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February 12, 1986

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SECRETARY'S OFFICE
Public Utility Commission

Mr. Jerry Rich, Secretary
Pennsylvania Public Utility Commission
Room G-18, North Office Building
North & Commonwealth Avenue
Harrisburg, Pennsylvania 17120

Dear Mr. Rich:

Re: Pennsylvania Public Utility Commission, et al.
v.
Philadelphia Electric Company
Docket No. R-850152

Enclosed for filing with the Commission are three (3) copies of the Surrebuttal Testimony and Exhibits of Philip R. Winter, on the issue of cost of capital, for the General Services Administration on behalf of the Federal Executive Agencies.

If you have any questions regarding this filing, please contact Michael J. Ettner at (202) 566-1156.

Sincerely,

for R. COLETTE MCKENNA
Acting Assistant General Counsel

Enclosures

cc: Honorable Joseph P. Matuschak
Administrative Law Judge
Pennsylvania Public Utility Commission

Mr. Joseph Brennan
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All Parties

DOCUMENT FOLDER

CERTIFICATE OF SERVICE

Re: Pennsylvania Public Utilities Commission, et al.
v.
Philadelphia Electric Company
Docket No. R-850152

I hereby certify that I am, this 12th day of February, 1986 serving either by special messenger or by first-class mail, the foregoing document, Surrebuttal Testimony and Exhibits of Philip R. Winter, on the issue of cost of capital, for the General Services Administration, upon the persons listed below:

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Public Utility Commission

GSA STATEMENT No. 1A

PENNSYLVANIA PUBLIC UTILITY COMMISSION

V.

PHILADELPHIA ELECTRIC COMPANY

DOCKET NO. R-850152

Updated and Surrebuttal Testimony of

PHILIP R. WINTER, CFA

Cost of Capital

on Behalf of the Federal Executive Agencies
General Services Administration

General Services Administration (PPR)
Room 6317
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February 12, 1986

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Q: ARE YOU THE SAME PHILIP R. WINTER WHO FILED DIRECT TESTIMONY IN THIS PROCEEDING CONCERNING THE PHILADELPHIA ELECTRIC COMPANY'S (PECO OR COMPANY) COST OF CAPITAL?

A: Yes.

Q: WHAT IS THE PURPOSE OF YOUR SURREBUTTAL TESTIMONY?

A: PECO witness Brennan's updated and rebuttal testimony concerning PECO's cost of capital contains significant inaccuracies and misstatements of fact. The purpose of my surrebuttal testimony is to identify these inaccuracies and misstatements and provide clarifying information for the record.

In addition, I have updated my direct testimony concerning PECO's cost of common equity, cost of debt, capital structure, and overall cost of capital (See Schedule 1, Updated). This updating of the debt and overall capital costs, as was promised in my direct testimony (p. 2), is now possible since required data on actual refinancing and redemptions were made available in Mr. Brennan's update (received February 4, 1986). An update to my cost of equity findings is also appropriate since significant changes have occurred subsequent to the period on which I relied in my direct testimony.

Q: GIVEN THE RECENT DEBT ISSUANCES AND REDEMPTIONS BY PECO, WHAT COST OF DEBT HAVE YOU FOUND REASONABLE?

A: My finding as to PECO's cost of debt, as of the June 30, 1986 end of test year, is 10.36%. Derivation of the 10.36% figure is shown in the attached Schedule 14 (Note: Schedule 14 is the next schedule in sequence following Schedule 13 of my direct testimony).

Q: WHY DOES YOUR COST OF DEBT FINDING DIFFER FROM THE 10.86% FIGURE RECOMMENDED BY COMPANY WITNESS MR. BRENNAN?

A: As stated in my direct testimony (at pp. 3-4), Mr. Brennan unjustifiably relies on Treasury Bill Future Contract yields to estimate end-of-test-year yields on PECO's floating rate pollution control notes. T-Bill Future Contract yields are not an indication of investor, or consensus market, expectations of future yields. This fact has not been refuted by Mr. Brennan, yet he continues to rely on Futures yields to estimate prospective costs of the floating rate notes. As shown in Schedule 15, the Future Contract yields on which Mr. Brennan relies have consistently been above recent consensus forecasts and therefore lead to higher cost estimates than would otherwise be indicated.

I continue to recommend that the floating rate note yields be estimated through use of a consensus forecast for T-Bill yields. The consensus forecast on which I rely is that contained in the Blue Chip Financial Forecasts for January 1 and February 1, 1986. It should be noted that Mr. Brennan also relies on Blue Chip forecasts (see Brennan's Updated and Rebuttal Testimony pp. 3, 5), but not for forecasting the floating rate note yields. He has provided no justification for switching from one source of forecasts, to another in his testimony.

Mr. Brennan correctly recognizes, in his updated testimony recent declines in yields applicable to these notes. His revised findings remain excessive, however, due to his reliance on spot Future Contract yields. His forecasted T-Bill yield of 7.29% (reduced from an 8.13% forecast in his direct testimony), compares to January 1 and February 1 Blue Chip consensus forecasts of 7.1% and 7.2%, respectively.

I continue to recommend that a forecasted T-Bill yield of 7.15% be used to estimate effective costs of the floating rate notes. My Schedule 14 reflects results from use of the 7.15% figure.

Q: ARE THERE OTHER DIFFERENCES BETWEEN YOUR COST OF DEBT FINDINGS AND THOSE CONTAINED IN MR. BRENNAN'S UPDATED TESTIMONY?

A: Yes. I recommend disallowance of the projected effects of an exchange of $550 million of revolving credit for a like amount of debentures (see Brennan's updated testimony beginning on p. 3). While I would not object to inclusion of actual data on the effects of a prudent exchange (if it occurs before a decision is reached in this case), I find no basis for reflecting the full impact of the proposed exchange now. Mr. Brennan, however, argues that the exchange should be reflected now because (1) interest rates are bottoming out and future interest and inflation rates will likely be higher, (2) a bird in the hand is worth two in the bush and (3) long-term debt is the preferable method of financing long-lived assets (Brennan update pp. 5, 6).

I agree that long-term debt is, as a rule, the preferable method of financing long-lived assets. However, there are numerous factors, not mentioned by Mr. Brennan, that may lead to continuation of, or even a decline in, current interest rates and the cost of replacement debt to PECO. For example, oil prices, which have been the single most significant reason for high inflation since the early 1970's, continue to experience steep declines. Recent spot prices near $16 per

barrel are less than half earlier rates and further declines are projected. Capacity utilization levels, as recorded by the Federal Reserve, remain near a non-inflationary level of 80% and competition from foreign producers continues to keep a lid on domestic prices. There is also no sign of renewed inflation due to inadequate supplies of labor or raw materials. An unemployment rate near 7% and strong competition have contributed to a decline in the rate of wage increases and in some instances led to wage concessions. The Federal Reserve continues to provide an accommodative rate of monetary growth which is quite different from the relatively restrictive monetary growth in the early 1980's that contributed to extraordinarily high interest rates. Finally, although PECO's current debt rating is at the low end of the investment grade range, an improvement in debt rating may be forthcoming before the required repayment of the credit line beginning in 1988. Moody's Corporate Credit Report, dated October 25, 1985 does, in fact, mention the potential for improvement in PECO's credit quality over the near-term. Improvement in PECO's credit rating would, of course, reduce the cost of new debt below that which would otherwise be incurred.

Also contributing to my decision is the fact that the "bird in the hand" is the line of credit with an effective cost of only 9.75% compared to Mr. Brennan's estimate of a 11.88% cost for the replacement debentures. The approximate 210 basis point difference in cost between these two alternatives represents a before tax increase in annual revenue requirements on the ratepayer of $11.55 million (.021 x $550 million).

If Mr. Brennan's recommendation is accepted, ratepayers would be faced with the increased costs associated with this proposed exchange whether or not the exchange actually occurred and independent of future interest rate trends. A review of Mr. Brennan's and the Company's past record of projecting the timing of new issues and the cost of new capital reveals that the projections associated with this exchange may be in favor of the Company and to the detriment of the ratepayer. Mr. Brennan has, for example, admitted in this case that his prefiled cost of capital estimates were excessive. His updated testimony does, in fact, reduce his prefiled estimates for the costs of proposed long-term debt, proposed preferred stock, floating rate pollution control notes, and common equity. The magnitude of these reductions range, in round numbers, from 50 to 100 basis points. As for Company estimates for the timing and amounts of new issues, page 2 of Brennan's updated testimony reveals the significant

changes that may occur in financing plans over a relatively brief period of time.

While the preceding paragraph is not intended to be critical of Mr. Brennan's or the Company's forecasting abilities, it does highlight the uncertainties associated with prospective new financing. Because of these uncertainties and other factors mentioned above, I believe recognition in rates of this proposed exchange is premature at this time.

Q: WHAT OTHER DIFFERENCES EXIST BETWEEN YOUR COST OF DEBT FINDINGS AND THOSE OF MR. BRENNAN?

A: Entries in my Schedule 14 under the column labeled "% of Total" differ from Mr. Brennan's. This difference is due to my recommendation that net effects of the proposed exchange of debentures for the revolving credit line not be reflected in rates unless actual data on this exchange is available before a decision is reached. Differences in my "% of Total" column lead, in turn, to related differences in entries under my "Weighted Cost" column.

Also, I have not reflected amortization of the premium associated with the redemption of 17.625%, 18.75% and 18% First Mortgage Bonds (in December 1985) nor the associated adjustment to the principal amount of debt outstanding. Mr. Brennan has included $2.441 million to amortize, over a 21 year period, a $51.225 million premium he claims was paid (or will be paid) to effect the redemption. He has also reduced the principal amount of actual debt outstanding by the $51.225 million figure apparently to assure a balance between rate base and capitalization. Mr. Brennan shows these adjustments in his updated Schedule 4, p. 5a.

While I agree that the costs of effecting this redemption should be recovered by PECO, the approach and dollar amounts proposed by Mr. Brennan lead to excessive results. For example, during the first year his proposed approach is in effect, ratepayers would apparently pay $2.441 million for premium amortization all full-year service costs (coupons plus amortization of discount and issuance expenses associated with both the new and redeemed debt issues) on the beginning-of-year principal amount of the refunding issues. Mr. Brennan has apparently made no adjustment that reflects the interest that would be earned by PECO on this $2.441 million as it accrues, nor has he made provisions to reduce, at the beginning of the second year, the debt service costs

so that they are consistent with the unamortized premium balance.

Furthermore, the $51.225 million premium amount appears excessive relative to the principal amount of bonds redeemed. A premium of $44.801 million (Brennan's Updated Schedule 4, p. 8) was paid to redeem $216.848 million principal amount of high coupon bonds ($216.848=$78.096+$76.131+$62.621, Brennan update p. 2). In this instance, the premium is 20.66% ($44.801/$216.848) of the principal amount redeemed. In comparison, the $6,454 million premium related to the $46.904 million redemption planned for July 1986 is 13.76% of the high coupon debt face amount ($6.454/$46.904). Mr. Brennan has not provided reasons for the significant difference in relative premium amounts nor provided workpapers in support of the premium amounts or the supposed imbalance between PECO's rate base and capitalization. Time constraints have precluded interrogatories on these issues since Mr. Brennan's testimony on the effects of refunding was not received until the afternoon of February 4, 1986 (four days after the filing deadline) and the deadline for preparation of this testimony is February 12, 1986.

Because of the apparent excesses noted above and the lack of supporting workpapers, I recommend that the Commission reject Mr. Brennan's proposed treatment of the redemption premium. Alternately, I propose that after receipt of material indicative of the premium amount and any unjustified imbalances between rate base and capitalization, a method be devised that would recover actual costs over the life of the securities issued to effect the redemption. Among those methods considered, should be a "future value of an annuity" approach that leads to determination of the monthly or annual amounts required to repay the principal and interest on the unpaid balance of the premium. If this approach were used, the principal amount included in each annual payment should be used to reduce the amount of the premium outstanding and, in turn, reduce the required service costs.

Q: WHAT COST IS APPLICABLE TO THE PREFERRED STOCK OF THE COMPANY'S CAPITAL STRUCTURE?

A: I continue to recommend a finding of 10.41% as the effective cost of PECO's preferred stock. This finding differs from Mr. Brennan's updated finding of 10.50% (reduced from his earlier estimate of 10.54%). The difference is due to Mr. Brennan's estimate of 11.87%, as the effective cost of a proposed new preferred stock issue (see Mr. Brennan's

updated Schedule 5, p. 2), while my finding is that a 10.10% estimate for the proposed issue is more reasonable.

As stated in my direct testimony (p. 5), actual preferred stock issuances by triple-B rated utility companies in December 1985 were sold at costs of approximately 9.5%. Mr. Brennan apparently ignored data available from these actual issuances and also ignored the fact that yields on a company's preferred stock are typically lower than yields on a company's bonds. My Schedule 16 shows typical differences between public utility preferred stock and bond yields as computed by Moody's Investor Service, Inc. This schedule shows a typical difference in yields of 100 basis points with the preferred stock having the lower yield.

As shown on page 4 of Mr. Brennan's updated testimony, he has concluded that the prospective cost of PECO's long-term debt is 11.75% and then states, without justification, that the cost of PECO's preferred issuance in May 1986 will also be 11.75%. The above data from Moody's and recent actual issuance costs on triple-B rated preferred stock show his updated estimate is excessive.

Q: YOUR EARLIER CONCLUSION AS TO PECO'S COST OF COMMON EQUITY, WITHOUT ADJUSTMENT FOR RISKS ASSOCIATED WITH THE LIMERICK PLANTS, WAS A RANGE OF 15.1% TO 16.1% WITH A POINT ESTIMATE OF 15.6% (SEE P. 6 OF THE DIRECT TESTIMONY). YOUR DIRECT TESTIMONY NOTES THAT THESE FINDINGS SHOULD BE REDUCED A MINIMUM OF 500 TO 100 BASIS POINTS IF THE EFFECTS OF ADDED RISK ASSOCIATED WITH THE LIMERICK INVESTMENT ARE REMOVED. HAVE RECENT MARKET TRENDS AND EXPECTATIONS MADE THESE FINDINGS OUTDATED?

A: Yes. Both interest rates, in general, and PECO's cost of equity have declined subsequent to the period on which I relied in my direct testimony. Schedule 17 shows the declining trend in various interest rates recorded during and after 8/30/85 to 12/13/85, the period on which my direct testimony findings were based. Long-term debt costs are shown to decline by approximately 100 basis points from the beginning to end of this period.

