania as a result of a move to more competitive markets for electricity?

A. On January 2, 2000, customer choice was fully available in Pennsylvania for electricity. From that point forward, PECO Energy's responsibility became primarily the provision of delivery service at regulated prices, while it also retains the responsibility for provider-of-last-resort ("POLR") service to customers that do not elect competitive energy suppliers. The restructuring of the electric business in Pennsylvania has been underway for years.

12. Q. Have these changes brought about increases in the risks facing electric utilities generally?

A. Yes. Aside from its traditional responsibility to maintain reliability and comply with the mandates of PJM, a different set of risks now exists for the electric delivery business in Pennsylvania. The risk of distributed generation will continue to be a concern, and could have an increasing influence on the business of electric-delivery utilities. With technological advances in micro-turbines, potential commercialization of fuel cells, development of wind and solar power, and the creation of micro-grids, utilities face the potential for bypass and the resulting declines in transmission and distribution revenues. At the same time, an electric utility retains the obligation to provide reliable delivery service and must continue to invest in its rate base to fulfill that obligation.

The obligation to serve also represents a key risk factor for the local delivery of electricity. The risks facing the electric utilities are clearly different from

those that existed in the past. Investors generally are risk-averse, and with increased uncertainty will require compensation for higher risk.

13. Q. What are the primary risk factors facing the electric-utility industry?

A. In the new environment, competitive issues have or will develop due to the convergence of energy sources and bypass arising from self-generation or distributed-generation. Regulatory risks include the overall framework of ratesetting, cost allocation, and rate-design issues, and the level of return that will be allowed.

The financial structure of the electric business is uncertain due to the structure and term of relationship with end-users, the adequacy of capital recovery, counter-party risk, potential for financial penalties associated with operational problems, and growth in the utilization of the transmission and distribution network by non-affiliated generators and marketers.

14. Q. Please discuss further the evolving risks for electric utilities.

A. With increased emphasis on market-determined prices and open access of the transmission and distribution network, a new dimension has been opened in the electric-utility business. A pricing structure restricted by regulation diminishes management's ability to adjust its business strategy quickly to changing market conditions to respond to broadening competition. Hence, deregulation of certain segments of the electric utility business provides significant downside risk due to loss of revenues, but provides little upside potential due to the limitations placed on returns by regulators.

15. Q. Are there other specific risk issues facing the Company?

A. Yes. Commercial and industrial customers, which account for 63% of the Company's energy deliveries, are usually thought to be of higher risk than residential customers. Success in this segment of the Company's market is subject to the business cycle and pressures from alternative providers. Moreover, external factors can influence deliveries to these customers, which face competitive pressure on their own operations from other facilities outside the utility's service territory.

16. Q. Please indicate how the Company's risk profile is affected by its construction program.

A. The Company must undertake substantial investments to maintain, upgrade and expand existing facilities in its service territory to ensure safe and reliable service to its customers. In particular, the rehabilitation of the Company's infrastructure represents a non-revenue producing use of capital. The Company projects its construction expenditures for the electric division will approximate $1.7 billion during the period 2010-2014, which represents approximately 52% ($1.7 billion ÷ $3.3 billion) of its net electric utility plant at December 31, 2009.

17. Q. How should the Commission respond to the evolving business environment facing the Company?

A. In the situation where additional capital is required, as shown by the projected construction expenditures indicated above, the regulatory process must establish a return on equity that provides a reasonable opportunity for the Company to actually

achieve its cost of capital. Where ongoing capital investment is required to meet the high quality of service that customers demand, supportive regulation is essential.

III. FUNDAMENTAL RISK ANALYSIS

18. Q. Is it necessary to conduct a fundamental risk analysis to provide a framework for determining a utility's cost-of-equity?

A. Yes. It is necessary to establish a company's relative risk position within its industry through a fundamental analysis of various quantitative and qualitative factors that bear upon investors' assessment of overall risk. The qualitative factors that bear upon the Company's risk have already been discussed. The quantitative risk analysis follows. The items that influence investors' evaluation of risk and their required returns are described in Appendix C. For this purpose, I compared PECO Energy to the S&P Public Utilities, an industry-wide proxy consisting of various regulated businesses, and to the Electric Group.

19. Q. What are the components of the S&P Public Utilities?

A. The S&P Public Utilities is a widely recognized index that is comprised of electric power and natural gas companies. These companies are identified on page 3 of Schedule 4.

20. Q. What criteria did you employ to assemble the Electric Group?

A. The companies that comprise the Electric Group have the following common characteristics: (i) their stock is traded on the New York Stock Exchange, (ii) they

are listed in the "Electric Utility (East)" section of The Value Line Investment Survey, (iii) they operate in the Northeast region of the U.S., (iv) they are not currently the target of a publicly announced merger or acquisition, and (v) they do not have a significant amount of electric generation. As noted previously, these companies are listed on page 2 of Schedule 3.

21. Q. Is knowledge of a utility's bond rating an important factor in assessing its risk and cost of capital?

A. Yes. Knowledge of a company's credit rating is important because the cost of each type of capital is directly related to the associated risk of the firm. So, while a company's credit-quality risk is shown directly by the rating and yield on its bonds, these relative risk assessments also bear upon the cost-of-equity. This is because, in some cases, a firm's cost-of-equity is represented by its borrowing cost plus compensation to recognize the higher risk of an equity investment compared to debt.

22. Q. How do the bond ratings compare for PECO Energy, the Electric Group, and the S&P Public Utilities?

A. Currently, the corporate credit rating ("CCR") for PECO Energy is BBB from Standard and Poor's Corporation ("S&P"), and the Long Term ("LT") issuer rating is A3 from Moody's Investors Services ("Moody's"). The CCR designation by S&P and LT issuer rating by Moody's focus upon the credit quality of the issuer of the debt, rather than upon the debt obligation itself. The average credit quality of the Electric Group is BBB+ from S&P and Baa1 from Moody's. For the S&P Public Utilities, the average composite rating is BBB+ by S&P and Baa1 by Moody's. Most

of the financial indicators that I will subsequently discuss are considered during the rating process.

23. Q. How do the financial data compare for PECO Energy, the Electric Group, and the S&P Public Utilities?

A. The broad categories of financial data that I will discuss are shown on Schedules 2, 3, and 4. The data cover the five-year period 2004-2008. For PECO Energy, the financial statements contained in SEC Form 10-K, which is the source used by S&P Utility Compustat, include both its natural gas distribution and electric delivery and transmission businesses. I have modified the income statement and cash flow data for PECO Energy by removing the unique effects of the Intangible Transition Charge ("ITC") and Competitive Transition Charge ("CTC"), which are related to the Company's electric division. I have also adjusted the balance sheet for the effects of the parent-company receivable that is also related to the electric division, and Accumulated Other Comprehensive Income ("OCI"). The important categories of relative risk may be summarized as follows:

Size. In terms of capitalization, PECO Energy is fairly similar to the average size of the Electric Group, but smaller than the average size of the S&P Public Utilities. All other things being equal, a smaller company is riskier than a larger company because a given change in revenue and expense has a proportionately greater impact on a small firm. As I will demonstrate further, the size of a firm can impact its cost-of-equity.

Market Ratios. Market-based financial ratios, such as earnings/price ratios and dividend yields, provide a partial measure of the investor-required cost-of-equity.

If all other factors are equal, investors will require a higher rate of return for companies that exhibit greater risk, in order to compensate for that risk. That is to say, in most cases, a firm that investors perceive to have higher risks will experience a lower price per share in relation to expected earnings.[1]

There are no market ratios available for PECO Energy because Exelon owns its stock. The five-year average price-earnings multiple for the Electric Group was fairly similar to that of the S&P Public Utilities. The five-year average dividend yield was higher for the Electric Group as compared to the S&P Public Utilities. The five-year average market-to-book ratio was lower for the Electric Group as compared to the S&P Public Utilities.

Common-Equity Ratio. One way to measure financial risk is measured by the proportion of long-term debt and other senior capital that is contained in a company's capitalization. Financial risk is also analyzed by comparing common-equity ratios (the complement of the ratio of debt and other senior capital). That is to say, all things being equal, a firm with a high common-equity ratio has lower financial risk, while a firm with a low common equity ratio has higher financial risk. The five-year average common-equity ratios, based on permanent capital, were 61.5% for PECO Energy, 47.1% for the Electric Group, and 45.0% for the S&P Public Utilities. For the purpose of calculating the weighted average cost of capital for this case, the Company is proposing a 53.18% common equity.

