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BEFORE THE

PENNSYLVANIA PUBLIC UTILITY COMMISSION

PENNSYLVANIA POWER & LIGHT COMPANY	)))	DOCKET NO. R-00943271

DIRECT TESTIMONY

OF

MATTHEW I. KAHAL

ON

FAIR RATE OF RETURN

AND

NUCLEAR DECOMMISSIONING TRUST FUND EARNINGS

ON BEHALF OF THE

PENNSYLVANIA OFFICE OF CONSUMER ADVOCATE

APRIL 1995

EXETER
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OF

MATTHEW I. KAHAL

I. QUALIFICATIONS

Q. PLEASE STATE YOUR NAME AND BUSINESS ADDRESS.

A. My name is Matthew I. Kahal. My business address is 12510 Prosperity Drive, Silver Spring, Maryland 20904.

Q. PLEASE STATE YOUR EDUCATIONAL BACKGROUND.

A. I hold B.A. and M.A. degrees in economics from the University of Maryland and have completed course work and examination requirements for the Ph.D. degree in economics. My areas of academic concentration include industrial organization, economic development and econometrics.

Q. PLEASE STATE YOUR PRESENT POSITION.

A. I am a Senior Economist and Principal at Exeter Associates, Inc., a consulting firm specializing in public utility regulation and energy studies. I have held that position since January 1981.

Q. PLEASE DESCRIBE YOUR PAST EMPLOYMENT.

A. Prior to joining Exeter Associates, I served on the Economic Evaluation Directorate of the Aerospace Corporation, a federally-funded research and development center. At Aerospace, I conducted studies for the U.S. Department of Energy's Strategic Petroleum Reserve. From 1977 to 1980, I was employed with a Washington, D.C. consulting firm as a staff economist. In that position I conducted numerous technical studies on topics concerning the electric utility industry.

Before entering consulting, I served on the Economics Department faculties of the University of Maryland and Montgomery College teaching courses on economic principles, development and business.

Q. DESCRIBE YOUR PROFESSIONAL EXPERIENCE WITH THE PUBLIC UTILITY INDUSTRY.

A. I have been almost continually involved with consulting in the area of energy economics and public utility regulation since 1977. Much of that work has involved utility financial analysis and resource planning. I have conducted numerous cost of capital studies and other financial assessments. In the resource planning area, I have directed or conducted technical studies in the areas of utility load forecasting, time-of-use pricing, the impact of electric rates on industrial location, uranium pricing, direct load control, weatherization, capacity planning, alternative power supply technologies and environmental controls. I managed a project for the Electric Power Research Institute on the regulatory treatment of fuel expenses.

In addition, I have participated in utility rate and other regulatory proceedings. I have testified before utility commissions in Maryland, Ohio, Alabama, Oklahoma and Pennsylvania on load forecasting matters, before the New York and Ohio Commissions concerning rate impacts, before the Ohio, Pennsylvania and Alabama commissions on test year costs and revenues, and before commissions in Maryland, Pennsylvania, West

Virginia, Rhode Island, and the Tennessee Valley Authority on rate structure issues and the PURPA standards. I have testified on issues related to cogeneration and small power production in Maryland, Delaware, Maine, Pennsylvania and Oklahoma. Finally, I have testified in Florida, Illinois, Utah, Oklahoma, Texas, Indiana, Ohio, Rhode Island, Delaware, Idaho, New Jersey, Louisiana, Minnesota, South Carolina, Kentucky, Nevada, Pennsylvania and the Federal Energy Regulatory Commission on rate of return, capital structure, the accounting treatment of construction work in progress, rate phase-in and other financial issues.

Within the past few years I have made presentations as an invited speaker on utility issues before conferences, workshops and symposia sponsored by the Nuclear Regulatory Commission, Oak Ridge National Laboratory, the Michigan State University Institute for Public Utilities, the International Association of Energy Economists, the Massachusetts Energy Facilities Siting Council, Rutgers University, NARUC and the State of Maryland. I served as a lecturer on capacity planning issues for the NARUC Advanced Regulatory Studies Program. In October 1989, I testified before the Committee on Ways and Means, U.S. House of Representatives, on proposed legislation governing excess deferred taxes.

Q. WHAT ARE YOUR CURRENT RESPONSIBILITIES WITH EXETER ASSOCIATES?

A. For the past several years, I have directed Exeter's extensive work for the Maryland Department of Natural Resources (DNR). Our firm has been serving as DNR's integrator for economic studies, and as the Program Manager, I have chief responsibility for the technical studies performed by Exeter and other contractors. Study areas currently include or have included long-range load forecasting, power supply planning, plant licensing, weatherization, cogeneration/small power production, demand-side management and acid rain control.

My other main area of responsibility with Exeter concerns rate of return and utility financial issues. I have conducted a number of rate of return and other financial studies relating to electric, water, gas and telephone utilities, and I have testified on this subject area on approximately 100 occasions within the past 12 years. Appendix A accompanying my testimony identifies those cases.

Q. DO YOU BELONG TO ANY PROFESSIONAL ORGANIZATIONS?

A. I am a member of the American Economic Association, the American Finance Association, the Atlantic Economic Society and the International Association of Energy Economists.

Q. HAVE YOU PREVIOUSLY TESTIFIED BEFORE THE COMMISSION?

A. Yes. Over the past ten years I have testified on numerous occasions on rate of return and on other issues impacting Pennsylvania electric utilities.

II. OVERVIEW

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

A. I have been asked by the Office of Consumer Advocate (OCA) to develop a recommendation concerning the fair rate of return on the jurisdictional rate base of Pennsylvania Power & Light Company (PP&L or the Company). As part of my assignment, I have undertaken an independent study of the cost of common equity for a proxy group of comparable electric utility companies and for the proxy group selected by Company witness Moul. As a check, I have also applied the DCF model to PP&L itself, on a stand-alone basis.

In addition to fair rate of return, my direct testimony also addresses the question of the earnings rate which the Company should reasonably be able to earn on its nuclear decommissioning trust fund assets.

Q. WHAT RATE OF RETURN IS PENNSYLVANIA POWER & LIGHT COMPANY REQUESTING IN THIS CASE?

A. PP&L is requesting an overall return on its rate base of 10.22 percent, including a return on the common equity (ROE) component of 13.0 percent. The overall rate of return request is supported by Mr. Paul Moul, the Company's outside expert on cost of capital. Mr. Moul's direct testimony identified a cost of equity range (with adjustments) of 12 to 14 percent, based upon several methods.

The rate of return proposed by the Company is derived from a projected September 30, 1995 capital structure and the cost rates at that point in time. The proposed capitalization ratios are 46.56 percent for long-term debt, 7.59 percent for preferred stock and 45.88 percent for common equity. The proposed 45.88 percent common equity ratio is based upon projections of increases in the common equity balances during 1995, including substantial new issuances of common stock.

Q. WHAT IS YOUR RECOMMENDED RATE OF RETURN?

A. As shown on Schedule MIK-1, I recommend an overall rate of return of 9.33 percent, including a return on the common equity component of 11.1 percent. With one small modification, this return incorporates the Company's proposed capital structure and cost rates for long-term debt and preferred stock. Mr. Moul subtracts $115.9 million of unamortized losses on debt reacquisitions (i.e., call premiums) from the balance of long-term debt prior to calculating the capital structure ratios. That adjustment is improper, and I therefore have reversed it.

The only two changes I am offering at this time are the reduction to the proposed return on equity of 13.0 percent and the reversal of Mr. Moul's reduction to debt balance adjustment. Given the potential for changes in capital costs, I anticipate submitting an update to my cost of equity analysis at the time of my surrebuttal testimony in May of this year.

Q. PP&L IS REORGANIZING ALONG HOLDING COMPANY LINES. IS THIS AN ISSUE IN THIS CASE?

A. It is my understanding that the Company has received approval from this Commission to reorganize as a holding company, with PP&L remaining as the operating utility (Docket No. A-110500 F.206). This is intended to facilitate investments by the parent in non-utility businesses. The level of such investments, however, is expected to constitute only a very minor portion of total corporate assets for the next several years. Consequently, in the near term it will have little effect on the corporation's risk profile and financings.

Q. HOW HAVE YOU ESTIMATED THE COST OF COMMON EQUITY?

A. I have applied the standard discounted cash flow (DCF) model to the comparable group of "proxy" companies selected by PP&L's cost of capital witness Mr. Moul and to an alternative group of proxy companies which I have selected. My proxy group is composed of electric utilities with significant nuclear operations rated either "2" or "3" for Safety by the Value Line Investment Survey and single A by Moody's. PP&L is rated "2" for Safety by Value Line and A(2) by Moody's. The DCF method is the approach generally relied upon by this Commission in previous electric utility rate cases. I also apply the DCF model to PP&L on a stand-alone basis as a check on my proxy group studies.

My DCF return estimate for my proxy groups range between 10.8 and 11.3 percent for Mr. Moul's companies and 10.5 to 11.5 percent for my alternative proxy group. On a stand-alone basis, the cost of equity to PP&L is 11.0 to 11.5 percent. (See page 1 of Schedules MIK-5, 6 and 7 for a summary of these three studies.)

I am recommending 11.1 percent at this time which approximates the midpoint of my range of results for my two proxy groups. I am not giving any explicit recognition at this time to the recent trend in capital costs in selecting an ROE point value within this range. Had I done so, it might have been proper to select a figure closer to the lower end of the range. I will revisit this subject again in my May surrebuttal testimony, and an update will be presented if capital cost conditions warrant.

Q. MR. MOUL RECOMMENDS 13.0 PERCENT, OR TWO PERCENTAGE POINTS ABOVE YOUR RECOMMENDATION. WHAT ACCOUNTS FOR THE DIFFERENCE?

A. Mr. Moul employs the DCF methodology, but he emphasizes other methodologies, particularly the risk premium and comparable earnings in arriving at his recommendation. These latter two methodologies are inappropriate and only serve to bias upwards his cost of equity estimate and return on equity recommendation.

In addition, the cost of equity has moderated somewhat since the time Mr. Moul prepared his direct testimony in late 1994. I assume this improvement will be reflected in his update.

Q. WHAT ARE YOUR FINDINGS CONCERNING THE NUCLEAR DECOMMISSIONING TRUST FUND EARNINGS.

A. The Susquehanna nuclear decommission trust fund earnings are at issue because they directly determine the revenue requirements which Pennsylvania jurisdictional ratepayers must contribute. PP&L projects that with its asset allocation plan it should be able to earn 1.5 percentage points above the inflation rate, or a rate of return (after tax) of 5.5 percent. In my opinion, this is far too pessimistic, and furthermore, completely inconsistent with its own rate of return evidence. I estimate that a more realistic rate of return would be about 7.5 percent. This higher earnings rate -- all else equal -- means fewer revenue requirements contribution dollars are needed from ratepayers.

Q. HOW HAVE YOU ORGANIZED THE REMAINDER OF YOUR TESTIMONY?

A. The remainder of this section identifies trends in financial markets and compares that outlook with current conditions. It also briefly addresses capital structure. Section III is a conceptual discussion concerning the attributes of a fair rate of return to be applied to rate base. Section IV presents my cost of equity study. This study is based upon the application of the standard DCF model to two proxy groups of electric utility companies and to PP&L on a stand-alone basis. After presenting my study, the next section of my testimony critiques Mr. Moul's cost of equity evidence. The final section of my testimony presents my analysis of the nuclear decommissioning trust fund earnings.

Capital Cost Trends

Q. PLEASE DESCRIBE THE TRENDS IN CAPITAL COSTS IN RECENT YEARS.

A. I have prepared Schedule MIK-2 which provides detailed information on several capital cost indicators over the time period January 1984 through February 1995. (Full month data for March are not available at this time.) As this schedule indicates, capital costs moved downwards between 1984 and 1987 but then moved back up somewhat between 1987 and 1990. However, there has been a clear and pronounced downward trend in capital costs since 1990, with interest rates reaching their low point in the fall of 1993. Interest rates again have moved back up sharply since the October 1993 low point, but early 1995 capital costs still remain below the levels prevailing in most of the earlier years.

Q. WHAT EXPLAINS THE IMPROVEMENT IN CAPITAL COSTS BETWEEN 1989 AND 1993?

A. Capital costs remained stubbornly high during 1989 and 1990 in response to several key factors in financial markets including problems with the banking system, heightened concerns over the federal deficit, increases in interest rates overseas and inflation. Inflation accelerated to nearly 6 percent in 1990, and interest rates increased and stock prices fell in response. Problems in financial markets were exacerbated by the onset of the Middle East crisis in August 1990, with the resultant rising oil prices. The subsequent resolution of the Gulf War in early 1991 helped ease investor concerns over inflation and interest rates.

A clear trend of improving capital costs became evident in late 1991. During late 1991 and 1992, the Federal Reserve lowered its discount rate and the federal funds rate on several occasions, responding to a weak economy and the Fed's desire to pursue a policy of monetary easing. The weakness in the U.S. economy and the slow rate of recovery has also helped to moderate inflation, which has averaged about 3 percent (or less) during the past two years. Capital cost improvements in 1993 also have been helped by actions taken to deal with the federal deficit.

The low point was reached in October 1993 with single A utility bond yields falling to 7.3 percent and ten-year Treasury bond yields declining below 6.0 percent. Interest rates gradually drifted upward through January 1994, and during the past year capital markets have been very unstable, with interest rates increasing sharply.

Q. WHAT ACCOUNTS FOR THE UPWARD TREND DURING 1994?

A. The increase in capital costs over the past year is not fully understood, and according to some commentators, is not warranted by underlying fundamental conditions. In general, it appears that most of the upward pressure is the result of a strengthening U.S. economy. GDP in the fourth quarter 1993 surprised capital markets by growing at an annual rate in excess of 7 percent. In response to this strengthening, the Federal Reserve Board has taken steps on several occasions to increase short-term interest rates. Other possible causes of the 1994 bond market instability may include recent difficulties in U.S./Japanese trade relations, the behavior of highly leveraged hedge investment funds and instability in foreign bond and currency markets. The decline of the dollar relative to other major currencies during 1994 also has been of great concern to fixed income investors.

Q. WHAT IS THE CURRENT OUTLOOK?

A. While no one can be certain what will happen in capital markets, in general, analysts remain optimistic. The inflation fundamentals are viewed as positive, and the 7 percent fourth quarter 1993 GDP growth is viewed as an aberration. According to the survey reported in the March 1995 Blue Chip Economic Indicators, forecasters are predicting a gradual slowing of economic activity to more moderate rates of growth over the coming year (i.e., 3.1 percent in 1995 and 2.2 percent in 1996 compared to an estimated 4 percent for 1994).

We have already witnessed some significant moderation in capital costs in early 1995. Yields on long-term bonds as of mid-March 1995 have declined by about 0.5 percentage points as compared to December 1994 levels. The stock market has also performed well in early 1995.

Q. WHAT IS THE INTEREST RATE OUTLOOK AMONG ECONOMIC FORECASTERS?

A. In the table below, I present the latest near-term and long-term forecasts published by Blue Chip Economic Indicators. The Blue Chip "consensus" forecasts are essentially averages of the forecasts submitted to Blue Chip by approximately 40 to 50 major organizations. Blue Chip publishes its short-term (i.e., one- to two-year) forecasts monthly, while its long-term (i.e., ten-year) forecasts are published in March and October of each year, and the long-term figures shown below are as of March 1995. These forecasts indicate that over the next two years long-term interest rates are expected to remain at approximately the current (i.e., year end 1994) level. It is interesting to note that the "consensus" long-term forecast indicates a decline in Aaa corporate interest rates in the years after 1996 to an average level of 7.9 percent -- well below the year end 1994 level. The long-term inflation outlook is also favorable, with annual CPI increases averaging 3.4 percent through 2005.

Blue Chip "Consensus" Projections[1]			
	1995	1996	Ten-Year Average (1997—2006)
Inflation (CPI)	3.2%	3.6%	3.4%
Aaa Corporate	8.4	8.3	7.9
3-Month T-Bills	6.1	6.1	5.4

[1]March 10, 1995.

Q. HAS THE BOND MARKET INSTABILITY IMPACTED ELECTRIC UTILITY STOCKS?

A. Yes. There has been a sharp increase in electric utility dividend yields in 1994, with the increases leveling off to some degree in the latter part of 1994. In my opinion, the interest rate increases during the past year have been the primary cause of the slump in utility stock prices. In addition, electric utility investors are also concerned about pending regulatory reviews of retail wheeling, stranded investment and the so-called emerging competitive agenda. Declining ROE awards over the past two years may also have contributed to the declining price trend as investors scale back their expectations concerning future dividend and earnings growth.

Despite these problems which plagued the industry in 1994, there has been steady improvement so far in 1995.

Capital Structure

Q. WHAT IS PP&L'S APPROACH TO CAPITAL STRUCTURE IN THIS CASE?

A. The Company is basing its capital structure and debt/preferred cost claim in this case on its projected capital structure at September 30, 1995, the end of the test year. This capital structure has a slightly stronger common equity ratio than PP&L's actual ratio at September 30, 1994, primarily due to substantial planned equity issuances during the test year. Specifically, the Company plans on adding $78 million in new equity from dividend reinvestments and $100 million from a public issuance.

Q. ARE YOU DISPUTING THESE PROJECTIONS?

A. Not specifically. I would note, however, that the public issuance is planned for August 1995, months after the close of the record. PP&L is obviously not committed at this time to this issuance, the desirability and timing of which may depend on market conditions. Consequently, the $100 million should be reflected in the PUC approved capital structure in this case only if PP&L provides verification of the issuance prior to the Commission's final order in this case. Unless this is done, the Commission would be approving a hypothetical capital structure.

Q. DO YOU HAVE ANY SPECIFIC DISAGREEMENTS WITH THE REQUESTED CAPITAL STRUCTURE?

A. Yes, I have one disagreement. As described by Mr. Moul, PP&L's actual capitalization data have been modified to permit recovery of losses on reacquired debt. These losses are primarily call premiums incurred by the Company in the process of refinancing outstanding high cost debt issues after 1986 when long-term interest rates fell dramatically relative to interest rates in the early and mid 1980s. PP&L chose to refinance and thereby incur the call premiums because doing so presumably provides substantial savings in interest expense over the remaining life of the bonds being refinanced.

Mr. Moul's treatment provides the Company both a return of and a return on these expenditures in three ways. First, the annual amortization of the losses (net of some minor gains) is added to interest expense. This totals about $7.2 million. Second, the unamortized balance of $115.9 million is subtracted from the long-term debt balance when computing the embedded cost of debt. The combination of these two actions increases the embedded cost of debt from 7.40 to 7.97 percent. Third, Mr. Moul also subtracts the $115.9 million of unamortized losses from the debt balance for capital structure purposes. This third adjustment serves to artificially inflate the equity portion of capital structure, thus increasing the overall pre-tax rate of return.

Q. WHY DO YOU DISAGREE WITH THIS ADJUSTMENT?

A. I agree with Mr. Moul that PP&L should receive a return <u>of</u> and a return <u>on</u> the call premiums (i.e., losses on reacquisition) and that cost recovery should take place through rate of return. Moreover, as I understand Mr. Moul's position, the return on the unamortized balance which PP&L should receive is a debt return. I have attached Mr. Moul's statement to that effect (provided as PP&L response to OCA Set V, item 14) as Schedule MIK-1, page 4 of 4. Based on this agreement, I concur with Mr. Moul's two adjustments to increase the embedded cost of debt from 7.40 to 7.97 percent.

My disagreement is with Mr. Moul's decision to reduce the debt balance by $115.9 million, thereby artificially producing a more expensive capital structure. There is absolutely no reason to do this, and it has nothing whatsoever to do with providing adequate cost recovery for the call premiums.

Q. IS MR. MOUL'S ADJUSTMENT CONSISTENT WITH PP&L'S BALANCE SHEET?

A. No, it is not. PP&L does <u>not</u> subtract the $115.9 million from debt balance for financial reporting purposes. (<u>Tr</u>. 414)

It is also not the case that this adjustment is needed in order to keep the PP&L capital structure in some sense "neutral" with respect to the refinancings. The call premiums when incurred were expenses to PP&L, expenses incurred in order to reduce interest costs by an even larger amount. The call premiums, however, did not reduce common equity when incurred the way an incremental expense normally would. This is because PP&L has created a "regulatory asset" on its books, reflecting the unamortized balance of the reacquisition losses (call premiums). Because the call premiums are a regulatory asset on the PP&L balance sheet, the common equity balance is unaffected by the refinancings.

There is an additional consideration. PP&L shareholders have been able to enjoy many years of savings from these refinancings since PP&L has not had a rate case since 1985. These substantial interest expense savings due to refinancings undoubtedly increased PP&L's profits and higher profits translate into higher retained earnings and thus common equity. Unless one makes the rather unrealistic assumption that every additional dollar of profit translates into an additional dollar of common dividends, the refinancings very likely have resulted in a higher per books common equity balance than would exist absent the refinancings.

Mr. Moul's adjustment, of course, increases the common equity ratio even further.

Q. WHAT IS THE COST OF MR. MOUL'S ADJUSTMENT FOR LOSS ON REACQUISITION?

A. As shown on page 2 of Schedule MIK-1, Mr. Moul's adjustment provides PP&L roughly $24 million of cost recovery on a total company basis.[1] This is calculated in the following manner. First, Mr. Moul shows on his Schedule 14 a pre-tax rate of return of 14.96 percent. Removing the loss on reacquisition, his pre-tax rate of return

[1]For simplicity of exposition, all calculations are total Company, and I assume rate base is equal to capitalization. It is most convenient to present results this way since rate of return (and capital structure) are total Company concepts. Presenting the analysis on a jurisdictional basis would produce smaller numbers but would not affect the concept or comparisons discussed herein.

declines to 14.56 percent, or a 0.4 percent reduction. If we assume a $6.0 billion rate base on a total Company basis, the revenue requirement cost of Mr. Moul's treatment totals to roughly $24 million (i.e., $6 billion x 0.4%).

Q. IS $24 MILLION A REASONABLE CHARGE TO RATEPAYERS?

A. No, it's far too high. Keep in mind that cost recovery is supposed to provide PP&L the annual amortization plus a debt return on the unamortized balance. According to Mr. Moul, the annual amortization is $7.2 million. Using PP&L's actual 7.40 percent cost of debt, the return on the unamortized balance is $115.9 x 7.40% = $8.6 million. The total charge to ratepayers (total Company) therefore should be $15.8 million, or approximately $16 million. Indeed, this is what Mr. Moul would have obtained had he followed only steps (1) and (2) and left capital structure alone.

Using actual capital structure but the 7.97 percent cost of debt (which provides both the return of and return on call premiums), Mr. Moul's pre-tax rate of return would be 14.83 percent. (I also show this on Schedule MIK-1, page 3 of 4.) As mentioned earlier, Mr. Moul's pre-tax rate of return with no call premium cost recovery would be 14.56 percent. Thus, the appropriate rate of return increase to fully recover call premiums (amortization plus debt return) is about 0.27 percent. Again, using a $6.0 billion rate base, the revenue requirement increase is about $16 million (total Company).

The $16 million is sufficient to provide PP&L with full cost recovery, including a debt return on the unamortized balance. This $16 million charge results entirely from increasing the embedded cost of debt from 7.40 to 7.97 percent. Mr. Moul's additional adjustment to alter capital structure is improper and overcharges ratepayers by about $8 million ($24 million minus $16 million).

Q. WHAT IS YOUR RECOMMENDATION ON THIS ISSUE?

A. To provide PP&L with complete cost recovery of losses on reacquisition, I support increasing the debt cost rate from 7.40 to 7.97 percent. However, I oppose Mr. Moul's adjustment to artificially thicken the equity ratio. If anything, PP&L's added profits in past years provided by debt refinancings have already contributed to a common equity balance increase. The $115.9 million should not be subtracted from the debt balance for capital structure purposes.

My recommended capital structure includes 47.56 percent long-term debt, 7.44 percent preferred stock and 45.0 percent common equity. I believe this is a reasonable capital structure to use in this case.

III. RATE OF RETURN CONCEPTS

Q. PLEASE EXPLAIN THE ROLE OF RATE OF RETURN IN THE UTILITY RATEMAKING PROCESS.

A. The ratemaking process is designed to provide the utility an opportunity to recover its costs of providing service including a return on its used and useful utility property. One category of utility cost of service is the cost of financial capital. Financial capital normally falls into two major categories -- financing for which the company has a fixed, contractual obligation and financing for which no specific return is contractually fixed. The first category includes debt obligations and preferred stock, whereas the second refers only to common equity. The cost of debt and preferred stock can be determined arithmetically by dividing annual interest payments and preferred dividends by the outstanding debt and preferred balances.

The cost of common equity is far more difficult to determine. This is because investors do not directly reveal the return they require to hold or to purchase common stock. Instead, that requirement must be inferred through an analysis of capital market behavior.

The final step in this process is to combine the costs of debt, preferred and common equity into one overall rate of return. When applied to the jurisdictional rate base, the utility's total jurisdictional return requirement is obtained.

Q. WHAT ARE THE ATTRIBUTES OF A FAIR RETURN ON EQUITY FOR A REGULATED PUBLIC UTILITY?

A. A fair rate of return on equity for a regulated utility is normally the return required by investors to hold or to acquire that company's common stock. That rate of return adequately compensates the investor purchasing common equity in that utility. A return higher than the required return provides the investor an unexpected windfall while overcharging ratepayers for utility service. A return below that required by investors will not adequately compensate them.

The investor's return requirement would also normally be sufficient to permit the utility to maintain its financial integrity and to attract additional capital.

Q. IS THE MINIMUM REQUIRED RETURN EQUAL TO THE COST OF COMMON EQUITY?

A. Yes. If the investor does not expect that the return on his or her investment in the utility's common stock will at least equal the return obtainable on other available investments (on a risk and tax adjusted basis), then he or she will not make those funds available to the utility.

Q. DOES THIS MEAN THAT THE INVESTOR PURCHASING UTILITY COMMON STOCK EXPECTS THE UTILITY TO EARN A RETURN AT LEAST EQUAL TO ITS COST OF CAPITAL?

A. No. The return that the investor expects to receive and the rate of return on book common equity that he or she expects the utility to earn are not necessarily the same. This is because the investor may not be purchasing the stock at a price equal to book value. For example, if the prevailing market price for a utility's common stock is below book value, investors are indicating that they believe that the utility will fail to earn its cost of equity. However, the investor expects to earn his required return on the funds he plans to invest or he will not undertake the investment.

Q. IS THE INVESTOR-REQUIRED RETURN A FAIR RETURN EVEN THOUGH UNREGULATED FIRMS OF COMPARABLE RISK ARE OR HAVE BEEN EARNING RATES OF RETURN GREATER THAN THAT FIGURE?

A. Yes, the investor-required return is a fair return. For any number of reasons, unregulated firms of comparable risk (assuming they exist) may be earning returns less than or greater than their costs of capital. For example, in the unregulated sector of the economy, firms might achieve earnings well in excess of investor requirements due to monopoly profits, unusually favorable market conditions or even luck. On the other hand, depressed economic conditions or other adverse circumstances could produce earnings below the rate of return investors require. In neither case, however, do these earnings constitute a fair rate of return for a public utility.

IV. COST OF COMMON EQUITY STUDY

Overview

Q. WHAT APPROACH HAVE YOU USED TO ESTIMATE THE COST OF COMMON EQUITY IN THIS CASE?

A. I have applied the discounted cash flow (DCF) method to the proxy group of eight companies selected by Mr. Moul and to an alternative group of 17 companies which I have selected ("primary proxy group"). It should be noted that there is some overlap between the two groups, with four of Mr. Moul's companies included within my proxy group.

There are two primary reasons why our groups differ. First, Mr. Moul disqualified an electric utility if it did not operate in or contiguous to Pennsylvania. My proxy selection method does not use geographic location as a screen since there is no evidence that it is critically important to investors (or not reflected in other, broader risk measures). Second, I restricted my group to nuclear utilities, whereas several of Mr. Moul's utilities have no nuclear operations. Despite these differences, I believe both proxy groups are generally valid proxies in this case for PP&L. My group does have the advantage of being larger and more comprehensive.

Q. WHAT ARE YOUR DCF RESULTS?

A. My DCF analysis applied to Mr. Moul's proxy group produces a range of 10.8 to 11.3 percent with a midpoint of 11.1 percent (Schedule MIK-5, page 1). The cost of equity estimate using my primary proxy group results in a range of 10.5 to 11.5 percent, also with a midpoint of 11.0 percent. (See page 1 of Schedule MIK-6.) The PP&L stand-alone study return range is 11.0 to 11.5 percent. (See page 1 of Schedule MIK-7.)

My recommendation at this time is a figure near the midpoint of my ranges -- 11.1 percent. This recommendation is fully responsive to conditions in capital markets during the past year and perceptions of an increasingly competitive electric utility industry.

Q. PLEASE SUMMARIZE THE DCF MODEL.

A. The basic formulation of the DCF method is probably the most widely used approach to return on equity determinations in utility rate cases and has been relied upon in past cases by this Commission. This model states that the percent return expected (and therefore required) by investors equals the expected dividend yield (annualized dividend divided by market price) plus the expected annual rate of growth of dividends per share. Moreover, this formulation requires dividends, earnings and book value all to grow at the same rate for the indefinite future. This model is generally referred to as the constant growth model, because for the sake of simplicity, it assumes that the future rate of growth will be constant. Although these assumptions may appear to be rather restrictive, for relatively stable companies, such as most public utilities, the model is an acceptable approximation of reality.

The dividend yield is directly observable and, except for some minor differences in calculation procedure and timing, it is usually not a major source of controversy. However, investor expectations of the long-run rate of growth cannot be observed and instead must be inferred by some sort of analytical process. Because a great deal of judgment and analysis is involved with the growth determination, it is often subject to considerable debate.

Q. WHAT APPROACHES MIGHT BE USED TO DETERMINE THE GROWTH COMPONENT OF THE DCF FORMULA?

A. Analysts have employed various methods to determine the growth component. One method frequently employed by rate of return analysts involves the use of investor service projections. There are numerous investment forecast reports published, some of which are widely circulated, while others are not readily available. Analysts often rely upon surveys of growth projections such as the survey published by the Institutional Brokers Estimate System (IBES).

A second approach to determining growth is to analyze the historical financial performance in conjunction with current information. Historical information is readily available and is undoubtedly analyzed or at least examined by virtually all serious investors. Investors can temper their analyses of historical data with specific knowledge concerning changes in government policy or regulations affecting the industry in question, announced investment plans, recent market developments, general capital market conditions and so forth.

Historical data may be used to determine growth in at least two ways. First, some analysts (including Mr. Moul) use historical growth rates as guidance in ascertaining investor expectations. A second method, referred to as the earnings retention method, involves an analysis of reinvested earnings. According to this second method, the future dividend growth rate is the product of the future percent return on common equity and the future percent of earnings reinvested in the firm. Both may be useful approaches, though I would generally place more emphasis on the second method since it is more consistent with the requirements of the DCF model and avoids the instabilities often associated with historical growth rates.

Q. WHAT IS YOUR PREFERRED APPROACH FOR YOUR DCF STUDIES?

A. My DCF studies consider and make use of all relevant information, including historical growth rates, published growth rate projections and earnings retentions growth. In conducting my DCF study, I prefer to begin with an analysis of earnings retention growth, using recent historical experience as a starting point. While historical data are relevant to investors, it is unreasonable to assume that the future outlook must be no different than recent past history.

In using the earnings retention (or growth through retained earnings) approach, it is necessary to take a prospective orientation. That is, the analyst must formulate a judgment regarding the company's expected future profitability and propensity to reinvest those profits. In doing so, the historical performance of the company provides a starting point in formulating those judgments.

Q. WHAT IS THE ADVANTAGE IN EMPLOYING A GROUP OF COMPARABLE FIRMS IN PERFORMING A DCF ANALYSIS?

A. In conducting a single company DCF analysis, there is always the risk that the historical and market data for that firm may be atypical of what investors could reasonably expect in the future. Employing a group of firms has the advantage of averaging out the unusually high and low observations. I note that Mr. Moul, like most analysts, relies to a substantial degree on the proxy group approach.

DCF Analysis of Mr. Moul's Proxy Group

Q. PLEASE DESCRIBE THE PROXY GROUP.

A. As mentioned earlier, this group includes the eight proxy companies selected by Mr. Moul. He began with the population of electric utility companies within the Compustat data base serving Pennsylvania or a state contiguous to Pennsylvania. He then excluded all companies which have reduced or eliminated their dividend and have operating revenues below $750 million.

Q. DO YOU AGREE WITH HIS SELECTION METHOD?

A. Not entirely. I would not place as much emphasis as Mr. Moul on location as a selection criterion. Moreover, I do not believe it necessary to disqualify a company which at some point in the past cut its dividend, as long as the reduction did not occur recently (e.g., within the past two years). Even though a company may have reduced its dividend several years ago, it still may be feasible to apply the DCF model to that company. In addition, I believe the proxy group can be improved by restricting it to nuclear utilities, since PP&L has large nuclear operations.

Despite these concerns, I find his group, overall, to be acceptable as a proxy for PP&L. Moreover, I believe that it is useful for me to employ the same proxy companies as Mr. Moul so that sample selections can be set aside in this case as an area of disagreement. The eight proxy companies are listed on page 1 of Schedule MIK-3.

Q. HAVE YOU COMPARED THE ATTRIBUTES OF THIS PROXY GROUP TO PP&L?

A. Yes, and in terms of overall risk the comparison is reasonably close. This comparison is shown on page 2 of Schedule MIK-3 for several indicators. For all indicators except nuclear generation, the proxy group average and PP&L are quite similar. Both PP&L and the proxy group (on average) are rated medium single A by Moody's. In the case of the common equity ratio, the group average (at December 31, 1994) is 47.0 percent compared to the 43.5 percent for PP&L and 45.88 percent proposed in this case by the Company. This schedule also shows percent nuclear generation since "nuclear exposure" may be a discrete risk factor in the minds of some investors. PP&L's nuclear generation is 31 percent which is higher than the group average of 17 percent. The beta statistic and the Value Line Safety Rating, which are comprehensive risk measures, are virtually identical for PP&L as compared to the proxy group average. As a general matter, this information suggests that Mr. Moul's group -- while not perfect -- can serve as a reasonable risk proxy. That is, the cost of equity for this group is a good estimate of PP&L's cost of equity.

Q. HOW HAVE YOU APPLIED YOUR DCF ANALYSIS TO THIS GROUP OF COMPARABLE COMPANIES?

A. I begin the analysis by obtaining the dividend yields for the proxy companies. Using the Standard & Poor's Stock Guide, I computed the average stock price (the average of the published monthly high and low prices) for each company for the six-month period ending in February 1995, the most recent data available to me. From the same document I obtained the indicated quarterly dividend which I then annualized and divided by the average stock price (i.e., the average of the monthly high and low) for each of the six months. Schedule MIK-4 lists the company-by-company dividend yield for each of the six months along with the most recent three- and six-month averages. Those averages are 7.66 percent for the most recent six months and 7.48 percent for the most recent three months. Consistent with my past practice, I am using the six-month average, in order to achieve broad coverage over time. The three-month average produces a slightly lower result consistent with the general improvement in capital markets since the beginning of the year. The use of the six-month average is also consistent with Mr. Moul's DCF analysis.

I believe that it is generally preferable to utilize a dividend yield averaged over a period of several months rather than a "spot" yield. It would be impractical for regulators to follow every twist and turn in the stock market in determining an appropriate return on equity. It is also important that the allowed rate of return be based, to the extent practicable, upon relatively current capital market conditions. Both the most recent three and six months of data are sufficiently current while avoiding a reliance on potentially unstable spot stock price data.

Q. ARE YOU EMPLOYING A 7.66 PERCENT YIELD IN YOUR DCF MODEL FOR YOUR GROUP?

A. I am using it only as a starting point. I have adjusted the yield upwards by two calendar quarter's growth in dividends (assumed for purposes of this adjustment to be 2.0 percent for half a year), so that the dividend yield will be based upon the dividend the investor expects to receive during the first year after the purchase of the stock. This results in an adjusted dividend yield of 7.8 percent (i.e., 7.66 x 1.02).

After obtaining the adjusted dividend yield, I next turn to the calculation of the growth rate.

Q. PLEASE DESCRIBE YOUR GROWTH RATE ANALYSIS.

A. To determine the growth factor, I begin by applying the earnings retention method, but I also evaluate evidence on historical growth rates and published analysts' forecasts. The earnings retention method is consistent with the theoretical assumptions of the DCF model because it results in identical growth rates for earnings, dividends and book value and because the single growth rate it produces is constant. This growth rate is the sum of two components -- internal and external growth. The internal growth rate is obtained by multiplying the earned return on common equity (ROE) assumed to prevail, on average, in future years by the percentage of earnings expected to be retained and reinvested in the firm (the retention rate). The greater the earned return on equity and the greater the percent of earnings retained, the more rapidly per share earnings, dividends and book value will grow.

Q. HOW HAVE YOU CONDUCTED YOUR EARNINGS RETENTION GROWTH ANALYSIS?

A. I have developed my assumptions concerning the future earned returns on equity and retention rates for the group of eight comparable firms by considering historical data, but also taking into account recent and current developments. For each comparable company, I compiled data on the return on book common equity and the retention rate for each year, 1985 through 1994. (The 1994 figures are Value Line estimates.) As shown on page 2 of Schedule MIK-5, I computed averages for the last five years (1990-1994) and the last ten years (1985-1994).

I have also constructed an "optimistic case" which is based on the assumption that the future, on average, will be better than the past. The optimistic case is useful for comparative or "sensitivity" purposes, but it probably is not the view of most investor analysts.

Q. WHAT RESULTS DID YOU OBTAIN FOR THESE TWO CASES?

A. The average ROE was 11.8 percent during the last five years and 13.2 percent during the past ten years. The retention rates during the past five- and ten-year period averaged 11.8 to 20.1 percent. In combination, these parameters produce implied growth of 1.4 percent (i.e., 11.8 x 11.8%) to 2.7 percent (i.e., 13.2 x 20.1%). Under the optimistic case, the ROE was 15 percent, the retention rate was 29.8 percent, producing internal growth of 4.5 percent. The optimistic case, however, is of limited relevance because it reflects conditions only from the mid 1980s (i.e., 1985, 1986 and 1987) when allowed returns were much higher than currently.

The historic averages and optimistic cases, however, are somewhat more favorable than the actual performance of these companies during 1993 and 1994. As this schedule shows, the ROE for the group in 1993 averaged 12.1 percent and 11.8 percent in 1994.