PECO's cost of common equity has dropped by even a greater amount as evident from approximately a 150 basis point drop in dividend yield without a corresponding increase in investor expectations for future growth. I attribute this yield decline to both general interest rate trends and lower investment risk associated with PECO's equity. The lower investment risk is primarily due to a Commission decison to

allow completion of Limerick II which reduced prospects for a dividend reduction.

Q: WHAT ARE YOUR UPDATED FINDINGS AS TO PECO'S COST OF COMMON EQUITY?

A: PECO's current cost of common equity ranges from 13.72% to 15.41%. I consider the midpoint of this range, 14.56% a reasonable point estimate of current costs, but as stated in my direct testimony, the Commission should revise this estimate in accordance with any significant trends recorded before the decision is due.

Q: WHAT ARE THE BASES FOR THIS FINDING?

A: As in my direct testimony, I primarily rely on discounted cash flow (DCF) techniques, with checks for reasonableness made by comparing DCF results with (1) actual current market required returns on securities of comparable risk to PECO, and (2) historically recorded risk premiums between stocks and bonds.

Q: WHAT WERE THE YIELD AND GROWTH RATE INPUTS TO YOUR UPDATED DCF ANALYSES?

A: The dividend yield input was 13.10%, which is the simple average of end-of-week yields during the period 10/25/85 to 2/07/86. As in my direct testimony, I have chosen the most recent 16-week period available. PECO's current annual dividend of $2.20 per share was divided by the end-of-week closing stock price recorded for each of the sixteen weeks to compute the 13.10% average. PECO's stock price ranged from $15.25 to $19.125 during this period. My updated yield is 140 basis points below the 14.5%, 16-week average yield utilized in my direct testimony. This yield decline, without a corresponding increase in near-term growth expectations, is the primary indicator of recent declines that have occurred in PECO's cost of equity.

To determine the appropriate growth rates for input to my DCF model, I relied on updated growth rate forecasts from the investment community along with data presented in my direct testimony on historical, concomitant, growth rates in dividends and stock price for both PECO and utility companies in general. Investment firm growth forecasts on which I relied are shown in Schedule 18 along with the date associated with the forecast. Each of the forecasts was made subsequent to the Commission's decision concerning

completion of Limerick II, yet none of these forecasts indicate an increase in investor growth expectations for PECO. The only change in these growth rate forecasts, from those contained in my direct testimony, is a decrease in Salomon Brothers' growth expectations for PECO earnings. Their old forecast for 5-year earnings growth of 2.0% has been reduced to 1.0% in their January 1986 forecast. Based on a review of these more recent short-term growth rate forecasts and the sharp drop that has occurred in PECO's yield, I believe the only change in investor growth rate expectations has been the assignment of a lower probability to a prospective dividend cut. I noted in my direct testimony (pp. 25, 30, 31), factors that led some investors to expect a reduction in PECO dividends and contributed to an atypically high dividend yield.

The above evidence and historical, short-term concomitant growth in PECO's stock price and dividends continue to support the 0.0% to 1.0% near-term (5-year) growth rate range I found reasonable in my direct testimony. Contributing to this updated decision, is the fact that only twice during the past 25 years (1961-1985) have PECO's stock price and dividends recorded concomitant 5-year average growth rates in excess of 0.0% (see Schedule 9 of my direct testimony).

Although I have not changed near-term growth rate estimates, I have revised my initial growth rate findings for the second stage of the two-stage DCF model. I consider a range of 1.0% to 2.9% now indicative of most investor expectations. The 1.0% figure is unchanged from my direct testimony and is supported therein (see pp. 31-33). It is reflective of residual prospects for a dividend reduction due to the high costs and uncertainties related to Limerick construction. As shown on page 33 (direct testimony), even the 1.0% figure may be excessive if a dividend reduction occurs. The 2.9% figure represents an upward revision from 2.0% in my direct testimony and is justified by Merrill Lynch's long-term growth rate forecast of 2.9% for PECO and PECO's long-term dividend growth rate history of 2%-3% (see direct testimony, p. 32). The 2.9% figure may be excessive, however, in light of PECO's long-term stock price growth rate history of -3.5% (direct testimony, p. 32). The predominant reason for upward revision of the initial 2.0% long-term growth rate estimate is the previously mentioned reduction in the probability of a cut in PECO's dividend.

Q: WHEN THE 13.10% CURRENT DIVIDEND YIELD AND SHORT-TERM AND LONG-TERM GROWTH RATE RANGES OF 0.0% TO 1.0% AND 1.0% TO 2.9%, RESPECTIVELY, ARE SUBSTITUTED IN YOUR TWO-STAGE DCF MODEL, WHAT COSTS OF COMMON EQUITY ARE INDICATED?

A: Substitution of these data in the two-stage DCF model shown on page 26 of my direct testimony, indicates PECO's current cost of common equity falls between 13.72% and 15.41%. The 13.72% figure is derived from use of the 0.0% short-term growth rate and 1.0% long-term growth rate. Growth rates of 1.0% (for first five years) and 2.9% (for each year after the fifth) lead to the 15.41% figure. In terms of the constant growth DCF model (yield + growth) on which many analysts rely, the 13.72% to 15.41% range has an implicit constant growth rate range of approximately 0.5% to 2.1%, i.e., 13.10* (1.005) + .005=13.72% and 13.10* (1.021)+.021 = 15.41%.

Q: CONCERNING YOUR GROWTH RATE FINDINGS, WHY HAVE YOU NOT RELIED ON GROWTH FORECASTS FROM ADDITIONAL INVESTMENT FIRMS?

A: As indicated during my cross-examination (TR.2071-2073), the investment firms on which I, as a rule, rely are Value Line, Merrill Lynch, Duff and Phelps, Salomon Brothers, Dean Witter, and Prudential-Bache. I have also relied in recent testimony on growth forecasts from Argus and E.F. Hutton. I

would prefer to include consideration of growth rate forecasts from all firms that regularly prepare such forecasts, but these forecasts are not readily available to the public without considerable expense. Through library and other sources, I am, however, occasionally able to increase the list of investment firms on which I rely. Forecasts from E.F Hutton have for example, recently become available to me, hopefully on a regular basis.

Q: WHY HAVE CHANGES OCCURRED, OVER TIME, IN THE LIST OF FIRMS FROM WHICH YOU OBTAIN GROWTH RATE FORECASTS?

A: As indicated above, a change in the list may occur if previously unavailable forecasts become available to me on a regular basis, e.g. E.F. Hutton's forecasts. A change in the list may occur if an investment firm on which I rely does not cover the partcular utility company I am examining. For example, the E.F Hutton reports on which I rely, did not contain five-year dividend and earnings growth rate forecasts for El Paso Electric.

A change may also occur if my library, or other source, maintains a file on only one segment of the utility industry or discontinues publication of its forecasts. For example, the Duff and Phelps growth forecasts are only available to me on electric utilities and Prudential-Bache has, in the

past temporarily stopped publication of its Quantum report.

Q: WHY DID YOU NOT INCLUDE CONSIDERATION OF ARGUS' GROWTH FORECAST FOR PECO THAT THE COMPANY REFERENCED DURING YOUR CROSS-EXAMINATION (TR.2069)?

A: The Company referenced a 3.0% growth forecast contained in December 1985 and January 1986 reports from Argus. Both of these reports were published subsequent to the October and November 1985 Utilityscope and Monthly Handbook Argus reports that I reviewed at the time I prepared my direct testimony in late November and early December 1985. Neither the October or November reports contained the 3.0% growth forecast. Argus was, in fact, projecting a 3.8% decline in PECO earnings between 1985 and 1986 in their November 1985 Monthly Handbook. This November report did not contain a 5-year growth forecast. As for the -3.8% growth forecast, it wasn't included in my direct testimony because it didn't span a two- to five-year period.

As a final matter, it should be noted that inclusion of the 3.0% growth forecast would not change my conclusion concerning the growth rates appropriate for use in my DCF model. Inclusion of the 3.0% dividend growth forecast

would increase the average forecast for dividends from 1.0% (see Schedule 12 direct testimony) to 1.25% ((7*1.0+3.0=10)/8=1.25). The average of this dividend growth figure with the .8% earnings growth figure from my Schedule 17 indicates a 1.025% growth forecast ((1.25+.8)/2=1.025). The 1.025% figure is not significantly different from the 1.0% near-term growth rate figure I have used to obtain my DCF results. Furthermore, the 1.0% figure may prove excessive in light of PECO's historical, concomitant, dividend and stock price growth rates. As shown in Schedule 9 of my direct testimony, only twice during the period 1961 to 1985 did both PECO's stock price and dividend grow at a rate in excess of 0.0%.

Q: IS YOUR UPDATED DCF RANGE SUPPORTED BY HISTORICAL RISK PREMIUMS BETWEEN UTILITY STOCKS AND LONG-TERM GOVERNMENT BONDS?

A: Yes. My updated DCF range indicates risk premiums of 380 to 550 basis points over the average yield on long-term government bonds during the 16-week period October 25, 1985 to February 7, 1986. The average yield on long-term government bonds was 9.9% during this period. Historically, the premium between utility stocks and government bonds has ranged from 182 to 359 basis points (see my direct testimony, p. 42).

The 380-550 basis point premiums related to my DCF findings exceed the historical premiums, as one would expect, because of the current above average risk associated with PECO. The current risk premium range has decreased slightly from the premiums calculated in a similar manner in my direct testimony. This decline is also consistent with my expectations since company-specific risks have recently declined due to less uncertainty concerning PECO's dividend. In summary, the risk premiums offered by my DCF findings are reasonable in comparison with those that have historically been available to investors.

Q: WHAT OTHER CHECK FOR REASONABLENESS HAVE YOU PERFORMED?

A: As was done in my direct testimony, I have calculated the current actual average yields required by investors on securities of similar risk to PECO's common stock. These required returns are shown in Schedule 19 and are derived from data contained in Standard and Poor's January 1986 Bond Guide. The rationale for this risk/required return approach is documented on pages 43-48 of my direct testimony.

Q: DOES YOUR UPDATED RISK/REQUIRED RETURN ANALYSIS SUPPORT YOUR UPDATED DCF FINDINGS?

A: Yes. My updated DCF range of 13.72% to 15.41% corresponds to required returns shown in Schedule 19 for bonds rated B by Standard and Poor's. Standard and Poor's describes B-rated bonds as "... predominantly speculative with respect to capacity to pay interest and repay principal in accordance with the terms of the obligation. ...While such debt will likely have some quality and protective characteristics, these are outweighed by large uncertainties or major risk exposures to adverse conditions."

In my opinion, risks faced by investors in PECO's common stock are similar to those associated with B-rated bonds. This opinion is based on consideration of several risk factors, including regulatory risk, liquidity risk, and price volatility risks as described in my direct testimony (see pp. 45-47). I no longer consider PECO's common equity to be of comparable risk to triple-C rated bonds due to the recent reduction in uncertainty as to PECO's dividend. In summary, my risk required return analysis shows actual required returns on investments, with risks similar to those of PECO, that fall within my updated DCF range.

Q: IN LIGHT OF THE RECENT SIGNIFICANT DECLINE RECORDED IN PECO'S DIVIDEND YIELD, WHY HAVEN'T YOU CHOSEN THE LOWER END, INSTEAD OF THE MID-POINT, OF YOUR DCF RANGE AS A POINT ESTIMATE OF PECO'S COST OF COMMON EQUITY?

A: PECO's yield has drop steadily, from 14.4% to 11.5%, during the 16-week period on which I base my updated findings. Even with this decline, however, PECO's yield remains significantly above the average yield of 8.0-8.5% in the industry. This relatively high yield, along with previously mentioned uncertainties associated with the Limerick investment and future PECO dividends, continues to place PECO in a relatively high risk class. In my opinion, the mid-point of my DCF range, 14.56%, is currently more consistent with this risk level than the 13.70% low-end-of-range figure. If however, PECO's yield continues near the 11.5% current value, without evidence of higher growth expectations in the investment community, a strong case could be made for a cost of equity finding of 13.7%, or below.

Q: IN YOUR DIRECT TESTIMONY, YOU RECOMMENDED THAT YOUR DCF FINDINGS BE REDUCED A MINIMUM OF 50 TO 100 BASIS POINTS IF THE EFFECT OF RISKS ASSOCIATED WITH THE LIMERICK PLANTS WERE TO BE REMOVED. DO YOU CONTINUE TO RECOMMEND SUCH AN ADJUSTMENT?

A: A significant portion of the risk increment in PECO's cost of equity due to Limerick is no longer present. I base this conclusion on the fact that PECO's dividend yield has dropped from an average level of 14.5% to 11.5% between the time my direct testimony was prepared in November and December 1985, and today. This decline has occurred without a corresponding increase in near-term growth rate expectations for PECO. In comparison, interest rates, in general, have declined only 50 to 100 basis points as shown in Schedule 17. Subtracting the 50 to 100 basis point decline from the 300 basis point decline in PECO's yield, indicates a 200 to 250 basis point decline not attributable to general trends.

A considerable portion of this 200 to 250 basis point decline is attributable to reduced uncertainties related to the Limerick investment. Reduced uncertainties are due to both the Commission's decision to allow completion of Limerick II and the positions presented by expert witnesses in this case. Since these reduced uncertainties are reflected in my updated DCF findings, I no longer consider the initially proposed 50 to 100 basis point reduction necessary.

Q: SHOULD AN ADJUSTMENT FOR FLOTATION COSTS OR MARKET PRESSURE BE ADDED TO YOUR COST OF EQUITY FINDINGS?

A: No. My position concerning such an adjustment is unchanged from that contained in my direct testimony (see pp. 49, 50).

Q: WHAT CAPITAL STRUCTURE AND OVERALL COST OF CAPITAL HAVE YOU FOUND APPROPRIATE IN THIS CASE?

A: I have accepted the capital structure presented in Mr. Brennan's updated testimony. PECO's overall cost of capital, based on this capital structure and my cost of debt, preferred stock, and common equity findings described herein, is 11.97%. Calculation of this overall cost is shown in Schedule 1 (Updated).

Q: AT THE BEGINNING OF THIS TESTIMONY YOU STATED THAT MR. BRENNAN'S UPDATED AND REBUTTAL TESTIMONY CONTAINED INACCURACIES AND MISSTATEMENTS OF FACT. WHAT ARE THESE INACCURACIES AND MISSTATEMENTS OF FACT?