Return on Book Equity. Greater variability (*i.e.*, uncertainty) of a firm's earned returns signifies relatively greater levels of risk, as shown by the coefficient of

[1] For example, two otherwise similarly situated firms each reporting $1.00 in earnings per share would have different market prices at varying levels of risk (i.e., the firm with a higher level of risk will have a lower share value, while the firm with a lower risk profile will have a higher share value).

variation (standard deviation ÷ mean) of the rate of return on book common equity. The higher the coefficients of variation, the greater degree of variability. For the five-year period, the coefficients of variation were 0.154 (1.9% ÷ 12.3%) for PECO Energy, 0.193 (1.6% ÷ 8.3%) for the Electric Group, and 0.068 (0.8% ÷ 11.8%) for the S&P Public Utilities.

Operating Ratios. I have also compared operating ratios (the percentage of revenues consumed by operating expense, depreciation, and taxes other than income).[2] The five-year average operating ratios were 86.4% for PECO Energy, 90.6% for the Electric Group, and 84.3% for the S&P Public Utilities.

Coverage. The level of fixed-charge coverage (*i.e.*, the multiple by which available earnings cover fixed charges, such as interest expense) provides an indication of the earnings protection for creditors. Higher levels of coverage, and hence earnings protection for fixed charges, are usually associated with superior grades of creditworthiness. The five-year average interest coverage (excluding Allowance for Funds Used During Construction ("AFUDC") was 6.80 times for PECO Energy, 2.97 times for the Electric Group, and 3.34 times for the S&P Public Utilities. The Company's interest coverage, however, has declined significantly in recent years and for 2009 was 3.67 times.

Quality of Earnings. Measures of earnings quality usually are revealed by the percentage of AFUDC related to income available for common equity, the effective income tax rate, and other cost deferrals. These measures of earnings quality usually influence a firm's internally generated funds because poor quality of

[2] The complement of the operating ratio is the operating margin which provides a measure of profitability. The higher the operating ratio, the lower the operating margin.

earnings would not generate high levels of cash flow. Quality of earnings has not been a significant concern for PECO Energy, the Electric Group, or the S&P Public Utilities.

Internally Generated Funds. Internally generated funds ("IGF") provide an important source of new investment capital for a utility and represent a key measure of credit strength. Historically, the five-year average percentage of IGF to capital expenditures was 56.1% for PECO Energy, 85.4% for the Electric Group, and 95.0% for the S&P Public Utilities.

Betas. The financial data that I have been discussing relate primarily to company-specific risks. Market risk for firms with publicly traded stock is measured by beta coefficients. Beta coefficients attempt to identify systematic risk, *i.e.*, the risk associated with changes in the overall market for common equities.[3] Value Line publishes such a statistical measure of a stock's relative historical volatility to the rest of the market. A comparison of market risk is shown by the Value Line beta of .71 as the average for the Electric Group (see page 2 of Schedule 3), and .77 as the average for the S&P Public Utilities (see page 3 of Schedule 4).

24. Q. Based on your analysis, does the Electric Group provide a reasonable basis to measure the Company's cost-of-equity for this case?

A. Yes. Some risk indicators are higher for the Company, some are lower, and others are about the same. On balance, the risk factors average out, indicating that the cost-

[3] The procedure used to calculate the beta coefficient published by Value Line is described in Appendix H. A common stock that has a beta less than 1.0 is considered to have less systematic risk than the market as a whole and would be expected to rise and fall more slowly than the rest of the market. A stock with a beta above 1.0 would have more systematic risk.

of-equity for the Electric Group provides a reasonable basis for measuring the Company's cost-of-equity.

IV. CAPITAL STRUCTURE RATIOS

25. Q. Please explain the selection of capital structure ratios for PECO Energy.

A. The capital structure ratios of PECO Energy should be employed for rate of return purposes. In the situation where the operating public utility raises its own debt directly in the capital markets, as is the case for the Company, it is proper to employ the capital structure ratios and senior capital cost rates of the regulated public utility for rate-of-return purposes. Furthermore, consistency requires that the embedded cost rates of the Company's senior securities also be employed. This procedure is consistent with the ratesetting procedures used by the Commission in prior rate cases for PECO Energy.

26. Q. Does Schedule 5 provide the Company's capitalization and capital structure ratios?

A. Yes. The December 31, 2009 capitalization corresponds with the end of the historic test year in this case. The December 31, 2010 capital structure is estimated at the end of the future test year. The Company does not plan to issue or retire any new long-term debt during the future test year. A forecast increase in retained earnings by December 31, 2010 has been included. In presenting the Company's capital structure on Schedule 5, I have removed several items for ratesetting purposes, including the treatment of the call premiums on the early redemption of high-cost long-term debt

and preferred stock, which has been redeemed, and the OCI. I should note that the transitional funding obligations and parent-company receivable that was outstanding at December 31, 2009 will be repaid before the end of the future test year, and, as such, no adjustments to the Company's future test year-end capital structure for these items are required at this point.

27. Q. Please describe the adjustment for the call premiums paid to redeem the high-cost debt.

A. I have adjusted the principal amounts of long-term debt and preferred stock to exclude the amounts used to finance premiums on the early redemption of these securities. To do otherwise would deny PECO Energy the full return on the premiums paid to redeem this high-cost capital since additional amounts of capital were issued to pay the call premiums. The amounts issued to finance the call premiums do not increase the Company's rate base. That is to say, no additional rate base was created through additional debt and preferred stock necessary to finance this transaction, and therefore an adjustment is required to provide the return necessary to service this additional capital. Hence, PECO Energy's long-term debt and preferred stock amounts must be adjusted for this disparity in order that the return necessary to service the capitalization is produced from rate-base investment times the overall rate of return.

This adjustment is equitable because customers receive the cost savings resulting from these refinancings in the form of a lower overall rate of return, and PECO Energy recovers all costs incurred in providing these benefits to customers. To produce these savings, the Company paid to the debt and preferred stock holders a

premium for surrendering their securities prior to maturity. These premiums represented an investment made by PECO Energy to reduce its overall cost of capital. Because the reduced interest costs and preferred stock dividends are reflected in the lower cost of capital to customers, it is appropriate that the Company recover the costs incurred to produce these savings. This includes both a return of and return on the unamortized premiums. Adjusting the principal amounts in the capital structure provides a return on the premium as a part of the embedded cost rates of capital.

28. Q. Please describe the OCI adjustment.

A. I have removed the accumulated OCI from the capital structure for ratesetting purposes. OCI arises from a variety of sources, including: minimum pension liability, foreign-currency hedges, unrealized gains and losses on securities available for sale, interest-rate swaps, and other cash-flow hedges. For PECO Energy, its OCI is represented by Unrealized Gains and Losses on Available-for-Sale Securities, and Other Cash Flow Hedges - representing the fair value of settled interest-rate swaps, net of amortization. The settled interest rate swaps relate to various series of transitional funding obligations. The settled swaps resulted in a net gain, and the monthly amortization of that amount resulted in a debit to OCI in 2009 and 2010 and a net credit to interest expense (gains on interest rate swaps and losses on interest rate swaps were amortized to separate interest expense subaccounts). I should add that the amortization of the net gain will end in August 2010, when the remaining debt owed to bondholders by PECO Energy Transition Trust ("PETT") is repaid on September 1, 2010. These accounting entries to accumulated OCI are unrelated to the Company's rate base determination and must be excluded from the common-equity

balance. That is to say, these accounting entries neither produce nor consume cash, and hence they cannot impact the rate base valuation.

29. Q. Should short-term debt be included in the capital structure for rate of return purposes?

A. There is no need to consider short-term debt in the capital structure because PECO does not forecast any short-term debt to be outstanding in the future test year. Moreover, short-term debt is typically assumed to finance construction work in progress.