Given past performance and recent return on equity awards to electric utilities, a reasonable expectation for the proxy companies would be an <u>average</u> future return on book equity of about 12.0 percent and a retention rate of about 20 percent. These parameters imply retained earnings or internal growth of about 2.4 percent (e.g., 12.0% x 20% = 2.4%). As Schedule MIK-5, page 2 of 6 indicates, the historic internal growth during the last five years is weaker than that, i.e., 1.4 percent. The optimistic case does produce more rapid growth, i.e., 4.5 percent, but that is based strictly on the three years between 1985-1987 when rate of return awards were much higher than today. The optimistic case, while useful for comparative purposes, is not a realistic expectation.

Q. OTHER THAN HISTORICAL PERFORMANCE, DO YOU HAVE ANY SUPPORT FOR YOUR EXPECTED FUTURE RETURN ON BOOK EQUITY OF 12.0 PERCENT?

A. Yes. The Value Line Investment Survey currently projects a future (i.e., 1997-1999) return on book equity for the electric utility industry of about 11.8 percent and 12.1 percent for this group of proxy companies, as shown on page 4 of Schedule MIK-5. In recent years, regulatory commission return on equity awards for electric utilities have averaged about 11 to 12 percent, but with a declining trend. In addition, increasing wholesale and retail competition may erode earnings to some degree. All of this tends to support the view that a reasonably expected future earned return on book equity for these companies is certainly not much more than 12 percent.

Q. HAVE YOU INCLUDED AN ESTIMATE FOR THE EXTERNAL GROWTH COMPONENT?

A. As I mentioned above, the earnings retention method requires a consideration of growth through stock issuance. The issuance of new common stock at prices below book value per share tends to "dilute" earnings and thus retard growth, while issuance of stock at a price in excess of book value tends to enhance growth. Since the electric utility companies have been selling at prices above book value, this factor is expected to contribute at least modestly to long-term growth. However, most investment analysts employing the earnings retention method make little mention of this external growth factor.

To get a quantitative handle on this, I performed an illustrative analysis of external growth, shown on page 6 of Schedule MIK-5. These calculations are based on the current market-to-book premium (or discounts) and Value Line projections of new common equity issuances through 1999. As this schedule demonstrates, the impact on the DCF growth rate is only about 0.1 percent. However, given the uncertainty over the magnitude of future stock issuances (and share prices), it would be reasonable to increase the estimate of external growth to 0.5 percent.

Based on the internal and external growth results discussed above, the earnings retention analysis implies a "sustainable" growth rate of about 2.9 percent for the group (2.4 percent internal plus 0.5 percent external).

Q. HAVE YOU ALSO CONSIDERED HISTORICAL GROWTH RATES?

A. Yes, I have examined historical growth in earnings, dividends and book value per share over the last five and ten years to supplement my earnings retention analysis. The calculation of these growth rates is shown on page 3 of Schedule MIK-5 for the proxy group of electric utilities. The bottom row averages together the last five and ten years in order to give primary weight to the more recent time period.

The historical rates of growth for the proxy group, as shown on this schedule, have been relatively slow. Over the last five years, they average to only 1.1 percent for dividends, 2.7 percent for earnings and 2.3 percent for book value. The average for all three measures is 2.0 percent. The ten-year growth rates are similar, averaging about 1.9 percent. The five- and ten-year historic growth rates are somewhat lower than my earnings retention analysis.

Q. HAVE YOU CONSIDERED INVESTOR ANALYST PROJECTIONS?

A. Yes, I have. Recent growth rate projections published by the <u>Value Line Investment Survey</u> and the IBES survey are presented on pages 4 and 5 of Schedule MIK-5. As indicated on page 5, the IBES and Value Line "normalized" growth rates for the eight companies average to 2.6 and 3.4 percent, respectively. The Value Line 1994-1998 earnings growth rate projections average to 3.1 percent, suggesting that Value Line may be slightly more optimistic than investor analysts generally.

Value Line also publishes much more detailed projections information which enables me to calculate both short-term and long-term growth rates. (See page 4 of that schedule.) The short-term growth rate is simply the 1994 to 1998 (or four years) growth rate in dividends per share. The longer run growth rate is the "earnings retention" growth rate published by Value Line for the 1997 to 1999 time period. I have included an additional 0.5 percent to the Value Line long-run estimate to account for possible growth through stock issuance (i.e., external growth) since Value Line omits that factor. As this schedule shows, the short-term dividend growth rate averages 1.6 percent, the long-term averages 3.9 percent, and the weighted average or overall composite growth rate is 2.5 percent. Specifically, I have given two-thirds weight on the long-term and one-third on the short-term in calculating the weighted average, based upon a present value calculation over 100 years.

In summary, the Value Line and IBES growth rate projections which I have cited confirm the reasonableness of the 2.9 percent earnings retention growth estimate.

Q. WHAT IS YOUR CONCLUSION REGARDING THE GROWTH RATE FOR THIS GROUP?

A. For DCF purposes, I am using a growth range of 3.0 to 3.5 percent. The 3.5 percent upper value is generally consistent with or greater than the published earnings projections (e.g., IBES and Value Line), while the 3.0 percent lower value approximates my earnings retention analysis results. Historic dividend and book value growth rates provide support for the lower end of this range. As I have shown, there is evidence supporting growth rates even below this 3.0 to 3.5 percent range (i.e., the Value Line two-stage analysis).

Q. PLEASE SUMMARIZE YOUR DCF ANALYSIS OF MR. MOUL'S PROXY GROUP.

A. As shown on page 1 of Schedule MIK-5, I began with a dividend yield for the group of 7.66 percent adjusted forward to 7.8 percent. The growth range is 3.0 to 3.5 percent. Summing these components produces an estimated total return of 10.8 to 11.3 percent. The midpoint of this range, 11.1 percent, is also my recommendation, subject to updating. This analysis provides recognition of the industry and capital market conditions over the past six months.

DCF Analysis of the Primary Proxy Group

Q. HOW HAVE YOU APPLIED THE DCF MODEL TO YOUR PRIMARY PROXY?

A. I have approached it in the same manner as the first study. This proxy group includes 17 electric utilities in the Value Line data base rated "2" or "3" for Safety (an above average and average rating, respectively) and with Moody's bond ratings of A. PP&L is rated "2" for Safety and A(2) by Moody's. In addition, I have excluded the non-nuclear utilities and any utility experiencing a dividend reduction (or nonpayment) within the past two years.

As shown on Schedule MIK-4, page 2 of 2, the subgroup dividend yields for the six months and three months ending February 1995 are 7.38 and 7.22 percent, respectively. I am using the six-month average figure as the starting point. This is adjusted upward to 7.5 percent to account for dividend growth over the next year. I have selected a growth range of 3.0 to 4.0 percent based upon my review of the historical and projected growth evidence. Combining the adjusted yield and growth range produces a total return range of 10.5 to 11.5 percent, with a midpoint of 11.0 percent. This analysis is summarized on Schedule MIK-6, page 1 of 6.

Q. HOW DOES THIS GROUP COMPARE TO PP&L WITH RESPECT TO RISK?

A. On page 3 of Schedule MIK-3, I compile a series of risk indicators for PP&L is almost identical to the group average with respect to these risk indicators. PP&L is slightly less risky as measured by beta and Safety Rating. On the other hand, PP&L's 31 percent nuclear generation percentage compares to a proxy group average of 23 percent. Based on this information, I conclude that PP&L is approximately equal in overall risk to this proxy group.

Q. HOW DID YOU SELECT YOUR GROWTH RATE RANGE?

A. I examined the same type of evidence as in my previous study: earnings retention, historical growth rates, Value Line two-stage projections and published five-year earnings projections. Historical earnings retention information is shown on page 2 of Schedule MIK-6. As shown, internal growth has averaged 2.2 percent over the last five years and 2.8 percent over the last ten years. During those time periods, the ROEs averaged about 12.4 and 13.1 percent, respectively. The average of the last five and ten years indicates an internal growth rate of 2.5 percent.

For study purposes, I am assuming a future average ROE of 12.5 percent and retention rate of 20 percent, resulting in internal growth of 2.5 percent (12.5% x 20% = 2.5%). The 12.5 percent figure is generally consistent with both historical experience and the Value Line projections for these companies (see Schedule MIK-6, page 4 of 6). The 12.5 percent ROE is somewhat higher than the figure that I applied to Mr.

Moul's group, but the 20 percent retention rate is the same figure as I assumed for his group.

In order to be consistent with my earlier analysis, I am using an external growth factor of 0.5 percent even though the projections of external growth shown for the proxy group on Schedule MIK-6, page 6 of 6, might support a lower figure (i.e., 0.1 percent). Summing internal and external growth produces a total earnings retention growth rate of 3.0 percent (2.5% + 0.5% = 3.0%).

Q. WHAT HAVE HISTORIC GROWTH RATES BEEN FOR THIS PROXY GROUP?

A. As shown on Schedule MIK-6, page 3, historic growth rates have been similar to or slightly less than the earnings retention analysis. The historic growth rates range from about one to three percent, with the historic five- and ten-year growth rates averaging slightly more than two percent. However, I do not place much weight on the historic growth rates.

Q. WHAT DO THE PUBLISHED GROWTH RATES INDICATE?

A. I have compiled the published earnings growth rates on page 5 of Schedule MIK-6 and my two-stage analysis on page 4 of that schedule. The proxy group averages using these various measures are as follows:

IBES: 2.7%

Value Line: 3.0 - 3.8% (depending upon calculation method)

Two-stage analysis: 2.9%

As before, this information indicates that Value Line projections are somewhat more optimistic than the IBES analysts' survey. The two-stage growth analysis (on page 4 of Schedule MIK-6) indicates near term (i.e., through 1999) growth in dividends of 1.8 percent and long-term earnings retention growth of 3.5 percent. This translates into a composite near-term/long-term growth rate of about 2.9 percent.

Q. WHAT DO YOU CONCLUDE?

A. The evidence suggests that long-term growth for my primary proxy companies may be slightly higher than for Mr. Moul's proxy group -- perhaps about 25 basis points higher. In my opinion, the evidence continues to support a growth rate range of 3.0 to 3.5 percent. The earnings retention and the Value Line two-stage analyses produce results that are close to the lower end of this range. To be conservative and to reflect the possibility of higher growth, I am using a range of 3.0 to 4.0 percent.

PP&L Stand-Alone Study

Q. PLEASE DESCRIBE YOUR PP&L STAND-ALONE STUDY?

A. I have directly applied the DCF model to PP&L on a stand-alone basis using the same data sources as used in the two proxy group studies. I use this study only as a check because I believe that proxy groups -- if correctly selected -- should produce more reliable, stable estimates than single company DCF studies. In addition, it should be noted that PP&L is in the process of reorganizing in order to facilitate investments in non-utility ventures. While this activity is nominal at present, it could become significant in the future.

The PP&L dividend yield for the six months ending February 1995 is 8.39 percent, a figure somewhat greater than the proxy group average. I have adjusted that figure forward by a half year of growth to 8.5 percent. The growth rate evidence which I examined suggests a growth rate estimate for PP&L somewhat lower than the two proxy group averages. In light of that evidence, I have selected a growth rate range for PP&L of 2.5 to 3.0 percent. Summing these elements, the estimated PP&L return becomes 11.0 to 11.5 percent, as summarized on Schedule MIK-7, page 1 of 3. The midpoint is 11.25 percent, which is slightly above my 11.1 percent recommendation.

Q. PLEASE SUMMARIZE THE GROWTH RATE EVIDENCE.

A. I show historic internal growth on Schedule MIK-7, page 2 and historic growth rates on Schedule MIK-7, page 3. The historic earnings retention (i.e., internal) growth has averaged about 2.6 percent based on an ROE of about 13 percent. The historic earnings retention rate has averaged 20 percent. These historic results are very similar to the historic performance of the two proxy groups. The historic growth rates for PP&L average about 2.0 percent, also similar to the two proxy groups. It should be noted that PP&L's historic growth in dividends and book value per share have been approximately 3.0 percent, but earnings growth has weakened in 1994.

Although the historic data indicate that PP&L is similar to the proxy companies, the available projections present a very different picture. This information is shown on pages 4 and 5 of Schedule MIK-5. According to the IBES survey, earnings per share growth for PP&L is only expected to be 1.0 percent. Value Line is more optimistic showing a range of 1.5 to 3.7 percent for earnings. The Value Line two-stage growth indicates composite near-term/long-term growth of 2.4 percent. This is based on a projection of near-term growth in dividends of 1.2 percent followed by sustained growth of 3.0 percent.

Based on this evidence, I conclude that a conservatively high but reasonable growth range for PP&L is 2.5 to 3.0 percent. Combined with the 8.5 percent adjusted yield leads to a cost of equity of 11.0 to 11.5 percent.

Q. SHOULD MUCH WEIGHT BE GIVEN TO THE PP&L STAND-ALONE STUDY?

A. No, I am using it only as a check on my other studies. A single company or stand-alone study is much less reliable than using a study based upon a reasonable size proxy group.

DCF Summary

Q. PLEASE SUMMARIZE THE BASIS FOR YOUR RECOMMENDATION.

A. I have conducted three DCF studies using two electric utility proxy groups and PP&L on a stand-alone basis. The PP&L study is used only as a check due to the inherent limitation associated with single company DCF studies. The table below summarizes my results.

	DCF Study Results	
	Range	Midpoint
Moul Group	10.8 - 11.3%	11.05%
Primary Group	10.5 - 11.5%	11.0%
PP&L	11.0 - 11.5%	11.25%
Average	10.8 - 11.4%	11.1%

In my opinion, the reasonable range is 10.5 to 11.5 percent, and I have selected a point estimate at this time of 11.1 percent. I am utilizing a figure close to the midpoint value at this time even though there has been a trend toward improving capital costs during the early part of 1995.

Q. MR. MOUL ARGUES THAT THE RATE OF RETURN AWARDED TO PP&L SHOULD PROVIDE FOR A REASONABLE END RESULT? (STATEMENT 12, PAGE 4) DO YOU AGREE WITH HIS CONCEPT?

A. Mr. Moul argues that a reasonable "end result" means (1) a return which provides a reasonable level of earnings retention; (2) a return high enough to maintain credit quality; and (3) a return commensurate with PP&L's market risk. I believe that awarding PP&L a return on equity equal to what investors require provides a reasonable end result. I strongly disagree that this Commission must somehow ensure that the rate of return is sufficient to provide for "a reasonable level" of earnings retention. In using that criterion, the Commission would be endorsing (and even underwriting) the Company's dividend policy. Dividend payout decisions are a management prerogative. Protection of the dividend or ensuring a profit level above the dividend should <u>not</u> be a basis for setting the fair rate of return. After all, neither the Commission nor PP&L customers has had any say in dividend policy, nor should they (absent financial mismanagement).

With respect to credit quality, Mr. Moul calculated the pre-tax interest coverage ratio which results from his recommendation, obtaining 4.0x. Credit rating agencies focus on actual coverages, not pro forma coverages calculated in rate cases.

I have followed Mr. Moul's procedure and calculated a pre-tax coverage based on my recommended rate of return, obtaining 3.5x. As Mr. Moul shows on page 21 of his testimony, 3.5x is completely consistent with a single A bond rating for an "average" business position electric utility, i.e., PP&L's current position according to S&P. Thus, using Mr. Moul's own credit rating standard, my return is adequate and his is excessive. Moreover, my 3.5x pro-forma figure exceeds the historical coverages both for PP&L and his proxy group during 1988-1993. (See his Schedules 1 and 2.)

Q. MR. MOUL'S TESTIMONY ASSERTS THAT THE DCF MODEL IS AN UNRELIABLE AND BIASED TOOL FOR ESTIMATING THE COST OF EQUITY. WHAT ARE HIS ARGUMENTS?

A. In his discussion of the DCF model (pp. 39-45 of Statement No. 12), Mr. Moul levels several criticisms against the DCF method. These criticisms not only question the accuracy of the DCF method, but also suggest that it systematically understates the utility cost of equity under present circumstances. These are extremely important assertions given this Commission's heavy reliance upon the DCF model.

Mr. Moul's principal criticisms are as follows. First, he argues that the model introduces an "element of circularity" (page 39) because investor expectations for utilities depend on regulatory decisions. Hence, "the DCF model may not fully reflect the true risk of a utility." Second, he argues that when the market/book ratio (M/B) exceeds 1.0, the DCF model "will lead to a misspecified cost of equity" (id.), assuming the cost of equity so derived is applied to a net original cost rate base. Third, the DCF model assumes a constant price/earnings multiple, an assumption which may not comport with investors' expectations. Fourth, the practice in Pennsylvania omits issuance (i.e., flotation) cost recovery. (id., page 45) The implication of all four criticisms, as articulated by Mr. Moul, is that the DCF model seriously understates the cost of equity, and therefore, other methods should be given considerable weight. He uses these arguments to justify his position that the cost of equity for PP&L is 13 percent even though his own DCF evidence supports 12 to 12.5 percent.

Q. ARE MR. MOUL'S CRITICISMS OF THE DCF MODEL VALID?

A. No, these arguments are either conceptually incorrect or are lacking in support. The first two criticisms reflect conceptual error on the part of Mr. Moul, while the other two arguments are either unsupported or quantitatively minor.

The asserted circularity in the DCF model does not exist. The standard application of the model measures the DCF cost of equity as the dividend yield plus growth rate. The dividend yield is measured with precision much the same way as a utility bond yield. The growth rate (i.e., earnings or dividends) depends on investor expectations, and those expectations can be influenced by anticipated regulatory decisions. The only thing that matters here is what rate of growth investors are expecting, not why they hold that opinion. The "what" question is answered in such sources as IBES or Value Line earnings/dividend projections. The answer to the "why" question involves some element of speculation.

There can be no circularity to the DCF model because stock prices are totally unregulated and free to move as investor perceptions and expectations change. Consider a case where investors become convinced that an adverse regulatory decision will take place and this decision will increase the utility's risk. Mr. Moul incorrectly asserts that the DCF model will fail to capture this added risk, thereby understating the cost of equity. In reality, the investors will react to the expected (or actual) adverse decision by bidding down utility share prices. This free market response pushes up the dividend yield and therefore the DCF calculated cost of equity. The ability of market prices to freely adjust to whatever utility regulation does guarantees that circularity cannot exist in a properly performed DCF study.

Q. DOES A M/B GREATER THAN 1.0 INTRODUCE A BIAS IN THE DCF METHOD?

A. No. The error embodied in this criticism is even more fundamental than the inaccurate charge of circularity. This criticism, in essence, confuses the issue of cost of equity and fair rate of return. What Mr. Moul is really saying is that even if the DCF method correctly estimates the cost of equity, that result is not a fair rate of return if it is to be applied to an original cost rate base. He views the net income from that procedure as not being generous enough to investors. This is as much a criticism of using a net original cost rate base (in lieu of a fair market rate base) as it is using the cost of capital as the fair rate of return. The DCF model is merely a technique for estimating the cost of equity, and Mr. Moul's criticism would remain under any cost of equity method (so long as rate base is net original cost).

Mr. Moul's concern apparently is that when market price exceeds book value, the cost of equity (however estimated) applied to net original cost rate base will not be sufficient to sustain the stock price at its lofty level. That may or may not be true. However, under the concept of cost-based ratemaking, it is not this Commission's responsibility to target a specific stock price or M/B ratio. Moreover, consider the logical converse of Mr. Moul's argument. If it is the Commission's job to protect the share price when that price is very high, it follows that it is also the Commission's responsibility to hold down the share price or M/B ratio when the utility share price is relatively depressed. Of course, neither is reasonable.

I believe the Commission acts properly when it sets the rate of return equal to the cost of equity. It need not concern itself with M/B ratios or how to fulfill investor stock price expectations.

Q. MR. MOUL'S OTHER TWO COMMENTS CONCERN THE PRICE/EARNINGS RATIO AND FLOTATION EXPENSE. ARE THESE CRITICISMS OF THE DCF VALID?

A. Although these criticisms do not commit the same conceptual errors as his other criticisms, they lack substance. The price/earnings ratio criticism suggests that utility stocks are somehow mispriced, hence, the suggestion that share prices could rise more rapidly than dividends. This assertion is not a theoretical impossibility. However, the problem is that Mr. Moul presents no evidence to support this assertion. As investors are well aware, price/earnings ratios for utilities could move in either direction over time, leading to either an increase or decrease in the DCF results. At best, Mr. Moul is arguing that there is an element of uncertainty with the DCF estimates, not that the model is biased in either direction.

Similarly, analysts may disagree whether an adjustment is needed or warranted for flotation expense. This Commission does not recognize a need for such an adjustment. However, even if flotation expense is included, its impact on ROE would be minimal, in my opinion no more than an adder of 3 to 5 basis points.

Q. YOU HAVE DISMISSED MR. MOUL'S CRITICISMS OF THE DCF AS BEING CONCEPTUALLY IN ERROR OR LACKING SUBSTANCE. DOES THIS MEAN YOU BELIEVE THE DCF TO BE PERFECT?

A. No, it is not perfect, merely the best cost of equity method available for regulatory purposes. The DCF can produce only an estimate of the cost of equity, and such estimates should not be viewed as precise.

There are two basic concerns in relying upon the DCF model. First, the model relies upon stock market data, and unexplained fluctuations in stock prices can occur, potentially affecting DCF calculations. Second, the DCF growth rate reflects investor expectations and therefore can only be estimated, not measured with precision.

While I recognize that these potential problems with the DCF method exist, these problems can be managed. The stock market fluctuations are best managed by (a) using a large proxy group; and (b) averaging stock market prices over a period of several months rather than using "spot" data. I have used six months of market data, and the Pennsylvania Commission has in the past used up to a 12-month average. If these precautions are taken, there is very little danger of market fluctuations unduly disturbing DCF results.

The uncertainty in the growth rate estimation can be managed through a careful and objective review of all of the evidence relating to growth. In my analysis, I have managed the problem by selecting a very conservative growth range -- 3.0 to 4.0 percent -- even though the objective evidence tends to support a figure closer to the lower end of the range. While the exact growth rate expectation is certainly difficult to identify, the available evidence clearly demonstrates with a very high degree of probability that it lies within the 3.0 to 4.0 percent range.

As a result of taking these precautions, I can conclude with a high degree of confidence that PP&L's cost of equity lies within the 10.5 to 11.5 percent range. The issue is not and never has been precision, but rather what is a reasonable estimate.

Q. MR. MOUL ARGUES THAT DUE TO THE DCF'S INFIRMITIES, OTHER METHODS MUST BE USED. DO YOU AGREE?

A. I have shown that Mr. Moul's DCF criticisms are incorrect or unsupported, but I recognize nonetheless that the DCF model is not precise. This recognition, however, does not warrant the averaging in of other methods to arrive at a final result. This becomes apparent when one examines the specific way in which these methods are applied, as will be discussed in the next section.

The comparable earnings method should not be considered since it does not even address cost of equity estimation. The other two approaches used by Mr. Moul are the CAPM and risk premium. These methods were applied using two types of evidence. The first involves DCF calculations of cost of equity for the stock market as a whole. The second involves inspection of after-the-fact market returns on stocks and bonds over the past 65 years. The historical realized returns data have received little acceptance either by this or by other commissions.

Q. MR. MOUL CITES A GOLDMAN SACHS STUDY OF STOCK MARKET BEHAVIOR. DOES THIS STUDY SUPPORT USING OTHER METHODS OVER THE DCF?

A. This study examined stock market returns achieved during the 1980s and concluded that these returns could not be explained completely by contemporaneous changes in income or interest rate movements. This was neither a utility study, nor does the study specifically criticize the DCF model. In fact, the study speculates that the unexplained stock price movements during the 1980s may be attributable to changes in the equity risk premium. If anything, the study provides a criticism in the risk premium approach, not the DCF.

V. REVIEW OF MR. MOUL'S ANALYSIS

Q. MR. MOUL RECOMMENDS A RETURN ON EQUITY OF 13.0 PERCENT. HOW DOES HE ARRIVE AT THAT RESULT?

A. Mr. Moul employed four methods, three of which are cost of equity estimation techniques. The fourth method -- comparable earnings -- examines actual and projected returns on book equity for non-regulated proxy companies and assumes that these returns are appropriate for PP&L. The three cost of equity methods provide the following results: DCF -- 12.0 to 12.5 percent; risk premium -- 13.75 percent; and CAPM -- 14.0 percent. The recommendation of 13 percent does not appear to be the result of any specific weighting or averaging formula.

The DCF Evidence

Q. MR. MOUL OBTAINS 12 TO 12.5 PERCENT IN HIS DCF STUDY COMPARED TO YOUR ESTIMATE OF 11.1 PERCENT. WHAT EXPLAINS THE DIFFERENCE?

A. A small part of the difference is due to timing. Capital costs (including dividend yields) have declined since late 1994 when Mr. Moul performed his study.[2] This presumably will be rectified when he updates during rebuttal.

The larger discrepancy concerns growth rates. Mr. Moul adopts a 4.0 percent growth rate both for PP&L and his barometer companies. Although he displays his source data, that information fails to support his 4.0 percent estimate. For example, consider the growth rate data he provides for his barometer group. As shown on his Schedule 9, page 2, historic growth ranges from -2.56 to +3.31 percent, averaging about 1.5 percent. The projections data which he cites on page 2 of his Schedule 10

[2]Mr. Moul also introduces two erroneous but very minor adjustments to his dividend yield calculations. This includes subtraction of the accrued ex dividend from the share price and the use of quarterly compounding of the dividend. Both adjustments should be rejected.

range from 1.56 to 3.81 percent, averaging 2.7 percent. The "leap" from such evidence to 4.0 percent is neither clearly nor convincingly explained. The ranges which I selected of 2.5 to 3.0 percent for PP&L and 3.0 to 3.5 percent for the proxy group are much more realistic and consistent with available evidence.

Mr. Moul's analysis includes 0.5 percent for what he calls non-company specific factors, but he never clearly explains what this is or how he derived it. It appears to be little more than an unwarranted adder to the DCF results.

Risk Premium Study

Q. HOW DOES MR. MOUL DEVELOP HIS 13.75 RISK PREMIUM-DERIVED COST OF EQUITY?

A. The risk premium cost of equity is derived as the sum of the prospective market yield on single A utility bonds -- 9.0 percent as of the time of his study -- plus an assumed 4.75 percentage point equity premium. The 4.75 figure is based upon Mr. Moul's inspection of historic average returns on utility stocks and bonds over the past 65 years, i.e., since 1928.

It should be noted that since the time of Mr. Moul's study the prospective return on single A bonds has declined and is now about 8.5 percent or slightly less. I assume that this change will be reflected in his update.

Q. HAS THIS COMMISSION PREVIOUSLY ACCEPTED THE HISTORICAL MARKET RETURNS APPROACH TO THE RISK PREMIUM?

A. No, this evidence has not been deemed reliable by this Commission in previous cases. Moreover, based on my experience, it has received little acceptance in other jurisdictions.

Q. WHAT IS YOUR OBJECTION TO THE HISTORICAL RETURNS METHOD TO THE RISK PREMIUM?

A. One of the main difficulties is that historical returns can be used to show just about anything, depending on how it is presented. For example, the average annual return on utility stocks going back to 1928 is 8.8 to 11.0 percent using the geometric and arithmetic means, respectively. Yet, Mr. Moul looks at the very same data and concludes that historic market returns support an expected return on utility stocks of about 14 percent. This illustrates the problem.

The source of the difficulty with using historic returns data rests with the historic market returns on utility bonds -- about 5.5 percent. (See Mr. Moul's Schedule 12.) Since inflation over that same historic period averaged more than 3.0 percent, this indicates an inflation adjusted bond return after inflation of 2 to 2.5 percent. Single A bonds today yield about 8.5 percent, providing investors with a spread over inflation of at least 5 percentage points.

It is important to note that investor behavior in the bond market today is vastly different than over the past 65 years. There has been simply too much change in financial markets in recent years to support Mr. Moul's use of the traditional risk premium measured over the last 65 years. The equity risk premium has very likely changed over time, as even risk premium advocates acknowledge.

A number of practitioners have suggested that the risk premium changes with market interest rates, falling as interest rates rise. Since interest rates today are far above Mr. Moul's 1928-1993 historical 5.5 percent, it follows that the risk premiums today would be much narrower than the historical level cited and used by Mr. Moul.

Q. ARE YOU AWARE OF OTHER WAYS OF EMPLOYING THE RISK PREMIUM METHOD?

A. Yes. There is another approach which does not require reliance on historical after-the-fact returns data. This involves directly estimating the cost of equity over an historical time period using DCF calculations and subtracting out contemporaneous bond yields. The result is a time series of risk premium figures.

In the context of responding to Mr. Moul, I have conducted such a study. The central feature of this approach to estimating the risk premium is that it requires a reliable series of DCF cost of equity estimates over an extended time period. Far and away the best source of historical estimates of the cost of equity for electric utilities is the Federal Energy Regulatory Commission's (FERC's) benchmark or generic rate of return on equity for the electric utility industry. This is an ideal source of historical cost of equity information because the FERC (1) is a neutral source; (2) until recently, had been performing DCF calculations on an industry-wide basis every calendar quarter since 1985;[3] (3) has maintained analytical consistency over this entire time period; and (4) the FERC benchmark database, methods and results have been publicly available, widely disseminated and closely reviewed. The FERC periodically obtained and received comments from various parties on its analysis methods.

I have displayed the FERC industry-wide cost of equity estimates on Schedule MIK-8. I have also provided the ten-year Treasury bond yields and single A utility bond yields (averaged over six months) contemporaneous to the benchmark rate of return figures. Risk premia are computed by subtracting the bond yield during each two calendar quarter periods from the FERC benchmark DCF result. Averaging over the entire history of the FERC benchmark, the risk premium is 3.74 percent using ten-year Treasury bonds and 2.18 percent using single A utility bonds.

Q. USING THIS APPROACH, WHAT IS THE RISK PREMIUM-DERIVED COST OF EQUITY?

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[3]The FERC terminated its practice of specifying an industry benchmark cost of equity at the end of 1991. Thus, the FERC benchmark covered the historical period 1985-1991.

A. Using recent representative bond yields of about 7.4 percent for the ten-year Treasury rates and 8.5 percent as the single A utility bond yield, this produces:

Ten-Year Treasury Note: 7.4% + 3.7% = 11.1 percent

Single A Utility Bond: 8.5% + 2.2% = 10.7 percent

These risk premium-derived cost of equity estimates fall within the range of my DCF proxy group results in this case. This analysis produces a much more consistent and realistic estimate than the much higher ROEs obtained by Mr. Moul using his 65-year historic market returns.

Q. HAVE YOU RELIED UPON THESE RESULTS IN DEVELOPING YOUR RECOMMENDATION IN THIS CASE?

A. No. I am relying exclusively on my DCF studies for my return on equity recommendation. This analysis serves only as a check on my primary evidence. I continue to believe that it is the superior, more reliable and the more widely used methodology. I have presented this risk premium study merely to respond to Mr. Moul's contention that the risk premium method produces an investor return estimate substantially greater than obtained by the DCF evidence.

<u>Capital Asset Pricing Model (CAPM)</u>

Q. HOW DID MR. MOUL ESTIMATE THE COST OF EQUITY USING THE CAPM?

A. The traditional CAPM model employed by Mr. Moul requires three major inputs: (1) a beta or "proxy beta" (β) for the subject utility; (2) a measure of the prospective return on a risk-free asset (Rf), and (3) the return on the overall stock market (Rm). According to the model, the cost of equity (K(e)) is estimated as:

$$Ke = Rf + \beta\ (Rm - Rf)$$

To apply the model, Mr. Moul uses a Treasury bond rate of 8.0 percent, an electric utility beta of 0.68 and an overall stock market return of 15.85 percent. The 15.85 percent stock market rate of return implies an equity risk premium over the risk-free interest rate of 7.85 percent. Inserting these figures into the formula he obtains:

$$Ke = 8.0\ \% + 0.68\ (15.85 - 8.0) = 13.34\%.$$

The 0.68 is the average beta of his barometer group. Using the PP&L by itself, his CAPM cost of equity is a slightly higher 13.5 percent. These results are substantially greater than his DCF results.

Q. MR. MOUL ALSO EMPLOYS A "ZERO BETA" CAPM. WHAT RESULT DOES THIS STUDY PROVIDE?

A. This technique produces a 14.5 percent cost of equity for PP&L, again based on an assumed stock market return of nearly 16 percent. Since this method has found little acceptability in either the regulatory or financial community, no further comment is warranted.

Q. WHAT IS YOUR DISAGREEMENT WITH THIS ANALYSIS?

A. I have two major concerns with his analysis -- the definition of the risk-free interest rate and the determination of the overall stock market cost of equity. In fairness to Mr. Moul, these are issues which continually arise in rate cases when the CAPM is introduced and help to explain why the model is not widely relied upon by regulatory commissions.

Q. WHAT IS YOUR OBJECTION TO MR. MOUL'S 8.0 PERCENT RISK-FREE RATE?

A. There is both a factual and conceptual problem with that figure. First, the current yield on long-term Treasury bonds is not 8.0 percent but something less than that.

The average Treasury bond yield in recent months has actually been closer to about 7.5 percent.

The larger conceptual dispute is over his selection of long-term Treasury bonds as a risk-free asset. In fact, Treasury bonds bear considerable risk -- as investors in 1994 have discovered -- which is why their yields have historically been much greater than yields on short-term Treasury bills, which certainly are risk-free assets. As any investment advisor would acknowledge, Treasury bond prices fluctuate significantly with changes in market interest rates and inflation expectations.

Q. WHAT IS THE CONTROVERSY OVER THE STOCK MARKET RETURN?

A. This is clearly the most serious difficulty of all with the CAPM. In order to apply this model, the analyst first must have a <u>reliable</u> estimate of the cost of equity for the stock market as a whole. Mr. Moul uses two methods to estimate that return, obtaining a range of 14.9 to 16.79 percent, with a 15.85 percent midpoint. The 14.9 percent is based upon approximately 65 years of after-the-fact returns data on stocks and bonds, as published by Ibbotson. I have already discussed the validity of such data in establishing the current cost of capital in connection with my discussion of his risk premium analysis. In short, the 65-year historical returns on stocks versus bonds do not provide a very reliable indicator of investor requirements today due to changing capital market conditions.

The second estimate is based upon some information from Value Line. Specifically, Mr. Moul relies upon a recent Value Line report suggesting that the price appreciation <u>potential</u> for the stock market (i.e., the median stock followed by Value Line) over the next three to five years is 70 percent. He uses this information to derive a DCF-type estimate for the Value Line companies of a 16.8 percent return.

Q. DO YOU FIND THIS 16.8 PERCENT STOCK MARKET RETURN TO BE PLAUSIBLE?

A. No, I do not. This result rests upon Mr. Moul's assumption that Value Line's statement of a 70 percent price appreciation "potential" is (a) Value Line's true forecast of the stock market generally; and (b) even if this really is Value Line's forecast of what will happen, that it reflects the consensus of investors. Both assumptions are inconsistent with available evidence.

I consulted Value Line's most recent projection (February 15, 1995) for its Industrial Composite. This group includes three-fourths of all industries covered by Value Line, excluding only utilities, financial services and foreign corporations. Value Line's projection of investor returns for the Industrial Composite is 14 percent, <u>as an upper bound</u>. This suggests to me that the 70 percent price appreciation "potential" was not meant to be used as a best estimate type forecast of returns on the stock market as a whole.

I would also note that Value Line publishes earnings and dividends per share growth rate projections for the Industrial Composite. Earnings per share are projected to increase by 12.0 percent annually, dividends per share by 7.5 percent annually and earnings retention growth of 9.0 percent. The Industrial Composite growth projections data therefore suggest a long-run dividend growth estimate of about 9 to 10 percent. In combination with the Composite's 2.8 percent dividend yield, this produces a DCF cost of equity of 2.8 + 9.5 percent = 12.3 percent. While one can certainly question whether this result represents the consensus opinion of investors generally, it differs dramatically from Mr. Moul's asserted 17 percent stock market rate of return.

Q. WHAT DO YOU CONCLUDE FROM THIS?

A. A conventional CAPM using current yields on Treasury securities and realistic stock market returns would produce a cost of equity consistent with my recommendation. For example, assuming a 6.0 percent Treasury bill yield and a 12.5 percent stock market rate of return produces the following CAPM estimate.

$$K_e = 6.0 + 0.68\ (12.5 - 6.0) = 10.4 \text{ percent}$$

Using a long-term Treasury bond, the estimate becomes:

$$K_e = 7.5 + 0.68\ (12.5 - 7.5) = 10.9 \text{ percent}$$

Despite these results, I feel very uncomfortable with this method and his analysis because it requires that we first obtain a reliable estimate of the overall stock market return (i.e., cost of equity). It is simpler and more direct to estimate the electric utility cost of equity using the standard DCF model. Unfortunately, the CAPM only serves to add uncertainty and controversy to the task at hand.

In this case, I must question the plausibility of Mr. Moul's assertion that investors expect overall stock market rates of returns of 15 to 17 percent. Available evidence demonstrates that it is much less than that.

Comparable Earnings

Q. MR. MOUL'S COMPARABLE EARNINGS STUDY PRODUCES A RETURN ON EQUITY OF 13.5 PERCENT. IS THIS A VALID ESTIMATE OF PP&L'S COST OF EQUITY?

A. No. In fact, it is not a market cost of equity estimate of any kind, as Mr. Moul himself is well aware. Mr. Moul has acknowledged that the comparable earnings is not a technique designed to estimate the market-determined cost of equity. (Tr. 42)

I agree with that view. The cost of equity is a market price (just as an interest rate is a market price), and comparable earnings figures are merely accounting returns.

They tell us nothing about either the market cost of equity or the returns on investment actually required by investors.

Q. IF THIS METHOD DOES NOT MEASURE PP&L'S COST OF EQUITY, WHY DOES HE EMPLOY IT?

A. As Mr. Moul explains in his Appendix B, it appears that he selects this technique because he believes it conforms to the legal standard of "comparability" under Hope. (See page B-4 accompanying PP&L Statement 12.) However, in applying that standard he confuses the rate of return the equity investor can achieve on his investment with a comparable company's accounting return on book equity. The cited passage states:

> "[T]he return to the equity owner should be commensurate with returns on investments in other enterprises having corresponding risks." (emphasis added)

This plainly indicates that the "comparable returns" in the Hope decision refers to the market return which an investor could expect to earn by investing elsewhere -- in other words, the DCF cost of equity return. The cited passage never references the accounting return on book equity.

Q. ARE THERE ANY OTHER PROBLEMS WITH THE COMPARABLE EARNINGS ANALYSIS?

A. As I suggest above, the accounting returns on book equity fail to measure the return opportunities of investors for one simple reason -- stocks of the comparable companies do not sell at book value. The fact that a company may be consistently earning 20 percent on equity does not by itself make the investment attractive, if that stock is also selling at 300 percent of book value per share.