A: (1) Mr. Brennan states (p. 48) that the upper end of my direct testimony DCF range should be 16.23% not 16.09%. I have recalculated the discount rate associated with a 14.5% dividend yield, 1.0% short-term growth rate, and 2.0% long-term growth rate and found no error in the 16.09% figure. Mr. Brennan has apparently used a 14.645% yield, instead of the 14.5% figure to obtain the 16.23% figure.

(2) Mr. Brennan has stated (p. 49) that I have relied "entirely on projections of security analysts" in choosing my growth rates and ignored the history of growth in dividends. A review of pages 27 through 30 of my direct testimony clearly shows that I have relied on historical growth in both PECO's dividends and stock price and on investment firm growth forecasts, a recent Commission decision concerning the Susquehanna Plant #2, and evidence indicative of the potential for a cut in PECO's dividend. It should be noted that Mr. Brennan wasn't aware of this latter evidence, even though PECO's Board of Director's had stated in meetings with shareholders a dividend cut could occur (Tr. 43, 44).

(3) Mr. Brennan states (p. 49) that I have rejected "... the only long-run analysts (sic) forecast of growth available ...". The Commission should note that I have utilized a 3.0% figure (the rounded value of Merrill Lynch's 2.9% long-term forecast) to estimate my long-term growth rate range (see pp. 32, 33). I incorporated in this estimate, however, the effects of a potential dividend cut of which Mr. Brennan was apparently not aware (Tr. 43, 44).

(4) Mr. Brennan cites his risk premium findings as evidence that my historical risk premium findings are flawed (p. 50). It should be noted that my risk premium findings depict actual premiums that have been available to investors in utility stocks and are not dependent on DCF calculations. Mr. Brennan's risk premium findings are, on the otherhand, based on DCF calculations for which he has chosen each of the data inputs. His risk premium findings have been shown excessive in past rate cases and furthermore are inappropriate for use in checking DCF results, which was the purpose of my risk premium analyses.

(5) Mr. Brennan states that I have asserted, "without evidence," that PECO's "...common stock is comparable in risk to bonds rated between B and CCC..." (p. 51). An apparent conclusion from this statement is that Mr. Brennan has not read my testimony nor the responses I provided to PECO interrogatories. Pages 45 through 47 of my direct testimony relate the evidence I considered in concluding

that PECO's common stock was comparable in risk to bonds rated B to CCC. Among the risk factors specifically discussed on these pages are regulatory risks, liquidity risks, price volatility risks, and definitions utilized by Moody's and Standard and Poor's in assigning the B and triple-C ratings. The response to a PECO interrogatory to which I refer is Set 2 No. 27. This interrogatory compares the recent price volatility of PECO's common stock with various B and CCC-rated bonds. My response to this interrogatory is contained in Schedule 20.

Q: DOES THAT CONCLUDE YOUR UPDATED AND SURREBUTTAL TESTIMONY?

A: Yes.

GSA STATEMENT No. 1A

PENNSYLVANIA PUBLIC UTILITY COMMISSION

V.

PHILADELPHIA ELECTRIC COMPANY

DOCKET NO. R-850152

Updated and Surrebuttal Exhibits of

PHILIP R. WINTER, CFA

Cost of Capital

on Behalf of the Federal Executive Agencies
General Services Administration

General Services Administration (PPR)
Room 6317
18th & F Streets, N.W.
Washington, DC 20405
(202) 566-1034

February 12, 1986

Schedule 1
(Updated)

Computation of PECO's Overall Cost of Capital

	% of Total Capital	Effective Cost (%)	Weighted Cost (%)
L.T Debt	50.9	10.36	5.27
Preferred Stock	10.7	10.41	1.11
Common Equity	38.4	14.56	5.59
Total	100.0%		11.97%

PECO's Composite Cost of Long-Term Debt as of June 30, 1986 (Actual and Estimated)

First Mortgage Bonds:	Amount Outstg. ($000)	% of Total	Effective Cost	Weighted Cost
4.375% Series, due 1986	$50,000	1.62	4.43	0.05
4.625% Series, due 1987	$40,000	1.29	4.69	0.06
3.750% Series, due 19888	$40,000	1.29	3.82	0.05
5.000% Series, due 1989	$50,000	1.62	5.00	0.08
6.500% Series, due 1993	$60,000	1.94	6.57	0.13
4.500% Series, due 1994	$50,000	1.62	4.50	0.07
9.000% Series, due 1995	$59,452	1.92	8.49	0.16
8.250% Series, due 1996	$80,000	2.58	8.31	0.21
6.125% Series, due 1997	$75,000	2.42	6.16	0.15
7.500% Series, due 1998	$100,000	3.23	7.51	0.24
7.500% Series, due 1999	$100,000	3.23	7.54	0.24
7.750% Series, due 2000	$60,800	1.96	7.43	0.15
7.375% Series, due 2001	$80,000	2.58	7.38	0.19
8.500% Series, due 2004	$125,000	4.04	8.51	0.34
11.625% Series, due 2000	$65,000	2.10	11.73	0.25
11.000% Series, due 2000	$55,938	1.81	10.72	0.19
9.125% Series, due 2006	$100,000	3.23	9.23	0.30
9.625% Series, due 2002	$100,000	3.23	9.74	0.31
6.000% Series, due 2007	$23,500	0.76	6.21	0.05
8.625% Series, due 2007	$75,000	2.42	8.72	0.21
8.625% Series, due 2003	$75,000	2.42	8.70	0.21
9.125% Series, due 2008	$100,000	3.23	9.13	0.29
12.500% Series, due 2005	$100,000	3.23	12.64	0.41
13.750% Series, due 1992	$125,000	4.04	13.90	0.56
15.250% Series, due 1996	$52,500	1.70	15.40	0.26
15.000% Series, due 1996	$21,000	0.68	15.17	0.10
18.750% Series, due 2009	$48,869	1.58	18.96	0.30
18.000% Series, due 2012	$37,379	1.21	18.39	0.22
15.375% Series, due 2010	$100,000	3.23	15.53	0.50
13.375% Series, due 2013	$125,000	4.04	13.67	0.55
13.050% Series, due 1994	$20,000	0.64	13.19	0.08
14.000% Series, due 1994	$80,000	2.58	14.10	0.36
11.750% Series, due 2014	$250,000	8.08	12.05	0.97
10.875% Series, due 1995	$150,000	4.85	11.27	0.55
11.750% Proposed Series	$100,000	3.23	11.87	0.38

Debentures:				
14.125% Series, due 1990	$50,000	1.62	14.28	0.23
14.750% Series, due 2005	$100,000	3.23	14.89	0.48
Sinking Fund Debentures:				
4.850% Series, due 1986	$20,800	0.67	3.38	0.02
14.500% Series, due 2009	$150,000	4.85	14.73	0.71
Total Bonds:	$3,095,238	100.00		10.63
Pollution Control Notes:				
5.500%, due 1997	$24,485	4.38	5.02	0.22
13.000%, due 2010	$71,500	12.79	13.38	1.71
11.500%, due 2011	$18,500	3.31	13.16	0.44
Floating Rate, 1982 Series A	$60,000	10.73	5.65	0.61
Floating Rate, 1982 Series B	$40,000	7.15	5.26	0.38
Floating Rate, 1983 Series A	$50,000	8.94	5.27	0.47
Floating Rate, 1984 Series A (York)	$4,500	0.81	5.07	0.04
Floating Rate, 1984 Series A (Salem)	$4,200	0.75	5.07	0.04
10.500% Series, due 2015	$245,000	43.81	10.79	4.73
10.500% Series, due 2014	$41,000	7.33	10.79	0.79
Total Pollution Control Notes:	$559,185	100.00%		9.43%

Term Bank Loans:				
Citibank N.A.	$75,000	9.68	9.5	0.92
Chase Manhattan N.A.	$75,000	9.68	10.00	0.97
Morgan Guaranty Trust Co.	$25,000	3.22	9.98	0.32
Chemical Bank	$50,000	6.45	9.98	0.64
Limerick Revolving Credit Line	$550,000	70.97	9.75	6.92
Total Term Bank Loans:	$775,000	100.00%		9.77%
Total Long-Term Debt:				
Bonds	$3,095,238	69.56	10.63	7.39
Pollution Control Notes	$559,185	12.57	9.43	1.19
Term Bank Loans	$775,000	17.42	9.77	1.70
Serial Notes	$20,000	0.45	17.06	0.08
Other Long-Term Debt	$326	0.00	8.97	0.00
Total Long-Term Debt:	$4,449,749	100.00%		10.36%

Schedule 15

Comparison of T-Bill Future Contract Yields Recommended by Mr. Brennan and Consensus Forecasts of T-Bill Yields

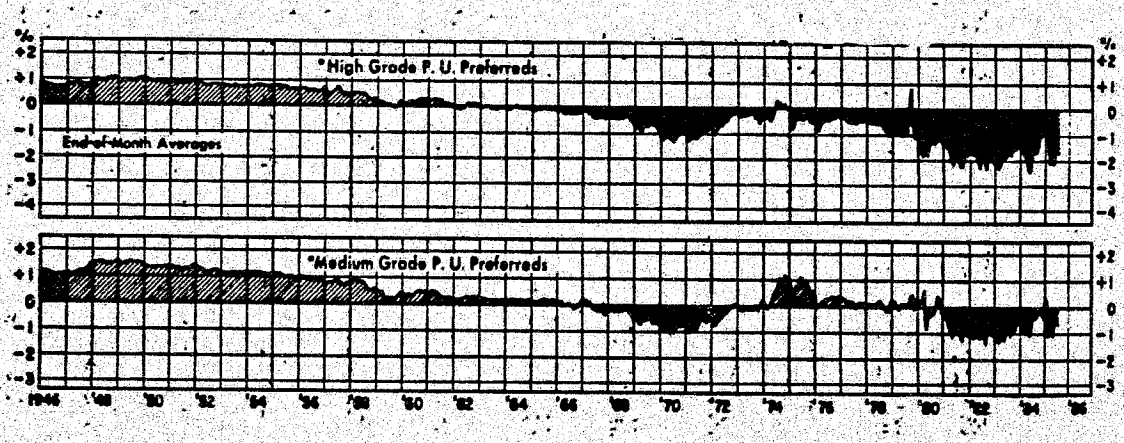
Date	3-Month T-Bill Consensus Forecasts for 1986(%)*	Brennan's Recommendation (%)	Difference (%)**
July 1, 1985	7.6-7.8	8.13%	+0.43
Aug. 1, 1985	7.6-7.8	8.13%	+0.53
Sep. 1, 1985	7.5-7.7	8.13%	+0.58
Oct. 1, 1985	7.4-7.7	8.13%	+0.53
Nov. 1, 1985	7.5-7.7	8.13%	+0.78
Dec. 1, 1985	7.2-7.5	8.13%	+0.98
Jan. 1, 1986	7.0-7.3	8.13%	+0.93
Feb. 1, 1986	7.1-7.3	7.29%	

* Source: Blue Chip Financial Forecasts

** Difference between Mr. Brennan's recommendation and the mid-point of the consensus forecast range.

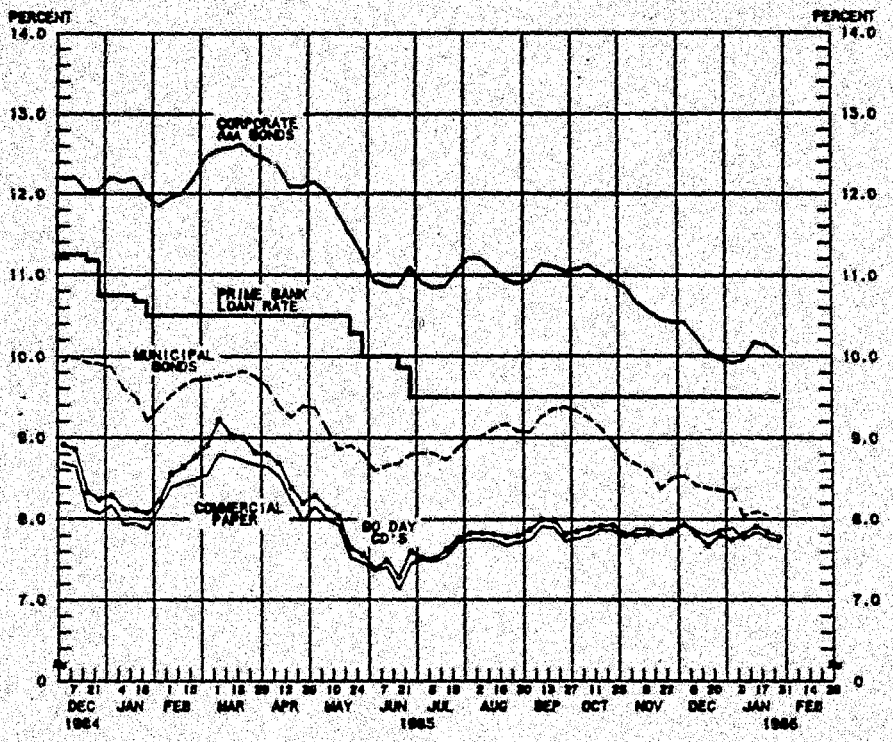
Schedule 16

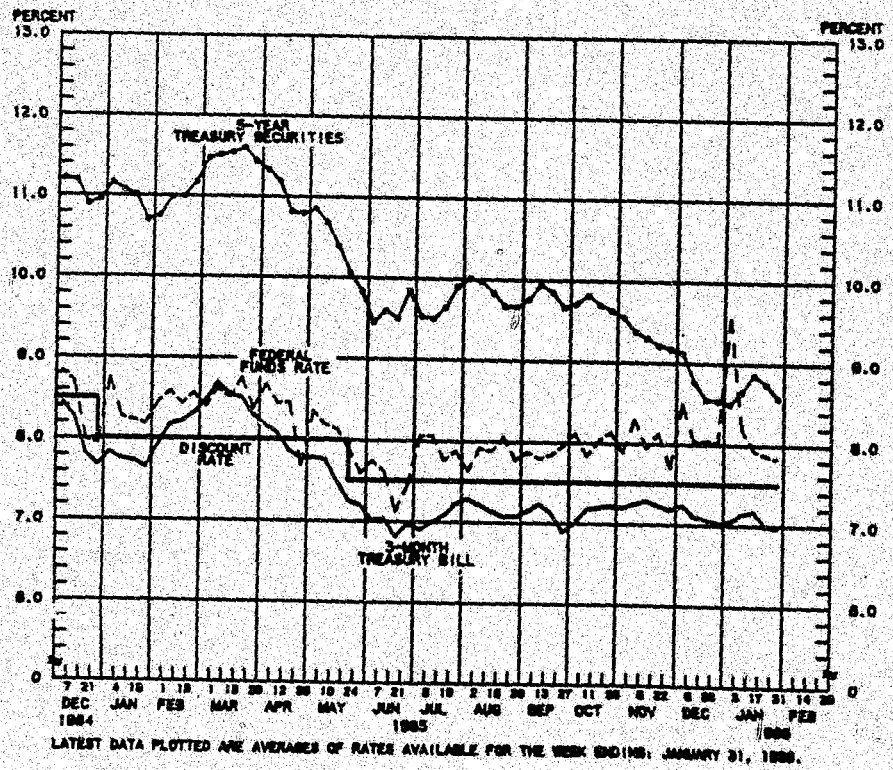
Historical Spreads Between Yields on Public Utility Bonds and Preferred Stocks



Source: Moody's Public Utility Manual, 1985, p. a8

Recent Interest Rate Trends
(Average of Daily Rates)





LATEST DATA PLOTTED ARE AVERAGES OF RATES AVAILABLE FOR THE WEEK ENDING: JANUARY 31, 1986.