30. Q. What capital structure ratios do you recommend be adopted for rate of return purposes in this proceeding?

A. Since ratesetting is prospective, the rate of return should, at a minimum, reflect known or reasonably foreseeable changes which will occur during the course of the test year. As a result, I will adopt the Company's future test year-end capital structure ratios of 45.19% long-term debt, 1.63% preferred stock, and 53.18% common equity.

V. COSTS OF SENIOR CAPITAL

31. Q. What cost rate have you assigned to the debt portion of PECO Energy's capital structure?

A. The determination of the long-term debt cost rate is essentially an arithmetic exercise. This is due to the fact that the Company has contracted for the use of this capital for a specific period of time at a specified cost rate. As shown on page 1 of Schedule 6, I

have computed the actual embedded cost rate of long-term debt at December 31, 2009. On page 3 of Schedule 6, I have shown the estimated embedded cost rate of long-term debt at December 31, 2010. The development of the individual effective cost rates for each series of long-term debt, using the cost rate to maturity technique, is shown on pages 2 and 4 of Schedule 6. The cost rate, or yield to maturity ("ytm"), is the rate of discount that equates the present value of all future interest and principal payments with the net proceeds of the bond. In my calculation of the embedded cost of long-term debt, I have recognized the costs associated with the Company's early redemption of high cost debt. As previously explained, it is necessary to compensate PECO Energy for the costs incurred to lower the embedded debt cost rate, which reduces the cost of capital charged to customers.

32. Q. What cost rate have you determined for the Company's long-term debt?

A. I will adopt the 5.81% embedded cost of long-term debt at December 31, 2010, as shown on page 3 of Schedule 6. This rate is related to the amount of long-term debt shown on Schedule 5 which provides the basis for the 45.19% long-term debt ratio.

33. Q. What preferred stock cost rate have you calculated for the Company?

A. For the future test year, I have calculated a 4.38% embedded cost of preferred stock, as shown on page 3 of Schedule 7. I have included in the embedded cost of preferred stock the unrecovered issuance costs and the call premium on the redemption of the preferred stock. The unrecovered issuance expenses and the call premium have been amortized over the remaining term of the issues that were redeemed. These adjustments correspond to those that I previously discussed regarding the Company's

capital-structure ratios. I will adopt the 4.38% embedded cost of preferred stock, which is related to the 1.63% preferred stock ratio shown on Schedule 5. The details regarding the individual cost rates for each series of preferred stock are provided on page 4 of Schedule 7.

VI. COST-OF-EQUITY – GENERAL APPROACH

34. Q. Please describe the process you employed to determine the cost of common equity for the Company.

A. Although my fundamental financial analysis provides the required framework to establish the risk relationships between the Company, the Electric Group and the S&P Public Utilities, the cost-of-equity must be measured by standard financial models that I describe in Appendix D. Differences in risk traits, such as size, business diversification, geographical diversity, regulatory policy, financial leverage, and bond ratings must be considered when analyzing the cost-of-equity indicated by the models.

It also is important to reiterate that no one method or model of the cost-of-equity can be applied in an isolated manner. As noted in Appendix D, and elsewhere in my direct testimony, each of the methods used to measure the cost-of-equity contains certain incomplete and/or overly restrictive assumptions and constraints that are not optimal. Therefore, I favor considering the results from a variety of methods. In this regard, I applied each of the methods with data taken from the Electric Group and have arrived at a cost-of-equity of 11.75% for the Company, which reflects its performance.

VII. DISCOUNTED CASH FLOW ANALYSIS

35. Q. Please describe your use of the Discounted Cash Flow approach to determine the cost-of-equity.

A. The details of my use of the DCF approach and the calculations and evidence in support of my conclusions are set forth in Appendix E. I will summarize them here. The DCF model seeks to explain the value of an asset as the present value of future expected cash flows discounted at the appropriate risk-adjusted rate of return. In its simplest form, the DCF return on common stock consists of a current cash (dividend) yield and future price appreciation (growth) of the investment.

Among other limitations of the model, there is a certain element of circularity in the DCF method when applied in rate cases. This is because investors' expectations for the future depend upon regulatory decisions. In turn, when regulators depend upon the DCF model to set the cost-of-equity, they rely upon investor expectations that include an assessment of how regulators will decide rate cases. Due to this circularity, the DCF model may not fully reflect the true risk of a utility.

As I describe in Appendix E, the DCF approach has other limitations that diminish its usefulness in the ratesetting process where, as in this case, the firm's market capitalization diverges significantly from the book-value capitalization. When this situation exists, the DCF method will lead to a misspecified cost-of-equity when it is applied to a book-value capital structure.

36. Q. Please explain the dividend-yield component of a DCF analysis.

A. The DCF methodology requires the use of an expected dividend yield to establish the investor-required cost-of-equity. For the twelve months ended December 2009, the monthly dividend yields of the Electric Group are shown graphically on Schedule 8. The monthly dividend yields shown on Schedule 8 reflect an adjustment to the month-end prices to reflect the buildup of the dividend in the price that has occurred since the last ex-dividend date (*i.e.*, the date by which a shareholder must own the shares to be entitled to the dividend payment – usually about two to three weeks prior to the actual payment). An explanation of this adjustment is provided in Appendix E.

For the twelve months ending December 2009, the average dividend yield was 5.64% for the Electric Group based upon a calculation using annualized dividend payments and adjusted month-end stock prices. The dividend yields for the more recent six- and three- month periods were 5.42% and 5.32%, respectively. I have used, for the purpose of my direct testimony, a dividend yield of 5.42% for the Electric Group, which represents the six-month average yield. The use of this dividend yield will reflect current capital costs, while avoiding spot yields.

For the purpose of a DCF calculation, the average dividend yield must be adjusted to reflect the prospective nature of the dividend payments *i.e.*, the higher expected dividends for the future. Recall that the DCF is an expectational model that must reflect investor anticipated cash flows for the Electric Group. I have adjusted the six-month average dividend yield in three different, but generally accepted, manners, and used the average of the three adjusted values as calculated in Appendix E. That adjusted dividend yield is 5.60% for the Electric Group.

37. Q. Please explain the underlying factors that influence investor's growth expectations.

A. As noted previously, investors are interested principally in the future growth of their investment (*i.e.*, the price per share of the stock). As I explain in Appendix E, future earnings per share growth represents the DCF model's primary focus because under the constant price-earnings multiple assumption of the model, the price per share of stock will grow at the same rate as earnings per share. In conducting a growth-rate analysis, a wide variety of variables can be considered when reaching a consensus of prospective growth, including: earnings, dividends, book value, and cash flow stated on a per-share basis. Historical values for these variables can be considered, as well as analysts' forecasts that are widely available to investors. A fundamental growth rate analysis also can be formulated, which consists of internal growth ("b x r"), where "r" represents the expected rate of return on common equity and "b" is the retention rate that consists of the fraction of earnings that are not paid out as dividends. The internal growth rate can be modified to account for sales of new common stock -- this is called external growth ("s x v"), where "s" represents the new common shares expected to be issued by a firm and "v" represents the value that accrues to existing shareholders from selling stock at a price different from book value. Fundamental growth, which combines internal and external growth, provides an explanation of the factors that cause book value per share to grow over time.

Growth also can be expressed in multiple stages. This expression of growth consists of an initial "growth" stage where a firm enjoys rapidly expanding markets, high profit margins, and abnormally high growth in earnings per share. Thereafter, a

firm enters a "transition" stage where fewer technological advances and increased product saturation begin to reduce the growth rate and profit margins come under pressure. During the "transition" phase, investment opportunities begin to mature, capital requirements decline, and a firm begins to pay out a larger percentage of earnings to shareholders. Finally, the mature or "steady-state" stage is reached when a firm's earnings growth, payout ratio, and return on equity stabilizes at levels where they remain for the life of a firm. The three stages of growth assume a step-down of high initial growth to lower sustainable growth. Even if these three stages of growth can be envisioned for a firm, the third "steady-state" growth stage, which is assumed to remain fixed in perpetuity, represents an unrealistic expectation because the three stages of growth can be repeated. That is to say, the stages can be repeated where growth for a firm ramps-up and ramps-down in cycles over time.