A further concern relates to the problem of monopoly power. A central purpose of regulation is to prevent utilities with monopoly franchises from exercising monopoly power. One danger of the comparable earnings method is that it may to some extent be including profits which arise from the possession of monopoly or market power. This problem tends to increase whenever lower risk companies are selected as being comparable. If earnings are inflated by monopoly power, they certainly cannot be used as a standard for setting a utility's fair rate of return. Mr. Moul's analysis neither recognizes nor addresses this concern.

VI. DECOMMISSIONING TRUST FUND EARNINGS

Q. WHAT IS THE ISSUE CONCERNING DECOMMISSIONING TRUST FUND EARNINGS?

A. PP&L is requesting to include in its revenue requirements in this case $30 million on a total company basis for the decommissioning of the Susquehanna nuclear plant. The revenue requirements collected from ratepayers are to be transferred to an external trust fund to be used for the expressed purpose of decommissioning. The magnitude of the revenue requirements depends on several key factors including (1) the estimated cost of decommissioning the plant at retirement; (2) the annual rate at which decommissioning costs can be expected to escalate over time; and (3) the rate of return that PP&L can reasonably expect to earn on trust fund assets. Since decommissioning is not expected to begin until the year 2022 and be completed several years hence, the assumed rate of return on trust fund assets is an important determinant of the level of customer payments.

The earnings rate assumption has become more complex as a result of recent change in federal law. The 1992 Energy Policy Act (EPAct) relaxed previously federally-mandated restrictions on qualified nuclear decommissioning trust fund investments. Prior to EPAct, the trust funds were required to invest in "Black Lung" securities -- obligations of state and local governments, U.S. Treasury securities and deposits with commercial banks. While such investments generally are viewed as "safe" (i.e., free from default risk), they also provide relatively low returns. By lifting the Black Lung restrictions, the trust funds have the opportunity to invest in more attractive, higher earnings securities such as corporate stocks and bonds.

In addition, EPAct lowers the tax rate on trust fund earnings (for qualified trust funds) down to 20 percent. Since it is the after-tax rate of return which is relevant here, the reduction in the earnings income tax rate further contributes to a higher rate of return on trust fund assets.

As a result of the change in federal law, PP&L is petitioning the Commission in this case to permit the Company to employ the "prudent person" standard for investing the trust funds. This is explained in the testimony of Mr. Hill.

Q. WHAT EARNINGS RATE IS PP&L ASSUMING ON TRUST FUND ASSETS?

A. PP&L assumes a net of tax rate of return averaging 5.5 percent over the period 1995 until completion of decommissioning. In addition to factoring in the 20 percent tax rate, PP&L bases its return estimates on the historic market returns, 1926-1993, as published by Ibbotson Associates. The historic returns data are used both for equity investments and bonds. I show the Company's trust fund analysis, where the 5.5 percent rate of return is derived, on Schedule MIK-10.

Q. HOW DOES PP&L PLAN TO INVEST TRUST FUND ASSETS?

A. Although the actual investing will be undertaken by a trustee, PP&L identified an overall investment strategy in response to OCA Cross Exhibit 8. Following its allocation strategy, PP&L expects to invest about 30 percent the trust fund in corporate equities and the remainder in bonds. I interpret this to be the average allocation over the remaining life of the trust fund recognizing that it will change from year to year. In particular, it will be lower than 30 percent in the early years as PP&L ramps up its equity allocation.

Q. ARE PP&L'S TRUST FUND EARNINGS ASSUMPTIONS REASONABLE?

A. No. Based upon PP&L's various assumptions, the trust fund is projected to achieve an average after-tax earnings rate of only 5.5 percent. I believe this to be an overly conservative estimate and should be increased. Understating the return on the Trust

Fund has the effect of significantly increasing the decommissioning revenue requirements which PP&L must obtain from its ratepayers in this case.

Q. WHAT ARE YOUR SPECIFIC DISAGREEMENTS WITH PP&L'S ANALYSIS?

A. PP&L's assumed rates of returns on stocks and bonds are greatly understated and out of line both with current market conditions, the long-term outlook in financial markets and available authoritative forecasts. Mr. Hill assumes a return on long-term bonds of 5.5 to 6.0 percent and a mere 10 percent rate of return on equities. This latter figure compares to the 13 percent the Company presently insists is the market-required rate of return for PP&L common stock. The return on common stocks for trust fund planning purposes should certainly exceed the PP&L authorized return, and in my opinion, should be no lower than about 12 percent. This is about a percentage point above my 11.1 percent recommendation for PP&L in this case and reflects PP&L's lower than average risk relative to the overall stock market.

My other disagreement, which is relatively minor, concerns asset allocation. I believe an asset allocation to equities of 30 percent is too conservative, given the clear advantages of equity investing. These advantages include a substantially higher expected rate of return, diversification benefits and tax savings due to the tax deferral attribute of capital gains. I also recognize, however, that asset allocation is highly judgmental. Consequently, I have conducted my own earnings analysis using both a 30 and 40 percent average equity ratio.

Q. WHAT AFTER-TAX EARNINGS RATE ARE YOU RECOMMENDING?

A. I recommend a 7.5 percent average earnings rate for the trust fund horizon. This is based upon the assumption of an 8 percent average bond yield and a 12 percent return on corporate equities. Consistent with PP&L, it also assumes a 20 percent tax rate on bonds and a 15 percent tax rate on corporate equities (in order to recognize capital gains deferrals). This results in an average after-tax rate of return of about 7.5 percent, as shown on Schedule MIK-10. As my schedule indicates, the after-tax rate of return is 7.5 percent using the 30/70 asset allocation and 7.9 percent using the 40/60 portfolio.

Q. DO YOU HAVE ANY FURTHER SUPPORT FOR YOUR ASSUMED 12 PERCENT RETURN ON COMMON STOCKS?

A. Yes, as I stated earlier, consistency requires using a return on corporate common stocks of at least 12 percent given my recommendation of 11.1 percent for PP&L and Mr. Moul's 13.0 percent finding. Moreover, Mr. Moul has testified that a risk premium of nearly 5 percentage points over bond yields is a reasonable view of expected equity returns. Given the current corporate bond yields of about 8.5 percent and projected yields of 8 percent, this implies a <u>minimum</u> return on corporate equities of 13 to 14 percent.

In addition, I have reviewed DCF evidence for the stock market as a whole. For example, the IBES survey is projecting a long-term earnings growth rate for the S&P 500 of 9.2 percent. Combined with an adjusted yield of about 2.8 percent, this implies a DCF cost of equity for the overall stock market of approximately 12.0 percent.

Q. WHAT IS THE SOURCE OF YOUR 8.0 PERCENT DEBT RETURN?

A. As I explained earlier in my testimony, the <u>Blue Chip Economic Indicator</u> recently published its survey of long-term forecasts of yields on Aaa corporate bonds, extending from 1996 to 2007. The Blue Chip long-term consensus is about 7.9 to 8.0 percent. The yield on long term Treasury bonds would be slightly lower than Aaa corporate bonds, while the yield on average investment grade corporate bonds would be slightly higher. On the basis of this consensus forecast, coupled with currently prevailing market yields, I believe a reasonable expectation for bond returns would be approximately 8 percent.

What is clear is that there is absolutely no support among either economic forecasters or financial markets for PP&L's assumption of a 5.75 percent return on bonds as an average future expectation.

Q. DOES THIS CONCLUDE YOUR DIRECT TESTIMONY?

A. Yes, it does.

APPENDIX A

APPENDIX A

COST OF CAPITAL AND OTHER FINANCIAL TESTIMONY OF MATTHEW I. KAHAL

	Docket/Date	Utility	Jurisdiction	Client
(1)	RID 1819 April 1982	Pennsylvania Bell	Pennsylvania	Office of Consumer Advocate
(2)	82-0152 July 1982	Illinois Power	Illinois	U.S. Department of Justice
(3)	820150-EU September 1982	Gulf Power Company	Florida	Federal Executive Agencies
(4)	82-057-15 January 1983	Mountain Fuel Supply Company	Utah	Federal Executive Agencies
(5)	5200 August 1983	Texas Electric Service Company	Texas	FEA & Texas Whole-sale Customers
(6)	28069 August 1983	Oklahoma Natural Gas Company	Oklahoma	Federal Executive Agencies
(7)	83-0537 February 1984	Commonwealth Edison Company	Illinois	U.S. Department of Energy
(8)	84-035-01 June 1984	Utah Power & Light Company	Utah	Federal Executive Agencies
(9)	U-1009-137 July 1984	Utah Power & Light Company	Idaho	U.S. Department of Energy
(10)	R-842590 August 1984	Philadelphia Electric Company	Pennsylvania	Office of Consumer Advocate
(11)	840086-EI August 1984	Gulf Power Company	Florida	Federal Executive Agencies
(12)	84-122-E August 1984	Carolina Power & Light Company	South Carolina	Consumer Advocate
(13)	R-842710 January 1985	ALLTEL Pennsylvania	Pennsylvania	Office of Consumer Advocate
(14)	ER-504 February 1985	Allegheny Generating Company	FERC	Office of Consumer Advocate

	Docket/Date	Utility	Jurisdiction	Client
(15)	R-842632 March 1985	West Penn Power Company	Pennsylvania	Office of Consumer Advocate
(16)	83-0537 and 84-0555 April 1985	Commonwealth Edison Company	Illinois	U.S. Department of Energy
(17)	Rulemaking Docket No. 11 May 1985	Generic	Delaware	Delaware Commission Staff
(18)	29450 July 1985	Oklahoma Gas & Electric Company	Oklahoma	Oklahoma Attorney General
(19)	1811 August 1985	Bristol County Water Company	Rhode Island	Division of Public Utilities
(20)	R-850044 & R-850045 August 1985	Quaker State & Continental Telephone Companies	Pennsylvania	Office of Consumer Advocate
(21)	R-850174 November 1985	Philadelphia Suburban Water Company	Pennsylvania	Office of Consumer Advocate
(22)	EL-86-37 & EL-86-38 September 1986	Allegheny Generating Company	FERC	Pa. Office of Consumer Advocate
(23)	R-850287 June 1986	National Fuel Gas Distribution Corp.	Pennsylvania	Office of Consumer Advocate
(24)	1849 August 1986	Blackstone Valley Electric	Rhode Island	Division of Public Utilities
(25)	86-297-GA-AIR November 1986	East Ohio Gas Company	Ohio	Ohio Consumers' Counsel
(26)	U-16945 December 1986	Louisiana Power & Light Company	Louisiana	Public Service Commission
(27)	EL86-58 & 59 March 1987	System Energy Resources and Middle South Services	FERC	Louisiana PSC
(28)	ER87-72-001 April 1987	Orange & Rockland	FERC	Pa. Office of Consumer Advocate
(29)	86-2025-EL-AIR June 1987	Cleveland Electric Illuminating Company	Ohio	Ohio Consumers' Counsel

	Docket/Date	Utility	Jurisdiction	Client
(30)	86-2026-EL-AIR June 1987	Toledo Edison Company	Ohio	Ohio Consumers' Counsel
(31)	1872 July 1987	Newport Electric Company	Rhode Island	Commission Staff
(32)	WO 8606654 July 1987	Atlantic City Sewerage Company	New Jersey	Resorts International
(33)	7510 August 1987	West Texas Utilities Company	Texas	Federal Executive Agencies
(34)	RP-87-103 January 1988	Panhandle Eastern Pipe Line Company	FERC	Indiana Utility Consumer Counselor
(35)	87-0427 February 1988	Commonwealth Edison Company	Illinois	Federal Executive Agencies
(36)	870840 February 1988	Philadelphia Suburban Water Company	Pennsylvania	Pennsylvania Office of Consumer Advocate
(37)	870832 March 1988	Columbia Gas of Pennsylvania	Pennsylvania	Pennsylvania Office of Consumer Advocate
(38)	10105 August 1988	South Central Bell	Kentucky	Attorney General
(39)	U-17906 September 1988	Louisiana Power & Light Company	Louisiana	Commission Staff
(40)	1914 November 1988	Providence Gas Company	Rhode Island	Commission Staff
(41)	RP88-209 February 1989	Natural Gas Pipeline Co. of America	FERC	Indiana Utility Consumer Counselor
(42)	8425 March 1989	Houston Lighting & Power Company	Texas	U.S. Department of Energy
(43)	April 1989	Central Illinois Public Service Company	FERC	Soyland Power Cooperative, Inc.
(44)	89-0033 May 1989	Illinois Bell Telephone Company	Illinois	Citizens Utility Board
(45)	891208 May 1989	Pennsylvania American Water Company	Pennsylvania	Office of Consumer Advocate

	Docket/Date	Utility	Jurisdiction	Client
(46)	881167-EI May 1989	Gulf Power Company	Florida	Federal Executive Agencies
(47)	37414-S2 October 1989	Public Service Company of Indiana	Indiana	Indiana Utility Consumer Counselor
(48)	38728 November 1989	Indiana Michigan Power Company	Indiana	Indiana Utility Consumer Counselor
(49)	RP89-49-00 December 1989	National Fuel Gas Supply Corporation	FERC	Pennsylvania Office of Consumer Counselor
(50)	R89-1364 December 1989	Philadelphia Electric Company	Pennsylvania	Pennsylvania Office of of Consumer Advocate
(51)	RP89-160-000 January 1990	Trunkline Gas Company	FERC	Indiana Utility Consumer Counselor
(52)	EL90-16-000 November 1990	System Energy Resources, Inc.	FERC	Louisiana Public Service Commission
(53)	89-624 March 1990	Bell Atlantic	FCC	Pennsylvania Office of Consumer Advocate
(54)	38868 March 1990	Indianapolis Water Company	Indiana	Indiana Utility Consumer Counselor
(55)	1946 March 1990	Blackstone Valley Electric Company	Rhode Island	Division of Public Utilities
(56)	R-901670 July 1990	National Fuel Gas Distribution Corp.	Pennsylvania	Pennsylvania Office of Consumer Advocate
(57)	ER-891109125 July 1990	Jersey Central Power & Light Company	New Jersey	Rate Counsel
(58)	EL90-45-000 October 1990	Entergy Service, Inc.	FERC	Louisiana PSC
(59)	90-256 January 1991	South Central Bell Telephone Company	Kentucky	Attorney General
(60)	GR90080786J January 1991	New Jersey Natural Gas Company	New Jersey	Rate Counsel
(61)	U-17949-A February 1991	South Central Bell Telephone Company	Louisiana	Commission Staff
(62)	ER-900910905 April 1991	Atlantic City Electric Company	New Jersey	Rate Counsel

	Docket/Date	Utility	Jurisdiction	Client
(63)	Cause No. 39128 May 1991	Indianapolis Water Company	Indiana	Indiana Utility Consumer Counselor
(64)	GR90121301J May 1991	Elizabethtown Gas Company	New Jersey	Rate Counsel
(65)	91-5032 & 5055 August 1991	Nevada Power Co.	Nevada	U.S. Dept. of Energy
(66)	Cause No. 000662 September 1991	Southwestern Bell Telephone Co.	Oklahoma	Attorney General
(67)	U-19236 October 1991	Arkansas Louisiana Gas Company	Louisiana	Commission Staff
(68)	U-19237 December 1991	Louisiana Gas Service Company	Louisiana	Commission Staff
(69)	ER91030356J October 1991	Rockland Electric Company	New Jersey	Rate Counsel
(70)	GR91071243J February 1992	South Jersey Gas Company	New Jersey	Rate Counsel
(71)	GR91081393J March 1992	New Jersey Natural Gas Company	New Jersey	Rate Counsel
(72)	R-912164 April 1992	Equitable Gas Company	Pennsylvania	Office of Consumer Advocate
(73)	ER-91111698J May 1992	Public Service Electric & Gas Company	New Jersey	Rate Counsel
(74)	U-19631 June 1992	Trans Louisiana Gas Company	Louisiana	Commission Staff
(75)	ER91121820J July 1992	Jersey Central Power & Light Company	New Jersey	Rate Counsel
(76)	R-00922314 August 1992	Metropolitan Edison Company	Pennsylvania	Office of Consumer Advocate
(77)	92-049-05 September 1992	U S West Communications	Utah	Committee of Consumer Services
(78)	92PUE0037 September 1992	Commonwealth Gas	Virginia	Attorney General

	Docket/Date	Utility	Jurisdiction	Client
(79)	ER92-341-000 et al. December 1992	Entergy Services	FERC	Louisiana PSC
(80)	E-002/GR-92-1185 February 1993	Northern States Power Company	Minnesota	Attorney General
(81)	11,735 April 1993	Texas Utilities Electric Company	Texas	Federal Executive Agencies
(82)	2082 May 1993	Providence Gas Company	Rhode Island	Division of Public Utilities
(83)	P-00930715 December 1983	Bell Telephone Co. of Pennsylvania	Pennsylvania	Office of Consumer Advocate
(84)	R-00932670 February 1994	Pennsylvania-American Water Company	Pennsylvania	Office of Consumer Advocate
(85)	E-015/GR-94-001 April 1994	Minnesota Power & Light Company	Minnesota	Attorney General
(86)	CC Docket 94-1 May 1994	Generic	FCC	MCI Communications Corp.
(87)	93-11065 April 1994	Nevada Power Co.	Nevada	Federal Executive Agencies
(88)	94-0065 May 1994	Commonwealth Edison Company	Illinois	Federal Executive Agencies
(89)	GR94010002J June 1994	South Jersey Gas Company	New Jersey	Rate Counsel
(90)	WR94030059 July 1994	New Jersey-American Water Company	New Jersey	Rate Counsel
(91)	ER94-998 and 999 July 1994	Ocean State Power	FERC	Boston Edison Company
(92)	R-00942986 July 1994	West Penn Power Co.	Pennsylvania	Office of Consumer Advocate
(93)	94-121 August 1994	South Central Bell Telephone Co.	Kentucky	Attorney General
(94)	IPC-E-94-5 November 1994	Idaho Power Company	Idaho	Federal Executive Agencies

	Docket/Date	Utility	Jurisdiction	Client
(95)	November 1994	Edmonton Water	Alberta, Canada	Regional Customers Group
(96)	90-926 December 1994	South Central Bell Telephone Co.	Kentucky	Attorney General
(97)	U-20925 February 1995	Louisiana Power & Light Co.	Louisiana	Commission Staff
(98)	R-00932670	Pennsylvania-American Water Company	Pennsylvania	Office of Consumer Advocate

BEFORE THE

PENNSYLVANIA PUBLIC UTILITY COMMISSION

PENNSYLVANIA POWER & LIGHT COMPANY	)))	DOCKET NO. R-00943271

SCHEDULES ACCOMPANYING

DIRECT TESTIMONY

OF

MATTHEW I. KAHAL

ON

FAIR RATE OF RETURN

AND

NUCLEAR DECOMMISSIONING TRUST FUND EARNINGS

ON BEHALF OF THE

PENNSYLVANIA OFFICE OF CONSUMER ADVOCATE

APRIL 1995

EXETER
Associates, Inc.

12510 Prosperity Drive
Suite 350
Silver Spring, MD 20904

PENNSYLVANIA POWER & LIGHT COMPANY

Summary of Overall Rate of Return Recommendation
At September 30, 1995
($000s)

Capital Type	Amount Outstanding (@ 9/30/95)[1]	Percentage of Total Capital	Cost Rate[1]	WACC
Long-Term Debt	$2,873,250	47.56%	7.97%	3.79%
Preferred Stock	449,535	7.44	7.31	0.54
Common Stock	2,718,693	45.00	11.1[2]	5.00
	$6,041,487	100.00%	--	9.33%

[1]Source: Moul, Schedules 4 and 5. The $115.9 million of unamortized balance on reacquisition losses is not removed from debt balance.
[2]Source: Schedule MIK-5, page 1 of 6 and MIK-6, page 1 of 6.

PENNSYLVANIA POWER & LIGHT COMPANY

Cost Recovery of Loss on Reacquired Debt
(Total Company Basis)

I. Method (1)

(a) Annual amortization (per Moul) — $ 7.207 million

(b) Debt return on unamortized balance ($115.887 million x 7.40%) — $ 8.576 million

Total Cost — $15.783 million

II. Method (2)

(a) Pre-tax return excluding cost recovery of loss on reacquired debt:

	% of Total	Cost Rate	Weighted Cost	Pre-Tax Weighted Cost
Debt	47.56%	7.40%	3.52%	3.52%
Preferred	7.44	7.31	0.54	0.93
Common	45.00	13.0	5.85	10.11
Total	100%	--	9.91%	14.56%

Pre-tax return dollars: $6,041 million x 14.56% = $880 million

(b) Pre-tax return per Moul (14.96% -- See Moul Schedule 14)

Pre-tax return dollars: $6,041 million x 14.96 = $904 million

Difference: $904 - $880 = $24 million

PENNSYLVANIA POWER & LIGHT COMPANY

Cost Recovery of Loss on Reacquired Debt
(Total Company Basis)

(c) Pre-tax rate of return with losses on reacquisition only in the cost of debt, not in the capital structure.

	% of Total	Cost Rate	Weighted Cost	Pre-Tax Weighted Cost
Debt	47.56%	7.97%	3.79%	3.79%
Preferred	7.44	7.31	0.54	0.93
Common	45.00	13.00	5.85	10.11
Total	100%	--	10.18%	14.83%

Pre-tax return: \$6,041 million x 14.83% = \$896 million

Difference: \$896 - \$880 million = \$16 million

P.R. Moul

Pennsylvania Power & Light Company
Response to Interrogatories of
the Office Consumer Advocate, Set V
Dated February 6, 1995
Docket No. R-00943271

Q.31. On page 30, Mr. Moul argues that PP&L should be entitled to earn a "full return" on call premiums. Please explain what is meant by a "full return" (e.g., debt return, equity return, overall return)? What specific rate of return is appropriate?

A.31. A full return on the call premiums would involve both the recovery of the premium amounts through amortization and a return on the unamortized portion of the premium. Mr. Moul's procedures provide for both the return of and return on the premiums at the Company's cost of debt.

PENNSYLVANIA POWER & LIGHT COMPANY

Recent Trends in Capital Costs

1984	Annualized Inflation Rate	10-Year Treasury Yields	3-Month Treasury Bill	Single A Utility Yields
January	4.1%	11.7%	8.9%	13.4%
February	4.6	11.8	9.0	13.4
March	4.7	12.3	9.4	13.9
April	4.5	12.6	9.7	14.2
May	4.2	13.4	9.9	14.9
June	4.2	13.6	9.9	15.1
July	4.1	13.4	10.1	14.8
August	4.2	12.7	10.5	14.4
September	4.2	12.5	10.4	14.2
October	4.2	12.2	10.0	13.8
November	4.0	11.6	8.8	13.2
December	4.0	11.5	8.2	13.1
1985				
January	3.6	11.4	7.8	13.0
February	3.5	11.5	8.2	13.1
March	3.7	11.9	8.6	13.9
April	3.7	11.4	8.0	13.6
May	3.8	10.9	7.6	13.1
June	3.7	10.2	7.0	12.1
July	3.6	10.3	7.1	12.1
August	3.4	10.3	7.2	12.1
September	3.2	10.4	7.1	12.1
October	3.2	10.2	7.2	12.0
November	3.6	9.8	7.2	11.5
December	3.8	9.3	7.1	11.0

PENNSYLVANIA POWER & LIGHT COMPANY

Recent Trends in Capital Costs

1986	Annualized Inflation Rate	10-Year Treasury Yields	3-Month Treasury Bill	Single A Utility Yields
January	3.9%	9.2%	7.0%	10.8%
February	3.2	8.7	6.9	10.3
March	2.3	7.8	6.6	9.5
April	1.6	7.3	6.1	9.1
May	1.6	7.7	6.1	9.6
June	1.7	7.8	6.2	9.6
July	1.6	7.3	5.8	9.4
August	1.6	7.2	5.6	9.3
September	1.8	7.5	5.2	9.5
October	1.5	7.4	5.2	9.5
November	1.3	7.3	5.4	9.3
December	1.1	7.1	5.5	9.1
1987				
January	1.4	7.1	5.5	9.0
February	2.1	7.3	5.6	9.0
March	3.0	7.3	5.6	8.9
April	3.8	8.0	5.8	9.4
May	3.8	8.6	5.8	9.9
June	3.7	8.4	5.7	10.0
July	3.9	8.5	5.8	10.2
August	4.3	8.8	6.0	10.5
September	4.3	9.4	6.3	11.2
October	4.5	9.5	6.4	11.3
November	4.5	8.9	5.8	10.8
December	4.4	9.0	5.8	11.0

PENNSYLVANIA POWER & LIGHT COMPANY

Recent Trends in Capital Costs

1988	Annualized Inflation Rate	10-Year Treasury Yields	3-Month Treasury Bill	Single A Utility Yields
January	3.9%	8.6%	5.9%	10.8%
February	3.9	8.2	5.7	10.1
March	3.9	8.4	5.7	10.1
April	3.9	8.7	5.9	10.5
May	3.9	9.1	6.3	10.8
June	4.0	8.9	6.5	10.8
July	4.1	9.1	6.7	11.0
August	4.0	9.3	7.0	11.2
September	4.2	9.0	7.2	10.6
October	4.3	8.8	7.3	10.0
November	4.3	9.0	7.7	9.9
December	4.4	9.1	8.1	10.1
1989				
January	4.7	9.1	8.3	10.1
February	4.8	9.2	8.5	10.1
March	5.0	9.4	8.8	10.2
April	5.1	9.2	8.7	10.2
May	5.4	8.9	8.4	10.0
June	5.2	8.3	8.2	9.6
July	5.0	8.0	7.9	9.5
August	4.7	8.1	7.9	9.5
September	4.3	8.2	7.7	9.6
October	4.5	8.0	7.6	9.5
November	4.7	7.9	7.7	9.5
December	4.6	7.8	7.6	9.4

PENNSYLVANIA POWER & LIGHT COMPANY

Recent Trends in Capital Costs

1990	Annualized Inflation Rate	10-Year Treasury Yields	3-Month Treasury Bill	Single A Utility Yields
January	5.2%	8.2%	7.6%	9.6%
February	5.3	8.5	7.8	9.8
March	5.2	8.6	7.9	9.9
April	4.7	8.8	7.8	9.9
May	4.4	8.8	7.8	10.0
June	4.7	8.5	7.7	9.8
July	4.8	8.5	7.7	9.8
August	5.6	8.8	7.4	9.9
September	6.2	8.9	7.4	10.1
October	6.3	8.7	7.2	10.1
November	6.3	8.4	7.1	9.9
December	6.1	8.1	6.8	9.7
1991				
January	5.7	8.1	6.3	9.7
February	5.3	7.9	6.0	9.5
March	4.9	8.1	5.9	9.6
April	4.9	8.0	5.7	9.5
May	5.0	8.1	5.5	9.4
June	4.7	8.3	5.6	9.6
July	4.4	8.3	5.6	9.5
August	3.8	7.9	5.4	9.3
September	3.4	7.7	5.3	9.2
October	2.9	7.5	5.0	9.1
November	3.0	7.4	4.6	9.1
December	3.1	7.1	4.1	8.9

PENNSYLVANIA POWER & LIGHT COMPANY

Recent Trends in Capital Costs

1992	Annualized Inflation Rate	10-Year Treasury Yields	3-Month Treasury Bill	Single A Utility Yields
January	2.6	7.0	3.8	8.8%
February	2.8	7.4	3.8	8.9
March	3.2	7.5	4.1	9.0
April	3.2	7.5	3.9	8.9
May	3.0	7.4	3.8	8.9
June	3.1	7.3	3.8	8.8
July	3.2	6.8	3.4	8.6
August	3.1	6.5	3.2	8.4
September	3.0	6.4	3.0	8.4
October	3.2	6.6	2.9	8.5
November	3.0	6.9	3.1	8.6
December	2.9	6.8	3.3	8.4
1993				
January	3.3	6.6	3.1	8.3
February	3.2	6.3	3.0	8.0
March	3.1	6.0	3.0	7.9
April	3.2	6.0	2.9	7.8
May	3.2	6.0	3.0	7.9
June	3.0	6.0	3.1	7.8
July	2.8	5.8	3.1	7.5
August	2.8	5.7	3.1	7.3
September	2.7	5.4	3.0	7.0
October	2.8	5.3	3.0	7.0
November	2.7	5.7	3.1	7.3
December	2.7	5.8	3.1	7.3

[1]Inflation rate is the annualized rate of increase in the CPI computed as the CPI level that month compared with 12 months prior value.

Sources: Standard & Poor's Stock Guide, Economic Indicators, Moody's Bond Record, Federal Reserve Statistical Release, Business Week.

PENNSYLVANIA POWER & LIGHT COMPANY

Recent Trends in Capital Costs

1994	Annualized Inflation Rate[1]	10-Year Treasury Yields	3-Month Treasury Bill	Single A Utility Bond Yields
January	2.5%	5.8%	3.0%	7.3%
February	2.5	6.0	3.2	7.4
March	2.6	6.5	3.6	7.9
April	2.4	7.0	3.8	8.2
May	2.4	7.2	4.3	8.3
June	2.8	7.3	4.4	8.3
July	2.8	7.3	4.4	8.5
August	2.9	7.2	4.5	8.4
September	3.0	7.5	4.8	8.6
October	2.6	7.7	5.0	8.9
November	2.7	7.9	5.4	9.0
December	2.7	7.8	5.8	8.8
1995				
January	2.8	7.8	5.7	8.7
February	2.9	7.5	5.8	8.5

[1]Inflation rate is the annualized rate of increase in the CPI computed as the CPI level that month compared with 12 months prior value.

Sources: Standard & Poor's Stock Guide, Economic Indicators, Moody's Bond Record, Federal Reserve Statistical Release, Business Week.

PENNSYLVANIA POWER & LIGHT COMPANY

List of Proxy Companies

Primary Proxy Group (I):

Atlantic Energy, Inc.
Baltimore Gas & Electric Company
Carolina Power & Light Company
Delmarva Power & Light Co.
Detroit Edison Company
Dominion Resources, Inc.
Duke Power Company
IES Industries
Kansas City Power & Light
Midwest Resources
Pacific Power & Light Co.
Public Service Enterprise Group
San Diego Gas & Electric
SCANA Corp.
Union Electric Company
Western Resources

Mr. Moul's (II):

Allegheny Power System
Atlantic Energy, Inc.
American Elec. Power, Inc.
Baltimore Gas & Electric Company
Delmarva Power & Light Company
Potomac Electric Power Company
DPL, Inc.
Public Service Enterprise Group

Stand-alone Company (III): Pennsylvania Power & Light Co.

PENNSYLVANIA POWER & LIGHT COMPANY

Risk Attributes of Mr. Moul's Proxy Companies

	Company	Moody's Bond Rating	Value Line Safety Rating	Beta Statistic	% Nuclear Generation	Equity Ratio
(1)	Allegheny Power System	Aa(3)	1	0.65	0%	45.0%
(2)	Atlantic Energy	A(3)	2	0.70	24	45.0
(3)	American Electric Power	A-Baa	3	0.75	13	43.5
(4)	Baltimore Gas & Electric	A(1)	2	0.75	40	44.5
(5)	Delmarva Power & Light	A(2)	2	0.65	14	49.0
(6)	DPL, Inc.	A(2)	2	0.55	0	50.0
(7)	Potomac Electric Power	A(1)	1	0.75	0	49.5
(8)	Public Service Electric & Gas	A(3)	2	0.70	47	49.5
	Average	A(2)	1.9	0.69	17%	47.0%
	Pennsylvania Power & Light Company	A(2)	2	0.65	31%	43.5%

Source: Moody's Bond Record, February 1995.
Value Line Investment Survey, December 16, 1994, January 13 and February 24, 1995.

PENNSYLVANIA POWER & LIGHT COMPANY

Risk Attributes of the Primary Proxy Companies

	Company	Moody's Bond Rating	Value Line Safety Rating	Beta Statistic	% Nuclear Generation	Equity Ratio
(1)	Atlantic Energy	A(3)	2	0.70	24%	45.0%
(2)	Baltimore Gas & Electric	A(1)	2	0.75	40	44.5
(3)	Carolina Power & Light	A(2)	2	0.80	29	47.5
(4)	Delmarva Power & Light	A(2)	2	0.65	14	49.0
(5)	Detroit Edison	A(3)	3	0.70	17	43.0
(6)	Dominion Resources	A(1)	2	0.65	31	44.5
(7)	IES Industries	A(1)	2	0.60	20	51.0
(8)	Kansas City Power & Light	A(2)	2	0.65	25	51.0
(9)	Midwest Resources	A(1)	3	0.50	15	44.0
(10)	New England Electric System	A(3)	2	0.75	18	48.0
(11)	Pacific Gas & Electric	A(2)	3	0.75	17	46.5
(12)	Public Service Enterprise	A(3)	2	0.70	47	46.5
(13)	San Diego Gas & Electric	A(1)	2	0.60	17	50.3
(14)	SCANA	A(1)	2	0.65	22	45.0
(15)	Southern Company	A(3)	1	0.65	16	49.0
(16)	Union Electric	A(1)	1	0.65	25	53.5
(17)	Western Resources	A(3)	2	0.70	17	47.5
	Average	A(2)	2.1	0.68	23.2%	47.3%
	Pennsylvania Power & Light	A(2)	2	0.65	31.0%	43.5%

Source: Moody's Bond Record, February 1995, Value Line Investment Survey, December 16, 1994, January 13 and February 24, 1995.

PENNSYLVANIA POWER & LIGHT COMPANY

Monthly Dividend Yields for
Mr. Moul's Group
(September 1994 - February 1995)

	Sep 1994	Oct 1994	Nov 1994	Dec 1994	Jan 1995	Feb 1995	Averages Dec. 1994- Feb. 1995	Averages Sept. - Feb. 1995
Allegheny Power System	27.79%	7.95%	7.76%	7.60%	7.21%	6.92%	7.25%	7.54%
American Electric Power	7.90	7.63	7.47	7.27	7.07	6.96	7.10	7.38
Atlantic Energy	9.09	9.26	8.96	8.64	8.44	8.21	8.43	8.77
Baltimore Gas & Electric	6.91	6.59	6.87	6.79	6.57	6.24	6.53	6.66
Delmarva Power & Light	8.32	8.21	8.35	8.35	8.24	7.90	8.16	8.23
DPL, Inc.	6.11	5.97	5.81	5.74	5.96	5.82	5.84	5.90
PEPCO	8.62	8.65	8.76	8.82	8.68	8.51	8.67	8.67
Public Service Enterprise	8.47	8.29	8.35	8.25	7.85	7.42	7.84	8.10
Average	7.90%	7.82%	7.79%	7.68%	7.50%	7.25%	7.48%	7.66%

Source: Standard & Poor's Stock Guide, October 1994 - March 1995 issues.

PENNSYLVANIA POWER & LIGHT COMPANY

Monthly Dividend Yields for Primary Proxy Group (September 1994 - February 1995)

	Sep 1994	Oct 1994	Nov 1994	Dec 1994	Jan 1995	Feb 1995	Averages Dec. 1994 - Feb. 1995	Averages Sept. - Feb. 1995
Atlantic Energy	9.09%	9.26%	8.96%	8.64%	8.44%	8.21%	8.43%	8.77%
Baltimore Gas & Electric	6.91	6.59	6.87	6.79	6.57	6.24	6.53	6.66
Carolina Power & Light	6.59	6.54	6.57	6.50	6.40	6.29	6.40	6.48
Delmarva Power & Light	8.32	8.21	8.35	8.35	8.24	7.90	8.16	8.23
Detroit Edison	8.02	8.02	7.85	7.70	7.63	7.18	7.50	7.73
Dominion Resources	7.02	6.90	7.13	7.03	7.00	6.72	6.92	6.97
IES Industries	7.98	8.13	8.24	8.17	7.96	7.81	7.98	8.05
Kansas City Power & Light	7.28	6.97	6.89	6.63	6.52	6.38	6.51	6.78
Midwest Resources	8.14	8.29	8.47	8.67	8.40	8.21	8.43	8.36
New England Electric System	7.45	7.45	7.51	7.37	7.08	6.87	7.11	7.29
Pacific Gas & Electric	8.41	8.86	8.50	8.04	7.86	7.74	7.88	8.23
Public Service Enterprise	8.47	8.29	8.35	8.25	7.85	7.42	7.84	8.10
San Diego Gas & Electric	8.03	7.87	7.77	7.74	7.53	7.41	7.56	7.72
SCANA	6.38	6.52	6.67	6.63	6.53	6.47	6.54	6.53
Southern Company	6.60	6.17	5.92	5.77	6.01	5.83	5.87	6.05
Union Electric	7.01	6.93	6.84	6.88	6.71	6.50	6.70	6.81
Western Resources	7.12	6.9	6.99	6.95	6.50	6.09	6.51	6.76
Average	7.58%	7.53%	7.52%	7.42%	7.25%	7.01%	7.22%	7.38%
Pennsylvania Power & Light	8.22%	8.54%	8.48%	8.54%	8.43%	8.14%	8.37%	8.39%

Source: Standard & Poor's Stock Guide, September 1994 - March 1995. issues

PENNSYLVANIA POWER & LIGHT COMPANY

DCF Analysis Summary for Mr. Moul's Proxy Group of Electric Utility Companies

(1)	Dividend Yield (September 1994 - February 1995)	7.66%[1]
(2)	Adjusted Yield (7.66 x 1.02)	7.8
(3)	Growth Range	3.0 - 3.5
(4)	Cost of Equity	10.8 - 11.3
	Midpoint	11.1%
	RECOMMENDATION	11.1%

[1]Schedule MIK-4, page 1 of 2.
[2]DCF formula is as follows:

K_e = Do/Po (1 + 0.5g) + g, where
K_e = cost of equity
Do = indicated quarterly dividend x 4
Po = stock price
g = annualized dividend growth rate

PENNSYLVANIA POWER & LIGHT COMPANY

Earnings Retention Analysis for
Mr. Moul's Group

Year	(1) ROE	(2) Retention Rate	(3) Implied Growth (1)x(2)
1985	14.53%	28.33%	4.11%
1986	15.10	31.15	4.70
1987	15.25	30.01	4.58
1988	14.42	27.39	3.95
1989	14.09	25.05	3.53
1990	12.23	10.43	1.28
1991	11.93	10.06	1.20
1992	10.84	6.62	0.72
1993	12.07	16.15	1.95
1994	11.76	15.59	1.83
Last 5 Years	11.77%	11.77%	1.38%
Last 10 Years	13.22%	20.08%	2.65%
Average of Last 5 & 10 Yrs	12.49%	15.92%	1.99%
Best 3 Years ROE	14.95%	29.83%	4.46%

Source: Value Line Investment Survey, December 16, 1994, January 13 and February 24, 1995.