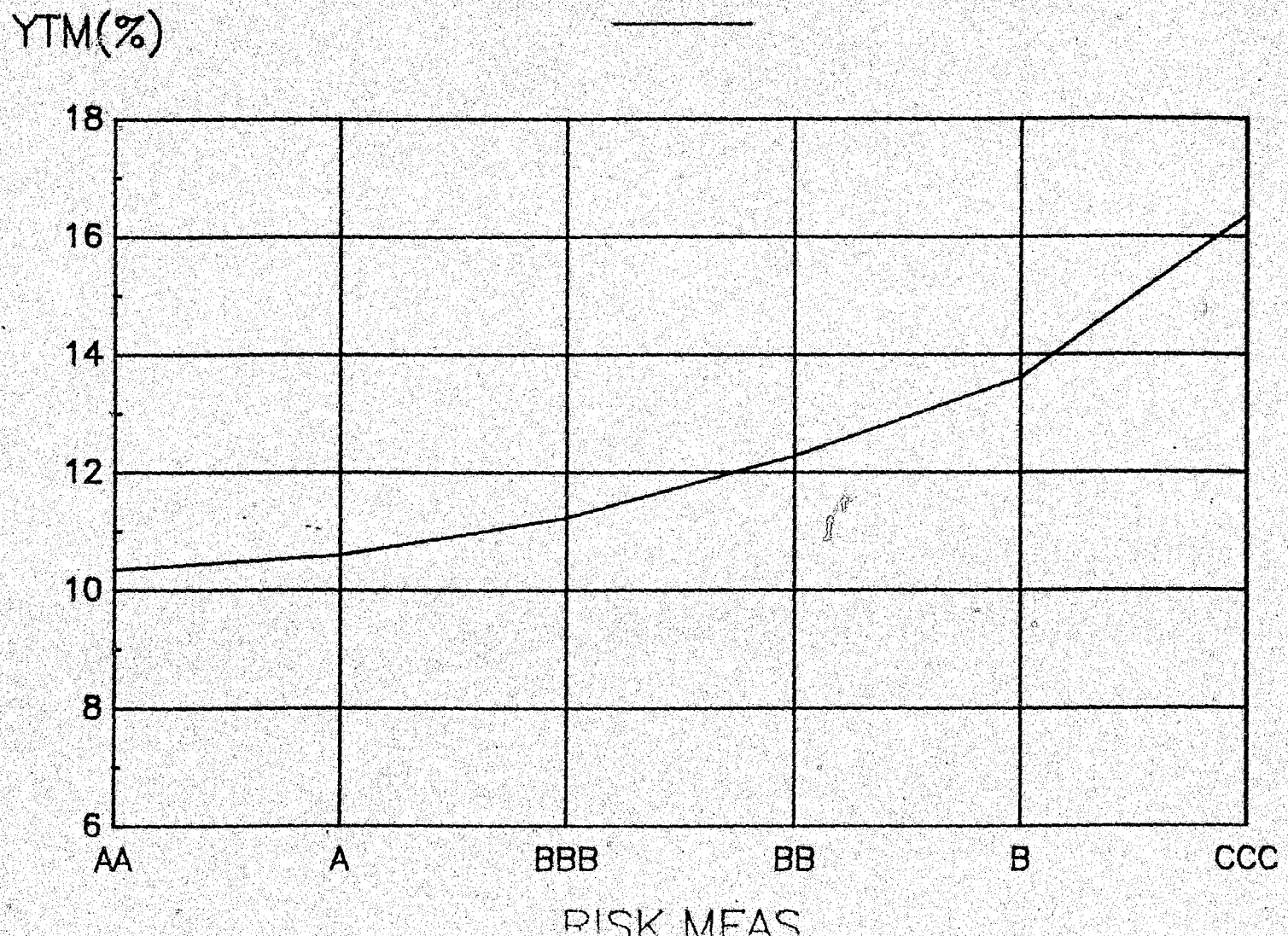
Source: U.S. Financial Data, The Federal Reserve Bank of St. Louis

Major Investment Firms' Recent Short-Term Growth Expectations for PECO Dividends and Earnings

Date	Investment Firm/Source	Expected Average Annual Growth Rates (%) Dividends	Earnings
12/27/85	Value Line	2.2	1.4
2/6/86	Prudential-Bache	0.0	0.0
Nov/Dec/85	Merrill Lynch	1.8	-2.3
1/16/86	Salomon Brothers	1.0	1.0
11/4/85	Duff & Phelps	0.0	-
1/86	E.F. Hutton	0.0	0.0
2/6/86	Dean Witter	2.0	2.5
	Average	1.0%	0.4%

REQ. RETURN VS RISK

(JANUARY 1986)



Schedule 19

Schedule 20

Comparison of Recent Price Volatility Risk
Between PECO's Common Stock and Low-Rated Bonds
(Response to PECO Interrogatory)

Q: 27. Provide any empirical studies that support Mr. Winter's statement (direct testimony, p. 47): "Comparing PECO's stock price volatility with the volatility of high risk bonds, PECO's stock is again shown to be of lower risk."

A: 27. The measures of volatility on which Mr. Winter's referenced testimony is based are shown below for the period December 14, 1984 to December 13, 1985.

ISSUE	COEFFICIENT OF VARIATION
PECO's common equity	.038
Eastern Airlines debt rated CCC maturing 2005 (EAL 05)	.166
Western Union Telegraph debt rated B maturing 1997 (WU 97)	.083 and .100
Public Service Co. of New Hampshire debt rated B and CCC maturing in years 2000 to 2003 (PNH 00, PNH 02, PNH 03)	.059 to .130
International Harvestor debt rated B maturing in 1998 and 2004 (HR 04 and HR 98)	.040 and .060
Forest Oil debt rated B maturing in 1999 and 200 (FOIL 99 and FOIL 00)	.038 to .047
Fuqua Industries debt rated B maturing in 1997 and 1998 (FQU 97 and FQU 98)	.040 to .043
Long Island Lighting debt rated B maturing in 2006 and 2007	.062 to .066
Petro Lewis Corp. debt rated CCC maturing in 2003 and 2005	.052 to .109

APPEARANCE SHEET

DOCKET NO. R-850152

CASE NAME PUC, et al. vs. Philadelphia Electric Company

HEARING LOCATION Philadelphia, PA

HEARING DATE Feb. 6 & 7, 1986

ALJ Matuschak

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Office of A. L. J.
Public Utility Commission

ALJ HEARING REPORT

CHECK THOSE BLOCKS WHICH APPLY:

	YES	NO
Hearing held	✓	
Testimony taken	✓	
Hearing concluded		✓
Further hearing needed	✓	
Estimated add'l days		
RECORD CLOSED		
Date		
Briefs to be filed	YES	NO
Date		
BENCH DECISION	YES	NO

REMARKS:

DOCUMENT FOLDER

NAMES, ADDRESSES AND TELEPHONE NUMBERS OF PARTIES OR COUNSEL OF RECORD
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INCOMPLETE INFORMATION MAY RESULT IN DELAY OF PROCESS

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MARLANE R. Chestnut	P O Box 3265 City Hbg State PA Zip 17120	Commission Trial Staff
Daniel Delaney		
David Wesman	1425 Strawberry Sq. City Hbg State PA Zip 17120	Office of Consumer Advocate

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Address | City | State | Zip

Address | City | State | Zip

Address | City | State | Zip

Reporter

APPEARANCE SHEET

ALJ HEARING REPORT

DOCKET NO. R-850152

CASE NAME PUC, et al. vs. Philadelphia Electric Company

HEARING LOCATION Harrisburg, PA.

HEARING DATE Feb. 10, 11, 12, 13 & 14, 1986

ALJ Matuschak

CHECK THOSE BLOCKS WHICH APPLY.

Hearing held YES NO

Testimony taken YES NO

Hearings concluded YES NO

Further hearing needed YES NO

Estimated add'l days

RECORD CLOSED YES NO Date

Briefs to be filed YES NO Date

BENCH DECISION YES NO

REMARKS: Hearing is Feb 18, 1986 Cancelled

Hearings will be held in Philadelphia Feb 19, 20 & 21

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Public Utility Commission

David B. MacGregor

NAMES, ADDRESSES AND TELEPHONE NUMBERS OF PARTIES OR COUNSEL OF RECORD

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United States Steel Corporation

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City State Zip

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City State Zip

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(404) 658-8700

February 14, 1986

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Public Utility Commission

Mr. Jerry Rich, Secretary
Pennsylvania Public Utility
Commission
New Filing Section
Secretary's Bureau, Room B-18
North Office Building
Commonwealth & North Streets
Harrisburg, Pennsylvania 17120

Re: Pennsylvania Public Utility Commission v.
Philadelphia Electric Company
Docket No. R-850152

Dear Mr. Rich:

On behalf of Occidental Chemical Corporation, enclosed for filing in the above-captioned proceeding please find the original plus two copies of "Motion of Occidental Chemical Corporation for Leave to File Supplemental Testimony," and the original plus two copies of "Supplemental Testimony of James A. Ross."

Also enclosed please find one extra copy of each of these documents. We would appreciate it if your office would time-stamp these documents and return them to us in the enclosed stamped, self-addressed envelope.

Sincerely,

Earle H. O'Donnell

Earle H. O'Donnell

Attorney for
Occidental Chemical Corporation

Enclosures

cc: All Active Parties

Before the

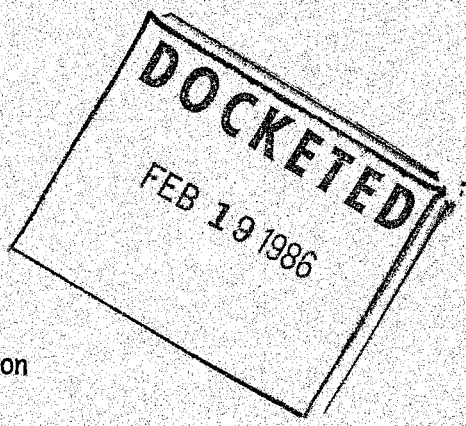
Pennsylvania Public Utility Commission

Docket No. R-850152

PHILADELPHIA ELECTRIC COMPANY

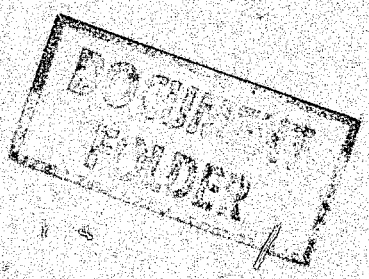
Supplemental Testimony of

JAMES A. ROSS



On Behalf of

Occidental Chemical Corporation



February, 1986
Project 4066

Drazen-Brubaker & Associates, Inc.
St. Louis, Missouri 63141-0110

BEFORE THE

PENNSYLVANIA PUBLIC UTILITY COMMISSION

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FEB 18 1986
SECRETARY'S OFFICE
Public Utility Commission

Pennsylvania Public Utility Commission	)	
v.	)	Docket No. R-850152
Philadelphia Electric Company	)	

TO: THE HONORABLE JOSEPH P. MATUSCHAK

MOTION OF OCCIDENTAL CHEMICAL CORPORATION
FOR LEAVE TO FILE SUPPLEMENTAL TESTIMONY

Occidental Chemical Corporation ("Occidental") hereby moves for leave to file the attached "Supplemental Testimony of James A. Ross" in the above-captioned proceeding. In support hereof, Occidental states as follows:

1. On January 22, 1986, Occidental filed in this proceeding the "Testimony of James A. Ross on Behalf of Occidental Chemical Corporation." This testimony was based in part on responses by Philadelphia Electric Company ("PECO") to some, but not all, of Occidental's First Set of Interrogatories, served on PECO on December 23, 1986.

2. Responses to all of Occidental's First Set of Interrogatories were to have been served by PECO on Occidental on January 7, 1986. However, a majority of PECO's responses were

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FEB 19 1986

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not served on Occidental by that date. Further, a number of relevant responses were not served upon Occidental in time for review and incorporation into Mr. Ross' testimony of January 22. Accordingly, Mr. Ross stated in his testimony of January 22 that "supplemental testimony may be necessary upon receipt of information which has been requested from PECO." (Testimony of James A. Ross, filed January 22, 1986, page 32, line 25).

3. Mr. Ross' supplemental testimony does not alter the position or recommendations he articulated in his January 22 testimony. Rather, the supplemental testimony primarily incorporates the additional data provided by PECO and explains its relevance to Mr. Ross' earlier recommendations.

4. The parties to this proceeding will not be prejudiced by acceptance of Mr. Ross' supplemental testimony into the record, given the narrow scope, purpose, and length of that testimony -- and also given that they have been on notice since January 22, 1986 of Occidental's intention to file such supplemental testimony, depending upon the content of PECO's late-filed responses.

5. In connection with the foregoing, Occidental notes that it has, contemporaneously with the filing of this motion, served Mr. Ross' supplemental testimony on PECO, PPUC Staff, and the Governor's Energy Council, who have expressed interest in the issues discussed in Mr. Ross' testimony to this proceeding

by Federal Express Mail. Mr. Ross will be available for cross-examination on the direct and supplemental testimony on February 20, 1986.