38. Q. What investor-expected growth rate is appropriate in a DCF calculation?

A. Investors consider both company-specific variables and overall market sentiment (*i.e.*, level of inflation rates, interest rates, economic conditions, etc.) when balancing their capital-gains expectations with their dividend-yield requirements. I follow an approach that is not rigidly formatted because investors are not influenced by a single set of company-specific variables weighted in a formulaic manner. Therefore, in my opinion, all relevant growth-rate indicators using a variety of techniques must be evaluated when formulating a judgment of investor expected growth.

39. Q. What data for the proxy group have you considered in your growth-rate analysis?

A. I have considered the growth in the financial variables shown on Schedules 9 and 10. The bar graph provided on Schedule 9 shows the historical growth rates in earnings per share, dividends per share, book value per share, and cash flow per share for the Electric Group. The historical growth rates were taken from the Value Line publication. In the situation where no values are shown on Schedule 9, the group averages had negative growth rates. Negative growth rates, which significantly influence the historical data, provide no reliable guide to gauge investor expected growth for the future. Investor expectations encompass long-term positive growth rates and, as such, could not be represented by sustainable negative rates of change. Therefore, statistics that include negative growth rates should not be given any weight when formulating a composite growth rate expectation. The prospect of rate increases granted by regulators, the continuing obligation to provide safe, adequate and proper service to customers, and the ongoing growth of customers mandate investor expectations of positive future growth rates. Stated simply, there is no reason for investors to expect that a utility will wind up its business and distribute net assets to shareholders, which would be symptomatic of a long-term permanent earnings decline. Although investors have knowledge that negative growth and losses can occur, their expectations include positive growth. Indeed, rational investors expect positive returns; otherwise they would hold cash rather than invest with the expectation of a loss. Hence, negative historic values will not provide a reasonable representation of future growth expectations because, in the long run, investors will

always expect positive growth. As shown on Schedule 9, the historical growth of earnings per share was in the range of 1.42% to 2.25% for the Electric Group.

Schedule 10 provides projected earnings per share growth rates taken from analysts' forecasts compiled by IBES/First Call and Zacks and from Value Line. IBES/First Call and Zacks represent reliable authorities of projected growth upon which investors rely. The IBES/First Call and Zacks forecasts are limited to earnings per share growth, while Value Line makes projections of other financial variables. The Value Line forecasts of dividends per share, book value per share, and cash flow per share have also been included on Schedule 10 for the Electric Group.

Although five-year forecasts usually receive the most attention in the growth analysis for DCF purposes, current market performance is strongly influenced by short-term earnings forecasts. Each of the major publications provides earnings forecasts for the current and subsequent year. These short-term earnings forecasts receive prominent coverage, and indeed they dominate these publications.

40. Q. Is a five-year investment horizon associated with the analysts' forecasts consistent with the DCF model?

A. Yes. Rather than viewing the DCF in the context of an endless stream of growing dividends (*e.g.*, a century of cash flows), the growth in the share value (*i.e.*, capital appreciation, or capital gains yield) is most relevant to investors' total return expectations. Hence, the sale price of a stock can be viewed as a liquidating dividend that can be discounted along with the annual dividend receipts during the investment-holding period to arrive at the investor expected return. The growth in the price per share will equal the growth in earnings per share absent any change in price-earnings

("P-E") multiple -- a necessary assumption of the DCF. As such, my company-specific growth analysis, which focuses principally upon five-year forecasts of earnings per share growth, is consistent with the type of analysis that influences the total return expectation of investors. Moreover, academic research focuses on five-year growth rates as they influence stock prices. Indeed, if investors really required forecasts which extended beyond five years in order to properly value common stocks, then I am sure that some investment-advisory service would begin publishing that information for individual stocks in order to meet the demands of investors. The absence of such a publication signals that investors do not require infinite forecasts in order to purchase and sell stocks in the marketplace.

41. Q. What specific evidence have you considered in the DCF growth analysis?

A. As to the five-year forecast growth rates, Schedule 10 indicates that the projected earnings per share growth rates for the Electric Group are 6.10% by IBES/First Call, 5.50% by Zacks, and 4.83% by Value Line. The Value Line projections indicate that earnings per share for the Electric Group will grow prospectively at a more rapid rate (*i.e.*, 4.83%) than the dividends per share (*i.e.*, 3.63%), which translates into a declining dividend payout ratio for the future. As noted earlier, and in Appendix E, with the constant price-earnings multiple assumption of the DCF model, growth for these companies will occur at the higher earnings per share growth rate, thus producing the capital gains yield expected by investors.

42. Q. What conclusion have you drawn from these data regarding the applicable growth rate to be used in the DCF model?

A. A variety of factors should be examined to reach a conclusion on the DCF growth rate. However, certain growth rate variables should be emphasized when reaching a conclusion on an appropriate growth rate. First, historical and projected earnings per share, dividends per share, book value per share, cash flow per share, and retention growth represent indicators that could be used to provide an assessment of investor growth expectations for a firm. However, while history cannot be ignored, it cannot receive primary emphasis. This is because an analyst, when developing a forecast of future earnings growth, would first apprise himself/herself of the historical performance of a company. Hence, there is no need to count historical growth rates separately, because historical performance is already reflected in analysts' forecasts. Second, from the various alternative measures of growth identified above, earnings per share should receive greatest emphasis. Earnings per share growth is the primary determinant of investor expectations concerning their total returns in the stock market. This is because the capital gains yield (*i.e.*, price appreciation) will track earnings growth with a constant price-earnings multiple (a key assumption of the DCF model). Moreover, earnings per share (derived from net income) are the source of dividend payments, and are the primary driver of retention growth and its surrogate, *i.e.* book value per share growth. As such, under these circumstances, greater emphasis must be placed upon projected earnings per share growth. In this regard, it is worthwhile to note that Professor Myron Gordon, the foremost proponent of the DCF model in rate cases, concluded that the best measure of growth in the

DCF model is a forecast of earnings per share growth.[4] Hence, to follow Professor Gordon's findings, projections of earnings per share growth, such as those published by IBES/First Call, Zacks, and Value Line, represent a reasonable assessment of investor expectations.

It is appropriate to consider all forecasts of earnings growth rates that are available to investors. In this regard, I have considered the forecasts from IBES/First Call, Zacks, and Value Line. The IBES/First Call and Zacks growth rates are consensus forecasts taken from a survey of analysts that make projections of growth for these companies. The IBES/First Call and Zacks estimates are obtained from the Internet and are widely available to investors free-of-charge. First Call is probably quoted most frequently in the financial press when reporting on earnings forecasts. The Value Line forecasts are also widely available to investors and can be obtained by subscription or free-of-charge at most public and collegiate libraries.

The forecasts of earnings per share growth, as shown on Schedule 10 provide a range of growth rates of 4.83% to 6.10%. Although the DCF growth rates cannot be established solely with a mathematical formulation, it is my opinion that an investor-expected growth rate of 5.50% is reasonable as it is within the array of earnings per share growth rates shown by the analysts' forecasts. The Value Line forecast of dividend per share growth is inappropriate in this regard due to the forecast decline in the dividend payout. Moreover, the restructuring and consolidation now taking place in the utility industry will provide additional risks and opportunities as the utility industry successfully adapts to the new business

[4] "Choice Among Methods of Estimating Share Yield," The Journal of Portfolio Management, spring 1989 by Gordon, Gordon & Gould.

environment. These changes in growth fundamentals will undoubtedly develop beyond the next five years typically considered in the analysts' forecasts and will enhance the growth prospects for the future. In my opinion, a 5.50% growth rate will accommodate all these factors.

43. Q. Are the dividend yield and growth components of the DCF adequate to explain the rate of return on common equity when it is used in the calculation of the weighted average cost of capital?

A. Only if the capital structure ratios are measured with the market value of debt and equity. If book values are used to compute the capital structure ratios, then an adjustment is required.

44. Q. Please explain why.

A. If regulators use the results of the DCF (which are based on the market price of the stock of the companies analyzed) to compute the weighted average cost of capital with a book-value capital structure used for ratesetting purposes, those results will not reflect the higher level of financial risk associated with the book value capital structure. Where, as here, a stock's market price diverges from a utility's book value, the potential exists for a financial-risk difference, because the capitalization of a utility measured at its market value contains more equity, less debt and therefore less risk than the capitalization measured at its book value.