PENNSYLVANIA POWER & LIGHT COMPANY

Historical Growth Rates For Earnings, Dividends
and Book Value per Share for
Mr. Moul's Group of Companies
(annualized compound growth rates)

	Dividends Per Share	Earnings Per Share	Book Value Per Share	Average
Last 5 Years (1)	1.08%	2.65%	2.26%	2.00%
Last 10 Years (2)	2.13	0.81	2.75	1.89
Average	1.60%	1.73%	2.51%	1.95%

(1) Based on 1989 to 1994.
(2) Based on 1984 to 1994.

Source: Value Line Investment Survey, December 16, 1994, January 13 and February 24, 1995.

PENNSYLVANIA POWER & LIGHT COMPANY

Value Line Projections for
Mr. Moul's Group of Companies

Company	Near Term Dividend Growth Rate[1]	Long Term Growth Rate[2]	Weighted Average[3]	Future ROE (1997-1999)
Allegheny Power System	1.78%	3.0%	2.59%	12.0%
American Electric Power	1.03	3.5	2.68	12.5
Atlantic Energy	0.00	3.5	2.33	11.5
Baltimore Gas & Electric	2.87	3.0	2.96	11.0
Delmarva Power & Light	0.96	2.0	1.65	11.5
DPL, Inc.	3.99	3.0	3.33	14.5
PEPCO	1.47	2.0	1.82	11.5
Public Service Enterprise	0.69	3.5	2.56	12.0
Average	1.60%	2.94%	2.49%	12.06%
Pennsylvania Power & Light	1.18%	3.0%	2.39%	11.5%

(1) Annualized growth rate in dividends per share, 1994-1998.

(2) Earnings retention growth rate (1997-1999) published by Value Line plus an assumed 0.5 percent for possible "external" growth.

(3) Weighted average growth rate places one-third weight on near-term growth and two-thirds weight on long-term.

Source: Value Line Investment Survey, December 16, 1994, January 13 and February 24, 1995.

PENNSYLVANIA POWER & LIGHT COMPANY

Five Year Earnings Projection For
Mr. Moul's Group of Companies
Value Line vs. IBES

	Value Line		"IBES"	
Company	1994-1998	"Normalized"	Growth Rate	No. of Estimates
Allegheny Power System	3.73%	3.0%	1.90%	11.0
American Electric Power	2.49	3.0	2.5	10.0
Atlantic Energy	4.66	3.0	1.8	5.0
Baltimore Gas & Electric	2.99	5.0	3.5	11.0
Delmarva Power & Light	3.70	3.0	3.0	7.0
DPL, Inc.	3.18	4.5	4.0	10.0
PEPCO	2.60	2.0	1.5	10.0
Public Service Enterprise	1.77	3.5	2.7	11.0
Average	3.14%	3.38%	2.61%	9.4
Pennsylvania Power & Light Company	3.73%	1.50%	1.00%	7.0

Source: Value Line Investment Survey, December 16, 1994, January 13 and February 24, 1995.

PENNSYLVANIA POWER & LIGHT COMPANY

Illustrative Analysis of
the External Growth Component for
Mr. Moul's Group

Company	Growth Rate in Common Shares (1994-1998)	Mkt/Book Premium	External Growth Rate Component (2)x(3)
Allegheny Power System	1.24%	14.79%	0.18%
American Electric Power	0.40	26.48	0.11
Atlantic Energy	0.37	4.97	0.02
Baltimore Gas & Electric	1.08	11.72	0.13
Delmarva Power & Light	0.21	11.99	0.03
DPL, Inc.	0.00	44.47	0.00
PEPCO	0.73	6.93	0.05
Public Service Enterprise	0.07	12.15	0.01
Group Average	0.51%	16.69%	0.09%

(1) Value Line projections in common shares outstanding, 1994-1998.

(2) Premium calculated as (1 - BVPS/0.95P) where BVPS is 1994 book value per share, P is Value Line's "Recent Price" and 0.95 is a net proceeds adjustment factor.

Source: Value Line Investment Survey, December 16, 1994, January 13 and February 24, 1995.

PENNSYLVANIA POWER & LIGHT COMPANY

DCF Analysis Summary for the
Primary Group of Proxy Companies

(1)	Dividend Yield (September 1994 - February 1995)	7.38%[1]
(2)	Adjusted Yield (7.38 x 1.02)	7.5
(3)	Growth Range	3.0 - 4.0
(4)	Cost of Equity	10.5 - 11.5
	Midpoint	11.0%
	RECOMMENDATION	11.1%

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[1]Schedule MIK-4, page 2 of 2.
[2]DCF formula is as follows:

K_e = Do/Po (1 + 0.5g) + g, where

K_e = cost of equity

Do = indicated quarterly dividend x 4

Po = stock price

g = annualized dividend growth rate

PENNSYLVANIA POWER & LIGHT COMPANY

Earnings Retention Analysis for
Primary Proxy Group

	(1)	(2)	(3)
Year	ROE	Retention Rate	Implied Growth (1)x(2)
1985	14.36%	29.02%	4.17%
1986	14.23	28.92	4.11
1987	14.03	27.00	3.79
1988	13.06	21.69	2.83
1989	13.39	21.37	2.86
1990	12.76	17.09	2.18
1991	12.94	17.75	2.30
1992	11.75	14.03	1.65
1993	12.67	20.71	2.62
1994	12.02	17.73	2.13
Last 5 Years	12.43%	17.46%	2.17%
Last 10 Years	13.12%	21.53%	2.82%
Average of Last 5 & 10 Yrs	12.77%	19.49%	2.49%
Best 3 Years ROE	14.20%	28.31%	4.02%

Source: Value Line Investment Survey, December 16, 1994, January 13 and February 24, 1995.

PENNSYLVANIA POWER & LIGHT COMPANY

Historical Growth Rates For Earnings, Dividends
and Book Value per Share for
Primary Proxy Group
(annualized compound growth rates)

	Dividends Per Share	Earnings Per Share	Book Value Per Share	Average
Last 5 Years (1)	2.24%	1.42%	3.29%	2.32%
Last 10 Years (2)	2.55	0.62	2.78	1.98
Average	2.39%	1.02%	3.03%	2.15%

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(1) Based on 1989 to 1994.
(2) Based on 1984 to 1994.

Source: Value Line Investment Survey, December 16, 1994, January 13 and February 24, 1995.

PENNSYLVANIA POWER & LIGHT COMPANY

Value Line Projections for Primary Proxy Group

Company	Near Term Dividend Growth Rate[1]	Long-Term Growth Rate[2]	Weighted Average[3]	Future ROE (1997-1999)
Atlantic Energy	0.00%	3.5%	2.33%	11.5%
Baltimore Gas & Electric	2.87	3.0	2.96	11.0
Carolina Power & Light	2.38	4.0	3.46	13.5
Delmarva Power & Light	0.96	2.0	1.65	11.5
Detroit Edison	1.43	4.5	3.48	13.0
Dominion Resources	1.53	2.5	2.18	11.0
IES Industries	0.71	3.5	2.57	12.0
Kansas City Power & Light	2.57	4.5	3.86	14.0
Midwest Resources	2.49	3.5	3.16	12.0
New England Electric System	1.91	3.5	2.97	11.5
Pacific Gas & Electric	0.76	4.0	2.92	12.0
Public Service Enterprise	0.69	3.5	2.56	12.0
San Diego Gas & Electric	2.53	4.0	3.51	14.5
SCANA	2.39	3.0	2.80	12.0
Southern Company	3.23	4.5	4.08	13.5
Union Electric	1.73	2.5	2.24	13.0
Western Resources	1.96	3.0	2.65	10.5
Average	1.78%	3.47%	2.91%	12.27%

(1) Annualized growth rate in dividends per share, 1994-1998.

(2) Earnings retention growth rate (1997-1999) published by Value Line plus an assumed 0.5 percent for possible "external" growth.

(3) Weighted average growth rate places one-third weight on near-term growth and two-thirds weight on long-term.

Source: Value Line Investment Survey, December 16, 1994, January 13 and February 24, 1995.

PENNSYLVANIA POWER & LIGHT COMPANY

Five Year Earnings Projection For
Primary Proxy Group
Value Line vs. IBES

	Value Line		"IBES"	
Company	1994-1998	"Normalized"	Growth Rate	No. of Estimates
Atlantic Energy	4.66%	3.0%	1.8%	5.0
Baltimore Gas & Electric	2.99	5.0	3.5	11.0
Carolina Power & Light	3.25	1.5	3.1	13.0
Delmarva Power & Light	3.70	3.0	3.0	7.0
Detroit Edison	3.15	-3.0	1.8	8.0
Dominion Resources	3.23	2.5	2.5	12.0
IES Industries	3.85	2.5	2.7	5.0
Kansas City Power & Light	8.06	6.5	3.3	6.0
Midwest Resources	7.71	7.5	2.6	3.0
New England Electric System	1.17	2.0	2.5	12.0
Pacific Gas & Electric	1.24	3.5	1.8	8.0
Public Service Enterprise	1.77	3.5	2.7	11.0
San Diego Gas & Electric	5.28	3.0	2.3	8.0
SCANA	4.53	3.0	3.1	6.0
Southern Company	6.09	4.5	3.4	12.0
Union Electric	0.82	1.5	2.7	7.0
Western Resources	2.87	2.0	2.5	9.0
Average	3.78%	3.03%	2.67%	8.4

Source: Value Line Investment Survey, December 16, 1994, January 13 and February 24, 1995.

PENNSYLVANIA POWER & LIGHT COMPANY

Illustrative Analysis of
the External Growth Component for
Primary Proxy Group

Company	(1) Growth Rate in Common Shares (1994-1998)	(2) Mkt/Book Premium	(3) External Growth Rate Component (1)x(2)
Atlantic Energy	0.37%	4.97%	0.02%
Baltimore Gas & Electric	1.08	11.72	0.13
Carolina Power & Light	-0.41	37.43	-0.15
Delmarva Power & Light	0.21	11.99	0.03
Detroit Edison	-2.48	7.09	-0.18
Dominion Resources	1.63	23.33	0.38
IES Industries	1.69	16.80	0.28
Kansas City Power & Light	0.00	35.24	0.00
Midwest Resources	1.10	5.64	0.06
New England Elec. System	0.00	14.26	0.00
Pacific Gas & Electric	0.93	13.47	0.13
Public Service Enterprise	0.07	12.15	0.01
San Diego Gas & Electric	0.58	36.59	0.21
SCANA	4.16	25.44	1.06
Southern Company	0.00	34.74	0.00
Union Electric	0.00	35.09	0.00
Western Resources	0.00	14.52	0.00
Group Average	0.53%	20.03%	0.12%

(1) Value Line projections in common shares outstanding, 1994-1998.

(2) Premium calculated as (1 - BVPS/0.95P) where BVPS is 1994 book value per share, P is Value Line's "Recent Price" and 0.95 is a net proceeds adjustment factor.

Source: Value Line Investment Survey, December 16, 1994, January 13 and February 24, 1995.

PENNSYLVANIA POWER & LIGHT COMPANY

DCF Analysis Summary of
PP&L Stand-Alone

(1)	Dividend Yield (September 1994 - February 1995)	8.39%[1]
(2)	Adjusted Yield (8.39 x 1.02)	8.5
(3)	Growth Range	2.5 - 3.0
(4)	Cost of Equity	11.0 - 11.5
	Midpoint	11.25%
	RECOMMENDATION	11.1%

[1]Schedule MIK-4, page 1 of 2.
[2]DCF formula is as follows:

K_e = $Do/Po\ (1 + 0.5g) + g$, where

K_e = cost of equity

Do = indicated quarterly dividend x 4

Po = stock price

g = annualized dividend growth rate

PENNSYLVANIA POWER & LIGHT COMPANY

Earnings Retention Analysis
Stand-alone Analysis for
Pennsylvania Power & Light Company

Year	(1) ROE	(2) Retention Rate	Implied Growth (1)x(2)
1985	10.50%	4.48%	0.47%
1986	12.09	16.77	2.03
1987	12.77	19.28	2.46
1988	13.98	26.20	3.66
1989	14.60	29.56	4.32
1990	13.72	24.75	3.40
1991	13.48	22.89	3.08
1992	13.15	21.29	2.80
1993	13.13	20.29	2.66
1994	11.69	12.11	1.42
Last 5 Years	13.03%	20.26%	2.64%
Last 10 Years	12.91%	19.76%	2.55%
Average of Last 5 & 10 Yrs	12.97%	20.01%	2.60%
Best 3 Years ROE	14.10%	26.84%	3.78%

Source: Value Line Investment Survey, December 16, 1994, January 13 and February 24, 1995.

PENNSYLVANIA POWER & LIGHT COMPANY

Historical Growth Rates For Earnings, Dividends
and Book Value per Share for
Pennsylvania Power & Light Company
(average annualized growth rates)

	Dividends Per Share	Earnings Per Share	Book Value Per Share	Average
Last 5 Years (1)	3.15%	-1.31%	3.14%	1.66%
Last 10 Years (2)	3.02	1.99	2.66	2.56
Average	3.09%	0.34%	2.90%	2.11%

(1) Based on 1989 to 1994.
(2) Based on 1984 to 1994.

Source: Value Line Investment Survey, December 16, 1994, January 13 and February 24, 1995.

PENNSYLVANIA POWER & LIGHT COMPANY

Derivation of Risk Premia Using
FERC Benchmark Rate of Return, 1985-1991

Time Period (Quarter/Year)	FERC Benchmark Rate of Return	Ten-Year Treasury Bonds		Single A Utility Bonds	
		Yield	Premium*	Yield	Premium*
3rd/4th1985	13.75%	10.05%	3.70%	11.80%	1.95%
4th/1st 1986	13.25	9.17	4.08	10.85	2.40
1st/2nd 1986	12.75	8.08	4.67	9.82	2.93
2nd/3rd 1986	12.25	7.47	4.78	9.41	2.83
3rd/4th 1986	11.20	7.30	3.90	9.35	1.85
4th/1st 1987	11.30	7.25	4.05	9.13	2.17
1st/2nd 1987	11.74	7.78	3.96	9.37	2.37
2nd/3rd 1987	12.27	8.62	3.65	10.20	2.07
3rd/4th 1987	12.42	9.02	3.40	10.83	1.59
4th/1st 1988	12.51	8.77	3.74	10.68	1.83
1st/2nd 1988	12.36	8.65	3.71	10.52	1.84
2nd/3rd 1988	12.44	9.08	3.36	10.81	1.62
3rd/4th 1988	12.38	9.05	3.33	10.47	1.91
4th/1st 1989	12.44	9.10	3.34	10.07	2.37
1st/2nd 1989	12.43	9.02	3.41	10.03	2.40
2nd/3rd 1989	12.04	8.45	3.59	9.73	2.31
3rd/4th 1989	11.75	8.00	3.75	9.50	2.25
4th/1st 1990	11.85	8.17	3.68	9.62	2.23
1st/2nd 1990	12.06	8.57	3.49	9.83	2.23
2nd/3rd 1990	12.29	8.72	3.57	9.92	2.37
3rd/4th 1990	12.28	8.57	3.71	9.92	2.36
4th/1st 1991	12.02	8.18	3.84	9.75	2.27
1st/2nd 1991	11.72	8.05	3.67	9.55	2.17
2nd/3rd 1991	11.47	8.07	3.40	9.43	2.04
Average	-	-	3.74%	-	2.18%

Source: Schedule MIK-2; FERC Docket No. RM90-12-000, Notice of Benchmark Rate of Return on Common Equity for Public Utilities, October 15, 1991. Note: The Benchmark rate of return was discontinued in February 1992.

*Premium is computed as the FERC generic return on equity minus the contemporaneous bond yield.

R. E. Hill

Pennsylvania Power & Light Company
Response to Interrogatories
of the Office of Consumer Advocate, Set IV
Dated February 1, 1995
Docket No. R-00943271

Q. 84. With regard to Mr. Hill's testimony beginning at line 23 of page 10, please provide PP&L's projections of the rates of return it anticipates it would realize under the investment strategy consistent with reasonable person standard. Provide all workpapers and supporting documentation showing the derivation of those returns.

A. 84. As a starting point in projecting rates of return, the Company has relied on data produced by Ibbotson Associates in their annual Stocks, Bonds, Bills, and Inflation Yearbook. This data is available from 1926 through 1993. It covers periods including war, peace, inflation and deflation.

Based on an analysis of that data, the Company has projected the following returns assuming a 4.0 percent rate of inflation:

	Pre-Tax	Post-Tax Assuming 20% NDT Tax Rates (15% on Equities)
U.S. Treasury Bills	4.2%	3.4%
Long Term Govt. Bonds	5.5	4.4
Long Term Corp. Bonds	6.0	4.8
Equities (S&P 500)	10.0	8.5
Municipal Bonds	4.0	4.0

30% Equities (8.5) =	2.6%
+ 70% Bonds (4.6) =	3.2
SUB TOTAL	5.8%
Less Fees & Transaction Costs	0.3
NET RETURN	5.5%

PENNSYLVANIA POWER & LIGHT COMPANY

Nuclear Decommissioning Trust Fund Earnings Rate

30% Equities/70% Bonds Allocation

Asset Type	% of Total	Cost Rate	Weighted Cost	After Tax Weighted Cost
Bonds	70%	8.0%	5.6%	4.48%
Equities	30	12.0	3.6	3.06
Total	100%	--	9.2%	7.54%

40% Equity/60% Bonds Allocation

Asset Type	% of Total	Cost Rate	Weighted Cost	After Tax Weighted Cost
Bonds	60%	8.0%	4.8%	3.84%
Equities	40	12.0	4.8	4.08
Total	100%	--	9.6%	7.92%

USE = 7.5%

OCA STATEMENT NO. 2

R-942371 H6g
4/28/95 JK

BEFORE THE

PENNSYLVANIA PUBLIC UTILITY COMMISSION

PENNSYLVANIA POWER	)	
	)	DOCKET NO. R-00943271
& LIGHT COMPANY	)	

ADDITIONAL DIRECT TESTIMONY

OF

MATTHEW I. KAHAL

ON

CAPACITY ISSUES

THIS TESTIMONY DELETES INFORMATION
ALLEGED TO BE PROPRIETARY

ON BEHALF OF THE

PENNSYLVANIA OFFICE OF CONSUMER ADVOCATE

APRIL 1995

EXETER
Associates, Inc.
12510 Prosperity Drive
Suite 350
Silver Spring, MD 20904

BEFORE THE

PENNSYLVANIA PUBLIC UTILITY COMMISSION

PENNSYLVANIA POWER & LIGHT COMPANY	)))	DOCKET NO. R-00943271

THE ADDITIONAL DIRECT TESTIMONY

OF

MATTHEW I. KAHAL

I. OVERVIEW

Q. PLEASE STATE YOUR NAME AND BUSINESS ADDRESS.

A. My name is Matthew I. Kahal. My business address is 12510 Prosperity Drive, Silver Spring, Maryland 20904. I am a Senior Economist and Principal at Exeter Associates, Inc., a consulting firm specializing in public utility regulation and energy studies.

Q. ARE YOU SUBMITTING OTHER TESTIMONY IN THIS PROCEEDING AT THIS TIME?

A. Yes. I am also filing at this time direct testimony on fair rate of return and nuclear decommissioning trust fund issues (OCA Statement No. 1). That testimony provides a description of my background and qualifications.

Q. WHAT IS THE PURPOSE OF YOUR ADDITIONAL DIRECT TESTIMONY?

A. My Additional Direct Testimony addresses what are referred to as the "capacity issues" in this case. These issues can be divided into two areas. The first is whether

Pennsylvania Power & Light Company (PP&L or the Company) is seeking full cost recovery in this case for generating capacity which is excess. Excess generating capacity may be "physical," i.e., not needed to meet a standard of reliability, or "economic," i.e., capacity which will not provide a net economic benefit to customers within a reasonable period of time. The second area concerns the treatment in this case of PP&L's off-system or wholesale jurisdictional capacity sales. The most important issue in that second area concerns PP&L's proposal to flow through to customers using the Energy Cost Recovery (ECR) mechanism the non-energy costs associated with the 945 MW of slice-of-the system capacity now being sold to Jersey Central Power & Light Company (JCP&L), as that contract phases out.

Q. HAVE THESE ISSUES BEEN ADDRESSED BY PP&L WITNESSES?

A. They have been addressed in a limited manner. PP&L witness Sipics discusses PP&L's outlook with respect to generating reserves and reliability. He appears to acknowledge that in the near term, i.e., the next five years, PP&L expects to have excess generating capacity, but that excess is primarily due to PP&L's contracts with Qualifying Facilities (QFs) which he indicates are required under federal law and PaPUC regulations. Absent those contracts, he testifies that the Company would have little or no excess capacity. Consequently, for <u>ratemaking purposes</u> he argues the QF capacity should not be considered. Neither Mr. Sipics nor any other PP&L witness addresses the question of economic excess capacity.

Treatment of off-system capacity sales is discussed by witness Kleha. He presents PP&L's proposal for the ECR recovery of the capacity returning from the JCP&L phase-out (and other contracts). He also proposes that the current practice of flowing through to customers the revenue PP&L receives from its long-term capacity sale to Atlantic Electric should terminate.

Q. HOW DOES PP&L'S POSITION ON CAPACITY ISSUES IMPACT THIS RATE CASE?

A. Although the PP&L rate filing contains only a minimal discussion of capacity issues, this subject has a profound impact on this rate case. PP&L is seeking a base rate increase at this time of $261 million, compared to the net rate increase the Company requested in its last case of $330 million. The principal purpose of PP&L's last rate case in 1984 was to obtain rate recognition for the Susquehanna Unit 2 nuclear plant. In its 1985 decision in that case, the Commission disallowed a common equity return on that unit -- a $161 million revenue disallowance -- and approved a total rate increase in that case of $121 million. An important component of PP&L's current rate request is a reversal of the Commission's 1985 Susquehanna 2 disallowance. The Company now seeks the common equity return on its entire Pennsylvania jurisdictional investment in the Susquehanna plant.

I view PP&L as seeking much more in this case than the $261 million rate increase specified in its rate filing. The Company is also seeking in this case the authority to charge ratepayers for the non-energy revenue requirements associated with the 945 MW slice-of-system under contract to JCP&L, as that contract phases out. According to PP&L response to OCA Set V, item (63), this could add up to $177 million (prior to any fuel savings offsets) to customer rates if the full 945 MW is returned. In other words, the $261 million is merely the <u>initial</u> rate increase being sought at this time. An additional $177 million is to be phased in, essentially automatically, as the JCP&L capacity returns. Thus, the total rate increase authority requested in this case is on the order of $440 million, making it substantially larger than the rate increase sought by PP&L in 1984 when Susquenhanna Unit 2 entered service.

It is clear that this enormous rate request is being driven by these capacity issues which I address in my Additional Direct Testimony.

Q. WHAT ARE YOUR MAIN FINDINGS AND RECOMMENDATIONS CONCERNING CAPACITY ISSUES?

A. My testimony discusses the appropriateness of an excess capacity adjustment in light of Pennsylvania Commission practice and statute. This Commission disallowed a return on Susquehanna Unit 2 in its 1985 decision finding physical excess capacity at least equal to that unit and finding that the plant would not provide near-term economic (i.e., fuel savings) benefits sufficient to match that unit's fixed costs. After examining the evidence on these questions, I conclude that PP&L continues to have physical excess capacity, though not as much as identified in the last rate case. The current excess capacity is on the order of 400 to 800 MW. Unlike PP&L's analysis, my calculations include PP&L's QF contracts as capacity resources, to the extent they are recognized as such by PJM.

In addition to physical excess capacity, my testimony also evaluates whether Susquehanna Unit 2 is economic excess capacity. Based on my review of the evidence, I conclude that Susquehanna Unit 2 is economic excess capacity. The Susquehanna plant does not provide economic benefits in excess of its current revenue requirement cost to ratepayers. The Company's own study indicates that Susquehanna's revenue requirement cost will exceed the market cost of power during at least the next **XXX** years, and on a cumulative present value basis would result in a net economic detriment on the order of **$Confidential.** (See OCA Cross Exhibit 7.) Assuming the plant operates successfully (i.e., at a high capacity factor), the cost of Susquehanna under Company ratemaking proposals is at least 6 cents per kWh. This is nearly double the market cost of power (or, alternatively, PP&L's avoided cost) projected over the next five years. (Witness Sipics, Tr. 255)

In light of the existence of physical and economic excess capacity, I recommend that the Commission continue the practice which it implemented in the 1984 rate case and disallow a common equity return on Susquehanna Unit 2. As I mentioned, PP&L seeks to obtain a full equity return in this case on Susquehanna Unit 2.

The conditions which warranted an excess capacity disallowance in the 1984 case are still present. PP&L continues to experience physical excess capacity, although not as much as it possessed ten years ago. The economic excess capacity problem with Susquehanna, if anything, is even more compelling today than in 1984. At the time of the last rate case, the Company argued Susquehanna would be an economically attractive resource on a life cycle basis. It is clear from my review of discovery documents that this is no longer PP&L's assessment -- absent a substantial improvement in the plant's performance and cost control. Whether PP&L can attain such improvements is uncertain and, more importantly, these cost savings are not reflected in PP&L's rate request in this case.

Q. WHAT IS THE DOLLAR MAGNITUDE OF YOUR EQUITY RETURN DISALLOWANCE ON SUSQUEHANNA UNIT 2?

A. Using the OCA's recommended rate of return on equity of 11.1 percent, my disallowance totals approximately $62 million, excluding revenue taxes, on a Pennsylvania jurisdictional basis. This compares with the Commission's excess capacity disallowance in the last case relating to Susquehanna Unit 2 of $161 million. Thus, the dollar impact of my disallowance is about 40 percent of the Commission's Susquehanna Unit 2-related disallowance in the 1984 rate case.

Q. DOES YOUR RECOMMENDED RATE DISALLOWANCE TAKE INTO ACCOUNT MARKET CONDITIONS?

A. Yes, it does. Taking a five-year perspective, I estimate that the full revenue requirement cost of Susquehanna Unit 2 is about $150 to $200 million per year above market. This means that continuation of the equity disallowance effects roughly a 50/50 sharing between ratepayers and shareholders of the surplus of cost over market. Viewed from the perspective of the entire Susquehanna plant, the equity return disallowance results in ratepayers absorbing 75 percent of the surplus over market and shareholders only 25 percent of the excess. In an unregulated competitive market shareholders would absorb 100 percent of uneconomic costs.

Q. WHAT IS YOUR POSITION CONCERNING THE JCP&L SALE PHASE-OUT?

A. I strongly urge that PP&L's proposal to collect the non-energy costs associated with returning capacity from the JCP&L phase-out through the ECR should be rejected for a number of policy and factual reasons. It appears that this is an attempt on the part of PP&L to impose "stranded costs" associated with the potential loss of wholesale load on its captive, Pennsylvania jurisdictional customers. Moreover, even if it is proper for PP&L to recover the lost JCP&L revenue from retail customers, there can be no justification for doing so through the ECR, and therefore bypassing the standard base rate case process.

II. EXCESS CAPACITY DISALLOWANCE

Background on the Issue

Q. HOW HAS THIS COMMISSION PREVIOUSLY ADDRESSED EXCESS CAPACITY FOR PP&L?

A. The Commission was confronted with the issue of excess capacity both in the 1983 case for Susquehanna Unit 1 and in the 1984 case for Unit 2. In the 1983 rate case, the Commission ruled that PP&L had excess capacity and excluded a return on an amount of "slice of the system" generating capacity approximately equal in megawatts to PP&L's share of Susquehanna Unit 1. PP&L, however, was able to sell the capacity off-system on a cost of service basis in an amount equal to the disallowed capacity, thereby protecting its financial position from a revenue loss

In the 1984 rate proceeding, the Commission again ruled that PP&L was experiencing excess generating capacity. Since the addition of Susquehanna Unit 2 at that time was the direct cause of the excess capacity, the Commission ruled that the Company should be denied a common equity return on its investment in the unit. After including associated taxes, the jurisdictional revenue disallowance totaled $161 million.

Q. WHY DID THE COMMISSION SELECT THIS PARTICULAR RATEMAKING REMEDY?

A. Given its excess capacity finding, the Commission explained that an equity return disallowance best balanced the interests of shareholders and customers. For example, the Commission considered a slice of the system disallowance as an alternative, but it rejected that remedy as being too heavily skewed in favor of shareholders. The equity return disallowance would provide PP&L with full cost recovery of all expenses associated with the plant including depreciation, debt interest and preferred dividends.

Q. DID THE COMMISSION EVALUATE EVIDENCE ON ECONOMIC EXCESS CAPACITY?

A. Yes. PP&L presented evidence in that case claiming that on a life cycle present value basis the unit would provide an economic benefit to ratepayers. The Commission found that PP&L's net benefits analysis involved substantial uncertainties, and the asserted benefits were too far in the future to be meaningful. It therefore concluded:

> The sheer magnitude of the delay [associated with economic benefits] combined with the uncertainty of the projections render the net present value approach meaningless on the record before us. (Order page 18)

My interpretation of the Commission's order is that the Commission acknowledged that net economic benefits from a unit in theory could mitigate physical excess capacity. However, in the case of Susquehanna 2 it found the benefits to be too tenuous and distant in time to be meaningful.

Q. WHAT IS YOUR UNDERSTANDING OF THE STATUTORY STANDARD IN PENNSYLVANIA CONCERNING EXCESS CAPACITY?

A. I have been advised by counsel that the legal standard is defined by statute under Section 1323 of the Public Utility Code and this was implemented in 1986 subsequent to the 1985 PP&L decision mentioned above. This section establishes a two-part demonstration on the part of the utility seeking rate recovery for a baseload generating unit. The utility must demonstrate that the addition of the unit does not create excess capacity, i.e., capacity in excess what is needed to meet an appropriate reliability standard. For a baseload unit, the utility also must demonstrate that the unit will provide net economic benefits to customers "within a reasonable period following the test year."

Q. ARE THERE ANY OTHER CONSIDERATIONS PERTINENT TO THIS ISSUE?

A. Yes. The electric utility industry is changing, becoming increasingly competitive. For PP&L, this has already become evident on the wholesale level with PP&L granting substantial rate discounts to its wholesale requirements customers. Ironically, after granting those rate discounts in a competitive context to the wholesale customers, PP&L proposes substantial rate increases for its Pennsylvania retail customers.

This Commission is presently conducting an inquiry concerning the introduction of increased competition in the electric power industry, service, and a number of other states are doing likewise. While no decision has yet been made in Pennsylvania to increase competition at the retail level, there is reason to believe that competition in generation will increase over time. Indeed, PP&L's comments in that Inquiry docket recognize the likelihood of a competitive transition at the retail level.

In order to accommodate such a transition, it is important for utilities to take actions to hold down the price of generation and to reduce costs associated with uneconomic assets. A continuation of an equity disallowance on Susquehanna Unit 2 is consistent with that objective. PP&L's proposal to restore the full equity return on Susquehanna Unit 2 moves its rates in the wrong direction.

Physical Excess Capacity

Q. WHAT IS PP&L'S POSITION ON PHYSICAL EXCESS GENERATING CAPACITY?

A. As discussed by Mr. Sipics, PP&L has testified that it has no excess capacity. This is based on the exclusion of approximately 500 MW of QF capacity, recognized as such by PJM. Given this exclusion, he computes PP&L's projected reserves as falling within the range of 14.2 to 19.6 percent, a range which he concludes as reasonable. As he explains at page 13 of his testimony:

> For purposes of this rate proceeding, PP&L's reserve margins are most appropriately assessed on the basis of its owned and leased generation and available interruptible load, which reflect reserve margins ranging from a low of 14.2 percent (1995-1996) to a high of 19.6 percent (2000-2001). These reserve margins are clearly within a range of reasonable reserve margins for PP&L in view of the factors I described earlier.

Mr. Sipics argues that the appropriate reserve margin is not a single figure but rather is a range. The lower end of the reasonable range is the capacity reserve obligation prescribed by PJM -- 12 percent at the present time. Mr. Sipics never identifies the reasonable upper end of the range, but he implies it is much greater than the PJM 12 percent -- perhaps 20 percent or higher.

Q. WHY DOES HE BELIEVE THAT IT IS APPROPRIATE FOR PP&L TO EMPLOY A RESERVE MARGIN STANDARD GREATER THAN THE 12 PERCENT LEVEL REQUIRED BY PJM?

A. Mr. Sipics provides two basic reasons for utilizing a reserve margin standard in excess of the PJM reserve obligation. First, even if 12 percent is the appropriate planning reserve margin, a higher figure should be used for evaluating whether excess capacity exists. This is because generating units are added in discrete sizes which often exceed year-to-year load growth. For example, consider the case of a utility which adds a 400 MW plant, experiencing load growth of 150 MW per year and with a 100 MW reserve deficit absent the new plant. Under this scenario, the utility initially would have a 300 MW "surplus" when the unit enters service which would persist for two years (i.e., it would disappear in year 3). This is referred to as the "lumpiness" problem, and its temporary nature would argue against an excess capacity adjustment in this example.

The second concern raised by Mr. Sipics relates to reliability. He identifies an extensive list of factors (uncertainties with interruptible load, extreme weather, possible generating outages, etc.) which argue for a planned minimum reserve margin in excess of the PJM allocated 12 percent.

Q. WHAT IS YOUR ASSESSMENT OF HIS RESERVE MARGIN ANALYSIS?

A. There are numerous factors and operational parameters that enter into an analysis of whether a utility is experiencing excess capacity. This could include the load forecast, an assessment of DSM resources, measurement of installed capacity, and so forth. In this case, I have two disagreements with Mr. Sipics' analysis. First, he improperly excluded the QF capacity available to PP&L. Second, he does not adequately support the use of a planning reserve margin in excess of the 12 percent level prescribed by PJM. In my opinion, the appropriate reserve margin for determining whether all of PP&L's generating capacity is "used and useful" is the PJM prescribed 12 percent reserve margin or something very close to it.

Q. DO YOU HAVE ANY FACTUAL DISAGREEMENTS WITH MR. SIPICS ON THIS SUBJECT?

A. No, my disagreements are largely over policy and analytical interpretation.

Q. WHY DO YOU BELIEVE THAT THE QF CAPACITY SHOULD NOT BE EXCLUDED?

A. Mr. Sipics and I both recognize that the QF capacity exists and is recognized by PJM as being sufficiently reliable to warrant 504 MW of capacity credit. It should therefore be regarded as available to meet native load requirements. In a planning context, PP&L would agree with that assessment, as its 1994 Annual Resource Plan Report makes very clear. See also, Tr. 257.

Mr. Sipics believes, however, that a distinction should be made between capacity available in a planning context versus a ratemaking context. With respect to the latter, he suggests the QF capacity should be excluded because PP&L was compelled by federal law and this Commission's regulations to accept the power supply. Therefore, he believes it would be improper to include it in any ratemaking determination of excess capacity.

Q. WHY DO YOU DISAGREE?

A. Mr. Sipics' point seems to be that since PP&L did not actively seek to add the QF capacity, but did so only due to regulatory requirements, PP&L is not responsible for the excess capacity which factually results. In other words, the excess capacity due to the QF contracts is not the result of PP&L planning errors.

Mr. Sipics' argument misconstrues the nature of an excess capacity adjustment. The adjustment deals with the fact of excess capacity, not with whether the utility has acted imprudently. For example, excess capacity can just as easily result from a loss of load due to an economic downturn or self generation, also events arguably beyond the utility's control. In neither instance, does this eliminate the "used and useful" standard for excess capacity disallowances.

Q. IS THE CONTRIBUTION OF QF CAPACITY ADDRESSED IN STATUTE?

A. I have been advised by counsel that this very issue is specifically discussed in the Pennsylvania Public Utility Code Statute, Section 1323. Subsection (c) states that:

> ... cogeneration, for which an agreement has been entered into by the public utility within three years after the in-service date of the base load unit, shall not be considered by the Commission in determining the reserve margin or economic benefits resulting from the base load unit for the first five years after the date of the cogeneration agreement.

My reading of this section is that the Commission is instructed to disregard any QF capacity which the utility contracted for during the three-year period after the base load unit entered service for a period of five years from the date of the contract. That is, the QF capacity which the Commission is directed to exclude from the reserve margin calculations is that capacity contracted for within three years after the utility's base load unit enters service and for a five-year period thereafter. For example, if a utility base load unit enters service in 1990 and the utility signs up a cogenerator in 1993, the Commission must exclude that capacity from the reserve margin calculation until 1998.

In light of this standard, I requested information on contract executions for PP&L's 504 MW of QF capacity (OCA Cross Exhibit 6). A copy is attached as Schedule MIK-11, page 2 of 2. This indicates that all of the QF power supply was contracted for between 1985 and 1988, and hence, the five-year waiting period before the capacity could be counted expired during the time period 1990 to 1993. Hence, all of the 504 MW of capacity recognized by PJM should be included in the reserve margin calculation under the excess capacity statute, Section 1323.

One reasonable interpretation of subsection (c) is that the utility should be spared the excess capacity consequences (for ratemaking purposes) of QF capacity for a window of time, but not forever. The five-year period is considered a reasonable outer bound for exclusion.

Q. WHAT IS YOUR DISAGREEMENT CONCERNING THE TARGET RESERVE MARGIN?

A. Both Mr. Sipics and I agree that the PJM standard of 12 percent provides a reasonable lower bound for excess capacity measurement purposes. Moreover, I can accept his argument that <u>as a conceptual matter</u> some cushion above this minimum should be considered. Unfortunately, his testimony does not identify what that cushion is.

I can accept the argument that a prudent utility might plan its system to target reserves which in some years exceed the minimum reserve margin due to "lumpiness." This suggests that when large generating units are added, temporary capacity amounts above the reserve margin standard should not be regarded as excess. Alternatively, a utility might add new capacity purely for the fuel savings even though the capacity is not immediately needed to meet the reliability standard.

In the current planning environment, the "lumpiness" argument is no longer quantitatively important, nor has it been for a number of years. Utilities no longer plan for large (e.g., 600 to 1,000 MW) generating units. Capacity is normally added in relatively small increments, i.e., 100 to 300 MW or smaller, so that capacity additions can follow the utility's load growth pattern, keeping surplus capacity above the planning reserve margin standard to a minimum. In addition, utilities today are able to economize on excess reserves through flexible short-to-medium term purchases. While the lumpiness argument may have been important at one time, it can no longer be used as an explanation for large departures from the planning reserve margin.

The lumpiness argument also has little to do with PP&L's circumstances. Susquehanna Unit 2 entered service in 1985, i.e., ten years ago. PP&L's excess is not attributable to the temporary imbalance associated with absorbing a recently installed large capacity increment.

Q. MR. SIPICS' POSITION IS THAT RELIABILITY CONCERNS JUSTIFY A PLANNING RESERVE MARGIN HIGHER THAN WHAT PJM REQUIRES. DO YOU AGREE?