WHEREFORE, for the foregoing reasons, Occidental Chemical Corporation respectfully requests that its Motion for Leave to File "Supplemental Testimony of James A. Ross" be granted.

Respectfully submitted,

Earle H. O'Donnell

Earle H. O'Donnell
Merrill L. Kramer

Sutherland, Asbill & Brennan
1666 K Street, N.W.
Suite 800
Washington, D.C. 20006

Attorneys for
Occidental Chemical Corporation

Dated: February 14, 1986

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Public Utility Commission

Before the
Pennsylvania Public Utility Commission
Docket No. R-850152

PHILADELPHIA ELECTRIC COMPANY

Supplemental Testimony of James A. Ross

Q PLEASE STATE YOUR NAME AND BUSINESS ADDRESS.

A James A. Ross, 605 Old Ballas Road, St. Louis, Missouri.

Q HAVE YOU PREVIOUSLY FILED TESTIMONY IN THIS DOCKET?

A Yes, I have.

Q WHAT IS THE PURPOSE OF YOUR SUPPLEMENTAL TESTIMONY?

A The testimony addresses certain rate provisions incorporated in my proposed Scheduled Maintenance Power and As Available Power rates as presented in my prefiled direct testimony. This supplemental testimony is based on information which could not be included in the direct testimony due to the fact that the information was received from Philadelphia Electric Company (PECO) during the time the direct testimony was being finalized.

Q HAS THE COMPANY PROVIDED A SEPARATION OF THE ENERGY-RELATED AND THE DEMAND-RELATED COSTS INCLUDED IN THE ENERGY CHARGES OF THE

PECO PROPOSED RATE HT?

A Yes, it has. In addition to the $9.44 per kilowatt capacity charge, the HT monthly energy charges recover nonenergy-related costs in the following manner:

Rate HT	Price	Nonenergy Cost in $/kWh	Nonenergy Cost in $/kW
1st Block	$0.0964/kWh	$0.07036/kWh	$10.55/kW
2nd Block	$0.0668/kWh	$0.04076/kWh	$ 6.11/kW
3rd Block	$0.0375/kWh	$0.01146/kWh	$ 1.69/kW

The above table demonstrates that over 65% of the nonenergy-related costs are recovered through the Rate HT energy charges. This is an important factor in the design of a rate to recover the appropriate capacity or demand charges for Scheduled Maintenance Power, since customers taking Maintenance Power will pay the standard rate energy charges and thus pay demand costs in excess of the stated demand charge.

Q WHAT DO THE PENNSYLVANIA PUBLIC UTILITY COMMISSION RULES SAY ABOUT CAPACITY OR DEMAND CHARGES APPLICABLE TO MAINTENANCE POWER WHICH IS SCHEDULED WITH THE UTILITY DURING NONPEAK PERIODS?

A The Commission rules state:

> "A utility's rate for sales of maintenance power to qualifying facilities shall include all energy costs and a demand or capacity charge not in excess of a charge required to recover the appropriate transmission plant and full distribution plant costs."

Q UNDER THE PECO COST-OF-SERVICE ALLOCATION METHOD, WHAT IS THE

APPROPRIATE TRANSMISSION PLANT COST THAT SHOULD BE ALLOCATED TO CUSTOMERS TAKING SERVICE ON YOUR SCHEDULED MAINTENANCE POWER RATE?

A Consistent with the Company's four summer peak (June through September) transmission plant allocation method, Scheduled Maintenance customers under my proposed rate should not be allocated any transmission plant cost.

Q ACCORDING TO THE PECO COST-OF-SERVICE STUDY, WHAT PERCENTAGE OF THE TOTAL DEMAND-RELATED COSTS RECOVERED IN PROPOSED RATE HT IS RELATED TO DISTRIBUTION COST?

A Distribution cost associated with Rate HT is about 2.5% of the total demand-related cost recovered in that rate, or about $8.30/kW annually.

Q HOW MUCH DEMAND-RELATED COSTS ARE RECOVERED IN A SINGLE MONTH UNDER YOUR PROPOSED SCHEDULED MAINTENANCE POWER RATE?

A Even with the 0.50 scheduling provision, a single month of maintenance service under my proposal recovers about $16.50/kW of demand-related costs. This represents about two-times the Rate HT annual distribution cost recovery.

Q IS IT YOUR RECOMMENDATION THAT THE 0.50 SCHEDULING PROVISION FACTOR BE MODIFIED AT THIS TIME?

A No. However, the current cost data would suggest a reduction in the level of this factor. The point I wish to make is that the 0.50 factor is more than adequate to recover the costs. At the

proposed level, the factor assures that the other ratepayers of PECO will not subsidize customers taking Scheduled Maintenance Power under my proposed rate schedule. However, as PECO gains more experience in providing Scheduled Maintenance Power, a more rigorous analysis should be performed to more precisely determine the appropriate level for the scheduling provision factor.

Q PERTAINING TO THE AS AVAILABLE POWER RATE THAT YOU ARE PROPOSING, HAS PECO PROVIDED UPDATED PROJECTIONS OF THEIR INCREMENTAL ENERGY COST?

A Yes, an updated projection for the years 1985 through 1994 has been provided. Although these updated energy costs are somewhat lower than the original projections provided by PECO, the 10% adder associated with the As Available Power Rate produces an adder still in excess of the $2.60/MWh adder specified in various interconnection agreements to which PECO is a part. The following table illustrates the annual updated projected energy costs provided by PECO:

Description		Annual ($/MWh) All Hours	On-Peak	Off-Peak
Actual	1984	$44.4	$55.3	$37.5
Projected	1985	37.8	45.3	30.3
	1986	34.9	42.1	27.7
	1987	36.0	43.6	28.4
	1988	38.0	46.3	29.7
	1989	42.4	51.4	33.4
	1990	44.2	53.8	34.6
	1991	47.8	57.4	38.3
	1992	53.4	63.9	42.9
	1993	62.2	74.9	49.5
	1994	69.7	83.6	55.9

Q WHAT CONCLUSIONS HAVE YOU DRAWN FROM THE ADDITIONAL INFORMATION PROVIDED BY PECO?

A The additional information provided by PECO confirms that the Scheduled Maintenance Power Rate and the As Available Power Rate will not result in other ratepayers subsidizing customers who take service under the provisions of these rates. Furthermore, this information suggests that certain of the pricing aspects may require modification (after PECO has experience operating under these rates), in order to assure that the backup and maintenance customers are not subsidizing other regular rate customers of PECO.

Q DOES THIS CONCLUDE YOUR SUPPLEMENTAL TESTIMONY?

A Yes, it does.

CERTIFICATE OF SERVICE

I hereby certify that I have this 14th day of February, 1986, served the foregoing document upon counsel for Philadelphia Electric Company, the Governor's Energy Council, and the Staff of the Pennsylvania Public Utility Commission by Federal Express Mail, and upon all other parties whose names appear on the attached service list by first class mail, postage prepaid.

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Earle H. O'Donnell

Earle H. O'Donnell

Attorney for
Occidental Chemical Corporation

Dated: February 14, 1986

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ATLANTA, GEORGIA 30383-3001
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February 14, 1986

VIA FEDERAL EXPRESS

Honorable Joseph P. Matuschak
Pennsylvania Public Utility
Commission
97 East Main Street
Uniontown, Pennsylvania 15401

Re: Pennsylvania Public Utility Commission v.
Philadelphia Electric Company
Docket No. R-850152

Dear Judge Matuschak:

On behalf of Occidental Chemical Corporation, enclosed please find three copies of the following documents:

1) "Motion of Occidental Chemical Corporation for Leave to File Supplemental Testimony of James A. Ross"; and

2) "Supplemental Testimony of James A. Ross".

If you have any questions concerning these documents, please contact the undersigned.

Sincerely,

Earle H. O'Donnell

Earle H. O'Donnell

Attorney for
Occidental Chemical Corporation

Enclosures

cc: All Active Parties
Secretary Rich

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DONALD R. WAISEL
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JEFFERSON C. BARNHART
SAMUEL A. SCHRECKENGAUST, JR.

February 14, 1986

Re: Pennsylvania Public Utility Commission, et al.,
v. Philadelphia Electric Company
Docket No. R-850152

RECEIVED
FEB 18 1986
SECRETARY'S OFFICE
Public Utility Commission

Robert B. Hoffman, Esquire
Reed Smith Shaw & McClay
P. O. Box 11844
300 North Second Street
Harrisburg, PA 17101-1303

Dear Bob:

Enclosed please find response of Philadelphia Area Industrial Energy Users Group (PAIEUG) to SEPTA/AMTRAK Set I, Nos. 1 and 2 by Melvin P. Bloom.

Copies of the workpapers have been provided only to SEPTA/AMTRAK, PECo and OCA, and will be supplied to all other parties of record upon request.

Very truly yours,

McNEES, WALLACE & NURICK

By David M. Kleppinger
David M. Kleppinger

DMK/jf
Enclosures
HAND DELIVERED

cc: All Parties of Record (w/encl.[less workpapers])

CERTIFICATE OF SERVICE

Pennsylvania Public Utility Commission, et. al., :
v. : Docket No. R-850152
Philadelphia Electric Company :

I hereby certify that I have served a copy of the foregoing document on all known parties of record to this proceeding, all by first class mail (unless otherwise indicated) properly addressed as follows:

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Attn: Charles E. Rainey, Jr.
Assistant City Solicitor
Law Department - 15th Floor
Municipal Services Building
Philadelphia, PA 19102-1692

David M. Kleppinger
David M. Kleppinger

Dated this 14th day of FEBRUARY, 1986, at Harrisburg, PA

BEFORE THE
PENNSYLVANIA PUBLIC UTILITY COMMISSION

PENNSYLVANIA PUBLIC UTILITY COMMISSION, et al.,	:	
v.	:	Docket No. R-850152
PHILADELPHIA ELECTRIC COMPANY	:	

RECEIVED
FEB 18 1986
SECRETARY'S OFFICE
Public Utility Commission

DATA RESPONSES
OF
PHILADELPHIA AREA INDUSTRIAL ENERGY USERS GROUP
TO
NATIONAL RAILROAD PASSENGER CORPORATION (AMTRAK) AND
SOUTHEASTERN PENNSYLVANIA TRANSPORTATION AUTHORITY (SEPTA)
(SET I)

DOCKETED
FEB 18 1986
DOCUMENT FOLDER

SEPTA/AMTRAK:PAIEUG No. 1 (Bloom)

Q. With regard to your cost-of-service studies, quantify the adjustments which were made to each class' peak demands as a result of your weather normalization for: (a) average 1980 and 1983 EDH; (b) 1985 EDH; and (c) 213 EDH. Provide work papers to support all adjustments. (Bloom).

A. Enclosed are the workpapers utilized to adjust the "A" allocator for PECo's various rate classes. Summary work sheets, by month, are provided for:

(a) Average 1980 to 1983 EDH;

(b) 1985 EDH; and

(c) 213 EDH.

The complete print out of each half-hour monthly EDH adjustment is not provided. The summary page (final report), however, is attached. For illustrative purposes a complete print out of July weather sensitive load adjustments at 213 EDH is attached. If desired, a print out of the other adjusted half-hour EDH weather sensitive load data could be provided.

These workpapers, due to their voluminous nature are being provided only to SEPTA/AMTRAK, PECo and the OCA. Additional copies will be provided upon request.

SEPTA/AMTRAK:PAIEUG No. 2 (Bloom)

Q. Please provide workpapers to support the modifications to "A" allocators for each of the cost-of-service studies presented in Exhibit MPB-3. (Bloom).

A. See response and attachments to No. 1.

COMMUNITY
LEGAL
SERVICES, INC.

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215-227-2400

RECEIVED
FEB 24 1986
SECRETARY'S OFFICE
Public Utility Commission

February 21, 1986

Mr. Jerry Rich, Secretary
Pennsylvania Public Utility Commission
North Office Building
Commonwealth and North Streets
Harrisburg, Pennsylvania 17120

DOCUMENT
FOLDER

RE: Pennsylvania Public Utility Commission
v. Philadelphia Electric Company
Docket No. R-850152

Dear Secretary Rich:

Enclosed for filing with the Commission please find the original and three copies of CEPA, et al's Motion to Strike the Brief in Opposition to CEPA, et al's Petition for Review (filed on February 7, 1986) submitted by Mr. Shields on behalf of the Law Bureau of the Commission.

As shown on the attached Certificate of Service, I have today served copies of this document on all parties.

Sincerely,

John Hanger

John Hanger
Attorney for AASC, CEPA,
ACORN, PCIA and Mr. Bradshaw

JH/md

Enclosures

RECEIVED
FEB 24 1986
SECRETARY'S OFFICE
Public Utility Commission

BEFORE THE PENNSYLVANIA
PUBLIC UTILITY COMMISSION

DOCKETED
FEB 25 1986

PENNSYLVANIA PUBLIC UTILITY COMMISSION :
:
v. : DOCKET NO. R-850152
:
PHILADELPHIA ELECTRIC COMPANY :

DOCUMENT

MOTION TO STRIKE PUBLIC UTILITY COMMISSION
LAW BUREAU'S BRIEF FOR BEING FILED LATE

NOW COME CONSUMERS EDUCATION AND PROTECTIVE ASSOCIATION, et al (CEPA) to strike the Public Utility Commission Law Bureau's brief filed in response to CEPA, et al's Petition for Interlocutory Review. In support of the foregoing motion, CEPA, et al offer the following:

1. On January 23, 1986, CEPA, et al mailed to all parties in the proceeding, including the Trial Staff of the Public Utility Commission, an Application for Subpoena of Joseph Farrell, Director, Bureau of Consumer Services.

2. On January 30, 1986, ALJ Matuschak denied CEPA et al's Application for Subpoena, after hearing the arguments of Mr. Shields for the Public Utility Commission.

3. On February 7, 1986, CEPA et al filed a Petition for Commission Review and Answer of a Material Question and served this Petition on all parties, including the Trial Staff of the Public

Utility Commission (these were the same parties that were served with CEPA's Application for Subpoena of Joseph Farrell to which Mr. Shields replied for the Commission).

4. CEPA, et al served its Application for Subpoena, Petition for Commission Review, and its Brief in Support of Commission Review on every formal party in this proceeding at Docket No. R-850152.

5. CEPA, et al sent its Petition for Review (and all other documents to Marlane R. Chestnut, Veronica A. Smith and Daniel Delaney, all of whom are members of the Trail Staff in this proceeding.