It must be recognized that in order to make the DCF results relevant to the capitalization measured at book value (as is done for rate setting purposes) the market-derived cost rate cannot be used without modification. As I will explain later

in my testimony, the results of the DCF model can be adjusted to account for differences in risk when the book-value capital structure contains more financial leverage than the market-value capital structure.

45. Q. Is your leverage adjustment dependent upon the market valuation or book valuation from an investor's perspective?

A. The only perspective that is important to investors is the return that they can realize on the market value of their investment. As I have measured the DCF, the simple yield (D/P) plus growth (g) provides a return applicable strictly to the price (P) that an investor is willing to pay for a share of stock. The DCF formula is derived from the standard valuation model: P = D/(k-g), where P = price, D = dividend, k = the cost-of-equity, and g = growth in cash flows. By rearranging the terms, we obtain the familiar DCF equation: k= D/P + g. All of the terms in the DCF equation represent investors' assessment of expected future cash flows that they will receive in relation to the value that they set for a share of stock (P). The need for the leverage adjustment arises when the results of the DCF model (k) are to be applied to a capital structure that is different than indicated by the market price (P). From the market perspective, the financial risk of the Electric Group is accurately measured by the capital structure ratios calculated from the market capitalization of a firm. If the ratesetting process utilized the market-capitalization ratios, then no additional analysis or adjustment would be required, and the simple yield (D/P) plus growth (g) components of the DCF would satisfy the financial risk associated with the market value of the equity capitalization. Since the ratesetting process uses a different set of ratios calculated from the book-value capitalization, then further analysis is required

to synchronize the financial risk of the book capitalization with the required return on the book value of the equity. This adjustment is developed through precise mathematical calculations, using well-recognized analytical procedures that are widely accepted in the financial literature. To arrive at that return, the rate of return on common equity is the unleveraged cost of capital (or equity return at 100% equity) plus one or more terms reflecting the increase in financial risk resulting from the use of leverage in the capital structure. Multiple terms are used in the case of debt and preferred stock.

46. Q. Is your leverage adjustment based on a factor designed to transform the return into one that is designed to produce a particular market-to-book ratio?

A. No. The adjustment that I label as a "leverage adjustment" is merely a convenient way to incorporate into the result of the simple DCF model (*i.e.*, D/P + g), when applied to the capital structure used in ratemaking, which is computed with book-value weights rather than market-value weights. I specify a separate factor, which I call the leverage adjustment, but there is no need to do so other than providing identification for this factor. If I expressed my return solely in the context of the book-value weights that we use to calculate the weighted average cost of capital, and ignore the familiar D/P + g expression entirely, then there would be no separate element to reflect the financial-leverage change from market-value to book-value capitalization. This is because the equity return applicable to the book value common equity ratio is equal to 9.26%, which is the return for the Electric Group applicable to its equity with no debt in its capital structure (*i.e.*, the cost of capital is equal to the cost-of-equity with a 100% equity ratio) plus 2.46% compensation for having a

50.98% debt ratio, plus 0.08% for having a 1.21% preferred stock ratio (see pages E-12 and E-13 of Appendix E). The sum of the parts is 11.80% (9.26% + 2.46% + 0.08%) and there is no need to even address the cost-of-equity in terms of D/P + g. To express this same return in the context of the familiar DCF model, I summed the 5.60% dividend yield, the 5.50% growth rate, and the 0.70% for the leverage adjustment in order to arrive at the same 11.80% (5.60% + 5.50% + 0.70%) return. I know of no means to mathematically solve for the 0.70% leverage adjustment by expressing it in the terms of any particular relationship of market price to book value. The 0.70% adjustment is merely a convenient way to compare the 11.80% return computed directly with the Modigliani & Miller formulas to the 11.10% return generated by the DCF model based on a market value-capital structure. My point is that when we use a market-determined cost-of-equity developed from the DCF model, it reflects a level of financial risk that is different (in this case, lower) from the capital structure stated at book value. This process has nothing to do with targeting any particular market-to-book ratio.

47. Q. Are there specific factors that influence market-to-book ratios that determine whether the leverage adjustment should be made?

A. No. The leverage adjustment is not intended, nor was it designed, to address the reasons that stock prices vary from book value. Hence, any observations concerning market prices relative to book are not on point. The leverage adjustment deals with the issue of financial risk and is not intended to transform the DCF result to a book-value return through a market-to-book adjustment. Again, the leverage adjustment that I propose is based on the fundamental financial precept that the cost-of-equity is

equal to the rate of return for an unleveraged firm (*i.e.*, where the overall rate of return equates to the cost-of-equity with a capital structure that contains 100% equity) plus the additional return required for introducing debt and/or preferred stock leverage into the capital structure.

Further, as noted previously, the high market prices of utility stocks cannot be attributed solely to the notion that these companies are expected to earn a return on equity that differs from its cost-of-equity. Stock prices above book value are common for utility stocks, and indeed the stock prices of non-regulated companies exceed book values by even greater margins. In this regard, according to the Barron's issue of February 8, 2010, the major market indices' market-to-book ratios are well above unity. The Dow Jones Utility index traded at a multiple of 1.54 times book value, which is below the market multiple of other indices. For example, the S&P Industrial index was at 2.96 times book value, and the Dow Jones Industrial index was at 4.44 times book value. It is difficult to accept that the vast majority of all firms operating in our economy are generating returns far in excess of their cost of capital. Certainly, in our free-market economy, competition should contain such "excesses" if they indeed exist.

Finally, the leverage adjustment adds stability to the final DCF cost rate. That is to say, as the market capitalization increases relative to its book value, the leverage adjustment increases while the simple yield (D/P) plus growth (g) result declines. The reverse is also true that when the market capitalization declines, the leverage adjustment also declines as the simple yield (D/P) plus growth (g) result increases.

48. Q. What are the implications of a DCF-derived return that is related to market value when the results are applied to the book value of a utility's capitalization?

A. The capital structure ratios measured at the utility's book value show more financial leverage, and higher risk, than the capitalization measured at its market value. Please refer to page E-12 of Appendix E for the comparison. This means that a market-derived cost-of-equity, using models such as DCF and CAPM, reflects a level of financial risk that is different -- in this instance, much lower -- from that shown by the book-value capitalization. Hence, it is necessary to develop a cost-of-equity that reflects the higher financial risk related to the book-value capitalization used for ratesetting purposes. Failure to make this modification would result in a mismatch of the lower financial risk related to market-value used to measure the cost-of-equity and the higher financial risk of the book-value capital structure used in the ratesetting process. That is to say, the cost-of-equity for the Electric Group that is related to the 47.80% common equity ratio using book value has higher financial risk than the 56.05% common equity ratio using market values. Because the ratesetting process utilizes the book-value capitalization, it is necessary to adjust the market-determined cost-of-equity for the higher financial risk related to the book value of the capitalization.

49. Q. How is the DCF-determined cost-of-equity adjusted for the financial risk associated with the book value of the capitalization?

A. In pioneering work, Nobel laureates Modigliani and Miller developed several theories about the role of leverage in a firm's capital structure. As part of that work,

Modigliani and Miller established that, as the borrowing of a firm increases, the expected return on stockholders' equity also increases.[5] This principle is incorporated into my leverage adjustment which recognizes that the expected return on equity increases to reflect the increased risk associated with the higher financial leverage shown by the book-value capital structure, as compared to the market value capital structure that contains lower financial risk. Modigliani and Miller proposed several approaches to quantify the equity return associated with various degrees of debt leverage in a firm's capital structure. These formulas point toward an increase in the equity return associated with the higher financial risk of the book-value capital structure. Simply stated, the leverage adjustment contains no factor for a particular market-to-book ratio. It merely expresses the cost-of-equity as the unleveraged return plus compensation for the additional risk of introducing debt and/or preferred stock into the capital structure. There can be no dispute that a firm's financial risk varies with the relative amount of leverage contained in its capital structure. As detailed in Appendix E, the Modigliani and Miller theory when applied to the Electric Group shows that the cost-of-equity increases by 0.70% (11.80% - 11.10%) when the book value of equity, rather than the market value of equity, is used for ratesetting purposes.