A. I strongly disagree for two reasons. First, there is no evidence that PJM fails to consider the reliability concerns cited in Mr. Sipics' testimony when it assigns PP&L a reserve margin obligation. In his testimony, he notes that PJM adopts the one-day-in-ten-years standard of reliability. Moreover, on cross examination, he generally acknowledged that PJM takes into account the same factors as he cites as being reliability concerns. (Tr. 269-273) Hence, his reliability concerns cannot serve as the basis for a planning reserve margin greater than 12 percent unless PP&L wishes to argue that PJM fails to adequately address utility reliability needs, i.e., PJM reliability planners are imprudent. Mr. Sipics has not made that assertion.

The second point is that even if Mr. Sipics believes that PJM reliability standards are too lax, PP&L customers do not significantly benefit from the Company maintaining capacity reserves in excess of the PJM obligation. The PJM Agreement effectively establishes reliability at the Pool level, and PP&L is only 15 to 20 percent of total PJM.

If PP&L were to maintain reserves at the required 12 percent level but due to unexpected forced outages it experiences a capacity shortage, it has the right to draw upon available PJM capacity reserves to meet its needs. If the PJM as a whole experiences a capacity shortage, PP&L is obligated to participate in the emergency procedures established under the PJM Agreement <u>even though PP&L has adequate reserves for its own customers</u>. For example, if the PJM is capacity short, PP&L is obligated to participate in voltage reductions, incurring the costs of operating its units at emergency levels or customer curtailments regardless of its practice of maintaining surplus capacity above its PJM obligation. Reliability is a Pool-level concept, and PP&L's maintaining 20 percent reserves (for example) when only 12 percent is required does not significantly benefit PP&L customers. Arguably, it benefits the mid-Atlantic region, but only a tiny fraction of the added reliability benefit goes to its own customers.

Q. WHAT DO YOU CONCLUDE?

A. The PJM required reserve margin is an appropriate benchmark for measuring excess capacity. However, in recognizing the imperfections of capacity planning (i.e., the lumpiness problem), I recommend consideration of a range from 12 to 15 percent.

The extra 3 percentage points translates into approximately 200 MW and provides a generous cushion.

Q. USING THIS 12 TO 15 PERCENT RESERVE MARGIN STANDARD, DOES PP&L HAVE EXCESS GENERATING CAPACITY?

A. Yes. I show this on Schedule MIK-11, page 1 of 2, for the test year (i.e., winter of 1994/1995) and the following year (i.e., winter of 1995/1996). I am utilizing PP&L's own load forecast, its estimate of interruptible load and capacity resources (including QF capacity).[1] Consistent with Mr. Spics' procedure on Exhibit JFS-1, I net out from capacity the firm off-system sales.

I determine the required capacity using both a 12 percent reserve margin (line (7)) and a 15 percent reserve margin (line (8)). Excess reserves are the difference between actual capacity and required capacity. Using the PJM 12 percent standard, excess capacity totals 791 MW this winter and 621 MW next winter. Using the more generous 15 percent standard, excess capacity is 593 MW in 1994/1995 and 419 MW in 1995/1996. Thus, I conclude that excess capacity is in the range of about 400 to 800 MW.

Q. YOUR ANALYSIS SUGGESTS THAT EXCESS CAPACITY IS SOMEWHAT LESS THAN SUSQUEHANNA UNIT 2. DOESN'T THAT MEAN THAT ONLY PART OF THAT UNIT IS EXCESS?

A. No. A portion of Susquehanna Unit 2 is allocated off-system to JCP&L and BGE, and therefore approximately 850 MW or so of Susquehanna 2 serves native load customers

[1]PP&L reports in response to OCA Set XII, item (10) that its weather-normalized peak demand for the winter of 1994/1995 is 6,580 MW. This compares to 6,605 MW reported on Mr. Spics' Exhibit JFS-1. This suggests that my excess capacity estimates may be understated by about 30 MW.

and therefore is "on system." Thus, my excess capacity range of 400 to 800 MW is somewhat less than the "native load" portion of Susquehanna Unit 2.

This comparison, however, is based purely on physical excess capacity. Since Susquehanna Unit 2 is also economic excess capacity, the equity return disallowance should apply to the Pennsylvania jurisdictional share of the entire unit.

Economic Excess Capacity

Q. HOW HAVE YOU APPROACHED THE ISSUE OF ECONOMIC EXCESS CAPACITY?

A. The concept of economic excess capacity has been discussed over the years in testimony, Commission orders and in Section 1323 of the Public Utility Code. It refers to the concept as to whether a base load generating unit provides benefits -- primarily in the form of fuel savings[2] -- to compensate for the high fixed costs which are characteristic of generating units.

No one suggests that the proper standard is whether the fuel savings from having the unit must exceed its total revenue requirements cost in the test year. Section 1323 merely requires that benefits be expected within a reasonable period of time. Given the current market for generation at the wholesale level, it is possible to measure the economic benefits of capacity directly.

I have determined economic excess capacity by comparing the full revenue requirement cost of the unit with the market price of power supply. In the case of Susquehanna 2, the market price would refer to firm high load factor power, not the low load factor requirements power such as what a municipal utility might need. This concept of economic excess capacity is consistent with the Commission's recent

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[2]Another possible source of savings would be revenue contributions from off-system sales.

adoption of competitive bidding as the means of acquiring capacity by Pennsylvania utilities. As a practical matter, utilities today subject major power supply decisions to a competitive market test.

Q. GIVEN THAT YOU USE A MARKET TEST FOR EXCESS CAPACITY, WHAT TIME PERIOD IS RELEVANT?

A. What constitutes a "reasonable" time period is obviously a matter of judgment. For present purposes, however, I have focused primarily on the next five to ten years. I do so for two reasons. First, analyses extending beyond ten years are highly uncertain, as this Commission has previously noted and are therefore of only limited usefulness for ratemaking purposes.

A second and more pragmatic reason is that cost comparisons beyond a ten-year horizon may not matter if greater deregulation of generation is introduced. If Susquehanna Unit 2 can provide large savings (relative to the market or avoided costs) in the latter years of its life sufficient to offset early year cost penalties, one might conclude the unit is economic. However, if generation is deregulated during those outyears when the unit enjoys a cost advantage, ratepayers may never see the savings. Absent an excess capacity disallowance in this case, they will be required to pay <u>the greater of</u> full cost of service or market.

Given the strong possibility that ratepayers will pay market rates for generation in the years after 2005, I believe that the next five to ten years are the most meaningful for evaluating economic excess capacity.

Q. DOES THIS MEAN THAT YOU HAVE IGNORED LIFE CYCLE COMPARISONS?

A. No. I have examined such evidence, and that evidence only serves to reinforce my conclusions concerning the need for an economic excess capacity adjustment.

Q. HOW HAVE YOU CONDUCTED YOUR ANALYSIS?

A. My analysis is very straightforward and requires the following steps. First, I estimate the cost to ratepayers of power supply from Susquehanna Unit 2 and the entire plant on a standard revenue requirements basis assuming no rate disallowances. Using a range of cost parameters for possible disputed items such as rate of return and depreciation, I find the cost at this time to be roughly 6 cents per kWh. Second, I assess the probable market cost of base load power over the next five to ten years. The cost at present is approximately 2.5 cents per kWh, which includes both capacity and fuel costs, and is expected to increase up to perhaps 5 cents over the ten-year time period. Such projections, of course, are uncertain and proximate, but it is reasonable to view the average cost as being about 3 to 4 cents per kWh over the next five to ten years. The third step involves recomputing the cost of power from Susquehanna assuming continuation of this Commission's equity return disallowance. I find that this disallowance mitigates the cost of power somewhat, but even with the disallowance, the cost of power from Susquehanna retains a healthy premium over market.

Q. WHAT IS YOUR SOURCE CONCERNING MARKET PRICES?

A. I have examined several sources supplied by PP&L. PP&L has prepared a detailed study for the PJM region entitled **BEGIN PROPRIETARY**

END. This was supplied to the OCA as a confidential document in response to OCA Set V, item (37), Attachment 6. This report estimates the market price to be about **XXX** cents per kWh at present, increasing to **XXX** cents by 1998.

PP&L considers long-term market prices in its confidential **BEGIN PROPRIETARY**

END.

A non-confidential source concerning market prices would be the PP&L avoided costs filed last year (April 29, 1994) with this Commission. As shown on Form 1 of that report, the "all hours" marginal energy cost ranges from 2.4 cents in 1994 to 3.4 cents in 2003, with a levelized value of 2.8 cents. It would be reasonable to add up to about 0.5 cents per kWh for capacity to these energy costs. It should be noted that Mr. Sipics testified to a market price of 2.7 cents per kWh in 1995 increasing to 4.0 cents by the year 2000. (Tr. 255)

On the basis of all of this information, it is reasonable to characterize the average market cost of "all hours" base load power as being in the 2.5 to 5.0 cent range over the next ten years with the five- to ten-year average as 3 to 4 cents per kWh. This range is consistent with PP&L's various analyses, and I find it to be reasonable.

Q. HOW HAVE YOU ESTIMATED THE COST OF POWER FROM SUSQUEHANNA?

A. I have performed a summary revenue requirements analysis for the Susquehanna station using estimated costs from the test year and a normalized level of nuclear generation (rounded to 13,500 gWh per year) based upon projections from the Company's 1994 ARPR.

The analysis is summarized on Schedule MIK-12 using a range for rate of return, depreciation and decommissioning since these are likely to be disputed items. The analysis produces a revenue requirement range of $766 to $860 million per year. Assuming PP&L can operate at a very high capacity factor (i.e., 75 to 80 percent), this will provide power at an average cost of 5.67 to 6.37 cents per kWh.

In order to simplify, I describe the current, revenue requirements cost as being about 6.0 cents per kWh. It should be noted that this is a bare bones type of estimate since it does not include such items as working capital or an allocation of administrative and general costs. This analysis should also be regarded as preliminary since several interrogatory requests relating to Susquehanna have not yet been provided by the Company.

Q. DO YOU DISTINGUISH BETWEEN UNIT 1 AND UNIT 2?

A. No, it is neither necessary nor practical to do so. A large portion of the fixed and maintenance costs are identified as common to the two units. Moreover, the separately identifiable installed costs for the two units appear to be very similar.

Q. DOES YOUR COST ANALYSIS DIFFER SIGNIFICANTLY FROM THAT OF PP&L?

A. It doesn't appear to differ much. Based on an analysis performed by the Company, **BEGIN PROPRIETARY**

END.

Q. YOU ESTIMATE THE ANNUAL COST OF SUSQUEHANNA AT $800 MILLION. HOW MUCH IS THE COMMON EQUITY DISALLOWANCE ON UNIT 2?

A. This is shown on Schedule MIK-13 using the OCA's return on equity of 11.1 percent and 45.0 percent equity ratio. I have applied the disallowance to the Unit 2 rate base ($911 million total Company). This is computed as plant in service minus accumulated depreciation and the deferred tax balance at September 30, 1995.

As this schedule indicates, the disallowance is $78.8 million total Company and $61.85 million for the Pennsylvania jurisdiction, assuming a 78.5 percent jurisdictional allocation factor. Of course, the final disallowance should be consistent with the Commission's rulings on return on equity, rate base adjustments and the jurisdictional allocation percentage.

Q. HOW DOES THIS DISALLOWANCE AFFECT THE COST OF POWER AT SUSQUEHANNA UNIT 2?

A. Schedule MIK-14 provides an analysis of the cost to ratepayers of power from the Susquehanna plant after netting out my common equity return disallowance. As a result of this recommended disallowance, the cost of power at Susquehanna Unit 2 declines from the 6.0 cents per kWh figure to approximately 4.8 cents per kWh, i.e.. a 1.2 cent per kWh reduction.

Q. HOW DOES THIS 4.8 CENT PER KWH RATEPAYER CHARGE COMPARE TO MARKET PRICES?

A. The disallowance has the beneficial effect of bringing PP&L's cost to ratepayers for Susquehanna Unit 2 closer to market, but it remains significantly above it using a five- to ten-year time frame. I show this comparison on Schedule MIK-14. Using a benchmark market price of 3 to 4 cents per kWh, Susquehanna Unit 2 becomes 20 to 40 percent above market.

Q. HOW DOES YOUR PROPOSED DISALLOWANCE AFFECT THE COST OF POWER CHARGED TO RATEPAYERS FOR THE ENTIRE SUSQUEHANNA STATION?

A. As I just explained focusing only on Unit 2, the equity return disallowance results in the cost of power charged to ratepayers from that unit being 20 to 40 percent above market. This reduction still leaves the charges to ratepayers for Unit 1 at 50 to 100 percent over market, using a 5 to 10 year time horizon.

Another useful perspective would be to consider the charge to ratepayers for the entire Susquehanna plant after removing the Unit 2 equity return. This calculation is shown on line (7) of Schedule MIK-14. With the Unit 2 equity disallowance, the charge to ratepayers for power supply from the Susquehanna Station declines by about

0.6 cents per kWh, i.e., from 6.0 cents to 5.4 cents per kWh. As shown on line (8) of that schedule, this cost to ratepayers is approximately 35 to 80 percent above market.

Q. ASSUMING YOUR $62 MILLION DISALLOWANCE, HOW MUCH OF THE SURPLUS OVER MARKET DO SHAREHOLDERS ABSORB?

A. One way to look at the issue of an equity disallowance is to compare how much of the uneconomic or above market costs ratepayers must absorb versus how much shareholders absorb. Recognizing a 3 to 4 cent per kWh outlook for base load power, I priced out the Susquehanna Unit 2 generation at 3.5 cents per kWh, or $236 million ($35 per mWh x 6,750,000 mWh). The full revenue requirements cost of Unit 2 is about one-half the $800 million (i.e., the range is $766 to $860 million), or $400 million. Thus, the surplus cost over projected market is $164 million. With the $79 million disallowance (i.e., $62 million Pennsylvania jurisdictional), the uneconomic (i.e., above market) costs decline to $85 million (i.e., $164-$79). The above figures are presented on a total Company basis.

Thus, with the common equity return disallowance, there is roughly a 50/50 sharing between ratepayers and investors of the uneconomic costs for Unit 2. However, following that perspective implies that ratepayers absorb 100 percent of the Unit 1 uneconomic costs. Alternatively, spreading the $62 million disallowance over both units, ratepayers absorb 75 percent and shareholders only 25 percent of the uneconomic costs.

Q. YOU HAVE ADDRESSED THIS ISSUE USING ONLY A TEN-YEAR PERSPECTIVE. IS SUSQUEHANNA UNECONOMIC OVER ITS REMAINING 30-YEAR LIFE?

A. The Company has addressed this critical question in a confidential study entitled

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Q. PLEASE SUMMARIZE YOUR CONCLUSION.

A. I find that Susquehanna Unit 2 continues to be economic excess capacity, as verified by PP&L's own studies. I therefore recommend that the Commission continue to disallow an equity return on Unit 2 which results in a revenue adjustment in this case of $62 million. The practical effect of this adjustment is to require shareholders to absorb about 25 percent of the above market premium cost of the plant while ratepayers absorb 75 percent (or a 50/50 sharing if we focus only on Unit 2).

IV. <u>CAPACITY COST FLOWTHROUGH</u>

Q. WHAT IS PP&L'S PROPOSAL CONCERNING THE PHASE OUT OF OFF-SYSTEM SALES?

A. As explained by Mr. Kleha, PP&L has engaged in a long-term capacity sale with JCP&L for 945 MW (winter rating) of slice of the system capacity. The contract is scheduled to begin phasing out in 1996, with the phase out to be completed in the year 2000. Unless the capacity sale is renegotiated, renewed or sold to a new wholesale customer, PP&L will receive an increment of 189 MW of additional capacity each year until 2000. In addition to the PP&L capacity, the Company's capacity contracts with Atlantic Energy and Baltimore Gas & Electric Company (approximately 270 MW) also expire around the year 2000.

PP&L's concern appears to be two-fold. First, the current JCP&L contract provides PP&L with substantial cost recovery, but the rates received under that contract (nearly 5 cents per kWh) substantially exceed current market levels. Second, if PP&L does not successfully market this capacity off-system either to JCP&L or to another utility, that returning capacity will not provide PP&L with non-energy cost savings. That is, during the next five years, the returning capacity does not benefit PP&L by displacing any capacity which PP&L otherwise must add to serve load growth.

In light of these concerns, witness Kleha has proposed a very unusual ratemaking treatment. As the capacity increments return, PP&L would recover the capacity costs (i.e., non-energy revenue requirements) through the ECR. In the case of the JCP&L contract, this is equivalent to a rate increase (before any fuel savings) of $35 million in each year, or a $177 million total rate increase by the end of five years. As Mr. Kleha explained, this recommendation potentially also applies to the Atlantic and BGE capacity contracts scheduled to expire in the year 2000. (Tr. 357) The $177 million estimate does not include either the Atlantic or BGE contract.

Q. UNDER PP&L'S PROPOSAL, DO THESE NON-ENERGY COSTS FLOW BACK THROUGH THE ECR IF PP&L SUCCEEDS IN RESELLING THE JCP&L PHASE-OUT CAPACITY?

A. As I understand Mr. Kleha's testimony, the costs flow through the ECR only if PP&L fails to market the returning capacity. (Tr. 362) However, if the capacity returns and PP&L is subsequently able to engage in capacity credit sales, the revenue from such sales will be credited to the ECR.

Q. ASSUMING THE JCP&L CAPACITY RETURNS, WILL IT BE EXCESS CAPACITY?

A. According to Mr. Sipics' Exhibit JFS-1, the returning JCP&L capacity would appear to be excess. Consistent with that exhibit, Mr. Kleha gave no indication the returning capacity is in any way needed to serve native load customers in the near term. Moreover, the returning capacity will not replace any planned capacity additions over the next five years or so. Excess capacity, however, is best evaluated at the time it returns to the system.

Q. WHY IS THE RELATION OF THE COST OF THE RETURNING CAPACITY TO MARKET RELEVANT?

A. One of the fundamental concerns that I have with Mr. Kleha's proposal is the incentives which it creates. It is my understanding that the rates currently paid by JCP&L exceed market prices. As the capacity returns, PP&L recommends that it receive full compensation for the costs of the returning capacity virtually automatically through the ECR. If PP&L instead remarkets the phased out capacity either to JCP&L

or to someone else, the ECR flowthrough of the non-energy costs vanishes. The Company receives no ECR recovery, but it retains the revenues from this capacity sale.

PP&L, under its own proposal, faces one of two possibilities: (1) it may fail to market the returning capacity and therefore would receive automatic full cost recovery for the capacity through the ECR; or (2) it may successfully market the capacity and thereby accept whatever revenue the market provides. If, however, PP&L can only market the capacity at revenue levels below its full cost of service that would be automatically included in the ECR, PP&L has little incentive to market this surplus capacity. Rather, its most attractive option is to accept ECR recovery for these capacity costs from its Pennsylvania ratepayers.

PP&L's proposal for ECR flowthrough creates an unacceptable incentive to fail at marketing the returning JCP&L capacity.

Q. WILL THE ECR FLOWTHROUGH HAVE AN EARNINGS TEST?

A. No. PP&L, under its proposal, may flow the non-energy revenue requirements of the returning capacity through the ECR, even if it is earning in excess of its authorized return. (Tr. 365) There is no earnings test, and the annual rate increase is automatic for all practical purposes.

Q. CAN THE PROPOSED AUTOMATIC FLOWTHROUGH OF NON-ENERGY COSTS CREATE AN OVEREARNINGS PROBLEM?

A. Under standard ratemaking, the cost of the utility's existing generating capacity is embedded in the base rates which its customers pay. Witness Slivka is projecting significant system demand growth over the next several years. As the level of sales grows, PP&L generates additional capacity-related base revenue, even though the Company does not need to add new increased capacity to meet this demand growth. The demand growth contributes to PP&L's earnings, offsetting (and possibly even more than offsetting) the need for rate relief. Under its proposal, PP&L, however, may receive $35 million per year in additional revenue even though the Company's earnings requirements may already be met from sales growth. This is precisely why ECR recovery of capacity costs is inappropriate in this context.

Q. HAS PP&L PROVIDED ANY FINANCING PROJECTIONS OR REVENUE REQUIREMENTS ANALYSIS DEMONSTRATING A NEED FOR THE ECR RECOVERY OF THE RETURNING CAPACITY COSTS?

A. They have provided no empirical support or demonstration for this mechanism.

Q. SUPPOSE THE PUC REJECTS THIS PROPOSAL BUT PP&L LATER FINDS IT NEEDS A RATE INCREASE TO COVER THESE ADDED COSTS. IN SUCH A CASE, CAN PP&L FILE FOR BASE RATE RECOVERY?

A. Yes, PP&L always has the base rate case remedy available if circumstances support the need for a rate increase. In such a case, the increase is not automatic but depends upon the Company demonstrating that the rate increase is needed and appropriate.

Q. DOES THIS CONCLUDE YOUR ADDITIONAL DIRECT TESTIMONY AT THIS TIME?

A. Yes, it does. I may find it necessary to supplement this testimony at a later date based upon responses to outstanding OCA interrogatory requests.

BEFORE THE

PENNSYLVANIA PUBLIC UTILITY COMMISSION

PENNSYLVANIA POWER	)	
	)	DOCKET NO. R-00943271
& LIGHT COMPANY	)	

SCHEDULES ACCOMPANYING THE

ADDITIONAL DIRECT TESTIMONY

OF

MATTHEW I. KAHAL

ON

CAPACITY ISSUES

THIS TESTIMONY DELETES INFORMATION
ALLEGED TO BE PROPRIETARY

ON BEHALF OF THE

PENNSYLVANIA OFFICE OF CONSUMER ADVOCATE

APRIL 1995

EXETER
Associates, Inc.
12510 Prosperity Drive
Suite 350
Silver Spring, MD 20904

PENNSYLVANIA POWER & LIGHT COMPANY

Excess Capacity Calculations
Winters of 1994/1995 and 1995/1996
(MW)

		Winter 1994/1995	Winter 1995/1996
Capacity			
(1)	PP&L Owned/Leased	8,543	8,540
(2)	Interruptible Load	345	345
(3)	QF Contracts	504	474
(4)	Firm Off-System Sales	(1,203)	(1,206)
(5)	Net Capacity for Native Load	8,189	8,153
Demand			
(6)	Projected Native Load Peak	6,605	6,725
(7)	Peak + Reserves at 12%	7,398	7,532
(8)	Peak + Reserves at 15%	7,596	7,734
Excess Reserves (line (5) minus line (7) or (8))			
(9)	At 12% Reserve Margin	791	621
(10)	At 15% Reserve Margin	593	419

Source: PP&L Exhibit JFS-1.

Pennsylvania Power & Light Company
Response to Interrogatories of
the Office of Consumer Advocate, Set V
Dated February 6, 1995

Docket No. R-00943271

Q.47. Mr. Sipics discusses QF projects on page 14. For each current QF contract, *please identify:*

a. year of contract execution;
b. year the facility commenced operation; and
c. capacity amount recognized by PJM.

A.47. The following table provides the requested information.

Non-Utility Generator	Year of Contract Execution	Year Contract Initiated[1]	Year of Commercial Operation[2]	Capacity Value on PJM MW
Amity Landfill	1989[3]	1988	1989	1
Archbald	1986	1988	1990[4]	18
Bethlehem Steel	1985	1985	1985	30
Continental	1985	1989	1989	100
Foster Wheeler-Mt. Carmel	1986	1990	1990	40
Gilberton Power Corp.	1985	1988	1988	79
Hammermill Paper	1984	1984	1984	22
Harrisburg MSW	1986	1986	1986	5
Koppers Co.	1986	1988	1988	7
NEPCO	1986	1989	1989	50
Paxton Creek	1985	1986	1986	13
Schuylkill Energy	1986	1989	1989	80
Viking Energy	1986	1988	1988	17
Wheelabrator-Frackville	1986	1988	1988	42

[1] Output purchased at avoided cost pending meeting conditions for being declared commercial.
[2] Output purchased under terms of contract having met conditions for being declared commercial.
[3] Two contracts were signed with Amity Landfill. Unit met conditions for commercial operation after second contract was in effect.
[4] Time between initial operation and commercial operation was delayed by boiler problems.

PENNSYLVANIA POWER & LIGHT COMPANY

Busbar Cost of Power From the
Susquehanna Nuclear Station at 9/30/95
(million $)

Rate Base:[1]	$2,427.8
Rate of Return: [2]	$325 - $364
Decommissioning:	$15 - $30
Depreciation:	$147 - $187
Expenses (fuel, O&M, property taxes, insurance):	$279
Total Revenue Requirement:	$766 - $860
Normalized Generation:[3]	13,500 gWh
Cost per mWh:	5.67¢/kWh - 6.37¢/kWh

(1) Rate base equals net plant minus deferred taxes.
(2) Rate of return on a pre-tax basis ranges from 13.4 percent (OCA) to 15 percent (Moul). Reflects income taxes only.
(3) Based on projected ten-year generation in the PP&L 1994 Annual Resource Plan Report.

Source: Response to OCA Set V, item (40).

PENNSYLVANIA POWER & LIGHT COMPANY

Common Equity Disallowance on Susquehanna Unit 2 (millions $)

(1)	Susquehanna Unit 2 Net Book Value at 9/30/95	$1,209.2[1]
(2)	Deferred Taxes at 9/30/95	(298.3)
(3)	Rate Base Value at 9/30/95	$ 910.9
(4)	Disallowance of Common Equity Return (3) x 0.05	$45.55[2]
(5)	Income Tax Gross Up ($45.55 x 1.73)	$ 78.8
(6)	Pennsylvania Jurisdictional Amount (at 78.5%)	$ 61.85

[1]Source: Company response to OCA V-40.
[2]Based on ROE of 11.1 percent and 45 percent common equity. See OCA Statement No. 1, Schedule MIK-1, page 1 of 4.

PENNSYLVANIA POWER & LIGHT COMPANY

Impact of an Equity
Return Disallowance on the Cost of Power
at the Susquehanna Nuclear Station
(million $)

(1)	Common equity disallowance for Susquehanna 2	$79[1]
(2)(a)	Cents per kWh impact for Susquehanna Units 1 and 2 ($79/13,500,000 mWh)	0.59¢/kWh
(2)(b)	Cents per kWh impact for Unit 2 only (4(a) x 2)	1.2¢/kWh
(3)	Cost of power at Susquehanna Units 1 and 2, including equity return[2]	6.0¢/kWh
(4)	Cost of power at Susquehanna Unit 2, excluding equity return (6.0 - 1.2)	4.8¢/kWh
(5)	Average market price of power (next 5 to 10 years)	3 to 4¢/kWh
(6)	Cost of power at Susquehanna Unit 2 relative to the market excluding equity return on Unit 2	20 to 60% Premium over Market
(7)	Cost of power at Susquehanna Station, excluding equity return on Unit 2 (6.0¢ - 0.6¢)	5.4¢/kWh
(8)	Cost of power at Susquehanna Station relative to the market excluding equity return on Unit 2	35 to 80% Premium over Market

[1]See Schedule MIK-13. This figure is the disallowance on a total company, not Pennsylvania jurisdictional basis.
[2]See Schedule MIK-12.

PENNSYLVANIA POWER & LIGHT COMPANY

Susquehanna Nuclear Plant
Cost vs. Market Analysis

From:

Pennsylvania Power & Light Company

September 1994. (PP&L Response to
OCA Set V, item 37, Attachment 4)

CONFIDENTIAL

PENNSYLVANIA POWER & LIGHT COMPANY

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PENNSYLVANIA POWER & LIGHT COMPANY

CONFIDENTIAL

PENNSYLVANIA POWER & LIGHT COMPANY
WINTER PEAK HOUR DEMANDS BY CLASS

Year	PPUC	RS	EHH	RTS	GRS
1991	5,366	2,576	1,617	36	923
1992	5,674	2,819	1,437	190	1,193
1993	5,801	2,813	1,872	55	904
1994	6,075	3,406	1,849	258	1,298

PPL ICA Statement No. 8
R-943271 4/28/95
Hbg JK

BEFORE THE

PENNSYLVANIA PUBLIC UTILITY COMMISSION

PENNSYLVANIA POWER & LIGHT COMPANY

DOCKET NO. R-00943271

DIRECT TESTIMONY AND EXHIBITS OF RICHARD A. BAUDINO

ON BEHALF OF THE

PP&L INDUSTRIAL CUSTOMER ALLIANCE

Air Products and Chemicals, Inc.
Alumax Mill Products, Inc.
Appleton Papers Inc.
Armstrong World Industries, Inc.
BOC Gases
CertainTeed Corporation
Chamberlain Manufacturing Corporation
Cressona Aluminum Company
ESSROC Materials, Inc.
Grinnell Corporation
Hercules Cement Company
Hershey Foods Corporation
International Paper Company
Lafarge Whitehall Cement
Liquid Carbonic Industries
Magee Carpet Inc.
M&M/Mars, Inc.
Praxair, Inc.
R. R. Donnelley & Sons
The Stroh Brewery Company
Thomson Consumer Electronics, Inc.
Victaulic Company of America

J. KENNEDY AND ASSOCIATES, INC.
ATLANTA, GEORGIA

APRIL 1995

BEFORE THE

PENNSYLVANIA PUBLIC UTILITY COMMISSION

PENNSYLVANIA POWER & LIGHT COMPANY

DOCKET NO. R-00943271

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BEFORE THE

PENNSYLVANIA PUBLIC UTILITY COMMISSION

PENNSYLVANIA POWER & LIGHT COMPANY

DOCKET NO. R-00943271

DIRECT TESTIMONY OF RICHARD A. BAUDINO

I. QUALIFICATIONS AND SUMMARY

Q. **Please state your name and business address.**

A. Richard A. Baudino, J. Kennedy and Associates, Inc. ("Kennedy and Associates"), Suite 475, 35 Glenlake Parkway, Atlanta, Georgia 30328.

Q. **What is your occupation and by whom are you employed?**

A. I am a utility rate and economic consultant holding the position of Director of Consulting with the firm of Kennedy and Associates.

Q. **Please describe your education and professional background.**

A. I received my Master of Arts degree with a major in Economics and a minor in Statistics from New Mexico State University in 1982. I also received my Bachelor of Arts degree with majors in Economics and English from New Mexico State in 1979.

I began my professional career with the New Mexico Public Service Commission Staff in October of 1982 and was employed there as a Utility Economist. During my employment with the Staff, my responsibilities included the analysis of a broad range of issues in the ratemaking field. Areas in which I testified included cost of service, rate of return, rate design, revenue requirements, analysis of sale/leasebacks of generating plants, utility finance issues, and generating plant phase-ins.

In October 1989 I joined the utility consulting firm of Kennedy and Associates as a Senior Consultant where my duties and responsibilities cover substantially the same areas as those during my tenure with the New Mexico Public Service Commission Staff. I became Manager in July 1992 and was named to my current position in January 1995.

Exhibit ___ (RAB-1) summarizes my expert testimony experience.

Q. On whose behalf are you testifying in this proceeding?

A. I am testifying on behalf of the Pennsylvania Power and Light Industrial Customer Alliance.

Q. What is your responsibility in this proceeding?

A. My responsibility is to make an independent evaluation of the cost of equity for Pennsylvania Power and Light Company ("PP&L" or "Company").

Q. Please summarize your conclusions and recommendations.

A. My conclusions and recommendations are as follows:

1. I recommend the Pennsylvania Public Utility Commission ("PPUC" or "Commission") approve a cost of equity for PP&L of 10.85%. This return on equity is commensurate with returns for electric utilities with below average risk.

3. I recommend the Commission approve an overall weighted cost of capital for PP&L of 9.22%.

4. Company witness Moul's cost of equity recommendation of 13.00% is unreasonable and should be rejected.

Q. How is the remainder of your testimony organized?

A. The remainder of my testimony is organized into the following sections:

SECTION II. REVIEW OF ECONOMIC AND FINANCIAL CONDITIONS

SECTION III. DETERMINATION OF FAIR RATE OF RETURN

SECTION IV. REBUTTAL OF PP&L WITNESS MOUL

II. REVIEW OF ECONOMIC AND FINANCIAL CONDITIONS

Q. Please describe the general economic trends that have affected utilities in the last few years.

A. The early 1980s saw a reversal of some of the economic trends prevalent in the 1970s. Interest rates and inflation fell precipitously, and the U.S. economy experienced its longest peacetime expansion in history. After a sharp recession in 1981 - 1982, Gross Domestic Product ("GDP") rose steadily from 1982 to 1990. The stock and bond markets shared in this growth. During the 1980s, the Standard and Poor's ("S&P") 500 Index realized a compounded yearly return of 17.50%, while the stocks of smaller companies returned 15.80% per year.[1] Long-term corporate and government bonds also rose handsomely, providing yearly compounded returns to investors of 13.00% and 12.60%, respectively.[2] Except for small company stocks, these returns were significantly above the long-term historical returns for stocks and bonds. During this period, inflation was moderate, falling to 1.1% in 1986 and rising to 4.69% in 1989.

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[1] Ibbotson Associates, Stocks, Bonds, Bills and Inflation 1994 Yearbook, Exhibit 2, page 16.

[2] Ibid.

The year 1990 saw the end of this economic expansion. A recession began to settle in during the summer and was exacerbated by Iraq's invasion of Kuwait in August. The uncertainty and fears about the future sent the stock market tumbling. Bond investors, fearful about increasing inflation and restrictive Federal Reserve monetary policy, bid up long-term interest rates. The yield on the bellwether 30-year Treasury bond rose to more than 9.00%, and inflation rose to 6.1%.

In an attempt to temper the effects of the recession, the Federal Reserve Board ("Fed") began to lower interest rates. The two key interest rates over which the Fed exerted direct influence were the federal funds rate and the discount rate, both of which are considered short-term rates. The federal funds rate is the rate that banks charge each other for overnight use of reserves. The discount rate is the interest rate charged to depository institutions by Federal Reserve Banks. The Federal Reserve was successful in influencing short-term interest rates near the end of 1990 and throughout 1991. During this period the discount rate fell from 7.00% in December 1990 to 3.50% in December 1991. The federal funds rate also fell during this same period from 7.30% to 4.40%. Long-term interest rates, as measured by the 30-year Treasury bond, responded more sluggishly to the Fed's easing of interest rates. The yield on the 30-year bond fell from 8.40% in December 1990 to 7.40% at the end of December 1991.

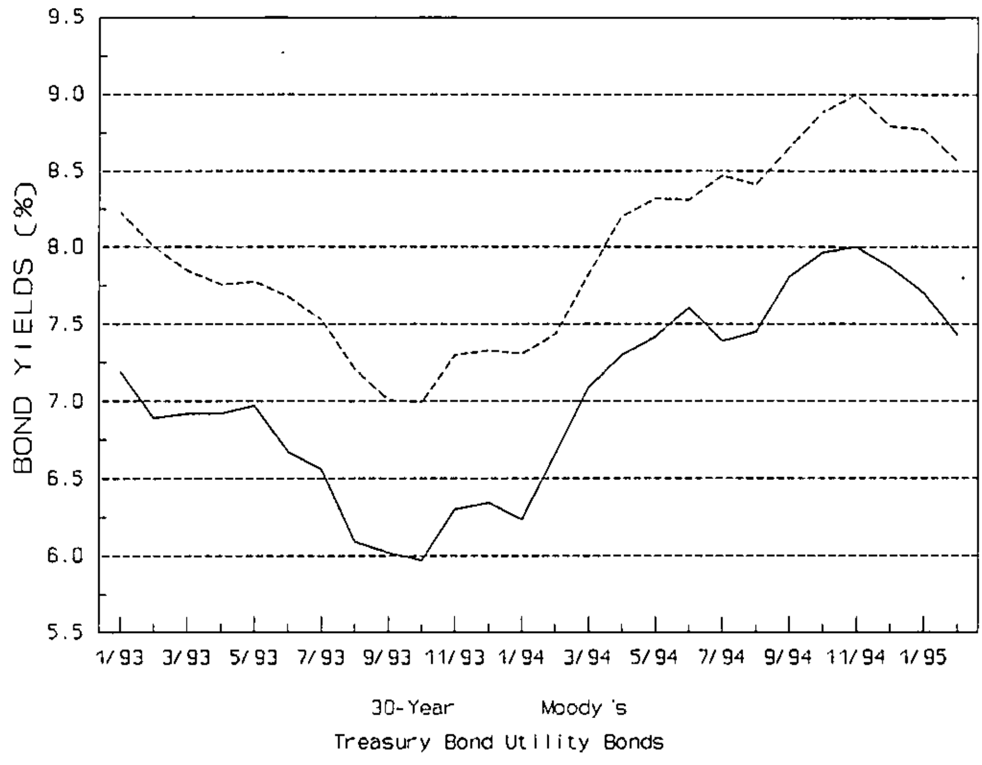
The recession that began in the summer of 1990 ended in March 1991, when the GDP began to rise. However, the pace of the recovery was unusually slow compared to past recoveries. For 1991, GDP growth was essentially flat, with growth in 1992 averaging about 2.00%. For 1993, the economy continued to expand, with GDP growing at a rate of 5.6%. Inflation during the 1990s has been low, ranging from 6.1% in 1990 to 2.67% in 1994.

Q. What has the trend in capital costs been over the last two years?

A. In 1993, the bond market began to register positive expectations about reductions in the federal budget deficit by staging a strong rally. The 30-year Treasury bond fell sharply from 7.50% in January to 5.97% at the end of October. The yields in October were the lowest since the Fed began issuing the 30-year Bond in the 1970s. Utility bonds also followed this pattern of declining yields. Figure 1 depicts the trend in yields from January 1993 through February 1995 for Treasury bonds and Moody's average public utility bonds.

FIGURE 1

BOND YIELD COMPARISON
30-YEAR TREASURIES AND MOODY'S PUBLIC UTILITY BONDS



Sources: Compuserve and Moody's Bond Record

As Figure 1 shows, bond yields began to rise in October 1993. Bond investors, fearing inflation associated with increased economic growth, began to bid down the prices of bonds. Then, in February 1994, the Fed announced that it intended to raise short-term interest rates as a "preemptive strike" at any potential future inflation associated with the accelerating growth in the economy during the fourth quarter of 1993. This move, along with continued fears of inflation, caused bond yields to rise further in February and March. In March 1994, the Fed announced that it would move again to tighten short-term interest rates. In all, the Fed has raised short-term interest rates seven times since February 1994 in an attempt to stem future inflation from a fast-growing economy.

During 1994, the stock and bond markets were extremely sensitive to potential inflation and uncertainties surrounding Fed policy on interest rates. These concerns contributed to significant volatility in the stock and bond markets throughout the year. So far in 1995, the yield on the 30-year Treasury bond has declined, ending the month of February at 7.43%. This represents a decline of 73 basis points, or .73% from the 8.16% yield reached in November 1994.

Q. What effect have these changes in interest rates had on utility stocks in general over the last two years?

A. Utility stocks are generally sensitive to interest rates. As such, they react to changes in interest rates in a similar fashion to bonds. Other things being equal, when interest rates fall, utility stock prices tend to rise, causing a decline in their dividend yields. This process works in reverse when interest rates rise.