6. CEPA, et al had no duty to serve non-parties to this proceeding with either its Application for Subpoena of Joseph Farrell, its Petition for Commission Review, or its Brief in Support of Commission Review.

7. If Mr. Shields is not a member of the Trial Staff, CEPA, et al have no duty to serve on him personally its filings in this proceeding including its Petition for Review, as he is not a party to this Docket.

8. If Mr. Shields is a member of the Trial Staff, Mr. Shields' was served, since CEPA, et al served its Petition for Review on the designated representatives of Trial Staff.

9. Given that Mr. Shields appeared at the January 30, 1986 hearing in this proceeding and successfully argued against CEPA, et al's Application for Subpoena of Joseph Farrell, Mr.

Shields should be designated as "prosecutory" in this proceeding and be considered a part of the Trial Staff.

10. Certainly, Mr. Shields has acted in a "prosecutorial" or adversarial manner toward CEPA, et al in this proceeding.

11. On February 11, 1986, CEPA, et al filed its Brief in Support of Commission Review.

12. On February 18, 1986, Mr. Shields informed counsel for CEPA, et al that he intended to file a Brief in Opposition to CEPA, et al's Petition for Commission Review.

13. Pursuant to 5.302(b), particiapnts have 7 days to respond to Petition for Commission Review.

14. Consequently, since CEPA, et al filed its Petiton for Commission Reivew on February 7, 1986, all responsive briefs were due by February 14, 1986.

15. Any Brief in Opposition to CEPA, et al's Petition for Commission Reivew filed after February 14, 1986, including a brief filed by Mr. Shields or other representatives of the Law Bureau, should be deemed to be late and struck.

Respectfully submitted,

John Hanger

JOHN HANGER
Attorney for
Consumer Education and Protective Association,
Action Alliance of Senior Citizens,
Association of Community Organizations
for Reform Now,
Philadelphia Citizens In Action, and
Mr. Bradshaw

CERTIFICATE OF SERVICE

I, hereby, certify that I am serving the attached Motion to Strike for late filing on all parties to this proceeding:

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John Hanger
JOHN HANGER

DATED: February 21, 1986

February 25, 1986

SUBJECT: R-850152 - Philadelphia Electric Company

TO: The File

FROM: Office of Administrative Law Judges

This is to inform the record that hearing in the above referenced proceeding scheduled for 2/25/86 at Harrisburg was cancelled.

vb

DOCKETED
FEB 26 1986

DOCUMENT
FOLDER

RECEIVED
FEB 26 1986
SECRETARY'S OFFICE
Public Utility Commission

COMMONWEALTH OF PENNSYLVANIA
BEFORE THE PUBLIC UTILITIES COMMISSION

THE PENNSYLVANIA
PUBLIC UTILITIES COMMISSION
V. PHILADELPHIA ELECTRIC
COMPANY

Docket No. R-850152

UP/UUC STATEMENT #3A

REBUTTAL TESTIMONY OF DR. ROBERT M WIRTSHAFTER
ON BEHALF OF THE
UTILITY USERS COMMITTEE/
UNIVERSITY OF PENNSYLVANIA

February 25, 1986

DOCKETED
FEB 26 1986

DOCUMENT
FOLDER

REBUTTAL TESTIMONY
OF
ROBERT M WIRTSHAFTER

Q. WHAT IS THE PURPOSE OF YOUR REBUTTAL TESTIMONY?

A. I strongly disagree with portions of the testimony of Mr. Larson and Mr. Pollock regarding treatment of the third energy block. Both have testified that they believe that the third block of the energy charges should be lowered. I also wish to clarify several typographical errors that appeared in my testimony regarding my proposed rates.

Q. WHAT ARE YOUR OBJECTIONS TO THE TESTIMONY OF MR. POLLOCK AND MR. LARSON?

A. It is inconceivable that the third block should receive a rate reduction at the time of the largest rate increase in Pennsylvania history. What makes the request even more absurd is that the tail block stands to receive the greatest benefits from the inclusion of Limerick I costs.

Q. WHY DO MESSRS. POLLOCK AND LARSON ERR IN DESIRING TO REDUCE THE THIRD (TAIL) ENERGY BLOCK?

A. Messrs. Pollock and Larson do not include the appropriate demand and energy related costs that result from the use of the Bary curve, nor do they allocate a portion of Limerick's cost to energy.

The Bary curve is the tool derived by PECo to measure the probability of the coincidence of an individual customer's peak with the class peak. It assigns a portion of the demand costs to each of the energy rate blocks. This is a necessary function for any rate-setting process that uses effective use hours. The Bary curve is an appropriate tool for the rate-setting process, yet it

is dismissed by these two parties.

Q. MR. POLLOCK OF PAIEUG STATES THAT ALL OF LIMERICK'S CAPITAL COSTS SHOULD BE ALLOCATED TO THE DEMAND COMPONENT OF HIS REVISED 4CP CALCULATIONS. WHY DO YOU FEEL HE HAS ERRED?

A. Mr. Pollock's argument that a demand cost allocation should apply to 100 percent of Limerick costs does not recognize the trade-off between high production capital costs and high running costs. Implicit in his rationale and stated by him in prior cases is that the criterion for system planning is always and entirely a need to meet new demand. He does not recognize that some capacity additions are made for reasons other than reliability. He consistently equates all capital costs with fixed charges and fixed charges with demand related costs.

Q. WHY IS IT WRONG TO EQUATE DEMAND CHARGES WITH FIXED CHARGES?

A. Fixed charges are not always demand related. An example is a contract with another utility for energy purchase on a "take or pay" basis; these are fixed charges, in that the expense is incurred regardless of load; however, they are by no means demand related.

Q. WHY SHOULD THE COSTS OF LIMERICK BE ALLOCATED PRIMARILY TO THE ENERGY COMPONENT RATHER THAN THE DEMAND COMPONENT?

A. The important point to remember is not why Limerick was originally proposed but rather what the reason was for its ultimate completion. In 1967, when the Limerick plants were begun, they were intended to meet demand forecasts which were never realized. In 1980-81, when the first Limerick hearings were held to justify the continued construction of the power plants, the Company consistently argued that the plants should not be cancelled. They based their arguments solely on the

energy savings of Limerick.

Mr. Pollock's colleague, Mr. Falkenberg, PAIEUG's own witness, states on pp. 23-24 of his testimony that Limerick Unit I "will reduce PECo's operational reliability from previous levels though reliability will remain more than adequate for the system. Secondly, Limerick Unit I will not produce economic benefits to consumers over the life of the plant based on PECO's own economic study, as would be interpreted by the majority of executives in the electric utility industry in the United States..."

PAIEUG's two claims, 1) that Limerick lessens PECo's reliability, and 2) that Limerick is to be placed solely in the demand component of the cost allocation, are inconsistent with each other. PAIEUG recognizes that Limerick provides no capacity benefits beyond what already exist, therefore Limerick's costs must be assigned to the energy related component.

Q. WHAT IS THE IMPACT OF MR. POLLOCK'S PROPOSED RATE REQUEST ON THE DIFFERENT HT CUSTOMERS?

A. According to Mr. Pollock's own analysis his rate request will lower the rate increase to the PAIEUG members. He did not provide as promised the actual impact of his rate request. The same rate request would be even more harmful to UUC members than the PECo proposed rates. RMW_26 and RMW_27 show the impact of Mr. Pollock's rate request on the twelve UUC customers and the two hypothetical manufacturing customers.

Q. THERE WAS SOME QUESTION DURING YOUR CROSS-EXAMINATION AS TO WHAT YOUR RATE PROPOSAL WAS. WHAT ARE THE RATES THAT YOU ARE PROPOSING?

A. The correct rates are those that appeared on pages 3 and 4 and again on page 21 of my testimony, with one exception. The

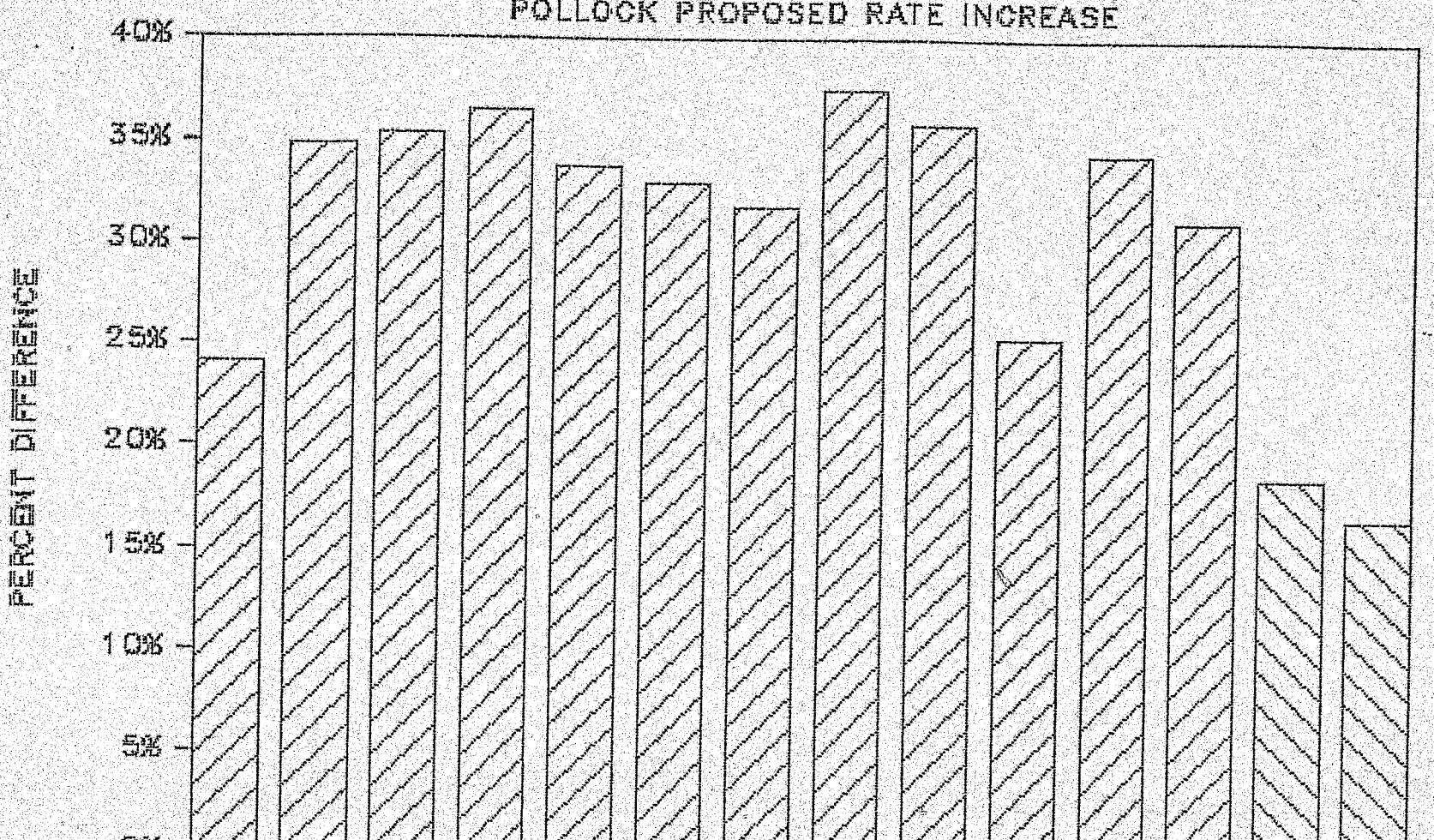
first energy block is corrected below. The demand charge is $5.34 and the three energy blocks are .0940 $/kwh, .0764 $/kwh, and .0591 $/kwh. I have included a revised RMW_18 and RMW_19 that show the correct revenue requirements for the HT class. For the example in which only 50 percent of the costs of Limerick is allowed, I inadvertently left out the rate for the demand charge in calculating the seven largest HT customers. I have included RMW_23 (revised 2/25) and RMW_24 (revised 2/25) as the corrected tables. Again there are no changes in the rates; the tables merely reflect the corrected demonstration of revenue requirements.

EFFECT OF POLLOCK RATE INCREASE PROPOSAL ON UUC CUSTOMER SAMPLE
AND HYPOTHETICAL MANUFACTURING CUSTOMERS

	Total Electric Bill	Percent difference from old PECO rate
N1	$18,350,237.20	24.15%
N2	$2,222,181.20	34.84%
N3	$423,116.70	35.41%
N4	$283,740.00	36.52%
N5	$296,125.20	33.83%
N6	$440,861.40	33.03%
N7	$2,287,727.20	31.79%
N8	$534,631.30	37.63%
N9	$945,537.20	35.94%
N10	$2,535,752.20	25.41%
N11	$2,258,364.20	34.46%
N12	$1,538,838.20	31.14%
M1	$3,148,886.20	18.60%
M2	$26,301,872.20	16.63%
TOTAL COMMERCIAL	$32,117,112.00	27.47%
TOTAL INDUSTRIAL	$29,450,758.40	16.83%

Source: Testimony of J. Pollock,
PECo HT rate schedule &
UUC customer bills.

PERCENT DIFFERENCE FROM OLD PECO RATE



Source: Testimony of J. Pollock,
PECo HT rate schedule &
UUC customer bills.