[5] Modigliani, F. and Miller, M.H. "The Cost of Capital, Corporation Finance, and the Theory of Investments." American Economic Review, June 1958, 261-297.

Modigliani, F. and Miller, M. H. "Taxes and the Cost of Capital: A Correction." American Economic Review, June 1963, 433-443.

50. Q. Please provide the DCF return based upon your preceding discussion of dividend yield, growth, and leverage.

A. As explained previously, I have utilized a six-month average dividend yield ("D_1 /P_0") adjusted in a forward-looking manner for my DCF calculation. This dividend yield is used in conjunction with the growth rate ("g ") previously developed. The DCF also includes the leverage modification ("lev.") required when the book-value equity ratio is used in determining the weighted average cost of capital in the ratesetting process rather than the market-value equity ratio related to the price of stock.

	D_1/P_0	+	g	+	$lev.$	=	k
Electric Group	5.60%	+	5.50%	+	0.70%	=	11.80%

The DCF result shown above represents the simplified (*i.e.*, Gordon) form of the model that contains a constant-growth assumption. I should reiterate, however, that the DCF-indicated cost rate provides an explanation of the rate of return on common stock market prices without regard to the prospect of a change in the price-earnings multiple. An assumption that there will be no change in the price-earnings multiple is not supported by the realities of the equity market, because price-earnings multiples do not remain constant. This is one of the constraints of this model that makes it important to consider other model results when determining a company's cost-of-equity. For this reason, the DCF cost rate I have developed likely understates the cost-of-equity.

VIII. RISK-PREMIUM ANALYSIS

51. Q. Please describe your use of the risk-premium approach to determine the cost-of-equity.

A. The details of my use of the Risk-Premium approach and the evidence in support of my conclusions are set forth in Appendix G. I will summarize them here. With this method, the cost-of-equity capital is determined by corporate bond yields plus a premium to account for the fact that common equity is exposed to greater investment risk than debt capital. As with other models of the cost-of-equity, the Risk-Premium approach has its limitations, including potential imprecision in the assessment of the future cost of corporate debt and the measurement of the risk-adjusted common-equity premium.

52. Q. What long-term public utility debt cost rate did you use in your risk premium analysis?

A. In my opinion, a 6.00% yield represents a reasonable estimate of the prospective yield on long-term A-rated public-utility bonds. The Moody's index and the Blue Chip forecasts support this figure. The historical yields for long-term public utility debt are shown graphically on page 1 of Schedule 11. For the twelve months ended December 2009, the average monthly yield on Moody's A-rated index of public-utility bonds was 6.04%. For the six and three-month periods ended December 2009, the yields were 5.70% and 5.66%, respectively. During the twelve-months ended December 2009, the range of the yields on A-rated public-utility bonds was 5.53% to 6.49%.

53. Q. What forecasts of interest rates have you considered in your analysis?

A. I have determined the prospective yield on A-rated public utility debt by using the Blue Chip Financial Forecasts ("Blue Chip") along with the spread in the yields that I describe above and in Appendix F. The Blue Chip is a reliable authority and contains consensus forecasts of a variety of interest rates compiled from a panel of banking, brokerage, and investment-advisory services. In early 1999, Blue Chip stopped publishing forecasts of yields on A-rated public-utility bonds because the Federal Reserve deleted these yields from its Statistical Release H.15. To independently project a forecast of the yields on A-rated public-utility bonds, I have combined the forecast yields on long-term Treasury bonds published on January 1 2010, and a yield spread of 1.50%. As shown on page 5 of Schedule 11, A-rated public-utility bonds have yielded more than Treasury bonds by 1.93% as the twelve-month average, 1.42% as the six-month average, and 1.39% as the three-month average. From these averages, 1.50% represents a reasonable spread for the yield on A-rated public-utility bonds over Treasury bonds. For comparative purposes, I also have shown the Blue Chip forecasts of Aaa-rated and Baa-rated corporate bonds. These forecasts are:

		Blue Chip Financial Forecasts				
		Corporate		30-Year	A-rated Public Utility	
Year	Quarter	Aaa-rated	Baa-rated	Treasury	Spread	Yield
2010	1st	5.3%	6.5%	4.5%	1.50%	6.00%
2010	2nd	5.4%	6.6%	4.6%	1.50%	6.10%
2010	3rd	5.5%	6.7%	4.8%	1.50%	6.30%
2010	4th	5.7%	6.8%	4.9%	1.50%	6.40%
2011	1st	5.8%	6.9%	5.1%	1.50%	6.60%
2011	2nd	5.9%	7.0%	5.2%	1.50%	6.70%

54. Q. Are there additional forecasts of interest rates that extend beyond those shown above?

A. Yes. Twice yearly, Blue Chip provides long-term forecasts of interest rates. In its December 1, 2009 publication, Blue Chip published forecasts of interest rates as follows:

	Blue Chip Financial Forecasts		
	Corporate		30-Year
Averages	Aaa-rated	Baa-rated	Treasury
2011-15	6.4%	7.5%	5.6%
2016-20	6.8%	7.8%	5.9%

Given these forecasted interest rates, a 6.00% yield on A-rated public-utility bonds represents a reasonable expectation.

55. Q. What equity risk premium have you determined for public utilities?

A. Appendix G provides a discussion of the financial returns that I relied upon to develop the appropriate equity risk premium for the S&P Public Utilities. I have calculated the equity risk premium by comparing the market returns on utility stocks and the market returns on utility bonds. I chose the S&P Public Utility index for the purpose of measuring the market returns for utility stocks. The S&P Public Utility index is reflective of the risk associated with regulated utilities, rather than some broader market indexes, such as the S&P 500 Composite index. The S&P Public Utility index is a subset of the overall S&P 500 Composite index. Use of the S&P Public Utility index reduces the role of judgment in establishing the risk premium for

public utilities. With the equity risk premiums developed for the S&P Public Utilities as a base, I derived the equity risk premium for the Electric Group.

56. Q. What equity risk premium for the S&P Public Utilities have you determined for this case?

A. To develop an appropriate risk premium, I analyzed the results for the S&P Public Utilities by averaging (i) the midpoint of the range shown by the geometric mean and median and (ii) the arithmetic mean. This procedure has been employed to provide a comprehensive way of measuring the central tendency of the historical returns. As shown by the values set forth on page 2 of Schedule 12, the indicated risk premiums for the various time periods analyzed are 5.51% (1928-2007), 6.58% (1952-2007), 6.08% (1974-2007), and 6.37% (1979-2007). The selection of the shorter periods taken from the entire historical series is designed to provide a risk premium that conforms more nearly to present investment fundamentals, and removes some of the more distant data from the analysis.

57. Q. Do you have further support for the selection of the time periods used in your equity risk premium determination?

A. Yes. First, the terminal year of my analysis presented in Schedule 12 represents the returns realized through 2007. An update to 2008 has not been prepared because of the difficulty obtaining the return on public-utility bonds from Lehman Brothers, which is in bankruptcy. Second, the selection of the initial year of each period was based upon the financial market defining events that I note here and describe in Appendix G. These events were fixed in history and cannot be manipulated as later

financial data becomes available. That is to say, using the Treasury-Federal Reserve Accord as a defining event, the year 1952 is fixed as the beginning point for the measurement period regardless of the financial results that subsequently occurred. Likewise, 1974 represented a benchmark year because it followed the 1973 Arab Oil embargo. Also, the year 1979 was chosen because it began the deregulation of the financial markets. I consistently use these periods in my work, and additional data are merely added to the earlier results when they become available. The periods chosen are therefore not driven by the desired results of the study.

58. Q. What conclusions have you drawn from these data?

A. Using the summary values provided on page 2 of Schedule 12, the 1928-2007 period provides the lowest indicated risk premium, while the 1952-2007 period provides the highest risk premium for the S&P Public Utilities. Within these bounds, a common equity risk premium of 6.23% (6.08% + 6.37% = 12.45% ÷ 2) is derived by averaging data covering the periods 1974-2007 and 1979-2007. Therefore, 6.23% represents a reasonable risk premium for the S&P Public Utilities in this case.