In 1993, utility stocks benefitted from falling interest rates throughout most of the year. However, rates began to rise significantly in November. After reaching a yearly high of 257.58 in September, the Dow Jones Utility Average ("DJUA") fell to 229.30 at the end of the year, reflecting increases in interest rates. In 1994, as interest rates continued to rise, the DJUA continued to fall. In May, it fell sharply to 175.92 as investors worried about higher interest rates and inflation and about increased competition in the electric industry. Investors were also concerned by Florida Power Group's dividend cut during the month. By the end of 1994, the DJUA had managed to recover somewhat and stood at 181.52. Utility stocks have generally benefitted from the decline in long-term interest rates so far in 1995. At the end of February, the DJUA stood at 193.91, an increase of 6.8% from the end of December 1994.

Q. **Have you reviewed both the past and current financial circumstances of PP&L?**

A. Yes.

Q. **Please provide an overview of these circumstances.**

A. PP&L is engaged in the sale of electricity to approximately 1.2 million customers in central and eastern Pennsylvania. The Company does not have any significant diversified activities of which to speak. In 1993, system sales were derived from the following sources: residential (36%), commercial (30%), industrial (29%), and other (5%). In addition to system sales, PP&L also engages in sales to other utilities and

PJM interchange power sales. The primary sources of electric generation for the Company are coal (63.6%) and nuclear (31.0%).

According to the Company's 1993 Annual Report, PP&L's capital expenditures for the period 1991 - 1993 totalled approximately $1.4 billion. Most of these expenditures were related to generation, transmission and distribution facilities. PP&L is not engaged in the construction of any major power plants at this time. However, the Company is projecting significant capital expenditures through the end of the decade to meet additional requirements for transmission and distribution facilities and to comply with the Federal Clear Air Act Amendment ("CAAA"). All told, PP&L expects to invest approximately $2.1 billion through 1999, $1.1 billion of which is related to CAAA expenditures. If the Company's forecasts are correct, its plant in service would increase by about 22% over the plant in service and construction work in progress totals reported in the Company's September 30, 1994 10-Q Report. The Company also noted in its 1993 Annual Report that 86% of its construction expenditures from 1994 through 1996 is expected to be provided through internal cash generation.

Despite $1.4 billion in construction expenditures from 1991 to 1993, PP&L generated handsome returns for its stockholders. The Company's 1993 return on average equity was 13.1%. For the five year period from 1989 through 1993, the Company's return on equity averaged 13.6%. Quality of earnings was high during this period as well, with Allowance for Funds Used During Construction averaging about 3.5% according to the Value Line Investment Survey.

Q. **Based on your review of PP&L, how does the investment community view the Company?**

A. In terms of its bond ratings, PP&L is rated A2 by Moody's and A- by Standard and Poor's ("S&P"). In its September 1994 report on PP&L, Moody's stated that the near term rating outlook for the Company is stable. In addition, Moody's noted the following:

> **"Pennsylvania Power & Light Company's (PP&L) A2 senior debt rating reflects the company's excellent nuclear performance, good capacity position, effective cost management, and strengthened credit quality. Strong cash flow and improved debt-protection measurements stem from a manageable construction program and aggressive cost-cutting initiatives, including refinancing of higher cost debt, and preferred and preference stock. Despite the absence of base rate increases since 1985, management has been able to enhance PP&L's earnings and returns through successful marketing of its available capacity and energy off-system."**

Standard and Poor's downrated PP&L's senior debt from A to A- in 1994. Its last report on the Company noted that the downgrade reflected insufficient financial improvement for the Company. S&P also stated that a high dividend payout and external financing requirements will constrain future cash flow and capital structure strengthening.

In its March 17, 1995 report on PP&L, the Value Line Investment Survey assigned the Company's common stock a Safety Rank of 2. The Safety Rank is a measure of the total risk of a stock. A Safety Rank of 2 indicates that a stock is considered to be safer and less risky that most common stocks. However, the report also noted the possibility of a dividend cut and shows two dividend yields for the Company: one based on its current dividend payout (8.4%) and another based on a projected dividend cut (7.0%).

Q. Has any particular aspect of PP&L's business risk been affected by its rate filing?

A. Yes. In this case, PP&L is proposing to increase rates to its Interruptible customers by 27% - 34%, increases more than double the proposed system average increase of 11.70%. In my opinion, if this increase to Interruptible customers is implemented, it may increase PP&L's business risk somewhat. On page 14 of his direct testimony, Company witness Moul noted that PP&L's sales profile "is strongly influenced by industrial sales and sales to other utilities through interchange and by contract." Mr. Moul also noted that PP&L's industrial sales are susceptible to self-generation and/or bypass. Given Mr. Moul's testimony regarding the influence of industrial sales on the Company's sales profile, the excessive increase proposed by the Company for Interruptible customers could increase the risk of self-generation and bypass. As a result, I believe the Company has voluntarily increased its overall business risk as a result of its proposed rate increase to Interruptible customers in this case.

III. DETERMINATION OF FAIR RATE OF RETURN

Q. Please describe the methods you employed in estimating a fair rate of return for PP&L.

A. I employed a Discounted Cash Flow ("DCF") analysis for PP&L and two comparison groups of companies that are similar to PP&L.

Q. What are the main guidelines to which you adhere in estimating the cost of equity for a firm?

A. Generally speaking, the estimated cost of equity should be comparable to the returns of other firms with similar risk structures and should be sufficient for the firm to attract capital. These are the basic standards set out in Federal Power Comm'n v. Hope Natural Gas Co., 320 U.S. 591 (1944) and Bluefield W.W. & Improv. Co. v. Public Service Comm'n., 262 U.S. 679 (1922).

From an economist's perspective, the notion of "opportunity cost" plays a vital role in estimating the cost of equity. One measures the opportunity cost of something based on what one gives up in the next best alternative activity. For example, let us suppose that an investor decides to purchase the stock of PP&L. That investor made the decision based on the expectation of dividend payments and perhaps some appreciation in the stock's value over time. However, that investor's opportunity cost is measured by what she or he could have invested in as the next best alternative. That alternative could have been another utility stock, a utility bond, a mutual fund, a money market fund, or any other number of possible investment vehicles.

The key determinant in deciding whether to invest, however, is based on comparative levels of risk. Our hypothetical investor would not invest in PP&L's stock if it offered a return lower than other investments of similar risk. The opportunity cost simply would not justify such an investment. Thus, the task for the rate of return analyst is to estimate a return that is equal to the return being offered by other risk-comparable firms. Failing this, the subject firm will be impaired in its ability to attract capital.

Q. What are the major types of risk faced by utility companies?

A. In general, risk associated with the holding of common stock can be separated into three major categories: business risk, financial risk, and liquidity risk. Business risk refers to risks inherent in the operation of the business. Volatility of the firm's sales, long-term demand for its product(s), the amount of operating leverage, and quality of management are all factors that affect business risk. The quality of regulation at the state and federal levels also plays an important role in business risk for regulated utility companies.

Financial risk refers to the impact on a firm's future cash flows from the use of debt in the capital structure. Interest payments to bondholders represent a prior call on the firm's cash flows and must be met before income is available to the common shareholders. Additional debt means additional variability in the firm's earnings, leading to additional risk.

Liquidity risk refers to the ability of an investor to quickly sell an investment without a substantial price concession. The easier it is for an investor to sell an investment for cash, the lower the liquidity risk will be. Stock markets, such as the New York and American Stock Exchanges, help ease liquidity risk substantially. Investors who own stocks that are traded in these markets know on a daily basis what the market price of their investments are and that they can sell these investments fairly quickly. Most electric utility stocks are traded on the New York Stock Exchange and are considered liquid investments.

Q. Are there any indices available to investor's that quantify the total risk of a company?

A. Yes. Published measures exist that categorize companies based on various measures of risk. One of the best known and most widely available sources is from Value Line. Each company on which Value Line reports is assigned a Safety Rank. The Safety Rank consists of a number from 1 to 5, with 1 being the highest and 5 being the lowest. The Safety Rank measures the total risk of a stock and encompasses just about all factors that affect financial and business risk. These factors include:

- Stock price volatility
- Fixed charge coverage ratio
- Quality of earnings
- Capitalization ratio
- Earnings on common stock
- Payout ratio
- Nuclear exposure
- Regulatory risk

By selecting companies with the same Safety Rank, investors can be relatively confident that the market views them as similarly risky investments.

Bond ratings are another good tool that investors may utilize to determine the risk comparability of firms. Moody's and Standard and Poor's perform detailed analyses of all the factors that contribute to the business and financial risk of a particular investment. The end result of their analyses is a bond rating that reflects these risks.

Q. Please describe the basic DCF approach.

A. The basic DCF approach is rooted in valuation theory. It is based on the premise that the value of a financial asset is determined by its ability to generate future net cash flows. In the case of a common stock, those future cash flows take the form of dividends and appreciation in price. The value of the stock to investors is the discounted present value of future cash flows. The general equation then is:

$$V = \frac{R}{(1 + r)^1} + \frac{R}{(1 + r)^2} + \frac{R}{(1 + r)^3} + \ldots \frac{R}{(1 + r)^n}$$

Where: V = *value of the asset*
R = *yearly cash flow*
r = *discount rate*

This is no different from determining the value of any asset from an economic point of view. However, the DCF model that I employ does make certain simplifying assumptions. One is that the stream of income from the equity share is assumed to be perpetual; that is, there is no salvage or residual value at the end of some maturity date (as is the case with a bond). Another important assumption is that financial markets are efficient; that is, they correctly evaluate the cash flows relative to the appropriate discount rate, thus rendering the stock price efficient relative to other alternatives. Finally, the model I employ also assumes a constant growth rate in dividends. The fundamental relationship employed in the DCF method is described by the formula:

$$k = \frac{D_1}{P_0} + g$$

Where: D_1 = *the next period dividend*
P_0 = *the current price of a share of common stock*
g = *the expected growth rate in dividends*
k = *the investor-required return*

It is apparent that the "k" so determined must relate to the investors' expected return. Use of the discounted cash flow method to determine an investor-required return is complicated by the need to express investors' expectations relative to dividends, earnings, and book value over an infinite time horizon. Financial theory suggests that stockholders purchase common stock on the assumption that there will be some change in the rate of dividend payments over time. We assume that the rate of growth in dividends is constant over the assumed time horizon, but the model could easily handle varying growth rates if we knew what they were. Finally, it is apparent that the relevant time frame is prospective rather than retrospective.

Q. At the beginning of this section, you stated that you employed both PP&L and two comparison groups of electric companies to estimate a DCF return on equity for PP&L. Why did you employ three DCF analyses?

A. Performing a DCF analysis on PP&L is the best way to directly estimate the cost of equity for the Company. PP&L's stock is actively traded on the New York Stock

Exchange, so its price data can be directly obtained. Investor services such as Value Line and IBES also publish forecasts which enable the analyst to directly estimate investor-expected growth for PP&L.

I also used comparison groups of utilities because using groups of companies with risk structures similar to PP&L adds an additional level of confidence and robustness to the DCF analysis. It also provides a measure of the opportunity cost of investing in PP&L. In addition, evaluation of comparison companies will serve as a check on the reasonableness of the DCF estimate for PP&L.

In this particular case, inclusion of comparison groups is important for another reason. As I mentioned in Section II of my testimony, Value Line is currently showing a split dividend yield for PP&L, indicating the possibility of a dividend reduction. It has been my past practice to eliminate companies from my comparison group when Value Line projects a possible dividend reduction. This has been more of a concern recently because several utilities reduced dividends in 1994 due to high dividend payouts. Therefore, including DCF analyses for two groups is a necessary check on the reasonableness of the DCF stand-alone results for PP&L.

Q. **If it has been your past practice to eliminate companies from your analyses when Value Line forecasts a possible dividend cut, why did you proceed with a DCF analysis for PP&L?**

A. Based on my review of other securities analysts' reports on PP&L and Value Line reports for the companies in the two groups, I believe it is reasonable to proceed with a DCF analysis for PP&L at this time. My reading of the reports from other securities analysts does not seem to indicate that a dividend cut is imminent. Furthermore, there are several companies in the groups that have dividend yields as high or higher than PP&L, and Value Line is not forecasting dividend reductions for them. Therefore, a DCF analysis for PP&L, supplemented by DCF analyses for the two groups, is a sound way to proceed in this case.

Q. Why are you using two groups of comparison companies?

A. It has been my practice to develop a comparison group of companies based on certain criteria which I shall present later in my testimony. In this case, I will also employ the "barometer group" of companies used by Company witness Paul R. Moul. Using Mr. Moul's group of companies has the added advantage of enabling the Commission to directly compare our results and to evaluate the reasonableness of the differences in our DCF estimation techniques.

Q. Is Mr. Moul's barometer group of companies a reasonable one to use for PP&L?

A. In general, Mr. Moul's barometer group is a reasonable one to use for PP&L, although I use criteria for selecting companies that are somewhat different. For example, one of Mr. Moul's criteria was that the companies operate in Pennsylvania or one of its six contiguous states. Another is that yearly operating revenues for the companies in the group must exceed $750 million. Although I have not seen fit to use these criteria for group selection in other cases, I see no harm in doing so in this case.

Q. Please explain how you chose your comparison groups of companies.

A. The two initial screens I selected were based on Value Line Safety Rank and bond ratings. Since PP&L has a Value Line Safety Rank of 2, I began by selecting all electric utilities followed by Value Line that had a Safety Rank of 2. I also eliminated any companies that derived less that 80% of total revenues from electric operations. From that group I then selected companies whose bonds were rated A by Moody's. From this group, I excluded companies that had recently reduced dividends, have significant diversified operations, or are involved in significant merger activity. Applying these screens resulted in the following group of comparison companies:

1. Atlantic Energy, Inc.
2. Carolina Power & Light Co.
3. Delmarva Power & Light Co.
4. Dominion Resources, Inc.
5. Kansas City Power & Light Co.
6. New England Electric System
7. Oklahoma Gas & Electric Co.
8. St. Joseph Light & Power Co.

PP&L Analysis

Q. What was your first step in determining the DCF return on equity for PP&L?

A. I first determined the appropriate expected dividend yield, D_1/P_0, from the basic equation. My general practice has been to use six months as being the most reasonable period over which to estimate the dividend yield. The six month period I used covered the period from September 1994 through February 1995. I then obtained the indicated annualized dividend as reported in the Standard and Poor's Stock Guide over the same six month period. The annualized dividend divided by the average monthly price represents the average dividend yield for each month in the period.

Using this approach results in an average dividend yield of 8.39% for PP&L. This calculation is shown in Exhibit ___ (RAB-2), page 1.

Q. **Having established the average dividend yield, how did you determine the expected growth rate for PP&L?**

A. "Expected" refers to the investor's expected growth rate. The task, in theory, is to use a growth rate that will correctly forecast the constant rate of growth in dividends. We refer to a perpetual growth rate since the DCF model has no cut-off point. The obvious fact is that there is no way to know with absolute certainty what investors expect the growth rate to be in the short term, much less in perpetuity. The dividend growth rate is a function of earnings growth and the payout ratio, neither of which is known precisely for the future.

In this analysis, I relied on two major sources of analysts' forecasts for growth. These sources are Value Line and the Institutional Brokers' Estimate Service ("IBES"). In addition, I also reviewed historical growth rates.

Q. **Please briefly describe Value Line and the IBES.**

A. Value Line is an investment survey that is published for approximately 1,700 companies, both regulated and nonregulated. It is updated quarterly and probably represents the most comprehensive and widely used of all investment information services. It provides both historical and forecasted information on a number of important data elements. Value Line neither participates in financial markets as a broker nor works for the utility industry in any capacity of which I am aware.

IBES seeks opinions from a variety of analysts on the earnings growth forecasts for numerous firms including regulated electrics. The estimates of the analysts responding are combined to produce consensus average estimates.

Q. Why did you rely on analysts' forecasts in your analysis?

A. Recent finance literature has shown that analysts' forecasts provide better predictions of future growth than do estimates based on historical growth alone.[3]

Q. You also mentioned that you also reviewed historical growth rates. Is it your general practice to use historical growth rates in your DCF analyses?

A. No. I have not used historical growth rates in my DCF analyses in the past. However, some of the analysts' forecasts of near-term growth for PP&L and the two groups are quite low and do not result in reasonable growth estimates for the longer

[3] See Rozeff (Journal of Forecasting, Volume 2, Issue No. 4, 1983), Brown and Rozeff (Journal of Finance, March 1978), Moyer, Chatfield and Kelley (International Journal of Forecasting, 1985), and a study by Vander Weide and Carleton that was incorporated as part of the Edison Electric Institute's comments in the Federal Energy Regulatory Commission's generic cost of capital proceedings.

term. Therefore, for purposes of this case I supplemented my analysis with historical growth rates to assist in the development of long-term expected growth for PP&L.

Q. How did you utilize your data sources to estimate growth rates for PP&L and the comparison groups?

A. Pages 2 and 3 of Exhibit ___ (RAB-2) present the details of the calculations for the Value Line and IBES forecasted growth estimates. The Value Line growth estimates are based on forecasts for the next five to six years. The IBES earnings growth estimates are forecasts for the next five years. These earnings and dividend growth estimates are presented in Columns (1) through (3) on page 2 of Exhibit __(RAB-2).

I also utilized the sustainable growth formula in estimating the expected growth rate. The sustainable growth method, also known as the retention ratio method, recognizes that growth in dividends is fueled by the firm's retaining a portion of its earnings. These retained earnings, which are plowed back into the firm's asset base, are expected to earn a rate of return. This, in turn, generates growth in the firm's book value, market value, and dividends.

The sustainable growth method is calculated using the following formula:

$$G = B \times R$$

Where: *G = sustainable growth rate*
B = the firm's expected retention ratio
R = the expected return

In its proper form, this calculation is forward-looking, or expectational. That is, the investors' expected retention ratio and return must be used in order to measure what investors anticipate will happen in the future. Data on expected retention ratios and returns may be obtained from Value Line.

The expected sustainable growth estimate is presented in Column (4) on page 2 of Exhibit ___ (RAB-2). The data came from the Value Line forecasts for the 1998 - 2000 time frame.

Q. How did you develop the historical growth rates?

A. In addition to growth forecasts, Value Line also presents compound historical growth rates for earnings and dividends for five- and ten-year periods. Value Line historical earnings and dividend data also allow the calculation of historical retention growth. These historical growth rates are presented on pages 3 and 4 of Exhibit ___ (RAB-2).

Q. Please summarize the forecasted and historical growth rates you developed in Exhibit ___ (RAB-2) for PP&L.

A. For PP&L, forecasted growth ranged from 1.00% to 2.05%. Historical growth rates for five and ten years averaged between 3.42% and 2.75%, respectively.

Q. What is your recommended growth rate for PP&L?

A. My recommended growth rate range for PP&L is 2.05% to 3.05%. The low end of the range is based on Value Line's forecasted retention growth. The upper end of the range is close to the average of five- and ten-year historical growth rates. I have excluded most of the forecasted growth rates from consideration because I believe they reflect lower near term growth prospects for PP&L. These lower prospects are to some extent reflected in the Company's dividend yield, which is from 73 to 104 basis points higher than the two groups. Given this fact, it is reasonable that investors would expect lower growth from PP&L. However, growth rates in the range of only 1.00% do not reflect the longer term prospects of the Company. Investors may also consider historical growth rates in forming their expectations for PP&L, and these growth rates are substantially higher than most of the forecasts. Furthermore, forecasted growth rates in the 1.00% to 1.50% range do not result in reasonable return estimates. Adding 1.00% growth to PP&L's dividend yield results in a DCF result of only 9.39%. Given that A rated utility bonds are yielding 8.54%

currently, the resulting risk premium is only 85 basis points. Based on my experience, this is not a reasonable premium over bonds.

All things considered, a range of 2.05% - 3.05% represents a reasonable balance between near-term and long-term growth prospects for PP&L. The range is based on publicly available information and can reasonably be assumed to influence investor behavior.

Q. How did you proceed to determine the DCF cost of equity for PP&L?

A. To estimate the expected dividend yield (D_1) for PP&L, the current dividend yield has to be moved forward in time to account for dividend increases over the next twelve months. I estimated the expected dividend yield by multiplying the current dividend yield by one plus one-half the expected growth rate. It is my understanding that the Commission has used this approach in past cases, and I believe it is a reasonable representation of the expected dividend yield for PP&L.

I then added the expected growth rate ranges to the expected dividend yield for PP&L. The calculation of the resulting DCF returns on equity is presented below in Table 1. These returns range from 10.53% to 11.57%. The midpoint of the range is 11.05%.

TABLE 1

PP&L DCF ANALYSIS

	Lower End of Range	Upper End of Range
Dividend Yield	8.39%	8.39%
Dividend Yield Adjust.	1.0103	1.0153
Expected Dividend Yield	8.48%	8.52%
Expected Growth Rate	2.05%	3.05%
DCF Returns	10.53%	11.57%

Comparison Group

Q. How did you calculate the dividend yield for your comparison group of companies?

A. The DCF approach for the comparison group was similar to my analysis for PP&L. First, I estimated the current dividend yield using a six-month average stock price for each company in the group. This resulted in an average yield for the comparison group of 7.35%. The calculations are detailed on page 1 of Exhibit ___ (RAB-3).

Q. Please present the forecasted and historical growth rates you considered.

A. The forecasted and historical growth rates I considered are presented on pages 2 through 6 of Exhibit ___ (RAB-3). The forecasted growth rates were calculated in a similar manner to PP&L's growth forecasts. The comparison group's forecasted growth rates are presented on page 2 of Exhibit ___ (RAB-3). They range from 1.45% (Value Line dividend growth) to 2.80% (Value Line earnings growth).

Five- and ten-year historical growth rates are presented on page 4 of Exhibit ___ (RAB-3). I omitted five-year earnings growth from consideration because several companies had zero or negative earnings growth, making the resulting group average growth rate unreasonably low. The historical averages range from 3.02% to 3.38%.

Q. What is your recommended growth rate for the comparison group of companies?

A. My recommended growth rate range is 2.60% to 3.40%. The bottom of my range is based on the average of forecasted growth rates, less the Value Line dividend growth rate. I believe this represents a reasonable lower end for investor expectations, although dividend growth suggests that it could be even lower. The upper end of the range is supported by the ten-year historical growth rates. I believe this range is well supported by the data and can reasonably be expected to influence investor expectations.

Q. How did you proceed to estimate the DCF return for the comparison group?

A. As in the PP&L analysis, I adjusted the current dividend yield for the group by one plus one-half the expected growth rate to obtain the expected dividend yield. Adding the expected growth to the expected dividend yield results in a range of 10.05% - 10.88% for the comparison group. The midpoint is 10.47%. The details of the calculations are presented in Table 2 below.

TABLE 2

COMPARISON GROUP
DCF ANALYSIS

	Lower End of Range	Upper End of Range
Dividend Yield	7.35%	7.35%
Dividend Yield Adjust.	1.0130	1.0170
Expected Dividend Yield	7.45%	7.48%
Expected Growth Rate	2.60%	3.40%
DCF Returns	10.05%	10.88%

Mr. Moul's Barometer Group

Q. How did you calculate the dividend yield for Mr. Moul's barometer group of companies?

A. Once again, I estimated the current dividend yield using a six-month average stock price for each company in the group. This resulted in an average yield for the barometer group of 7.66%. The calculations are detailed on page 1 of Exhibit _ (RAB-4).

Q. Please present the forecasted and historical growth rates you considered.

A. The forecasted and historical growth rates I considered are presented on pages 2 through 6 of Exhibit ___ (RAB-4). The forecasted growth rates were calculated in a similar manner to PP&L's growth forecasts. The comparison group's forecasted growth rates are presented on page 2 of Exhibit ___ (RAB-4). They range from 1.44% (Value Line dividend growth) to 3.15% (Value Line earnings growth).

Five- and ten-year historical growth rates are presented on page 4 of Exhibit ___ (RAB-4). Once again, I omitted five-year earnings growth from consideration because all of the barometer companies had negative earnings growth. The historical averages range from 2.10% to 2.73%.

Q. What is your recommended growth rate for the comparison group of companies?

A. My recommended growth rate range is 2.50% to 3.20%. The bottom of my range is supported by the forecasted IBES earnings and Value Line retention growth rates. I believe this represents a reasonable lower end for investor expectations, although there is evidence that it could be even lower. The upper end of the range is supported by Value Line forecasted earnings growth and ten-year historical dividend and retention growth.

Q. How did you proceed to estimate the DCF return for the barometer group?

A. I adjusted the current dividend yield for the barometer group by one plus one-half the expected growth rate to obtain the expected dividend yield. Adding the expected growth to the expected dividend yield results in a range of 10.26% to 10.98%. The midpoint is 10.62%. The details of the calculations are presented in Table 3 below.

TABLE 3

MR. MOUL'S BAROMETER GROUP DCF ANALYSIS

	Lower End of Range	Upper End of Range
Dividend Yield	7.66%	7.66%
Dividend Yield Adjust.	1.0125	1.0160
Expected Dividend Yield	7.76%	7.78%
Expected Growth Rate	2.50%	3.20%
DCF Returns	10.26%	10.98%

Conclusions and Recommendations

Q. Please summarize the cost of equity estimates you have developed up to this point in your testimony.

A. Utilizing the DCF model, I developed a cost of equity range for PP&L of 10.53% to 11.57%. The midpoint is 11.05%. I also applied the DCF model to two comparison groups of companies with risk profiles similar to PP&L's. The range of cost of equity estimates for my comparison group was 10.05% to 10.88%. The midpoint of this range is 10.47%. Finally, I also estimated a range of cost of equity estimates for the barometer group of companies used by Mr. Moul. The estimates ranged from 10.26% to 10.98%. The midpoint of the range is 10.62%.

Q. What is your recommendation for a fair rate of return for PP&L?

A. My recommendation is that the PPUC grant a rate of return on equity to PP&L of 10.85%. This is the approximate average of the range midpoints of the PP&L and barometer group analyses. It is also near the upper end of the range for the comparison group. Overall, this recommendation reflects investor expectations and strikes an appropriate balance between risk and reward in today's marketplace.

Weighted Cost of Capital

Q. Have you calculated the weighted cost of capital that results from your recommended cost of equity?

A. Yes. Table 4 presents the weighted cost of equity for PP&L. Utilizing my recommended cost of equity of 10.85% results in a weighted cost of capital for PP&L of 9.22%.

TABLE 4

**PENNSYLVANIA POWER & LIGHT COMPANY
WEIGHTED COST OF CAPITAL**

	Pct.	Cost Rate	Wtd. Cost
Long Term Debt	47.13%	7.97%	3.76%
Preferred Stock	7.91%	7.31%	0.58%
Common Equity	44.96%	10.85%	4.88%
Totals	100.00%		9.22%

Q. Did you use the Company's proposed capital structure as presented in Mr. Moul's direct testimony?

A. No. I have used the Company's actual September 30, 1994 capital structure. The percentages shown in Table 2 come from Schedule 4 Mr. Moul's direct testimony.

Q. Why didn't you use the Company's proposed capital structure for the 1995 future test period?

A. The Company did not provide any evidence supporting the reasonableness of its projected capital structure. It is important to note that the Company is proposing to use a substantial amount of additional common equity financing during the future test period. This additional equity has the effect of boosting the Company's common equity ratio by almost a full percentage point over the actual September 30, 1994 capital structure. Other things held constant, this increase in the common equity ratio results in an additional revenue requirement of about $5 million per year.

Although the Company proposes that the ratepayers support a higher common equity ratio, none of its witnesses has shown that there are any benefits to be gained from such an increase. Instead, Mr. Moul simply recites the Company's financing plans on page 28 of his direct testimony. He offers the Commission and the parties no reasons as to why the proposed level of equity financing is reasonable. Therefore, I recommend that the Commission impute the Company's actual September 30, 1994 capital ratios in this case.

Q. What cost rates did you employ for long-term debt and preferred stock?

A. I used the Company's projected cost of debt and preferred stock for the 1995 test period. The Company's projected debt costs include the redemption of high coupon debt and the issuance of lower coupon debt subsequent to September 30, 1994. It also includes the issuance of pollution control bonds later in the year. Overall, the Company's projected debt costs reflect actions that lower costs for ratepayers and should be accepted by the Commission.

SECTION IV. RESPONSE TO PP&L WITNESS MOUL

Q. Have you reviewed the direct testimony of PP&L witness Paul Moul?

A. Yes, I have reviewed Mr. Moul's direct testimony.

Q. Please summarize your conclusions with respect to his testimony.

A. My conclusions are as follows:

1. Mr. Moul overstated the growth rate in his DCF analysis. His recommended growth rate of 4.0% is not supported by the data he presented in his testimony. Further, he added a 0.5% adder for "market-wide factors" that has no factual support or analysis.

2. Mr. Moul's comparable earnings approach should be rejected because it is an accounting-based, rather than market-based, approach to estimating the cost of equity.

3. Mr. Moul's use of the risk premium method should be rejected. Its results are based solely on a series of historical earned returns that may have no relevance to current required returns. Further, Mr. Moul arbitrarily adjusted the risk premium results downward.

4. Mr. Moul's version of the Capital Asset Pricing Model ("CAPM") is flawed. Mr. Moul grossly overestimated the expected market return. He also inappropriately used historical earned returns in his analysis.0

5. Mr. Moul noted in his testimony that PP&L's industrial customers are susceptible to self-generation and bypass. However, he did not address the effect of PP&L's proposed increase to interruptible customers on the Company's risk profile.

<u>PP&L's DCF Method</u>

Q. Do you agree with Mr. Moul's recommended DCF return on equity?

A. No. Mr. Moul inappropriately estimated expected growth and applied the same growth rate to both PP&L and his barometer group of companies.

Q. Briefly describe Mr. Moul's DCF analysis.

A. Mr. Moul's DCF analysis utilizes data for both PP&L and a "barometer group" of companies. Mr. Moul relied on a six-month period to calculate the dividend yield for PP&L and the group. He then analyzed a number of historic and forecasted growth rates. After some discussion of the various growth rates, Mr. Moul recommended a 3.5% growth rate for PP&L and the barometer group. He then added another 0.5% for what he termed "market-wide factors" to arrive at a recommended growth rate of 4.0%. Mr. Moul then added this growth rate to the dividend yields for PP&L and the barometer group to obtain his recommended DCF range of 11.97% to 12.49%.

Q. Please explain why you disagree with Mr. Moul's growth rate analysis.

A. Mr. Moul's selection of an expected growth rate is unsupported by analysis or evidence. On page 42, lines 30 and 31, Mr. Moul explained that he followed an approach to estimating growth that is not rigidly formatted because investors do not behave in such a manner. He went on to state that a variety of techniques should be evaluated when formulating a judgement of investor expected growth. However, Mr. Moul never explained how he arrived at a 3.5% growth rate for both PP&L and the comparison group. Therefore, one cannot determine which technique(s) he actually used in arriving at his recommendation.

My analysis of both historical and forecasted growth rates indicates that a 3.5% growth rate is only supported by five-year historical growth rates. The vast majority of growth rates, both historical and forecasted, are significantly below 3.5%. The weight of the evidence indicates that investors are expecting lower future growth rates for PP&L. This conclusion is also supported by the fact that PP&L has a dividend yield that is significantly higher than that for both my comparison group and Mr. Moul's barometer group. A growth rate of 3.5% substantially overstates growth given the available evidence.

In terms of his barometer group, Mr. Moul once again failed to incorporate all the available evidence in his recommendation, evidence which supports lower growth expectations as well. A substantial number of historical and forecasted growth rates fall below 3.0%, indicating that Mr. Moul's single growth rate estimate is overstated.

Q. You stated earlier that Mr. Moul added 0.5% to his estimated growth rate for "market-wide factors." Is this recommendation reasonable?

A. No. Mr. Moul offered no analysis or evidence to support this adjustment. It is difficult to believe that investors would make such a leap in their own growth expectations for PP&L and the barometer group. I recommend that the Commission reject Mr. Moul's 0.5% adder out of hand.

<u>**PP&L's Comparable Earnings Method**</u>

Q. Do you agree with Mr. Moul's Comparable Earnings approach?

A. No. This approach greatly overstates the investors' required return for PP&L. I recommend the Commission reject this approach.

Q. Please briefly describe Mr. Moul's Comparable Earnings approach.

A. On page 36, lines 1 through 7, Mr. Moul explained that he selected a group of companies with risk traits similar to regulated utility companies. Mr. Moul also excluded utility companies from his sample. Once he developed his group, Mr. Moul developed return percentages based on accounting returns on book value for the companies in his sample. These accounting returns covered the five-year historical period from 1989 through 1993 and the Value Line forecasted return. The average of historical and forecasted accounting returns was 13.50%.

Q. What are the problems you see with Mr. Moul's Comparable Earnings approach?

A. The first and most important problem is that the Comparable Earnings method is not a market-based approach to estimating the cost of equity for PP&L. The Comparable Earnings approach assumes in part that investors' required returns are based on historical accounting returns on book equity for firms in unregulated industries. This assumption is not supported by economic theory or actual experience. When investors purchase the common stock of a company, their return requirements are forward-looking based on the price of the stock in the marketplace, the expected growth in dividends and stock price, and the "opportunity costs" of other investments. These expectations are not necessarily based on past or expected future accounting rates of return on book value. Investors obviously do not purchase stock at book value per share unless the stock price just happens to equal book value at the time of purchase. Instead, financial theory suggests that investors base their required returns on the present value of future cash flows from their investment. The value of these future cash flows is what determines the stock price that investors are willing to pay in the marketplace. Thus, investor required returns are based on the market price of their investment, not on accounting returns on book value.

Accounting returns are also insensitive to changes in interest rates and other factors that influence investors' required returns. For example, the current yield on A rated utility bonds is 8.52%. If interest rates were to drop by 50 basis points and the bond yield declined to 8.00%, it would imply that investors' return requirements would also decline. However, historical accounting earnings would be insensitive such a change. The situation would also be true for an increase in interest rates. This means that the Comparable Earnings approach can be completely unaffected by changes in the market cost of capital.

Q. On page 38, lines 14 through 20 of his direct testimony, Mr. Moul claimed that a DCF analysis he performed on the group of comparable companies verified the reasonableness of his Comparable Earnings approach. Do you agree with his assessment?

A. No. His DCF result for the group of companies is 15.0%, a number which is 150 basis points greater than his recommended return based on Comparable Earnings. I fail to see how this result confirms his analysis. Further, Mr. Moul considered only Value Line earnings growth for these companies and did not consider forecasted growth in dividends or retention growth. Thus, his DCF analysis is too narrow and of little use as a check on his Comparable Earnings results.

Q. Please state your conclusion with respect to the Comparable Earnings approach as presented by Mr. Moul.

A. The PPUC, like many other state commissions, has a long history of basing its allowed returns on market-based approaches, not accounting returns. Mr. Moul's Comparable Earnings analysis provides no good reason to change this practice. I recommend the Commission reject the Comparable Earnings method.

<u>PP&L's Risk Premium Method</u>

Q. What is your conclusion with respect to Mr. Moul's Risk Premium analysis?

A. Mr. Moul's Risk Premium analysis is deeply flawed and should be rejected by the Commission.

Q. Please summarize Mr. Moul's Risk Premium approach.

A. Mr. Moul developed a series of historical earned returns for the Standard and Poor's ("S&P") Utility Index. Return series for long-term corporate and public utility bonds were also calculated. These historical returns covered the period from 1928 through 1993. Arithmetic and geometric mean returns were calculated for these series. Mr. Moul then derived a number of risk premiums for different periods of time. His recommended risk premium for the S&P Utilities was 5.56% over public utility bonds. Mr. Moul then adjusted this number downward to 4.75% to reflect differences in risk between the S&P Utilities and the barometer group. Adding his recommended bond yield of 9.00% to the risk premium of 4.75% resulted in a return of 13.75%.

Q. Why do you disagree with Mr. Moul's Risk Premium analysis?

A. The use of historical risk premiums may not be appropriate either theoretically or practically. The appropriate cost of capital is by definition forward looking. The use of historical earned returns may be an unsuitable measure of investors' expected risk premiums. Further, risk premiums have not been constant over time. To assume that investors currently require a risk premium based on some arbitrarily chosen past time period may be misleading and just plain wrong.

In evaluating the usefulness of historical earned returns from the Ibbotson-Sinquefield ("I&S") data, Brigham, Shome and Vinson noted the following:

> **"There are both conceptual and measurement problems with using the I&S data for purposes of estimating the cost of capital. Conceptually, there is no compelling reason to believe that investors expect the same relative returns that were earned in the past. Indeed, evidence presented in the following sections indicates that relative expected returns should, and do, vary significantly over time. Empirically, the measured historic**

> **premium is sensitive to both the choice of estimation horizon and to the end points. These choices are essentially arbitrary, yet they can result in significant differences in the final outcome. These measurement problems are common to most forecasts based on time series data."[4]**

The real question is to what extent investors currently rely on historic data. As the above quote pointed out, there is no compelling reason to believe that investors expect current equity returns based on risk premiums derived from historical earned returns.

Based on my reading of past Commission orders, the PPUC has rejected cost of equity estimates based on historical return data. I recommend that the Commission continue this procedure and reject Mr. Moul's risk premium analysis.

<u>**PP&L Capital Asset Pricing Model**</u>

Q. Do you agree with the results from Mr. Moul's Capital Asset Pricing Model ("CAPM") approach?

A. No. Mr. Moul's analysis significantly overstates the return from the CAPM. I recommend that the Commission reject his CAPM results.

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[4] E.F. Brigham, D.K. Shome, and S.R. Vinson, <u>Financial Management</u>, "The Risk Premium Approach to Measuring a Utility's Cost of Equity," Spring 1985.

Q. Briefly summarize Mr. Moul's CAPM approach.

A. Mr. Moul performed two variations of the CAPM. The first variation was a traditional CAPM analysis. He estimated the market risk premium using forecasted and historical return estimates, resulting in a market premium of 7.85%. He then applied Value Line and Merrill Lynch betas to the market premium. Adding his estimate of the risk free rate of return (8.0%), Mr. Moul estimated CAPM returns in the range of 13.34% to 13.50%. Mr. Moul's second CAPM variation was what he called a "zero-beta" CAPM analysis. Mr. Moul segmented the market return into two parts. He added half of the market premium to the yield on a ten-year Treasury note, resulting in a zero-beta return of 11.85%. He then applied the beta factors to half the market premium. His zero-beta CAPM results ranged from 14.54% to 14.62%.