RMW — 27

RATE HT--7 LARGE CUSTOMERS (Revised)

CALCULATION OF REVENUE INCREASE UUC METHOD

12 MONTHS ENDED
JUNE 30, 1985 & 1986

12 MONTHS SAMPLE	BILLS, KW AND KWH FROM SAMPLE	SUPPLEMENT NO. 11 PRICING	SUPPLEMENT NO. 11 REVENUE	BILLS, KW AND KWH FROM SAMPLE	UUC SUPPLEMENT PRICING	UUC SUPPLEMENT REVENUE
	(1)	(2)	(3)=(1)*(2)	(4)	(5)	(6)=(4)*(5)
1 CUSTOMER CHARGE	84 BILLS	$220.45	$18,518	84 BILLS	$264.15	$22,189
2 ALL KW	3,188,205 KW	5.37	$17,120,661	3,188,205 KW	5.34	$17,025,015
3 FIRST 150 HRS USE	478,230,000 KWH	0.0739	$35,341,197	478,230,000 KWH	0.0940	$44,953,620
4 NEXT 150 HRS USE	448,837,000 KWH	0.0556	$24,955,337	448,837,000 KWH	0.0764	$34,291,147
5 ADDITIONAL USE	1,411,512,000 KWH	0.0376	$53,072,851	1,411,512,000 KWH	0.0591	$83,420,359
6 HIGH VOLTAGE DISCOUNT	2,527,620 KWH	0.3	($758,286)	2,527,620 KWH	0.3	($758,286)
7 BASE REVENUE			$129,750,278			$178,954,043

PHILADELPHIA ELECTRIC COMPANY-ELECTRIC OPERATIONS

RATE HT

CALCULATION OF REVENUE INCREASE UUC METHOD

12 MONTHS ENDED
JUNE 30, 1985 & 1986

12 MONTHS SAMPLE	BILLS, KW AND KWH FROM SAMPLE	SUPPLEMENT NO. 11 PRICING	SUPPLEMENT NO. 11 REVENUE	BILLS, KW AND KWH FROM SAMPLE	UUC SUPPLEMENT PRICING	UUC SUPPLEMENT REVENUE
	(1)	(2)	(3)=(1)*(2)	(4)	(5)	(6)=(4)*(5)
1 CUSTOMER CHARGE	27,512 BILLS	$220.45	$6,065,020	27,512 BILLS	$264.15	$7,267,295
2 ALL KW	24,494,179 KW	5.37	$131,533,741	23,677,622 KW (A)	5.34	$126,438,501
3 FIRST 150 HRS USE	3,654,963,716 KWH	0.0739	$270,101,819	3,532,480,166 KWH (B)	0.0940	$332,053,136
4 NEXT 150 HRS USE	3,366,781,298 KWH	0.0556	$187,193,040	3,356,134,112 KWH (C)	0.0764	$256,408,646
5 ADDITIONAL USE	3,019,493,022 KWH	0.0376	$113,532,938	3,152,623,758 KWH (D)	0.0591	$186,320,064
Total kwh	10,041,238,036 KWH			10,041,238,036		
6 HIGH VOLTAGE DISCOUNT) 66KV			($22,128)			($22,128)
7 HIGH VOLTAGE DISCOUNT - 66KV			($81,385)			($81,385)
8 HIGH VOLTAGE DISCOUNT - 33KV			($606,481)			($606,481)
9 SUB-TOTAL			$707,716,564			$907,777,648
10 UNACCOUNTED FOR			$99,292			$127,360
11 BASE REVENUE			$707,815,856			$907,905,009

TOTAL RATE HT——————12 MOS. ENDED 6/30/85

12 PROFORMA BASE REVENUE-EXCL NSR & 7 LARGE CUSTS	$714,950,596		$917,056,635
13 NIGHT SERVICE RIDER	$3,520,126		$3,520,126
14 BASE REVENUE OF 7 LARGE CUSTS	$129,750,278		$178,954,043
15 TOTAL PROFORMA BASE REVENUE	$848,221,000		$1,099,530,804
16 CURTAILMENT RIDER	($113,000)		($113,000)
17 ADJUSTED BASE REVENUE	$848,108,000		$1,099,417,804

TOTAL RATE HT——————12 MOS. ENDED 6/30/86

18 BASE REVENUE	$860,983,000		$1,116,073,913
19 CURTAILMENT RIDER	$0		($113,000)
20 ADJUSTED BASE REVENUE	$860,983,000		$1,115,960,913

(A) (LN.2,COL.1 = BILLED DEMAND FROM RATCHET, RMW #,LN. 8)
(B) (LN.3,COL.1 - RMW # ,LN.13)
(C) (LN.4,COL.1 - RMW # ,LN. 14)
(D) (LN.5, COL.1 - RMW # , LN.15)

PHILADELPHIA ELECTRIC COMPANY-ELECTRIC OPERATIONS

RMW_23

RATE HT--7 LARGE CUSTOMERS

(Revised)

CALCULATION OF REVENUE INCREASE UUC METHOD

Only 50% of Limerick allowed in rate base

12 MONTHS ENDED
JUNE 30, 1985 & 1986

12 MONTHS SAMPLE	BILLS, KW AND KWH FROM SAMPLE	SUPPLEMENT NO. 11 PRICING	SUPPLEMENT NO. 11 REVENUE	BILLS, KW AND KWH FROM SAMPLE	UUC SUPPLEMENT PRICING	UUC SUPPLEMENT REVENUE
	(1)	(2)	(3)=(1)*(2)	(4)	(5)	(6)=(4)*(5)
1 CUSTOMER CHARGE	84 BILLS	$220.45	$18,518	84 BILLS	$264.15	$22,189
2 ALL KW	3,188,205 KW	5.37	$17,120,661	3,188,205 KW	5.14	$16,387,374
3 FIRST 150 HRS USE	478,230,000 KWH	0.0739	$35,341,197	478,230,000 KWH	0.0802	$38,354,046
4 NEXT 150 HRS USE	448,837,000 KWH	0.0556	$24,955,337	448,837,000 KWH	0.0626	$28,097,196
5 ADDITIONAL USE	1,411,512,000 KWH	0.0376	$53,072,851	1,411,512,000 KWH	0.0453	$63,941,494
6 HIGH VOLTAGE DISCOUNT	2,527,620 KWH	0.3	($758,286)	2,527,620 KWH	0.3	($758,286)
7 BASE REVENUE			$129,750,278			$146,044,012

(Revised)

PHILADELPHIA ELECTRIC COMPANY-ELECTRIC OPERATIONS

RATE HT

CALCULATION OF REVENUE INCREASE UUC METHOD

Only 50% of Limerick allowed in rate base

12 MONTHS ENDED
JUNE 30, 1985 &1986

SUPPLEMENT NO. 11

UUC SUPPLEMENT

12 MONTHS SAMPLE	BILLS, KW AND KWH FROM SAMPLE	PRICING	REVENUE	BILLS, KW AND KWH FROM SAMPLE	PRICING	REVENUE
	(1)	(2)	(3)=(1)*(2)	(4)	(5)	(6)=(4)*(5)
1 CUSTOMER CHARGE	27,512 BILLS	$220.45	$6,065,020	27,512 BILLS	$264.15	$7,267,295
2 ALL KW	24,494,179 KW	5.37	$131,533,741	23,677,622 KW (A)	5.14	$121,702,977
3 FIRST 150 HRS USE	3,654,963,716 KWH	0.0739	$270,101,819	3,532,480,166 KWH (B)	0.0802	$283,304,909
4 NEXT 150 HRS USE	3,366,781,298 KWH	0.0556	$187,193,040	3,356,134,112 KWH (C)	0.0626	$210,093,995
5 ADDITIONAL USE	3,019,493,022 KWH	0.0376	$113,532,936	3,152,623,758 KWH (D)	0.0453	$142,813,856
Total kwh	10,041,238,036 KWH			10,041,238,036		
6 HIGH VOLTAGE DISCOUNT)	66KV		($22,128)			($22,128)
7 HIGH VOLTAGE DISCOUNT -	66KV		($81,385)			($81,385)
8 HIGH VOLTAGE DISCOUNT -	33KV		($606,481)			($606,481)
9 SUB-TOTAL			$707,716,564			$764,473,039
10 UNACCOUNTED FOR			$99,292			$107,255
11 BASE REVENUE			$707,815,856			$764,580,294
TOTAL RATE HT----------12 MOS. ENDED 6/30/85						
12 PROFORMA BASE REVENUE-EXCL NSR & 7 LARGE CUSTS			$714,950,596			$772,287,216
13 NIGHT SERVICE RIDER			$3,520,126			$3,520,126
14 BASE REVENUE OF 7 LARGE CUSTS			$129,750,278			$145,044,012
15 TOTAL PROFORMA BASE REVENUE			$848,221,000			$921,851,354
16 CURTAILMENT RIDER			($113,000)			($113,000)
17 ADJUSTED BASE REVENUE			$848,108,000			$921,738,354
TOTAL RATE HT----------12 MOS. ENDED 6/30/86						
18 BASE REVENUE			$860,983,000			$935,721,167
19 CURTAILMENT RIDER			$0			($113,000)
20 ADJUSTED BASE REVENUE			$860,983,000			$935,608,167

(A) (LN.2,COL.1 - BILLED DEMAND FROM RATCHET, RMW #,LN. 8)
(B) (LN.3,COL.1 - RMW # ,LN.13)
(C) (LN.4,COL.1 - RMW # ,LN. 14)
(D) (LN.5, COL.1 - RMW # , LN.15)

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SAMUEL A. SCHRECKENGAUST, JR.

February 26, 1986

Re: Pennsylvania Public Utility Commission, et al.,
v. Philadelphia Electric Company
Docket No. R-850152

RECEIVED
FEB 26 1986
SECRETARY'S OFFICE
Public Utility Commission

Jerry Rich, Secretary
Pennsylvania Public Utility Commission
New Filing Section
Room B-18 - North Office Building
P. O. Box 3265
Harrisburg, PA 17120

Dear Secretary Rich:

Enclosed for filing with the Commission please find the original and nine (9) copies of the Rebuttal Testimony of Jeffry Pollock of Drazen-Brubaker & Associates, Inc. on behalf of the Philadelphia Area Industrial Energy Users Group (PAIEUG) in the above-captioned matter.

Mr. Pollock will be available for cross-examination at hearings to be conducted in Harrisburg on March 10, 1986.

As evidenced by the attached Certificate of Service, all parties of record to this proceeding have been provided with copies of this Rebuttal Testimony.

Very truly yours,

McNEES, WALLACE & NURICK

By David M. Kleppinger
David M. Kleppinger

DMK/jf
Enclosures
HAND DELIVERED
cc: All Parties of Record (w/encl.)

DOCUMENT FOLDER

CERTIFICATE OF SERVICE

Pennsylvania Public Utility Commission, et. al., :
v. :
Philadelphia Electric Company : Docket No. R-850152
:

I hereby certify that I have served a copy of the foregoing document on all known parties of record to this proceeding, all by first class mail (unless otherwise indicated) properly addressed as follows:

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Assistant City Solicitor
Law Department - 15th Floor
Municipal Services Building
Philadelphia, PA 19102-1692

David M. Kleppinger

Dated this 26th day of FEBRUARY, 1986, at Harrisburg, PA

Before the

Pennsylvania Public Utility Commission

Docket No. R-850152

PHILADELPHIA ELECTRIC COMPANY

Rebuttal Testimony of

JEFFRY POLLOCK

On Behalf of

Philadelphia Area Industrial Energy Users Group

(Allied Corporation, Fibers Division
Boeing-Vertol Company
BP Oil, Inc.
The Budd Company
Liquid Air Corporation of North America
Lukens Steel Company
Nabisco Brands, Inc.
SDC (a Burroughs Company)
Smith Kline Beckman Corporation
Sun Refining and Marketing Company
3M Company)

and

United States Steel Corporation

February, 1986
Project 4035

Drazen-Brubaker & Associates, Inc.
St. Louis, Missouri 63141-0110

RECEIVED
FEB 26 1986
SECRETARY'S OFFICE
Public Utility Commission

Before the

Pennsylvania Public Utility Commission

Docket No. R-850152

PHILADELPHIA ELECTRIC COMPANY

Rebuttal Testimony and Exhibit of

JEFFRY POLLOCK

On Behalf of

Philadelphia Area Industrial Energy Users Group

(Allied Corporation, Fibers Division
Boeing-Vertol Company
BP Oil, Inc.
The Budd Company
Liquid Air Corporation of North America
Lukens Steel Company
Nabisco Brands, Inc.
SDC (a Burroughs Company)
Smith Kline Beckman Corporation
Sun Refining and Marketing Company
3M Company)

and

United States Steel Corporation

DOCKETED
FEB 26 1986

DOCUMENT FOLDER

February, 1986
Project 4035

Drazen-Brubaker & Associates, Inc.
St. Louis, Missouri 63141-0110

PHILADELPHIA ELECTRIC COMPANY

before the

Pennsylvania Public Utility Commission

Docket No. R-850152

Rebuttal Testimony of Jeffry Pollock

Q PLEASE STATE YOUR NAME AND BUSINESS ADDRESS.

A Jeffry Pollock, 605 Old Ballas Road, St. Louis, Missouri.

Q ARE YOU THE SAME JEFFRY POLLOCK WHO PREVIOUSLY TESTIFIED IN THIS DOCKET ON BEHALF OF THE PHILADELPHIA AREA INDUSTRIAL ENERGY USERS GROUP (PAIEUG) AND U. S. STEEL CORPORATION?

A Yes, I am.

Q WHAT ISSUES DO YOU ADDRESS IN YOUR REBUTTAL TESTIMONY?

A I shall address some of the specific cost-of-service and rate design proposals of the various Intervenors concerning:

(1) The classification and allocation of more than 60% of PECO's production and transmission capacity costs on the basis of "year-round" energy consumption,

(2) The substantial increase in the Rate HT tail block energy charge (to between 5.41¢ and 5.91¢ per kilowatthour), and

(3) The elimination of the 80% demand ratchet.

Q HAVE YOU PREPARED ANY EXHIBITS FOR SUBMISSION?

A Yes. I am sponsoring Exhibit JP-2 ( ), consisting of seventeen schedules.

CLASSIFICATION AND ALLOCATION OF PRODUCTION CAPACITY COSTS

Q VARIOUS WITNESSES--MR. STERZINGER ON BEHALF OF CEPA, MR. OLIVER ON BEHALF OF THE OFFICE OF CONSUMER ADVOCATE (OCA), MR. KING ON BEHALF OF THE PENNSYLVANIA BUSINESS UTILITY USERS GROUP (PBUUG) AND DR. WIRTSHAFTER ON BEHALF OF THE UTILITY USERS COMMITTEE/UNIVERSITY OF PENNSYLVANIA (UUC/UP)--HAVE RECOMMENDED THAT A SUBSTANTIAL PORTION OF PRODUCTION CAPACITY COSTS IS ENERGY-RELATED. THEREFORE, THESE COSTS SHOULD BE ALLOCATED ON THE BASIS OF YEAR-ROUND ENERGY CONSUMPTION. HAVE YOU REVIEWED THE TESTIMONY SUBMITTED BY THESE PARTICULAR WITNESSES?

A Yes, I have.

Q WHAT IS YOUR POSITION CONCERNING THE CLASSIFICATION AND ALLOCATION OF PRODUCTION CAPACITY COSTS?

A My position is that production capacity costs are demand-related, and they should be allocated to classes based on the revised four coincident peak demands quantified by Dr. Bloom. A demand-based classification and allocation is more consistent with (and reflective) of the principle of cost-causation than is a classification where allocation is primarily on "year-round" energy consumption. ("Year-round" energy consumption refers to the demands in each of

the 8,760 hours in a typical year.)