As noted earlier in my fundamental risk analysis, differences in risk characteristics must be taken into account when applying the results for the S&P Public Utilities to the Electric Group. I recognized these differences in the development of the equity risk premium in this case. I previously enumerated various differences in fundamentals between the Electric Group and the S&P Public Utilities, including size, market ratios, common equity ratio, return on book equity, operating ratios, coverage, quality of earnings, internally generated funds, and betas. In my opinion, these differences indicate that 5.50% represents a reasonable common equity

risk premium in this case. This represents approximately 88% (5.50% ÷ 6.23% = 0.88) of the risk premium of the S&P Public Utilities and is reflective of the risk of the Electric Group compared to the S&P Public Utilities.

59. Q. What common equity cost rate did you determine based on your risk premium analysis?

A. The cost-of-equity (*i.e.*, "k") is represented by the sum of the prospective yield for long-term public utility debt (*i.e.*, "i"), and the equity risk premium (*i.e.*, "RP"). The Risk Premium approach provides a cost-of-equity of:

	i	+	*RP*	=	*k*
Electric Group	6.00%	+	5.50%	=	11.50%

IX. CAPITAL ASSET PRICING MODEL

60. Q. Have you used the Capital Asset Pricing Model to measure the cost-of-equity in this case?

A. Yes, as with other models of the cost-of-equity, the CAPM contains a variety of assumptions and shortcomings that I discuss in Appendix H. Therefore, this method should be used with other methods to measure the cost-of-equity, as each will complement the other and will provide a result that will help reduce the unavoidable defects found in each method.

61. Q. What are the features of the CAPM as you have used it?

A. The CAPM uses the yield on a risk-free interest- bearing obligation plus a rate-of-return premium that is proportional to the systematic risk of an investment. The details of my use of the CAPM and evidence in support of my conclusions are set forth in Appendix H. To compute the cost-of-equity with the CAPM, three components are necessary: a risk-free rate of return ("Rf"), the beta measure of systematic risk ("β"), and the market risk premium ("Rm-Rf") derived from the total return on the market of equities reduced by the risk-free rate of return. The CAPM specifically accounts for differences in systematic risk (*i.e.*, market risk as measured by the beta) between an individual firm or group of firms and the entire market of equities. As such, to calculate the CAPM it is necessary to employ firms with traded stocks. In this regard, I performed a CAPM calculation for the Electric Group. In contrast, my Risk Premium approach also considers industry- and company-specific factors because it is not limited to measuring just systematic risk. As a consequence, the Risk Premium approach is more comprehensive than the CAPM. In addition, the Risk Premium approach provides a better measure of the cost-of-equity because it is founded upon the yields on corporate bonds rather than Treasury bonds.

62. Q. What betas have you considered in the CAPM?

A. For my CAPM analysis, I initially considered the Value Line betas. As shown on page 1 of Schedule 13, the average beta is 0.71 for the Electric Group.

63. Q. What betas have you used in the CAPM determined cost-of-equity?

A. The betas must be reflective of the financial risk associated with the ratesetting capital structure that is measured at book value. Therefore, Value Line betas cannot be used directly in the CAPM, unless those betas are applied to a capital structure measured with market values. To develop a CAPM cost rate applicable to a book value capital structure, the Value Line (market value) betas have been unleveraged and releveraged for the book value common equity ratios using the Hamada formula,[6] as follows:

$$\beta l = \beta u \, [1 + (1 - t) \, D/E + P/E]$$

where ßl = the leveraged beta, ßu = the unleveraged beta, t = income tax rate, D = debt ratio, P = preferred stock ratio, and E = common equity ratio. The betas published by Value Line have been calculated with the market price of stock and therefore are related to the market value capitalization. By using the formula shown above and the capital structure ratios measured at market value, the beta would become 0.47 for the Electric Group if it employed no leverage and was 100% equity financed. With the unleveraged beta as a base, I calculated the leveraged beta of 0.81 for the book value capital structure of the Electric Group. The betas and corresponding common equity ratios are:

Market Values		Book Values	
Beta	Common Equity Ratio	Beta	Common Equity Ratio
0.71	56.05%	0.81	47.80%

[6] Robert S. Hamada, "The Effects of the Firm's Capital Structure on the Systematic Risk of Common Stocks" *The Journal of Finance* Vol. 27, No. 2, Papers and Proceedings of the Thirtieth Annual Meeting of the American Finance Association, New Orleans, Louisiana, December 27-29, 1971. (May 1972), pp.435-452

The book value leveraged beta that I will employ in the CAPM cost-of-equity is 0.81 for the Electric Group.

64. Q. What risk-free rate have you used in the CAPM?

A. For reasons explained in Appendix F, I have employed the yields on 20-year Treasury bonds using historical data. For forecasts, I have used the yields on 30-year Treasury bonds that are published by Blue Chip. The reason that I used the 20-year Treasury yield in my historical analysis relates to the interruption in the 30-year series, which had no data reported for the months of March 2002 to January 2006. That is to say, 48-months of data were missing from the 60-months that I used for my five-year historical analysis shown on page 2 of Schedule 13. As shown on pages 2 and 3 of Schedule 13, I provided the historical yields on Treasury notes and bonds. For the twelve months ended December 2009, the average yield was 4.11%, as shown on page 3 of that schedule. For the six- and three-months ended December 2009, the yields on 20-year Treasury bonds were 4.28% and 4.27%, respectively. During the twelve-months ended December 2009, the range of the yields on 20-year Treasury bonds was 3.46% to 4.51%. As shown on page 4 of Schedule 13, forecasts published by Blue Chip on January 1, 2010 indicate that the yields on long-term Treasury bonds are expected to be in the range of 4.5% to 5.2% during the next six quarters. The longer-term forecasts described previously (see Blue Chip Financial Forecast presented earlier) show that the yields on 30-year Treasury bonds will average 5.6% from 2011 through 2015 and 5.9% for 2016 to 2020. For reasons explained previously, forecasts of interest rates should be emphasized at this time in selecting the risk-free rate of return in CAPM. Hence, I have used a 4.50% risk-free rate of

return for CAPM purposes, which considers not only the Blue Chip forecasts, but also the recent trend in the yields on long-term Treasury bonds.

65. Q. What market premium have you used in the CAPM?

A. As shown in Appendix H, the market premium is derived from the SBBI Classic Yearbook (*i.e.*, 6.05%) and the Value Line and S&P 500 returns (*i.e.*, 7.18%). For the historically based market premium, I have used the arithmetic mean. The market premium as averaged from these sources equals 6.62% (6.05% + 7.18% = 13.23% ÷ 2).

66. Q. Are there adjustments to the CAPM results that are necessary to fully reflect the rate of return on common equity?

A. Yes. The technical literature supports an adjustment relating to the size of the company or portfolio for which the calculation is performed. As the size of a firm decreases, its risk and, hence, its required return increases. Moreover, in his discussion of the cost of capital, Professor Brigham has indicated that smaller firms have higher capital costs than otherwise similar larger firms (see *Fundamentals of Financial Management*, fifth edition, page 623). Also, the Fama/French study (see "The Cross-Section of Expected Stock Returns"; The Journal of Finance, June 1992) established that the size of a firm helps explain stock returns. In an October 15, 1995 article in Public Utility Fortnightly, entitled "Equity and the Small-Stock Effect," it was demonstrated that the CAPM could understate the cost-of-equity significantly according to a company's size. Indeed, it was demonstrated in the SBBI Yearbook that the returns for stocks in lower deciles (*i.e.*, smaller stocks) had returns in excess

of those shown by the simple CAPM. In this regard, the Electric Group has a market-based average equity capitalization of $3,304 million. For my CAPM analysis, I have adopted a mid-cap adjustment of 0.94%.