Q. In general, are there concerns regarding the use of the CAPM in estimating the return on equity?

A. Yes. There is considerable controversy surrounding the use of the CAPM.[5] There is strong evidence that beta is not the primary factor in determining the risk of a security. Value Line states that its Safety Rank is a measure of total risk, not its calculated beta coefficient. Mr. Moul also noted in Appendix E, page E-3, that beta

[5] For a more complete discussion of some of the controversy surrounding the use of the CAPM, refer to <u>A Random Walk Down Wall Street</u> by Burton Malkiel, pages 242 - 255.

coefficients usually describe only a small amount of total investment risk. In addition, a considerable amount of judgment must be employed in determining the risk-free rate and market return portions of the CAPM equation. The analyst's application of judgment can significantly influence the results obtained from the CAPM. My past experience with the CAPM indicates that it is prudent to use a wide variety of data in estimating returns. Of course, the range of results may also be wide, indicating the difficulty in obtaining a specific rate of return from the CAPM.

Q. Specifically, are there problems you discovered in Mr. Moul's CAPM approach?

A. Yes. The biggest area of concern is the way in which Mr. Moul estimated the market return portion of the CAPM. As my subsequent analysis will show, Mr. Moul failed to include other relevant data in estimating the market return. This resulted in a gross overstatement of the market return in his analysis.

Q. How did Mr. Moul estimate the market return portion of the model?

A. Mr. Moul used both historical and forecasted data. The historical data was based on earned returns from Ibbotson and Associates' <u>Stocks, Bonds, Bills, and Inflation</u> ("SBBI") 1994 Yearbook. The earned returns were calculated over the period from 1926 through 1993. I have already explained in the Risk Premium section why this approach is unreasonable. Historical returns should not be used to measure current investor return requirements.

Mr. Moul also used Value Line data to estimate the market required return. He used the dividend yield and market appreciation estimates from <u>The Value Line Investment Survey Summary and Index</u>. The growth rate was derived based on Value Line's forecasted market appreciation potential, calculated by Mr. Moul to be 14.19%. Combined with the expected dividend yield of 2.6%, his estimated market return was 16.79%.

Q. Did Mr. Moul overestimate the market required return?

A. Yes. Mr. Moul ignored other data from Value Line which indicate a lower expected market return. He also neglected to include other forecasted data from IBES on the S&P 500 composite. Mr. Moul's narrow analysis significantly overstates the market return when other viable market estimates are employed.

Q. Please present the other market data that Mr. Moul failed to consider.

A. One of Mr. Moul's data sources, Value Screen III, contains a summary statistical report detailing, among other things, forecasted growth in dividends, earnings and book value for the companies Value Line follows. I have presented these three growth rates and the average on Exhibit ___ (RAB-5), page 5. The average growth rate is 11.70%. This is substantially lower than Mr. Moul's growth rate of 14.19% for the Value Line companies. Combining this growth rate with the average expected dividend yield of the Value Line companies results in an expected market return of 14.04%. The detailed calculations are shown on page 1 of Exhibit ___ (RAB-5).

Value Line also publishes an Industrial Composite which it updates twice a year. The most recent update was published in Value Line's <u>Selection and Opinion</u> on February 17, 1995. Value Line noted that the "Industrial Composite is often used as a proxy for the broader market, given that this model accounts for over 75% of all income earned by non-financial companies in the United States" (page 8240). Value Line publishes forecasts for earnings, dividends and retention growth for the Industrial Composite, which I have presented on page 5 of Exhibit __ (RAB-5). The average of these three growth rates is 9.33%. Combining the average forecasted growth rate with the Industrial Composite's expected dividend yield of 2.83% results in a market return of 12.16%.

Finally, IBES publishes a five-year earnings forecast for the S&P 500. I have included this forecast, along with the dividend yield for the S&P 500, on page 1 of Exhibit ____ (RAB-5). Combining the expected dividend yield of the S&P 500 (2.97%) with the IBES earnings growth rate (9.20%) results in a market return of 12.17%.

Q. What do you conclude from these alternative market return calculations?

A. I conclude that Mr. Moul's forecasted market return is grossly overstated. Considering the preponderance of other evidence, the market return seems to fall in the range between 12.16% and 14.03%. Even the top end of this range is well below Mr. Moul's estimate of 16.79% for the market. Further, given Value Line's Industrial Composite return of 12.16%, the 14.03% estimate based on Value Screen III could be overstated.

Q. Have you computed an alternative CAPM return on equity based on your estimates of the market return?

A. Yes. Exhibit ___ (RAB-5) presents revised CAPM returns using the high and low end of the range of market return estimates. For example, Column (1) of Exhibit ___ (RAB-5), page 1, utilizes the S&P 500 return of 12.17%, while Column (2) uses the Value Screen III market return of 14.03%.

Q. How did you determine the risk free rate?

A. I used yields on the 30-year Treasury bond and five-year Treasury note as proxies for the risk free rate. The 30-year Treasury bond is often used by rate of return analysts as the risk-free rate, but it contains a significant amount of interest rate risk. The five-year Treasury note carries less interest rate risk than the 30-year bond and is more stable than three-month Treasury bills. Therefore, I have employed both of these securities as proxies for the risk-free rate of return. This approach provides a reasonable range over which the CAPM may be estimated.

The yields for the 30-year bond and five-year note were calculated in two ways. I used the six-month average yield and the most recent monthly yield. Given the recent volatility of the bond market that I described in Section II of my testimony, I believe that it would be prudent to look at as much yield data as possible. The most recent month has the advantage of being the most current yield available and reflects a significant decline in bond yields since the end of last year. However, there is no guarantee that this most recent yield will persist in the future. A six-month average yield matches the time period over which the dividend yield was calculated. However, it may not be indicative of current investor expectations. Therefore, I believe it is reasonable to look at both sets of data in determining the yields on Treasury securities for purposes of this case. The Treasury yield calculations are presented on page 5 of Exhibit ___ (RAB-5).

Q. **What is your estimate of the market risk premium?**

A. Exhibit ___ (RAB-5), lines 9 and 10 of pages 1 through 4, presents my estimates of the market risk premium. The market risk premium ranges from 4.35% to 6.44%

using the 30-year Treasury bond and from 4.69% to 6.71% using the five-year Treasury bond.

Q. How did you determine the value for beta?

A. I obtained the betas for PP&L and the two groups from most recent Value Line reports. The Value Line beta is 0.65 for PP&L. For my comparison group and Mr. Moul's barometer group, the average betas are 0.68 and 0.69, respectively. Since the betas for the two groups are so close, I simply used the barometer group's beta for purposes of the group CAPM analysis.

Q. What is the resulting CAPM return on equity?

A. Please refer to lines 16 and 17 of pages 1 through 4 of Exhibit ___ (RAB-5) for the CAPM results for the 30-year and five-year Treasury bond yields. Using PP&L's beta, the CAPM returns range 10.47% (five-year bond) to 11.86% (30-year bond). Using the barometer group's beta, CAPM returns range from 10.67% (five-year bond) to 12.10% (30-year bond).

Q. What are your conclusions with respect to the revised CAPM results you have presented?

A. The major conclusion is that Mr. Moul's analysis severely overstated the return from the CAPM. In addition, the range of results presented in Exhibit ___ (RAB-5) is not significantly different from the range of DCF results I presented in Section III of my direct testimony. Based on this analysis, I recommend the Commission reject Mr. Moul's CAPM results as unreasonable.

PP&L Voluntarily Increased Its Business Risk

Q. The fifth point you raised at the beginning of this section pertained to the effect on PP&L's business risk profile from its proposed increase to Interruptible customers. Did Mr. Moul address this point in his direct testimony?

A. Mr. Moul referred to the effect on PP&L's business risk from industrial sales on pages 14 and 15 of his direct testimony. However, he did not address the effect of the Company's proposed increase to Interruptible customers on PP&L's business risk. As I noted in Section II of my testimony, PP&L's proposed increases of 27% - 34% to Interruptible customers could increase PP&L's business risk. As a result, PP&L may have voluntarily increased its cost of capital in the process.

Q. How did Mr. Moul describe the effect of industrial sales on the Company's risk profile?

A. On pages 14 and 15 of his direct testimony, Mr. Moul described the effect of industrial sales on the Company's sales profile. On page 14, Mr. Moul noted that the Company's industrial sales "are more influenced by the level of business activity and are susceptible to self-generation and bypass". Mr. Moul also noted on page 15 of his testimony that the Company is exposed to the potential loss of two large industrial customers representing approximately 400 million kWhs.

Q. Did Mr. Moul acknowledge any possible effects from the Company's proposed increase to Interruptible customers?

A. No.

Q. Is there reason to believe that PP&L's proposed increase to Interruptible customers could adversely affect its business risk and its cost of capital?

A. Yes. As Mr. Moul noted, industrial customers have the options of self-generation and bypass. Interruptible customers in particular would tend to be more likely bypass or self-generation candidates because their requirements for reliable power sources are lower than industrial customers who take firm power. Thus, the Interruptible customers would tend to have more options for alternative energy sources which may be less firm than PP&L.

Given that Interruptible customers may be greater risks for bypass, the Company's rate increase proposal could very well increase its business risk. In essence, the Company is proposing its largest rate increases to customers that are most likely to have other options for power. The higher the cost for power, the more incentives Interruptible customers have to seek alternative power sources and the more likely they are to leave the system. Increasing rates Interruptible rates to the extent PP&L proposes in this case increases the risk that Interruptible customers will bypass or self-generate.

Q. Does this conclude your testimony?

A. Yes.

BEFORE THE

PENNSYLVANIA PUBLIC UTILITY COMMISSION

PENNSYLVANIA POWER & LIGHT COMPANY

DOCKET NO. R-00943271

EXHIBITS

OF

RICHARD A. BAUDINO

ON BEHALF OF THE

PP&L INDUSTRIAL CUSTOMER ALLIANCE

J. KENNEDY AND ASSOCIATES, INC.
ATLANTA, GEORGIA

APRIL 1995

RESUME OF RICHARD A. BAUDINO, DIRECTOR OF CONSULTING

EDUCATION

New Mexico State University, M.A.
Major in Economics
Minor in Statistics

New Mexico State University, B.A.
Economics
English

Eleven years of experience in utility ratemaking. Broad based experience in revenue requirement analysis, cost of capital, utility financing, phase-ins and rate design. Has designed revenue requirement and rate design analysis programs.

REGULATORY TESTIMONY

Preparation and presentation of expert testimony in the areas of:

Electric and Gas Utility Rate Design
Cost of Capital for Electric, Gas and Water Companies
Ratemaking Treatment of Generating Plant Sale/Leasebacks
Electric and Gas Utility Cost of Service

RESUME OF RICHARD A. BAUDINO, DIRECTOR OF CONSULTING

EXPERIENCE

1989 to Present: <u>Kennedy and Associates</u>: **Director of Consulting** - Responsible for consulting assignments in the area of revenue requirements, rate design, cost of capital, and economic analysis of generation alternatives.

1982 to 1989: <u>New Mexico Public Service Commission Staff</u>: **Utility Economist** - Responsible for preparation of analysis and expert testimony in the areas of rate of return, cost allocation, rate design, finance, phase-in of electric generating plants, and sale/leaseback transactions.

CLIENTS SERVED

Regulatory Commissions

Louisiana Public Service Commission

Industrial Groups

Ad Hoc Committee for a Competitive Electric Supply System
Air Products and Chemicals, Inc.
Arkansas Electric Energy Consumers
Arkansas Gas Consumers
Armco Steel Company, L.P.
Association of Business Advocating Tariff Equity
General Electric Company
Industrial Energy Consumers
Kentucky Industrial Utility Consumers
Large Electric Consumers Organization
Newport Steel
Northwest Arkansas Gas Consumers
Maryland Industrial Group
Occidental Chemical
PSI Industrial Group
Taconite Intervenors (Minnesota)
Tyson Foods

**Expert Testimony Appearances
of
Richard A. Baudino
As of March 1995**

Date	Case	Jurisdict.	Party	Utility	Subject
03/83	1780	NM	New Mexico Public Service Commission	Boles Water Co.	Rate design, rate of return.
10/83	1803, 1817	NM	New Mexico Public Service Commission	Southwestern Electric Coop	Rate design.
11/84	1833	NM	New Mexico Public Service Commission	El Paso Electric Co.	Service contract approval, rate design, performance standards for Palo Verde nuclear generating system
1983	1835	NM	New Mexico Public Service Commission	Public Service Co. of NM	Rate design.
1984	1848	NM	New Mexico Public Service Commission	Sangre de Cristo Water Co.	Rate design.
02/85	1906	NM	New Mexico Public Service Commission	Southwestern Public Service Co.	Rate of return.
09/84	1907	NM	New Mexico Public Service Commission	Jornada Water Co.	Rate of return.
11/85	1957	NM	New Mexico Public Service Commission	Southwestern Public Service Co.	Rate of return.
04/86	2009	NM	New Mexico Public Service Commission	El Paso Electric Co.	Phase-in plan, treatment of sale/leaseback expense.
06/86	2032	NM	New Mexico Public Service Commission	El Paso Electric Co.	Sale/leaseback approval.
09/86	2033	NM	New Mexico Public Service Commission	El Paso Electric Co.	Order to show cause, PVNGS audit.
02/87	2074	NM	New Mexico Public Service Commission	El Paso Electric Co.	Diversification.
05/87	2089	NM	New Mexico Public Service Commission	El Paso Electric Co.	Fuel factor adjustment.
08/87	2092	NM	New Mexico Public Service Commission	El Paso Electric Co.	Rate design.
10/88	2146	NM	New Mexico Public Service Commission	Public Service Co. of New Mexico	Financiaal effects of restructuring, reorganization.
07/88	2162	NM	New Mexico Public Service Commission	El Paso Electric Co.	Revenue requirements, rate design, rate of return.
01/89	2194	NM	New Mexico Public Service Commission	Plains Electric G&T Cooperative	Economic development.

Expert Testimony Appearances
of
Richard A. Baudino
As of March 1995

Date	Case	Jurisdict.	Party	Utility	Subject
06/89	2253	NM	New Mexico Public Service Commission	Plains Electric G&T Cooperative	Financing.
08/89	2259	NM	New Mexico Public Service Commission	Homestead Water Co.	Rate of return, rate design.
10/89	2262	NM	New Mexico Public Service Commission	Public Service Co. of New Mexico	Rate of return.
09/89	2269	NM	New Mexico Public Service Commission	Ruidoso Natural Gas Co.	Rate of return, expense from affiliated interest.
12/89	89-208-TF	AR	Arkansas Electric Energy Consumers	Arkansas Power & Light Co.	Rider M-33.
01/90	U-17282	LA	Louisiana Public Service Commission	Gulf States Utilities	Cost of equity.
09/90	90-158	KY	Kentucky Industrial Utility Consumers	Louisville Gas & Electric Co.	Cost of equity.
09/90	90-004-U	AR	Northwest Arkansas Gas Consumers	Arkansas Western Gas Co.	Cost of equity, transportation rate.
12/90	U-17282 Phase IV	LA	Louisiana Public Service Commission	Gulf States Utilities	Cost of equity.
04/91	91-037-U	AR	Northwest Arkansas Gas Consumers	Arkansas Western Gas Co.	Transportation rates.
12/91	91-410-EL-AIR	OH	Air Products & Chemicals, Inc., Armco Steel Co., General Electric Co., Industrial Energy Consumers	Cincinnati Gas & Electric Co.	Cost of equity.
05/92	910890-EI	FL	Occidental Chemical Corp.	Florida Power Corp.	Cost of equity, rate of return.
09/92	92-032-U	AR	Arkansas Gas Consumers	Arkansas Louisiana Gas Co.	Cost of equity, rate of return, cost-of-service.
09/92	39314	ID	Industrial Consumers for Fair Utility Rates	Indiana Michigan Power Co.	Cost of equity, rate of return.
09/92	92-009-U	AR	Tyson Foods	General Waterworks	Cost allocation, rate design.

Expert Testimony Appearances
of
Richard A. Baudino
As of March 1995

Date	Case	Jurisdict.	Party	Utility	Subject
01/93	92-346	KY	Newport Steel Co.	Union Light, Heat & Power Co.	Cost allocation.
01/93	39498	IN	PSI Industrial Group	PSI Energy	Refund allocation.
01/93	U-10105	MI	Association of Businesses Advocating Tariff Equality (ABATE)	Michigan Consolidated Gas Co.	Return on equity.
04/93	92-1464-EL-AIR	OH	Air Products and Chemicals, Inc., Armco Steel Co., Industrial Energy Consumers	Cincinnati Gas & Electric Co.	Return on equity.
09/93	93-189-U	AR	Arkansas Gas Consumers	Arkansas Louisiana Gas Co.	Transportation service terms and conditions.
09/93	93-081-U	AR	Arkansas Gas Consumers	Arkansas Louisiana Gas Co.	Cost-of-service, transportation rates, rate supplements; return on equity; revenue requirements.
12/93	U-17735	LA	Louisiana Public Service Commission Staff	Cajun Electric Power Cooperative	Historical reviews; evaluation of economic studies.
03/94	10320	KY	Kentucky Industrial Utility Customers	Louisville Gas & Electric Co.	Trimble County CWIP revenue refund.
4/94	E-015/GR-94-001	MN	Large Power Intervenors	Minnesota Power Co.	Evaluation of the cost of equity, capital structure, and rate of return.
5/94	R-00942993	PA	PG&W Industrial Intervenors	Pennsylvania Gas & Water Co.	Analysis of recovery of transition costs.
5/94	R-00943001	PA	Columbia Industrial Intervenors	Columbia Gas of Pennsylvania	Evaluation of cost allocation, rate design, rate plan, and carrying charge proposals.
7/94	R-00942986	PA	Armco, Inc., West Penn Power Industrial Intervenors	West Penn Power Co.	Return on equity and rate of return.
7/94	94-0035-E-42T	WV	West Virginia Energy Users' Group	Monongahela Power Co.	Return on equity and rate of return.
8/94	8652	MD	Westvaco Corp.	Potomac Edison Co.	Return on equity and rate of return.

Expert Testimony Appearances
of
Richard A. Baudino
As of March 1995

Date	Case	Jurisdict.	Party	Utility	Subject
9/94	930357-C	AR	West Central Arkansas Gas Consumers	Arkansas Oklahoma Gas Corp.	Evaluation of transportation service.
9/94	U-19904	LA	Louisiana Public Service Commission	Gulf States Utilities	Return on equity.
9/94	8629	MD	Maryland Industrial Group	Baltimore Gas & Electric Co.	Transition costs.
11/94	94-175-U	AR	Arkansas Gas Consumers	Arkla, Inc.	Cost-of-service, rate design, rate of return.
3/95	RP94-343-000	FERC	Arkansas Gas Consumers	NorAm Gas Transmission	Rate of return.

PENNSYLVANIA POWER & LIGHT COMPANY

AVERAGE PRICE, DIVIDEND AND DIVIDEND YIELD

		Sep '94	Oct '94	Nov '94	Dec '94	Jan '95	Feb '95
Pennsylvania Power & Light Co.	High Price ($)	21.375	20.125	20.750	20.125	20.875	20.875
	Low Price ($)	19.250	19.000	18.625	19.000	18.750	20.125
	Avg. Price ($)	20.313	19.563	19.688	19.563	19.813	20.500
	Dividend ($)	0.418	0.418	0.418	0.418	0.418	0.418
	Mo. Avg. Div.	8.22%	8.54%	8.48%	8.54%	8.43%	8.15%
	6 mos. Avg.	8.39%					

Source: Standard and Poor's Stock Guide, October 1994 through March 1995

PENNSYLVANIA POWER & LIGHT COMPANY

GROWTH RATE CALCULATIONS

DCF Growth Rate Analysis

Company	(1) V.L. DPS	(2) V.L. EPS	(3) IBES	(4) V.L. B x R
Pennsylvania Power & Light Co.	0.94%	1.44%	1.30%	2.05%

Sources: Institutional Brokers Estimate System, March 1995 Earnings Reports
Value Line Investment Reports, March 17, 1995

Value Line Projected Dividend Per Share Growth

Company	1994 DPS	'98-'00 Projected DPS	Compound Growth Rate
Pennsylvania Power & Light Co.	\$1.67	\$1.75	0.94%

Value Line Projected Earnings Per Share Growth

Company	3-Year Avg. EPS	'98-'00 Projected EPS	Compound Growth Rate
Pennsylvania Power & Light Co.	\$1.97	\$2.15	1.44%

Note: 3-Year average based on EPS for 1992-1994.

Sustainable Growth Calculation

Company	Forecasted Payout Ratio	Forecasted Retention Ratio	Expected Return	Growth Rate
Pennsylvania Power & Light Co.	81.40%	18.60%	11.00%	2.05%

Note: Data come from Value Line's 1998-2000 forecasts.

Source: Value Line Investment Reports, March 17, 1995

PENNSYLVANIA POWER & LIGHT COMPANY

GROWTH RATE CALCULATIONS

Growth Rates for Past Five Years

Company	Earnings	Dividends	Retention Growth
Pennsylvania Power & Light Co.	3.50%	3.50%	3.25%
Average All Five Year Growth Rates			3.42%

Growth Rates for Past Ten Years

Company	Earnings	Dividends	Retention Growth
Pennsylvania Power & Light Co.	2.00%	3.50%	2.74%
Average All Ten Year Growth Rates			2.75%

PENNSYLVANIA POWER & LIGHT COMPANY

Historic Retention Growth Analysis

PP&L	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993
Earnings per Share		1.56	1.34	1.55	1.66	1.87	2.03	1.98	2.01	2.02	2.07
Dividends per Share		1.24	1.28	1.29	1.34	1.38	1.43	1.49	1.55	1.59	1.65
Book Value per Share	12.57	12.73	12.79	12.85	13.14	13.62	14.18	14.68	15.15	15.58	15.95
Avg. Book Value per Share for Year		1984	1985	1986	1987	1988	1989	1990	1991	1992	1993
PP&L		12.65	12.76	12.82	12.995	13.38	13.9	14.43	14.915	15.365	15.765
Return on Book Value		1984	1985	1986	1987	1988	1989	1990	1991	1992	1993
PP&L		12.33%	10.50%	12.09%	12.77%	13.98%	14.60%	13.72%	13.48%	13.15%	13.13%
Retention Rate		1984	1985	1986	1987	1988	1989	1990	1991	1992	1993
PP&L		20.513%	4.478%	16.774%	19.277%	26.203%	29.557%	24.747%	22.886%	21.287%	20.290%
Historic Retention Growth		1984	1985	1986	1987	1988	1989	1990	1991	1992	1993
PP&L		2.530%	0.470%	2.028%	2.462%	3.662%	4.317%	3.396%	3.084%	2.799%	2.664%

Avg. Historic Retention Growth	Past 5 Years	Past 10 Years
PP&L	3.252%	2.741%

PENNSYLVANIA POWER & LIGHT COMPANY
COMPARISON GROUP
AVERAGE PRICE, DIVIDEND AND DIVIDEND YIELD

		Sep '94	Oct '94	Nov '94	Dec '94	Jan '95	Feb '95
Atlantic Energy, Inc.	High Price ($)	17.750	17.250	18.000	18.250	19.000	19.125
	Low Price ($)	16.125	16.000	16.375	17.375	17.500	18.375
	Avg. Price ($)	16.938	16.625	17.188	17.813	18.250	18.750
	Dividend ($)	0.385	0.385	0.385	0.385	0.385	0.385
	Mo. Avg. Div.	9.09%	9.26%	8.96%	8.65%	8.44%	8.21%
	6 mos. Avg.	8.77%					
Carolina Power & Light Co.	High Price ($)	26.625	26.625	26.750	27.875	28.625	28.750
	Low Price ($)	25.000	25.375	25.000	26.250	26.375	27.250
	Avg. Price ($)	25.813	26.000	25.875	27.063	27.500	28.000
	Dividend ($)	0.425	0.425	0.425	0.440	0.440	0.440
	Mo. Avg. Div.	6.59%	6.54%	6.57%	6.50%	6.40%	6.29%
	6 mos. Avg.	6.48%					
Delmarva Power & Light Co.	High Price ($)	19.000	19.250	19.250	18.875	19.500	20.000
	Low Price ($)	18.000	18.250	17.625	18.000	17.875	19.000
	Avg. Price ($)	18.500	18.750	18.438	18.438	18.688	19.500
	Dividend ($)	0.385	0.385	0.385	0.385	0.385	0.385
	Mo. Avg. Div.	8.32%	8.21%	8.35%	8.35%	8.24%	7.90%
	6 mos. Avg.	8.23%					
Dominion Resources, Inc.	High Price ($)	37.500	38.125	37.250	37.625	38.250	39.250
	Low Price ($)	34.875	36.625	35.125	35.750	35.500	37.500
	Avg. Price ($)	36.188	37.375	36.188	36.688	36.875	38.375
	Dividend ($)	0.635	0.645	0.645	0.645	0.645	0.645
	Mo. Avg. Div.	7.02%	6.90%	7.13%	7.03%	7.00%	6.72%
	6 mos. Avg.	6.97%					
Kansas City Pwr. & Lt. Co.	High Price ($)	21.625	22.500	22.875	23.875	23.875	24.500
	Low Price ($)	20.125	21.125	21.250	22.000	22.750	23.125
	Avg. Price ($)	20.875	21.813	22.063	22.938	23.313	23.813
	Dividend ($)	0.380	0.380	0.380	0.380	0.380	0.380
	Mo. Avg. Div.	7.28%	6.97%	6.89%	6.63%	6.52%	6.38%
	6 mos. Avg.	6.78%					
New England Elec. System	High Price ($)	32.875	31.750	31.625	32.875	33.375	34.250
	Low Price ($)	28.875	30.000	29.625	29.500	31.625	32.750
	Avg. Price ($)	30.875	30.875	30.625	31.188	32.500	33.500
	Dividend ($)	0.575	0.575	0.575	0.575	0.575	0.575
	Mo. Avg. Div.	7.45%	7.45%	7.51%	7.37%	7.08%	6.87%
	6 mos. Avg.	7.29%					
Oklahoma Gas & Elec. Co.	High Price ($)	34.250	33.875	34.250	33.750	35.500	36.250
	Low Price ($)	32.250	32.625	32.000	32.500	32.500	34.500
	Avg. Price ($)	33.250	33.250	33.125	33.125	34.000	35.375
	Dividend ($)	0.665	0.665	0.665	0.665	0.665	0.665
	Mo. Avg. Div.	8.00%	8.00%	8.03%	8.03%	7.82%	7.52%
	6 mos. Avg.	7.90%					
St. Joseph Lt. & Pwr. Co.	High Price ($)	29.000	29.000	27.375	28.875	29.375	33.750
	Low Price ($)	27.625	27.250	25.750	26.625	27.875	29.250
	Avg. Price ($)	28.313	28.125	26.563	27.750	28.625	31.500
	Dividend ($)	0.450	0.450	0.450	0.450	0.460	0.460
	Mo. Avg. Div.	6.36%	6.40%	6.78%	6.49%	6.43%	5.84%
	6 mos. Avg.	6.38%					
Group Dividend Yield, 6 mos.		7.35%					

Source: **Standard and Poor's Stock Guide, October 1994 through March 1995**

PENNSYLVANIA POWER & LIGHT COMPANY

GROWTH RATE CALCULATIONS
COMPARISON GROUP

DCF Growth Rate Analysis

Company	(1) V.L. DPS	(2) V.L. EPS	(3) IBES	(4) V.L. B x R
Atlantic Energy, Inc.	0.77%	2.31%	2.20%	2.06%
Carolina Power & Light Co.	2.33%	2.44%	3.30%	2.92%
Delmarva Power & Light Co.	0.77%	2.06%	3.10%	1.55%
Dominion Resources, Inc.	0.77%	2.90%	2.50%	1.76%
Kansas City Pwr. & Lt. Co.	2.60%	6.64%	3.00%	3.67%
New England Elec. System	1.85%	1.76%	2.60%	2.88%
Oklahoma Gas & Elec. Co.	0.30%	3.65%	1.40%	3.09%
St. Joseph Lt. & Pwr. Co.	2.18%	0.62%	2.00%	1.55%
Averages	1.45%	2.80%	2.51%	2.44%

Sources: Institutional Brokers Estimate System, March 1995 Earnings Reports
Value Line Investment Reports, January 13, 1995 and March 17, 1995

Value Line Projected Dividend Per Share Growth

Company	DPS(1)	Projected DPS(1)	Compound Growth Rate
Atlantic Energy, Inc.	$1.54	$1.60	0.77%
Carolina Power & Light Co.	$1.72	$1.93	2.33%
Delmarva Power & Light Co.	$1.54	$1.60	0.77%
Dominion Resources, Inc.	$2.55	$2.65	0.77%
Kansas City Pwr. & Lt. Co.(2)	$1.46	$1.66	2.60%
New England Elec. System	$2.29	$2.51	1.85%
Oklahoma Gas & Elec. Co.(2)	$2.66	$2.70	0.30%
St. Joseph Lt. & Pwr. Co.(2)	$1.76	$1.96	2.18%
Average			1.45%

(1) 1994 DPS and 1998–2000 projected DPS Value Line data, except where otherwise noted.
(2) 1993 DPS and 1997–1999 projected DPS Value Line data.

PENNSYLVANIA POWER & LIGHT COMPANY

GROWTH RATE CALCULATIONS
COMPARISON GROUP

Value Line Projected Earnings Per Share Growth

Company	3-Year Avg. EPS(1)	Projected EPS(1)	Compound Growth Rate
Atlantic Energy, Inc.	$1.70	$1.95	2.31%
Carolina Power & Light Co.	$2.21	$2.55	2.44%
Delmarva Power & Light Co.	$1.64	$1.85	2.06%
Dominion Resources, Inc.	$2.86	$3.40	2.90%
Kansas City Pwr. & Lt. Co.(2)	$1.53	$2.25	6.64%
New England Elec. System	$3.02	$3.35	1.76%
Oklahoma Gas & Elec. Co.(2)	$2.82	$3.50	3.65%
St. Joseph Lt. & Pwr. Co.(2)	$2.22	$2.30	0.62%
Average			2.80%

(1) 3-Year average based on EPS for 1992-1994, except where otherwise noted; projected EPS for 1998-2000, except where otherwise noted.
(2) 3-Year average based on EPS for 1991-1993; projected EPS for 1997-1999.

Sustainable Growth Calculation

Company	Forecasted Payout Ratio	Forecasted Retention Ratio	Expected Return(1)	Growth Rate
Atlantic Energy, Inc.	82.05%	17.95%	11.50%	2.06%
Carolina Power & Light Co.	75.69%	24.31%	12.00%	2.92%
Delmarva Power & Light Co.	86.49%	13.51%	11.50%	1.55%
Dominion Resources, Inc.	77.94%	22.06%	8.00%	1.76%
Kansas City Pwr. & Lt. Co.(2)	73.78%	26.22%	14.00%	3.67%
New England Elec. System	74.93%	25.07%	11.50%	2.88%
Oklahoma Gas & Elec. Co.(2)	77.14%	22.86%	13.50%	3.09%
St. Joseph Lt. & Pwr. Co.(2)	85.22%	14.78%	10.50%	1.55%
Average				2.44%

(1) Data come from Value Line's 1998-2000 forecasts, except where otherwise noted.
(2) Data come from Value Line's 1997-1999 forecasts.

Source: Value Line Investment Reports, January 13, 1995 and March 17, 1995

PENNSYLVANIA POWER & LIGHT COMPANY

GROWTH RATE CALCULATIONS
COMPARISON GROUP

Growth Rates for Past Five Years

Company	Earnings	Dividends	Retention Growth
Atlantic Energy, Inc.	-2.00%	2.50%	1.38%
Carolina Power & Light Co.	3.00%	3.00%	4.71%
Delmarva Power & Light Co.	-2.00%	1.50%	1.85%
Dominion Resources, Inc.	0.00%	4.00%	2.23%
Kansas City Power & Light Co.	0.50%	5.50%	2.15%
New England Electric System	0.50%	1.50%	2.54%
Oklahoma Gas & Electric Co.	0.00%	3.50%	2.65%
St. Joseph Light & Power Co.	-1.00%	5.50%	3.77%
Average	-0.13%	3.38%	2.66%
Average without Negatives	0.80%	3.38%	2.66%
Average of Dividends and Retention Growth			3.02%

Growth Rates for Past Ten Years

Company	Earnings	Dividends	Retention Growth
Atlantic Energy, Inc.	2.00%	3.00%	2.40%
Carolina Power & Light Co.	4.00%	3.00%	4.43%
Delmarva Power & Light Co.	1.00%	3.50%	2.92%
Dominion Resources, Inc.	4.00%	4.50%	3.04%
Kansas City Power & Light Co.	-1.00%	3.50%	3.79%
New England Electric System	2.00%	4.00%	3.99%
Oklahoma Gas & Electric Co.	1.50%	4.00%	2.72%
St. Joseph Light & Power Co.	3.50%	6.50%	5.32%
Average	2.13%	4.00%	3.58%
Average without Negatives	2.57%	4.00%	3.58%
Average All Ten Year Growth Rates			3.23%
Average All Ten Year Growth Rates, without Negatives			3.38%

PENNSYLVANIA POWER & LIGHT COMPANY

COMPARISON GROUP
HISTORIC RETENTION GROWTH ANALYSIS

	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993
Atlantic Energy, Inc.											
EPS		1.60	1.50	1.75	2.02	1.84	1.87	1.51	1.75	1.52	1.80
DPS		1.23	1.28	1.31	1.36	1.37	1.43	1.47	1.50	1.52	1.54
BVPS	11.79	12.13	12.38	12.83	12.86	13.58	14.27	14.36	14.84	14.31	15.62
Carolina Power & Light Co.											
EPS		1.79	1.93	1.98	1.92	1.97	2.10	2.21	2.27	2.36	2.23
DPS		1.27	1.31	1.35	1.38	1.39	1.43	1.48	1.54	1.60	1.66
BVPS	12.69	13.16	13.69	14.39	14.92	14.34	13.88	14.02	14.87	15.77	16.38
Delmarva Power & Light Co.											
EPS		1.75	1.84	1.94	1.60	1.70	1.80	1.49	1.44	1.48	1.76
DPS		1.22	1.30	1.36	1.43	1.47	1.51	1.54	1.54	1.54	1.54
BVPS	11.25	11.80	12.29	12.85	13.01	13.28	13.67	12.84	13.42	13.77	14.66
Dominion Resources, Inc.											
EPS		2.31	2.40	2.65	3.03	3.01	2.76	2.75	2.94	2.66	3.12
DPS		1.73	1.83	1.91	1.99	2.07	2.15	2.23	2.31	2.40	2.48
BVPS	18.67	19.10	19.65	19.96	20.96	21.91	22.67	23.41	24.41	25.22	26.38
Kansas City Pwr. & Lt. Co.											
EPS		2.24	2.21	1.40	1.51	1.60	1.66	1.66	1.58	1.35	1.66
DPS		1.17	1.18	1.05	1.08	1.17	1.25	1.31	1.37	1.43	1.46
BVPS	11.76	12.64	13.55	13.90	14.22	13.10	13.50	13.75	13.90	13.79	13.99
New England Elec. System											
EPS		3.02	3.15	3.20	3.05	2.20	2.20	2.36	2.77	2.85	3.13
DPS		1.73	1.83	1.94	2.01	2.04	2.04	2.04	2.07	2.14	2.22
BVPS	16.13	17.44	18.81	20.24	21.41	18.33	19.24	21.43	22.17	22.88	23.55
Oklahoma Gas & Elec. Co.											
EPS		2.47	2.30	2.75	2.60	3.20	3.05	3.38	3.27	2.42	2.78
DPS		1.94	2.02	2.11	2.21	2.31	2.41	2.51	2.60	2.66	2.66
BVPS	17.94	18.52	18.89	20.43	20.11	21.01	21.28	21.92	22.60	22.35	22.48
St. Joseph Lt. & Pwr. Co.											
EPS		1.99	2.02	2.33	2.31	2.34	2.45	2.48	2.44	2.23	1.98
DPS		1.07	1.15	1.22	1.30	1.40	1.52	1.60	1.66	1.72	1.76
BVPS	11.79	12.72	13.64	14.74	15.74	16.51	17.12	17.62	18.37	18.84	19.07

PENNSYLVANIA POWER & LIGHT COMPANY

COMPARISON GROUP
HISTORIC RETENTION GROWTH ANALYSIS

Avg. Book Value per Share for Yr.	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993
Atlantic Energy, Inc.	11.96	12.26	12.61	12.85	13.22	13.93	14.32	14.60	14.58	14.97
Carolina Power & Light Co.	12.93	13.43	14.04	14.66	14.63	14.11	13.95	14.45	15.32	16.08
Delmarva Power & Light Co.	11.53	12.05	12.57	12.93	13.15	13.48	13.26	13.13	13.60	14.22
Dominion Resources, Inc.	18.89	19.38	19.81	20.46	21.44	22.29	23.04	23.91	24.82	25.80
Kansas City Power & Light Co.	12.20	13.10	13.73	14.06	13.66	13.30	13.63	13.83	13.85	13.89
New England Electric System	16.79	18.13	19.53	20.83	19.87	18.79	20.34	21.80	22.53	23.22
Oklahoma Gas & Electric Co.	18.23	18.71	19.66	20.27	20.56	21.15	21.60	22.26	22.48	22.42
St. Joseph Light & Power Co.	12.26	13.18	14.19	15.24	16.13	16.82	17.37	18.00	18.61	18.96

Return on Book Value	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993
Atlantic Energy, Inc.	13.38%	12.24%	13.88%	15.73%	13.92%	13.43%	10.55%	11.99%	10.43%	12.03%
Carolina Power & Light Co.	13.85%	14.38%	14.10%	13.10%	13.47%	14.88%	15.84%	15.71%	15.40%	13.87%
Delmarva Power & Light Co.	15.18%	15.28%	15.43%	12.37%	12.93%	13.36%	11.24%	10.97%	10.89%	12.38%
Dominion Resources, Inc.	12.23%	12.39%	13.38%	14.81%	14.04%	12.38%	11.94%	12.30%	10.72%	12.09%
Kansas City Power & Light Co.	18.36%	16.88%	10.20%	10.74%	11.71%	12.48%	12.18%	11.43%	9.75%	11.95%
New England Electric System	17.99%	17.38%	16.39%	14.65%	11.07%	11.71%	11.61%	12.71%	12.65%	13.48%
Oklahoma Gas & Electric Co.	13.55%	12.30%	13.99%	12.83%	15.56%	14.42%	15.65%	14.69%	10.77%	12.40%
St. Joseph Light & Power Co.	16.24%	15.33%	16.42%	15.16%	14.51%	14.57%	14.28%	13.56%	11.99%	10.45%

Retention Rate	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993
Atlantic Energy, Inc.	23.13%	14.67%	25.14%	32.67%	25.54%	23.53%	2.65%	14.29%	0.00%	14.44%
Carolina Power & Light Co.	29.05%	32.12%	31.82%	28.13%	29.44%	31.90%	33.03%	32.16%	32.20%	25.56%
Delmarva Power & Light Co.	30.29%	29.35%	29.90%	10.63%	13.53%	16.11%	-3.36%	-6.94%	-4.05%	12.50%
Dominion Resources, Inc.	25.11%	23.75%	27.92%	34.32%	31.23%	22.10%	18.91%	21.43%	9.77%	20.51%
Kansas City Power & Light Co.	47.77%	46.61%	25.00%	29.80%	26.88%	24.70%	21.08%	13.29%	-5.93%	12.05%
New England Electric System	42.72%	41.90%	39.38%	34.10%	7.27%	7.27%	13.56%	25.27%	24.91%	29.07%
Oklahoma Gas & Electric Co.	21.46%	12.17%	23.27%	15.00%	27.81%	20.98%	25.74%	20.49%	-9.92%	4.32%
St. Joseph Light & Power Co.	46.23%	43.07%	47.64%	43.72%	40.17%	37.96%	35.48%	31.97%	22.87%	11.11%

Historic Retention Growth	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993
Atlantic Energy, Inc.	3.094%	1.795%	3.491%	5.138%	3.555%	3.160%	0.279%	1.712%	0.000%	1.737%
Carolina Power & Light Co.	4.023%	4.618%	4.487%	3.685%	3.964%	4.748%	5.233%	5.054%	4.961%	3.546%
Delmarva Power & Light Co.	4.599%	4.483%	4.614%	1.315%	1.750%	2.152%	-0.377%	-0.762%	-0.441%	1.548%
Dominion Resources, Inc.	3.071%	2.942%	3.736%	5.083%	4.385%	2.737%	2.257%	2.635%	1.048%	2.481%
Kansas City Power & Light Co.	8.770%	7.866%	2.550%	3.201%	3.148%	3.083%	2.569%	1.519%	-0.578%	1.440%
New England Electric System	7.685%	7.283%	6.453%	4.994%	0.805%	0.852%	1.574%	3.211%	3.152%	3.920%
Oklahoma Gas & Electric Co.	2.907%	1.497%	3.255%	1.924%	4.329%	3.027%	4.028%	3.010%	-1.068%	0.535%
St. Joseph Light & Power Co.	7.507%	6.601%	7.822%	6.627%	5.829%	5.531%	5.066%	4.335%	2.741%	1.161%

Avg. Historic Retention Growth	Past 5 Years	Past 10 Years
Atlantic Energy, Inc.	1.378%	2.396%
Carolina Power & Light Co.	4.708%	4.432%
Delmarva Power & Light Co.	1.850%	2.923%
Dominion Resources, Inc.	2.231%	3.037%
Kansas City Power & Light Co.	2.153%	3.794%
New England Electric System	2.542%	3.993%
Oklahoma Gas & Electric Co.	2.650%	2.724%
St. Joseph Light & Power Co.	3.767%	5.322%

Note: Negative growth rates were omitted from the averages.

PENNSYLVANIA POWER & LIGHT COMPANY
MR. MOUL'S BAROMETER GROUP
AVERAGE PRICE, DIVIDEND AND DIVIDEND YIELD

		Sep '94	Oct '94	Nov '94	Dec '94	Jan '95	Feb '95
Allegheny Power System	High Price ($)	22.375	21.500	22.000	22.000	24.000	24.375
	Low Price ($)	19.750	19.750	20.250	21.125	21.500	23.000
	Avg. Price ($)	21.063	20.625	21.125	21.563	22.750	23.688
	Dividend ($)	0.410	0.410	0.410	0.410	0.410	0.410
	Mo. Avg. Div.	7.79%	7.95%	7.76%	7.61%	7.21%	6.92%
	6 mos. Avg.	7.54%					
American Electric Power Co.	High Price ($)	31.500	32.375	33.375	33.625	35.125	35.750
	Low Price ($)	29.250	30.500	30.875	32.375	32.750	33.250
	Avg. Price ($)	30.375	31.438	32.125	33.000	33.938	34.500
	Dividend ($)	0.600	0.600	0.600	0.600	0.600	0.600
	Mo. Avg. Div.	7.90%	7.63%	7.47%	7.27%	7.07%	6.96%
	6 mos. Avg.	7.38%					
Atlantic Energy, Inc.	High Price ($)	17.750	17.250	18.000	18.250	19.000	19.125
	Low Price ($)	16.125	16.000	16.375	17.375	17.500	18.375
	Avg. Price ($)	16.938	16.625	17.188	17.813	18.250	18.750
	Dividend ($)	0.385	0.385	0.385	0.385	0.385	0.385
	Mo. Avg. Div.	9.09%	9.26%	8.96%	8.65%	8.44%	8.21%
	6 mos. Avg.	8.77%					
Baltimore Gas & Electric Co.	High Price ($)	23.250	23.625	23.000	23.000	24.250	25.000
	Low Price ($)	20.750	22.500	21.250	21.750	22.000	23.750
	Avg. Price ($)	22.000	23.063	22.125	22.375	23.125	24.375
	Dividend ($)	0.380	0.380	0.380	0.380	0.380	0.380
	Mo. Avg. Div.	6.91%	6.59%	6.87%	6.79%	6.57%	6.24%
	6 mos. Avg.	6.66%					
Delmarva Power & Light Co.	High Price ($)	19.000	19.250	19.250	18.875	19.500	20.000
	Low Price ($)	18.000	18.250	17.625	18.000	17.875	19.000
	Avg. Price ($)	18.500	18.750	18.438	18.438	18.688	19.500
	Dividend ($)	0.385	0.385	0.385	0.385	0.385	0.385
	Mo. Avg. Div.	8.32%	8.21%	8.35%	8.35%	8.24%	7.90%
	6 mos. Avg.	8.23%					
DPL, Inc.	High Price ($)	20.250	20.500	20.875	21.000	21.625	22.125
	Low Price ($)	18.375	19.000	19.750	20.125	20.000	20.500
	Avg. Price ($)	19.313	19.750	20.313	20.563	20.813	21.313
	Dividend ($)	0.295	0.295	0.295	0.295	0.310	0.310
	Mo. Avg. Div.	6.11%	5.97%	5.81%	5.74%	5.96%	5.82%
	6 mos. Avg.	5.90%					
Potomac Electric Power Co.	High Price ($)	20.125	19.750	19.625	19.375	19.875	20.125
	Low Price ($)	18.375	18.625	18.250	18.250	18.375	18.875
	Avg. Price ($)	19.250	19.188	18.938	18.813	19.125	19.500
	Dividend ($)	0.415	0.415	0.415	0.415	0.415	0.415
	Mo. Avg. Div.	8.62%	8.65%	8.77%	8.82%	8.68%	8.51%
	6 mos. Avg.	8.68%					
Public Service Enterprise Grp.	High Price ($)	27.125	26.875	26.750	27.125	29.000	29.875
	Low Price ($)	23.875	25.250	25.000	25.250	26.000	28.375
	Avg. Price ($)	25.500	26.063	25.875	26.188	27.500	29.125
	Dividend ($)	0.540	0.540	0.540	0.540	0.540	0.540
	Mo. Avg. Div.	8.47%	8.29%	8.35%	8.25%	7.85%	7.42%
	6 mos. Avg.	8.10%					
Group Dividend Yield, 6 mos.		7.66%					

Source: Standard and Poor's Stock Guide, October 1994 through March 1995

PENNSYLVANIA POWER & LIGHT COMPANY

GROWTH RATE CALCULATIONS
MR. MOUL'S BAROMETER GROUP

DCF Growth Rate Analysis

Company	(1) V.L. DPS	(2) V.L. EPS	(3) IBES	(4) V.L. B x R
Allegheny Power System	1.19%	3.10%	1.90%	2.61%
American Electric Power Co.	0.66%	3.46%	2.30%	2.96%
Atlantic Energy, Inc.	0.77%	2.31%	2.20%	2.06%
Baltimore Gas & Electric Co.	2.40%	4.65%	3.30%	3.21%
Delmarva Power & Light Co.	0.77%	2.06%	3.10%	1.55%
DPL, Inc.	4.26%	4.53%	4.00%	2.73%
Potomac Electric Power Co.	0.71%	2.19%	1.60%	1.85%
Public Service Enterprise Grp.	0.73%	2.89%	2.70%	2.77%
Averages	1.44%	3.15%	2.64%	2.47%

Sources: **Institutional Brokers Estimate System, March 1995 Earnings Reports**
Value Line Investment Reports, January 13, 1995 and March 17, 1995

Value Line Projected Dividend Per Share Growth

Company	DPS(1)	Projected DPS(1)	Compound Growth Rate
Allegheny Power System	$1.64	$1.74	1.19%
American Electric Power Co.	$2.40	$2.48	0.66%
Atlantic Energy, Inc.	$1.54	$1.60	0.77%
Baltimore Gas & Electric Co.	$1.51	$1.70	2.40%
Delmarva Power & Light Co.	$1.54	$1.60	0.77%
DPL, Inc.(2)	$1.12	$1.38	4.26%
Potomac Electric Power Co.	$1.66	$1.72	0.71%
Public Service Enterprise Grp.	$2.16	$2.24	0.73%
Average			1.44%

(1) 1994 DPS and 1998-2000 projected DPS Value Line data, except where otherwise noted.
(2) 1993 DPS and 1997-1999 projected DPS Value Line data.

PENNSYLVANIA POWER & LIGHT COMPANY

GROWTH RATE CALCULATIONS
MR. MOUL'S BAROMETER GROUP

Value Line Projected Earnings Per Share Growth

Company	3-Year Avg. EPS(1)	Projected EPS(1)	Compound Growth Rate
Allegheny Power System	$1.87	$2.25	3.10%
American Electric Power Co.	$2.65	$3.25	3.46%
Atlantic Energy, Inc.	$1.70	$1.95	2.31%
Baltimore Gas & Electric Co.	$1.83	$2.40	4.65%
Delmarva Power & Light Co.	$1.64	$1.85	2.06%
DPL, Inc.(2)	$1.30	$1.70	4.53%
Potomac Electric Power Co.	$1.80	$2.05	2.19%
Public Service Enterprise Grp.	$2.49	$2.95	2.89%
Average			3.15%

(1) 3-Year average based on EPS for 1992-1994, except where otherwise noted; projected EPS for 1998-2000, except where otherwise noted.
(2) 3-Year average based on EPS for 1991-1993; projected EPS for 1997-1999.

Sustainable Growth Calculation

Company	Forecasted Payout Ratio	Forecasted Retention Ratio	Expected Return(1)	Growth Rate
Allegheny Power System	77.33%	22.67%	11.50%	2.61%
American Electric Power Co.	76.31%	23.69%	12.50%	2.96%
Atlantic Energy, Inc.	82.05%	17.95%	11.50%	2.06%
Baltimore Gas & Electric Co.	70.83%	29.17%	11.00%	3.21%
Delmarva Power & Light Co.	86.49%	13.51%	11.50%	1.55%
DPL, Inc.(2)	81.18%	18.82%	14.50%	2.73%
Potomac Electric Power Co.	83.90%	16.10%	11.50%	1.85%
Public Service Enterprise Grp.	75.93%	24.07%	11.50%	2.77%
Average				2.47%

(1) Data come from Value Line's 1998-2000 forecasts, except where otherwise noted.
(2) Data come from Value Line's 1997-1999 forecasts.

Source: Value Line Investment Reports, January 13, 1995 and March 17, 1995

PENNSYLVANIA POWER & LIGHT COMPANY

GROWTH RATE CALCULATIONS
MR. MOUL'S BAROMETER GROUP

Growth Rates for Past Five Years

Company	Earnings	Dividends	Retention Growth
Allegheny Power System	−1.50%	1.50%	1.59%
American Electric Power Co.	−2.00%	0.50%	1.78%
Atlantic Energy, Inc.	−2.00%	2.50%	1.38%
Baltimore Gas & Electric Co.	−6.00%	2.50%	1.57%
Delmarva Power & Light Co.	−2.00%	1.50%	1.85%
DPL, Inc.(2)	−2.00%	3.50%	3.11%
Potomac Electric Power Co.	−3.00%	4.50%	2.03%
Public Service Enterprise Grp.	−0.50%	1.50%	2.34%
Average	−2.38%	2.25%	1.96%
Average without Negatives		2.25%	1.96%
Average all Five Year Growth Rates			0.61%
Average all Five Year Growth Rates, without Negatives			2.10%

Growth Rates for Past Ten Years

Company	Earnings	Dividends	Retention Growth
Allegheny Power System	1.00%	3.50%	2.73%
American Electric Power Co.	1.50%	0.50%	2.11%
Atlantic Energy, Inc.	2.00%	3.00%	2.40%
Baltimore Gas & Electric Co.	1.50%	4.50%	4.15%
Delmarva Power & Light Co.	1.00%	3.50%	2.92%
DPL, Inc.(2)	1.00%	2.50%	4.54%
Potomac Electric Power Co.	4.50%	6.50%	4.41%
Public Service Enterprise Grp.	0.50%	2.00%	3.19%
Average	1.63%	3.25%	3.31%
Average all Ten Year Growth Rates			2.73%

PENNSYLVANIA POWER & LIGHT COMPANY

MR. MOUL'S BAROMETER GROUP
HISTORIC RETENTION GROWTH RATE ANALYSIS

	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993
Allegheny Power System											
EPS		1.81	1.80	2.02	2.03	1.98	1.86	1.81	1.81	1.83	1.88
DPS		1.32	1.35	1.43	1.48	1.51	1.55	1.58	1.59	1.61	1.63
BVPS	11.85	12.37	12.87	13.47	14.10	14.62	14.99	15.26	15.54	16.05	16.62
American Elec. Power Co.											
EPS		2.65	2.54	2.62	2.98	3.24	3.25	2.77	2.70	2.54	2.70
DPS		2.26	2.26	2.26	2.34	2.34	2.36	2.40	2.40	2.40	2.40
BVPS	20.24	20.39	20.35	20.71	20.94	21.84	22.71	22.58	22.88	23.01	22.50
Atlantic Energy, Inc.											
EPS		1.60	1.50	1.75	2.02	1.84	1.87	1.51	1.75	1.52	1.80
DPS		1.23	1.28	1.31	1.36	1.37	1.43	1.47	1.50	1.52	1.54
BVPS	11.79	12.13	12.38	12.83	12.86	13.58	14.27	14.36	14.84	14.31	15.62
Baltimore Gas & Elec. Co.											
EPS		1.85	1.87	2.10	2.31	2.31	2.03	1.40	1.52	1.63	1.85
DPS		1.03	1.12	1.19	1.25	1.32	1.39	1.40	1.40	1.43	1.47
BVPS	11.36	12.16	12.91	13.82	14.83	15.85	16.60	17.10	17.53	17.84	18.57
Delmarva Pwr. & Light Co.											
EPS		1.75	1.84	1.94	1.60	1.70	1.80	1.49	1.44	1.48	1.76
DPS		1.22	1.30	1.36	1.43	1.47	1.51	1.54	1.54	1.54	1.54
BVPS	11.25	11.80	12.29	12.85	13.01	13.28	13.67	12.84	13.42	13.77	14.66
DPL, Inc.											
EPS		1.36	1.42	1.36	1.60	1.34	1.45	1.49	1.15	1.34	1.42
DPS		0.89	0.89	0.89	0.92	0.96	1.00	1.04	1.08	1.08	1.12
BVPS	8.48	8.47	7.97	8.48	8.72	9.09	9.84	10.31	10.38	9.66	9.92
Potomac Electric Power Co.											
EPS		1.62	1.80	2.06	2.11	2.14	2.16	1.62	1.87	1.66	1.95
DPS		0.97	1.08	1.18	1.30	1.38	1.46	1.52	1.56	1.60	1.64
BVPS	9.40	10.01	10.71	11.84	12.61	13.22	14.23	14.39	15.45	15.95	16.60
Public Svc. Enterprise Grp.											
EPS		2.63	2.64	2.81	2.55	2.57	2.62	2.56	2.43	1.97	2.71
DPS		1.80	1.87	1.95	1.99	2.01	2.05	2.09	2.13	2.16	2.16
BVPS	18.04	18.54	19.08	17.92	18.54	19.11	19.85	20.44	21.01	20.32	21.07

PENNSYLVANIA POWER & LIGHT COMPANY

MR. MOUL'S BAROMETER GROUP
HISTORIC RETENTION GROWTH RATE ANALYSIS

Avg. Book Value per Share for Yr.	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993
Allegheny Power System	12.11	12.62	13.17	13.79	14.36	14.81	15.13	15.40	15.80	16.34
American Electric Power Co.	20.32	20.37	20.53	20.83	21.39	22.28	22.65	22.73	22.95	22.76
Atlantic Energy, Inc.	11.96	12.26	12.61	12.85	13.22	13.93	14.32	14.60	14.58	14.97
Baltimore Gas & Electric Co.	11.76	12.54	13.37	14.33	15.34	16.23	16.85	17.32	17.69	18.21
Delmarva Power & Light Co.	11.53	12.05	12.57	12.93	13.15	13.48	13.26	13.13	13.60	14.22
DPL, Inc.	8.48	8.22	8.23	8.60	8.91	9.47	10.08	10.35	10.02	9.79
Potomac Electric Power Co.	9.71	10.36	11.28	12.23	12.92	13.73	14.31	14.92	15.70	16.28
Public Service Enterprise Grp.	18.29	18.61	18.50	18.23	18.83	19.48	20.15	20.73	20.67	20.70

Return on Book Value	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993
Allegheny Power System	14.95%	14.26%	15.34%	14.73%	13.79%	12.56%	11.97%	11.75%	11.59%	11.51%
American Electric Power Co.	13.04%	12.47%	12.76%	14.21%	15.15%	14.59%	12.23%	11.88%	11.07%	11.87%
Atlantic Energy, Inc.	13.38%	12.24%	13.88%	15.73%	13.92%	13.43%	10.55%	11.99%	10.43%	12.03%
Baltimore Gas & Electric Co.	15.73%	14.92%	15.71%	16.13%	15.06%	12.51%	8.31%	8.78%	9.22%	10.16%
Delmarva Power & Light Co.	15.18%	15.28%	15.43%	12.37%	12.93%	13.36%	11.24%	10.97%	10.89%	12.38%
DPL, Inc.	16.05%	17.27%	16.53%	18.60%	15.05%	15.32%	14.79%	11.12%	13.37%	14.50%
Potomac Electric Power Co.	16.69%	17.37%	18.27%	17.26%	16.57%	15.74%	11.32%	12.53%	10.57%	11.98%
Public Service Enterprise Grp.	14.38%	14.04%	15.19%	13.99%	13.65%	13.45%	12.71%	11.72%	9.53%	13.09%

Retention Rate	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993
Allegheny Power System	27.07%	25.00%	29.21%	27.09%	23.74%	16.67%	12.71%	12.15%	12.02%	13.30%
American Electric Power Co.	14.72%	11.02%	13.74%	20.95%	27.78%	27.38%	13.36%	11.11%	5.51%	11.11%
Atlantic Energy, Inc.	23.13%	14.67%	25.14%	32.67%	25.54%	23.53%	2.65%	14.29%	0.00%	14.44%
Baltimore Gas & Electric Co.	44.32%	40.11%	43.33%	45.89%	42.86%	31.53%	0.00%	7.89%	12.27%	20.54%
Delmarva Power & Light Co.	30.29%	29.35%	29.90%	10.63%	13.53%	16.11%	-3.36%	-6.94%	-4.05%	12.50%
DPL, Inc.	34.56%	37.32%	34.56%	42.50%	28.36%	31.03%	30.20%	6.09%	19.40%	21.13%
Potomac Electric Power Co.	40.12%	40.00%	42.72%	38.39%	35.51%	32.41%	6.17%	16.58%	3.61%	15.90%
Public Service Enterprise Grp.	31.56%	29.17%	30.60%	21.96%	21.79%	21.76%	18.36%	12.35%	-9.64%	20.30%

Historic Retention Growth	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993
Allegheny Power System	4.046%	3.566%	4.480%	3.990%	3.273%	2.094%	1.521%	1.429%	1.393%	1.530%
American Electric Power Co.	1.920%	1.375%	1.754%	2.977%	4.208%	3.996%	1.634%	1.320%	0.610%	1.318%
Atlantic Energy, Inc.	3.094%	1.795%	3.491%	5.138%	3.555%	3.160%	0.279%	1.712%	0.000%	1.737%
Baltimore Gas & Electric Co.	6.973%	5.983%	6.809%	7.400%	6.454%	3.945%	0.000%	0.693%	1.131%	2.087%
Delmarva Power & Light Co.	4.599%	4.483%	4.614%	1.315%	1.750%	2.152%	-0.377%	-0.762%	-0.441%	1.548%
DPL, Inc.	5.546%	6.448%	5.714%	7.907%	4.267%	4.754%	4.467%	0.677%	2.595%	3.064%
Potomac Electric Power Co.	6.698%	6.950%	7.805%	6.626%	5.885%	5.100%	0.699%	2.078%	0.382%	1.905%
Public Service Enterprise Grp.	4.538%	4.094%	4.649%	3.072%	2.975%	2.926%	2.333%	1.448%	-0.919%	2.658%

Avg. Historic Retention Growth	Past 5 Years	Past 10 Years
Allegheny Power System	1.593%	2.732%
American Electric Power Co.	1.776%	2.111%
Atlantic Energy, Inc.	1.378%	2.396%
Baltimore Gas & Electric Co.	1.571%	4.147%
Delmarva Power & Light Co.	1.850%	2.923%
DPL, Inc.	3.111%	4.544%
Potomac Electric Power Co.	2.033%	4.413%
Public Service Enterprise Grp.	2.341%	3.188%

Note: Negative growth rates were omitted from the averages.

PENNSYLVANIA POWER AND LIGHT COMPANY

Alternative Capital Asset Pricing Model Analysis

Analysis with 30-Year Treasury Bond
PP&L Beta Factor

Line No.		(1) S&P 500	(2) Value Line
1	Market Required Return Estimate		
2	Expected Dividend Yield	2.97%	2.33%
3	Expected Growth	9.20%	11.70%
4	Required Return	12.17%	14.03%
5	Risk-free Rate of Return, 30-Year Treasury Bond		
6	February Rate	7.59%	7.59%
7	Average of Last Six Months	7.82%	7.82%
8	Risk Premium		
9	@ February RFR (Line 4 minus Line 6)	4.58%	6.44%
10	@ 6 Month Average RFR (Line 4 minus Line 7)	4.35%	6.21%
11	Pennsylvania Power & Light Beta	0.65	0.65
12	PP&L Beta * Risk Premium		
13	@ February RFR (Line 9 * Line 11)	2.98%	4.19%
14	@ 6 Month Average RFR (Line 10 * Line 11)	2.83%	4.04%
15	CAPM Return on Equity		
16	@ February RFR (Line 13 plus Line 6)	10.57%	11.78%
17	@ 6 Month Average RFR (Line 14 plus Line 7)	10.65%	11.86%

PENNSYLVANIA POWER AND LIGHT COMPANY

Alternative Capital Asset Pricing Model Analysis

Analysis with 5-Year Treasury Bond
PP&L Beta Factor

Line No.		(1) S&P 500	(2) Value Line
1	Market Required Return Estimate		
2	Expected Dividend Yield	2.97%	2.33%
3	Expected Growth	9.20%	11.70%
4	Required Return	12.17%	14.03%
5	Risk-free Rate of Return, 5-Year Treasury Bond		
6	February Rate	7.32%	7.32%
7	Average of Last Six Months	7.48%	7.48%
8	Risk Premium		
9	@ February RFR (Line 4 minus Line 6)	4.86%	6.71%
10	@ 6 Month Average RFR (Line 4 minus Line 7)	4.69%	6.55%
11	Pennsylvania Power & Light Beta	0.65	0.65
12	PP&L Beta * Risk Premium		
13	@ February RFR (Line 9 * Line 11)	3.16%	4.36%
14	@ 6 Month Average RFR (Line 10 * Line 11)	3.05%	4.26%
15	CAPM Return on Equity		
16	@ February RFR (Line 13 plus Line 6)	10.47%	11.68%
17	@ 6 Month Average RFR (Line 14 plus Line 7)	10.53%	11.74%

PENNSYLVANIA POWER AND LIGHT COMPANY

Alternative Capital Asset Pricing Model Analysis

Analysis with 30-Year Treasury Bond
Barometer Group Beta Factor

Line No.		(1) S&P 500	(2) Value Line
1	Market Required Return Estimate		
2	Expected Dividend Yield	2.97%	2.33%
3	Expected Growth	9.20%	11.70%
4	Required Return	12.17%	14.03%
5	Risk-free Rate of Return, 30-Year Treasury Bond		
6	February Rate	7.59%	7.59%
7	Average of Last Six Months	7.82%	7.82%
8	Risk Premium		
9	@ February RFR (Line 4 minus Line 6)	4.58%	6.44%
10	@ 6 Month Average RFR (Line 4 minus Line 7)	4.35%	6.21%
11	Barometer Group Beta	0.69	0.69
12	Barometer Group Beta * Risk Premium		
13	@ February RFR (Line 9 * Line 11)	3.16%	4.44%
14	@ 6 Month Average RFR (Line 10 * Line 11)	3.00%	4.28%
15	CAPM Return on Equity		
16	@ February RFR (Line 13 plus Line 6)	10.75%	12.03%
17	@ 6 Month Average RFR (Line 14 plus Line 7)	10.82%	12.10%

PENNSYLVANIA POWER AND LIGHT COMPANY

Alternative Capital Asset Pricing Model Analysis

Analysis with 5-Year Treasury Bond
Barometer Group Beta Factor

Line No.		(1) S&P 500	(2) Value Line
1	Market Required Return Estimate		
2	Expected Dividend Yield	2.97%	2.33%
3	Expected Growth	9.20%	11.70%
4	Required Return	12.17%	14.03%
5	Risk-free Rate of Return, 5-Year Treasury Bond		
6	February Rate	7.32%	7.32%
7	Average of Last Six Months	7.48%	7.48%
8	Risk Premium		
9	@ February RFR (Line 4 minus Line 6)	4.86%	6.71%
10	@ 6 Month Average RFR (Line 4 minus Line 7)	4.69%	6.55%
11	Barometer Group Beta	0.69	0.69
12	Barometer Group Beta * Risk Premium		
13	@ February RFR (Line 9 * Line 11)	3.35%	4.63%
14	@ 6 Month Average RFR (Line 10 * Line 11)	3.24%	4.52%
15	CAPM Return on Equity		
16	@ February RFR (Line 13 plus Line 6)	10.67%	11.95%
17	@ 6 Month Average RFR (Line 14 plus Line 7)	10.72%	12.00%

Sources: Value/Screen III Data Base, Summary Report, March 1995
Value Line Investment Survey, January 13 and March 17, 1995
Institutional Brokers' Estimate Service, March 1995 Report
Standard & Poor's Statistical Service, February 1995
Barrons, February and March 1995 Issues

PENNSYLVANIA POWER AND LIGHT

Supporting Data for CAPM Analyses

S&P Dividend Yield Data:

	Avg. Yield
September 1994	2.80%
October 1994	2.82%
November 1994	2.86%
December 1994	2.91%
January 1995	2.87%
February 1995	2.79%
6 month average	2.84%

Sources: Standard & Poor's Statistical Service,
Barron's, February and March 1995 issues

Value Screen III Growth Rate Data:

Earnings	17.20%
Book Value	10.40%
Dividends	7.50%
Average	11.70%

Source: Value Screen III, March 1995

Value Line Industrial Composite Data:

Earnings	12.00%
Dividends	6.50%
Retention Growth	9.50%
Average	9.33%

Source: Value Line Selection & Opinion, Feb. 17, 1995

30 Year Treasury Bond Data

	Avg. Yield
September 1994	7.65%
October 1994	7.94%
November 1994	8.05%
December 1994	7.89%
January 1995	7.81%
February 1995	7.59%
6 month average	7.82%

Source: Compuserve Data Base

5 Year Treasury Bond Data

	Avg. Yield
September 1994	7.03%
October 1994	7.39%
November 1994	7.71%
December 1994	7.75%
January 1995	7.71%
February 1995	7.32%
6 month average	7.48%

Source: Compuserve Data Base

Value Line Betas

Comparison Group:

Atlantic Energy	0.70
Carolina Power	0.80
Delmarva Power	0.65
Dominion Resources	0.65
Kansas City P&L	0.65
New England Electric	0.75
Oklahoma G&E	0.70
St. Joseph L&P	0.50
Average	0.68

Mr. Moul's Barometer Group:

Allegheny Power System	0.65
American Electric Power	0.75
Atlantic Energy	0.70
Baltimore G&E	0.80
Delmarva Power	0.65
DPL Inc.	0.55
Potomac Electric Power	0.75
Public Svc. Enterprise	0.70
Average	0.69

Source: Value Line Investment Survey, January 13 & March 17, 1995 Issues

ORIGINAL

BEFORE THE
PENNSYLVANIA PUBLIC UTILITY COMMISSION

PENNSYLVANIA PUBLIC UTILITY, COMMISSION, ET AL.	:	Docket No. R-00943271, R-00943271C001
V.	:	
PENNSYLVANIA POWER & LIGHT COMPANY	:	et seq.

REPLY BRIEF: ERIC JOSEPH EPSTEIN, PRO SE

Pennsylvania Power and Light Company (PP&L) attempted to dismiss safety, operating and nuclear waste storage problems at the Susquehanna Steam Electric Station (SESS) raised by Mr. Eric Joseph Epstein. These issues were discussed in depth in Mr. Epstein's Main Brief. (Pages, 2-23.) Mr. Epstein clearly demonstrated that there are safety concerns, generic challenges and substantial doubts relating to SESS's planned operating period and ability to safely manage and isolate nuclear waste. Rather than belabor the points previously discussed, Mr. Epstein will clarify several misstatements made by the Company.

PP&L claims that none of the witnesses at the public hearing were "qualified on the record as experts..." (Initial Brief of Respondent, Pennsylvania Power & Light Company, ("Brief"), Page, 300.) Mr. Epstein has substantial experience in nuclear decontamination and decommissioning. (Enclosure I.) Actually, Mr. Epstein is currently sponsoring decommissioning and decontamination research at Three Mile Island, Oyster Creek and Saxton Nuclear power plants that *exceeds* , both in cost and scope, anything PP&L has engaged in on this matter. Moreover, Mr. Epstein coordinates the largest non-partisan, civilian radiation monitoring network in the world. (Enclosure II.)

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The Company continued: "Second, their testimony was not based on first-hand experience or knowledge. Rather, these witnesses relied primarily on hearsay sources of information such as stories in newspapers and/or articles in the trade press." (Brief, Page, 300.) Mr. Epstein's testimony, and subsequent exhibit, were predominantly based on data provided to Mr. Epstein from the Nuclear Regulatory Commission (NRC). Mr. Epstein provided the Company, and the Court, with the citations, inspection numbers and dates. Initially the Company responded on March 30, 1995 that they "have had an opportunity to review Epstein Cross-Examination Exhibit No.1" (Transcript, page 1003, Lines 21-22). The Company made no attempt to identify any of the specific problems with Mr. Epstein's data. Then the Company's counsel complained on the final day of the hearings that Mr. Epstein's exhibit was untimely.

> We now stand on the last day of hearings. This document is not in evidence and we have not presented a response to it. I just don't see any way that it can be admitted into the record at this time without giving the company an opportunity to respond, which obviously we cannot do before the record closes. (Transcript, Page 2289, Lines 8-10.)

PP&L can not have it both ways unless they purport to have a Cybil-like personality disorder.The Company reviewed Epstein Exhibit 1 from March 27-30, 1995 yet by May 26, 1995 claimed they did not know the document would be offered as evidence and would be hard-pressed to respond. Mr. Epstein cannot account for this gap and PP&L must be held, in their words, to the "same evidentiary standards as all other parties." Transcript, 1006, Lines 17-20.)

The Company believes that "expert testimony" provided by Mr. George T. Jones, PP&L's Vice President Nuclear-Engineering "completely refuted these criticisms of SESS." It should be noted that Mr. Jones has no experience working at a nuclear power plant that operated for it's entire projected life. (Transcript, Page 2272, Lines 8-13.).

PP&L stated, "Mr. Epstein claimed that the number of Licensee Event Reports (LERs) increased by 30% at the plant in 1994. Mr. Jones responded that LERs at Unit 1 increased by only one; LERS at Unit 2 did not increase at all (Id.). (Brief, Page, 302.)" Mr. George T. Jones attempted to contradict Mr. Epstein's data but failed to provide substantiating evidence.

> I believe they [LERs] were wrong, but I didn't go back and say, okay, make a direct comparison of which ones I thought, trying to figure out where it was disconnected, which is not important.
>
> It was mainly looking at the trend in '93 and '94, which I thought was an issue. (Transcript, Page 2269, Lines 2-18.)

The Company should be subject to the same rigorous scrutiny the Company applies to Mr. Epstein.

Mr. Jones may "disagree" with Mr. Epstein on spent fuel disposal but he, and the Company, confuse the issues. Granted, spent-fuel disposal is a *multi-step isolation and disposal process*; however, billing customers twice for the same service is, as GPU Nuclear has asserted, "double-billing."

PP&L claimed the issues raised by Mr. Epstein "were totally refuted by PP&L are not relevant to this proceeding and should be totally disregarded." (Brief, Page, 302.) The Company's conclusion is naive and dangerous and has the potential to create an economic boondoggle as Mr. Epstein clearly demonstrated in his Main Brief.

Respectfully submitted,

Eric Joseph Epstein, Pro se
2308 Brandywine Drive
Harrisburg, PA 17110

JUNE 26, 1995

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PUBLIC UTILITY COMMISSION
SECRETARY BUREAU

Before the
PENNSYLVANIA PUBLIC UTILITY COMMISSION

PENNSYLVANIA PUBLIC UTILITY COMMISSION, ET AL.	:	
v.	:	Docket No. R-00943271
PENNSYLVANIA POWER and LIGHT COMPANY	:	

CERTIFICATION OF SERVICE

I hereby certify that I have this day served a true and correct copy of the foregoing document upon the individuals named below by US mail or hand delivery in accordance with the requirements of Section 1.54.

The Honorable Robert A. Christianson
Administrative Law Judge
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DATE: June 26, 1995

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JUN 26 1995

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Experience in Education

1992-present Instructor of Holocaust Studies, Harrisburg Area Community College and Pennsylvania State University-Harrisburg.

1992-present Instructor of Comparative Literature, Pennsylvania State University-Harrisburg.

1985-1995 Adult Basic Education Instructor, Tri-County OIC, Loysville Secure Treatment Unit, State Correctional Institute-Camp Hill and Dauphin County Prison

Education

1992 Masters of Arts, Pennsylvania State University. Major: Humanities. GPA: 3.75.

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References

Holocaust **Dr. William Mahar**, Head, Division of Humanities, Pennsylvania State University (Harrisburg.)

Dr. Simon Bronner, Head, Division of American Studies, Pennsylvania State University (Harrisburg.)

Dr. Louise Hoffman, Professor, European History, Pennsylvania State University (Harrisburg.)

Professor Monika Adamczyk-Garbowska, American Literature, Maria Curie-Sklodowska University, Poland (Lublin.)

References

Nuclear

Dr. Michael Masnik, Senior Project Manager, Non-Power Reactors and Decommissioning Project Directorate, Division of Plant Support, Office of Nuclear Reactor Regulation, Nuclear Regulatory Commission (Bethesda, Maryland.)

Mr. Bruce Clemens, P.E., Energy, Environment and Resources Center and Graduate School of Business, University of Tennessee (Knoxville).

Mr. Arthur Morris, Chairman, Nuclear Regulatory Commission's Advisory Panel for the Decontamination of Three Mile Island Unit 2 (Lancaster.)

Mr. Richard Janati, Director, Bureau of Radiation Protection, Pennsylvania Department of Environmental Resources (Harrisburg.)

Professional Papers and Publications

Holocaust

"Rewriting History: The Holocaust in Contemporary Europe," (Millersville University, 1995), "The Legal Path to Judaicide," (Dickinson College, 1995), "The Holocaust as A Tourist Industry," (Willamette University,1995) and "Law, Ethics and Morality" (Susquehanna University, 1994).

Nuclear

"Old and New Forms of Public Participation at the PUC," (Public Utility Commission, 1995), "Radioactive Scrap Metal: An Environmental Perspective," (University of Tennessee, 1994), "On-Site Storage and the Period Prior to Decommissioning," (League of Women Voters, 1993), Testimony on the Security Intrusion at Three Mile Island (Pennsylvania House of Representatives, 1993), Training Manual for the Rad Alert Radiation Monitor with Dr. John Luetzelschwab, (Dickinson College, Physics Department, 1993), Testimony on Chem Nuclear's Siting Plan for a Low-Level Radioactive Waste Site, (Department of Environmental Resources, 1991, 1990, 1989), Testimony on the Cleanup and Decommissioning of Three Mile Island Unit 2, (Nuclear Regulatory Commission, Three Mile Island

Professional Papers and Publications

Nuclear

Advisory Panel for the Decontamination of Three Mile Island, Unit 2, 1994, 1993, 1992, 1991, 1990, 1989, 1988, 1987, 1986, 1985), Testimony on the Pennsylvania Energy Plan, (Pennsylvania Energy Office, 1987), Testimony on the Shutdown of Peach Bottom, (Pennsylvania House of Representatives, 1987), Testimony on The Restart of Three Mile Island, (Nuclear Regulatory Commission, Washington, D.C., 1985.)

Research

Holocaust

Completing Dictionary of the Holocaust with Dr. Philip Rosen, Gratz College. Expected publication date: 1996.

Nuclear

- Sponsored the purchase of **MIRS-II, Scavenger SS100** and **9050 Pipe Crawling Robot (PLS 8750)** by General Public Utilities. These robots perform decontamination and decommissioning tasks at Three Mile Island, Oyster Creek and Saxton nuclear power plants.

Scavenger: Used to vacuum the fuel transfer canal canal during refueling outage 10R. Dose savings: One to two man-rem and eliminated one entry into canal saving three to four hours critical path time. Future uses: Clean TMI-2 outdoor tanks, vacuum Oyster Creek equipment pool (16R) and vacuum deep end of TMI-1 fuel transfer canal as well as shallow end (11R).

MISR-II: Used for operational surveillance during TMI 10R Outage, i.e. Spent Resin Pre-coat tank room; MU/Purification Demineralization Room and Letdown Prefilter Room. Dose savings: 1.5 man-rem (1994) and .45 man-rem (1993). Future uses: D-ring entries during power operation and Oyster Creek old radwaste decommissioning.

- Sponsored the purchase of five, **low-volume air samplers (Andersen)** located one to seven kilometers from Three Mile Island. Filters are collected and analyzed weekly for gross alpha and beta and Iodine-131, monthly for gamma isotopic analysis and semiannually for Strontium-90 analysis.