67. Q. What CAPM result have you determined?

A. Using the 4.50% risk-free rate of return, the leverage adjusted beta of 0.81 for the Electric Group, the 6.62% market premium, and the 0.94% size adjustment, I derived the following CAPM-indicated cost-of-equity:

	Rf	+	*β*	x (	*Rm-Rf*	) +	*size*	=	*k*
Electric Group	4.50%	+	0.81	x (	6.62%	) +	0.94%	=	10.80%

X. COMPARABLE-EARNINGS APPROACH

68. Q. How have you applied the Comparable Earnings approach in this case?

A. The technical aspects of the Comparable Earnings approach are set forth in Appendix I. Because regulation is a substitute for competitively determined prices, the returns realized by non-regulated firms with comparable risks to a public utility provide useful insight into a fair rate of return. In order to identify the appropriate return, it is necessary to analyze returns earned (or realized) by other firms within the context of the Comparable Earnings standard. The firms selected for the Comparable Earnings approach should be companies whose prices are not subject to cost-based price ceilings (*i.e.*, non-regulated firms) so that circularity is avoided. There are two avenues available to implement the Comparable Earnings approach. One method involves the selection of another industry (or industries) with comparable risks to the public utility in question, and the results for all companies within that industry serves

as a benchmark. The second approach requires the selection of parameters that represent similar risk traits for the public utility and the comparable risk companies. Using this approach, the business lines of the comparable companies become unimportant. The latter approach is preferable with the further qualification that the comparable risk companies exclude regulated firms in order to avoid the circular reasoning implicit in the use of the achieved earnings/book ratios of other regulated firms. The United States Supreme Court has held that:

> A public utility is entitled to such rates as will permit it to earn a return on the value of the property which it employs for the convenience of the public equal to that generally being made at the same time and in the same general part of the country on investments in other business undertakings which are attended by corresponding risks and uncertainties.... The return should be reasonably sufficient to assure confidence in the financial soundness of the utility and should be adequate, under efficient and economical management, to maintain and support its credit and enable it to raise the money necessary for the proper discharge of its public duties. Bluefield Water Works vs. Public Service Commission, 262 U.S. 668 (1923).

Therefore, it is important to identify the returns earned by firms that compete for capital with a public utility. This can be accomplished by analyzing the returns of non-regulated firms that are subject to the competitive forces of the marketplace.

69. Q. How have you implemented the Comparable Earnings approach?

A. In order to implement the Comparable Earnings approach, non-regulated companies were selected from the Value Line Investment Survey for Windows that have six categories (see Appendix I for definitions) of comparability designed to reflect the risk of the Electric Group. These screening criteria were based upon the range as defined by the rankings of the companies in the Electric Group. The items considered

were: Timeliness Rank, Safety Rank, Financial Strength, Price Stability, Value Line betas, and Technical Rank. The identities of the companies comprising the Comparable Earnings group and their associated rankings within the ranges are identified on page 1 of Schedule 14.

Value Line data was relied upon because it provides a comprehensive basis for evaluating the risks of the comparable firms. As to the returns calculated by Value Line for these companies, there is some downward bias in the figures shown on page 2 of Schedule 14, because Value Line computes the returns on year-end rather than average book value. If average book values had been employed, the rates of return would have been slightly higher. Nevertheless, these are the returns considered by investors when taking positions in these stocks. Because many of the comparability factors, as well as the published returns, are used by investors in selecting stocks, and to the extent that investors rely on the Value Line service to gauge returns, it is, therefore, an appropriate database for measuring comparable return opportunities.

70. Q. What data have you used in your Comparable Earnings analysis?

A. I have used both historical realized returns and forecasted returns for non-utility companies. As noted previously, I have not used returns for utility companies in order to avoid the circularity that arises from using regulatory-influenced returns to determine a regulated return. It is appropriate to consider a relatively long measurement period in the Comparable Earnings approach in order to cover conditions over an entire business cycle. A ten-year period (5 historical years and 5 projected years) is sufficient to cover an average business cycle. Unlike the DCF and

CAPM, the results of the Comparable Earnings method can be applied directly to the book value capitalization. In other words, the Comparable Earnings approach does not contain the potential misspecification contained in market models when the market capitalization and book-value capitalization diverge significantly. The historical rate of return on book common equity was 13.2% as shown on page 2 of Schedule 14. The forecast rate of return, as published by Value Line, approximates 13.4%, as indicated on page 2 of Schedule 14.

71. Q. What rate of return on common equity have you determined in this case using the Comparable Earnings approach?

A. The average of the historical and forecast median rates of return is:

	Historical	*Forecast*	*Average*
Comparable Earnings Group	13.2%	13.4%	13.30%

As noted previously, I have used the results from the Comparable Earnings method to confirm the results of the market-based models.

XI. CONCLUSION ON COST-OF-EQUITY

72. Q. What is your conclusion concerning the Company's cost of common equity?

A. Based upon the application of the variety of methods and models described previously, I recommend that the Commission set the Company's rate of return on common equity at 11.75%, *i.e.* the top end of my 11.5%-11.75% range. By proposing a cost-of-equity at the upper end of my findings, I have sought to recognize the exemplary performance of the Company. My cost-of-equity recommendation makes

no provision for the prospect that the rate of return may not be achieved due to attrition and/or other unforeseen events.

73. Q. Does this conclude your direct testimony?

A. Yes, it does.

PECO ENERGY COMPANY
STATEMENT NO. 5

APPENDICES A THROUGH I

TO ACCOMPANY THE

DIRECT TESTIMONY
OF
PAUL R. MOUL

DOCKET NO. R-2010-2161575

**Concerning Rate of Return
Including Capital Structure Ratios,
Embedded Cost of Debt and Preferred
Stock, and the Cost of Equity**

APPENDIX A TO DIRECT TESTIMONY OF PAUL R. MOUL

EDUCATIONAL BACKGROUND, BUSINESS EXPERIENCE AND QUALIFICATIONS

I was awarded a degree of Bachelor of Science in Business Administration by Drexel University in 1971. While at Drexel, I participated in the Cooperative Education Program which included employment, for one year, with American Water Works Service Company, Inc., as an internal auditor, where I was involved in the audits of several operating water companies of the American Water Works System and participated in the preparation of annual reports to regulatory agencies and assisted in other general accounting matters.

Upon graduation from Drexel University, I was employed by American Water Works Service Company, Inc., in the Eastern Regional Treasury Department where my duties included preparation of rate case exhibits for submission to regulatory agencies, as well as responsibility for various treasury functions of the thirteen New England operating subsidiaries.

In 1973, I joined the Municipal Financial Services Department of Betz Environmental Engineers, a consulting engineering firm, where I specialized in financial studies for municipal water and wastewater systems.

In 1974, I joined Associated Utility Services, Inc., now known as AUS Consultants. I held various positions with the Utility Services Group of AUS Consultants, concluding my employment there as a Senior Vice President.

In 1994, I formed P. Moul & Associates, an independent financial and regulatory consulting firm. In my capacity as Managing Consultant and for the past twenty-nine years, I have continuously studied the rate of return requirements for cost of service-regulated firms. In this regard, I have supervised the preparation of rate of return studies, which were employed, in

connection with my testimony and in the past for other individuals. I have presented direct testimony on the subject of fair rate of return, evaluated rate of return testimony of other witnesses, and presented rebuttal testimony.

My studies and prepared direct testimony have been presented before thirty-six (36) federal, state and municipal regulatory commissions, consisting of: the Federal Energy Regulatory Commission; state public utility commissions in Alabama, Alaska, California, Colorado, Connecticut, Delaware, Florida, Georgia, Hawaii, Illinois, Indiana, Iowa, Kentucky, Louisiana, Maine, Maryland, Massachusetts, Michigan, Minnesota, Missouri, New Hampshire, New Jersey, New York, North Carolina, Ohio, Oklahoma, Pennsylvania, Rhode Island, South Carolina, Tennessee, Texas, Virginia, West Virginia, Wisconsin, the Philadelphia Gas Commission. My testimony has been offered in over 200 rate cases involving electric power, natural gas distribution and transmission, resource recovery, solid waste collection and disposal, telephone, wastewater, and water service utility companies. While my testimony has involved principally fair rate of return and financial matters, I have also testified on capital allocations, capital recovery, cash working capital, income taxes, factoring of accounts receivable, and take-or-pay expense recovery. My testimony has been offered on behalf of municipal and investor-owned public utilities and for the staff of a regulatory commission. I have also testified at an Executive Session of the State of New Jersey Commission of Investigation concerning the BPU regulation of solid waste collection and disposal.

I was a co-author of a verified statement submitted to the Interstate Commerce Commission concerning the 1983 Railroad Cost of Capital (Ex Parte No. 452). I was also co-author of comments submitted to the Federal Energy Regulatory Commission regarding the