Q DID ANY OF THE OTHER WITNESSES PROPOSING AN ENERGY-BASED CLASSIFICATION AND ALLOCATION OF PRODUCTION CAPACITY COSTS JUSTIFY THEIR RECOMMENDATION BASED ON THE PRINCIPLE OF COST-CAUSATION?

A No, they did not. The term cost-causation seldom appears in the testimony of these four witnesses. In fact, the recommendations are based primarily on "Cost-Benefits" theory, rather than on the generally-accepted principle of cost-causation (Testimony of George J. Sterzinger, Page 8; Testimony of Bruce R. Oliver, Page 14; Testimony of Charles W. King, Page 26; Testimony of Dr. Robert Wirtshafter, Page 2).

Second, the recommended adjustments to the cost-of-service study were based on an incomplete analysis. (Dr. Wirtshafter's recommendations are not supported by any specific analysis.) Although each witness invokes the simplified theory of utility system planning (whereby planners make explicit trade-offs between production capital costs and operating costs), their specific recommendations affected only the capital cost side of the ledger. As described later in my rebuttal testimony, no attempt was made to apply the same costing theory to allocate operating costs (of which fuel and purchased power expense is a primary component). If capital cost allocation is to be based on a simplified theory of utility system planning, then there must be a symmetrical allocation of fuel and purchased power costs. That is, if a high load

factor class is to be allocated above-average capital cost (because it is more economical to serve this class with base load generating capacity), then it follows that this class should be allocated below-average fuel costs (because base load units typically have lower fuel costs than do other types of generating capacity).

Q ARE THERE ANY OTHER PROBLEMS WITH THE COST ALLOCATION RECOMMENDATIONS SPONSORED BY THESE FOUR INTERVENORS?

A Yes, there are. In at least two instances, these witnesses have taken contradictory positions on other issues. For example, Mr. King's position on the recovery of Limerick No. 1 capital costs over time contradicts his recommendation that 89% of Limerick Unit No. 1 capacity costs are energy-related. Similarly, Mr. Oliver's and Mr. Sterzinger's contentions that PECO's classification and allocation of distribution costs result in "double-counting" also apply to their recommendation that the peak and average method be used to allocate production capacity costs.

Finally, there are potentially serious consequences resulting from classifying a substantial portion of production capacity costs to energy. Among them are: (1) worsening of system load factor, (2) income stability, and (3) reducing the incentive to shift or increase power and energy consumption to off-peak periods.

Q PLEASE DEFINE THE TERM "PRODUCTION CAPACITY COSTS"?

A Production capacity costs are related to the specific production

facilities of a utility. The cost components include:

(1) Return on investment.

(2) Fixed operation and maintenance expenses (which do not vary with the amount of energy generated and sold).

(3) Depreciation expense.

(4) Related taxes (ad valorem, income, etc.).

Q WHAT IS THE BASIS FOR YOUR POSITION THAT ALL PRODUCTION CAPACITY COSTS SHOULD BE CLASSIFIED AND ALLOCATED RELATIVE TO THE INSTANTANEOUS DEMAND?

A First, generating units (and transmission facilities, as well) are rated in terms of the maximum amount of demand that can safely be imposed on them. They are not rated in terms of average annual demand; that is, the amount of energy produced divided by the number of hours in a year. Thus, in order to provide reliable service, there must be sufficient capacity available to meet the maximum expected (instantaneous) demand plus an allowance for reserves, at any point in time.

Second, most privately-owned utilities in this country must secure the approval of one or more commissions or other regulatory authorities before beginning the construction of a large, base load plant. Rarely, if ever, does a utility request such authorization without producing a demand forecast showing the need for additional capacity based on an increase in projected load. Furthermore, it is doubtful that any regulatory authority has ever authorized the

commencement of such construction without being convinced that it was required to meet reasonably anticipated demands.

Looking at this proposition in another way, it would follow that, if it is fuel cost savings that are the driving force behind the construction of base load plants, then once approved, a base load plant would never be postponed or canceled simply because of a change in the utility's load forecast. Certainly, other factors could cause delays or cancellations despite potential fuel savings. A review of currently projected coal and nuclear units, however, shows that, in fact, utilities are postponing large amounts of such base load capacity due to reduced load forecasts (U. S. Department of Energy, Energy Information Administration, "Inventory of Power Plants," Washington, D. C., 1980).

Q BUT ISN'T IT APPROPRIATE TO CLASSIFY A PORTION OF PRODUCTION CAPITAL COSTS TO ENERGY BECAUSE OF THE FUEL SAVINGS RESULTING FROM THE INSTALLATION OF MODERN BASE LOAD PLANTS?

A As a general proposition, no. One must be careful to distinguish between cause and effect. Although the effect of operating a base load unit at a high capacity factor is to produce fuel cost savings (relative to the costs which would have been incurred by operating a peaker plant at the same level), the factor which caused the utility to construct the base load plant was the need to meet projected demands reliably. To suggest otherwise would be an oversimplification of the planning process.

INCOMPLETE ANALYSIS

Q DURING THEIR CROSS-EXAMINATION, MESSRS. OLIVER AND STERZINGER CONCEDED THAT, ALTHOUGH THEY USED THE PEAK AND AVERAGE METHOD TO ALLOCATE PRODUCTION AND TRANSMISSION CAPACITY COSTS, FUEL COSTS WERE ALLOCATED IN THE TRADITIONAL MANNER--RELATIVE TO CLASS ENERGY REQUIREMENTS AT THE GENERATION LEVEL. IN YOUR OPINION, DOES THIS COST ALLOCATION TECHNIQUE COMPLETELY REFLECT THE PRODUCTION COST TRADE-OFFS UPON WHICH THEIR RESPECTIVE RECOMMENDATIONS ARE BASED?

A No, it does not. Assuming that it is also appropriate to recognize the capital and fuel cost trade-offs (in addition to peak demand) in a cost-of-service study, then one would expect to find similar trade-offs when analyzing the results of the study for individual customer classes. In other words, those customer classes having relatively low load factors would be allocated below-average fixed costs, but above-average variable costs. This would parallel the relatively low fixed costs and high variable costs of peaking units which would be the more economical choice to serve loads of shorter duration (i.e., lower load factor). By contrast, high load factor classes would be allocated above-average fixed costs and below-average variable costs to parallel the high fixed cost, low variable cost characteristic of base load units which are designed to more economically serve loads of longer duration (i.e., higher load factor).

As shown in Exhibit JP-2 ( ), Schedule 1, the peak and average method fails to live up to these expectations. Specifically,

the high tension (Rate HT) class (which has a relatively high load factor) is assigned above-average capital costs but only average fuel costs--contrary to expectations.

Q WHAT IS THE BASIS FOR YOUR EXPECTATION THAT HIGH LOAD FACTOR CUSTOMERS SHOULD BE ALLOCATED BELOW-AVERAGE VARIABLE COSTS?

A This can be demonstrated by using a "lowest cost system" (LCS) model. The LCS is the generation system that explicitly takes into account the trade-offs between capital costs and variable costs of different technologies, in order to minimize the total fixed and variable costs of serving a given load. In other words, the LCS explicitly reflects the capital substitution effect. To demonstrate this effect, I have constructed an LCS for the total PECO system and for a hypothetical high load factor class. By comparing the per unit fixed and variable costs, it is possible to demonstrate that the recognition of the production cost trade-off should result in allocating below-average variable costs to a high load factor class.

Q HOW WAS THE "LOWEST COST SYSTEM" DEVELOPED?

A We first have to determine the cross-over (or "threshold") point at which base load capacity becomes more economical than peaking capacity. Using data from the EPRI Technology Assessment Guide, the representative figures are:

	Annual Fixed Cost/kW	Variable Cost/kWh
Base	$243.38	$.01669
Peaking	47.60	.15799

These amounts are derived in Exhibit JP-2 ( ), Schedule 2.

The base plant has a higher fixed cost per kW, but a lower variable cost per kWh as compared to the peaking plant. At 1,386 hours of usage, the two types of capacity have the same total production cost:

Base: $ 243.38 + (1,386)($.01669) = $267
Peaking: $ 47.60 + (1,386)($.15799) = $267

If a unit is to be run for less than 1,386 hours, the lower "up-front" fixed cost of the peaking plant makes this type more economical. If the plant is to be run more than 1,386 hours per year, the base load unit is more economical.

Q WHAT IS THE NEXT STEP FOR DERIVING THE LCS?

A The next step is to look at the load duration curve and determine the optimal amount of base and peaking capacity. Exhibit JP-2 ( ), Schedules 3 and 4, respectively, show a representative load duration curve for the total PECO system and for the hypothetical high load factor class. On each curve, I have marked the point at which the load duration reaches 1,386 hours. For example, the total PECO load is most economically served by 4,128 MW of base capacity--which will be operated for more than 1,386 hours per

year--and 1,797 MW of peaking capacity--which will be operated for less than 1,386 hours per year. The corresponding capacity mix for the high load factor class is 2,034 MW of base load capacity and 404 MW of peaking capacity. These amounts are summarized in Exhibit JP-2 ( ), Schedule 5. This schedule demonstrates that, on a "stand-alone" basis, there is a significant difference in the capacity mix between a high load factor class and the total PECO system.

Q IF THERE ARE DIFFERENT PROPORTIONS OF BASE LOAD AND PEAKING CAPACITY FOR A HIGH LOAD FACTOR CLASS, WOULD THERE ALSO BE DIFFERENT PROPORTIONS OF BASE LOAD AND PEAKING ENERGY?

A Yes. Exhibit JP-2 ( ), Schedule 6, shows the base load and peaking energy generation for the total PECO system and for the high load factor class. Although the differences in the generation mix are not as pronounced (as in the case of the capacity mix), Exhibit JP-2 ( ), Schedule 7, confirms that the per unit variable cost for the high load factor class (of 1.825¢) is about 5% below the PECO system average variable cost (of 1.918¢).

Thus, the LCS analysis confirms the earlier expectation that a proper reflection of capital and fuel cost trade-offs should result in allocating a below-average variable cost to a high load factor customer class.

Q WHAT IS THE SIGNIFICANCE OF THE 1,386-HOUR BREAK-EVEN THRESHOLD?

A The significance of the break-even threshold is that, once the threshold is reached, additional energy use (and the fuel cost savings resulting therefrom) has no impact on the investment decision. Therefore, load duration may influence investment decisions, but only up to a point. It would be logically incorrect to jump from this to a method in which production capacity costs are allocated to all 8,760 hours of the year. Yet, this is precisely the assumption upon which both Messrs. Sterzinger, Oliver and King base their recommendations. Clearly, no capital costs should be allocated to those hours beyond the break-even threshold. Because they recommend allocating capital costs to all hours, these witnesses have mischaracterized the system planning process.

Q WOULD THE RESULTS OF THE LCS ANALYSIS HAVE BEEN MUCH DIFFERENT IF THE ANALYSIS WERE DERIVED FROM PECO-SPECIFIC, RATHER THAN EPRI, COST DATA?

A No, they would not. For example, based on PECO's 1980 analysis of projected Limerick capital costs, projected first-year fuel and operation and maintenance expenses, and escalation rates, the break-even point between would have been 1,303 hours. Irrespective of the specific break-even point, it is axiomatic that the optimal capacity and energy mix differs according to load shape. Thus, appropriate recognition of system planning considerations should result in differences in per unit capacity and energy costs allocated to each customer class.

Q CAN YOU PROVIDE AN EXAMPLE TO DEMONSTRATE THAT, UNDER A COST-CAUSATION APPROACH, CAPITAL COSTS SHOULD NOT BE ALLOCATED TO ALL 8,760 HOURS?

A Yes, I can. Messrs. Sterzinger, Oliver and King each argue that, if a utility only had to meet its peak demand, then it would need to install only peaking units (Sterzinger Testimony, Page 7; Oliver Testimony, Page 11; King Testimony, Page 25). Based on the LCS analysis described earlier, the cost to serve the on-peak period (defined as the area under the load duration curve to the left of the break-even point) would be $1,270 million, as shown in the chart below:

Chart 1

Total On-Peak* Production Cost Assuming that Service Were Supplied Entirely from Peaker Units

Capital Cost	= System Peak x Cp = 5,925 MW x $47.60/kW = $282.0 Million
Variable Cost	= On-Peak Energy x Vp = 6,252,600 MWh x $.15799/kWh = $987.8 Million
Total On-Peak Cost	= $1,270 Million

Where: Cp = Capital Costs of a Peaking Unit
Vp = Variable Costs of a Peaking Unit

*Highest 1,386 hours of load.

However, this is equivalent to the total production capital cost (both base load and peaking) and the on-peak variable cost derived in the LCS model in Schedule 7 and in the chart below:

Chart 2

Total On-Peak* Production Cost
Derived from LCS Model

Capital Cost:		
Peak-Related = 5,925 MW x $47.60/kW	=	$ 282 Million
LDC-Related = 4,128 MW x ($243.38 - $47.60)	=	$ 808 Million
Total Capital Cost	=	$1,090 Million
Variable:		
Peaker = 531,192 MWh x $.15799/kWh	=	$ 84 Million
Base Load = 5,721,408 MWh** x .01669/kWh	=	$ 96 Million
Total Variable Cost	=	$ 180 Million
Total On-Peak Production Cost	=	$1,270 Million

*Highest 1,386 hours of load.
**4,128 MW x 1,386 hours.

Thus, allocating production capital costs to the off-peak hours would, by definition, understate the cost of providing service during the on-peak hours and overstate the off-peak cost of service.

Q PLEASE SUMMARIZE YOUR CRITICISM OF THE ANALYSIS OF MESSRS. STERZINGER, OLIVER, KING AND DR. WIRTSHAFTER?

A These witnesses have failed to demonstrate that their respective allocation proposals are consistent with the principle of cost-causation. The earlier examples demonstrate that the incorporation of production costing trade-offs into the cost analysis does not support their contentions that year-round energy consumption causes a utility to incur production capital costs.

Further, Mr. Oliver has presented no evidence to support applying the same procedure to allocate transmission capacity costs. Even if it were appropriate to recognize production costing

trade-offs in a cost-of-service study, these same trade-offs are clearly invalid with respect to the transmission system.

CONTRADICTORY POSITIONS

Q WHAT IS THE BASIS FOR YOUR CONTENTION THAT MR. KING'S RECOMMENDATION TO CLASSIFY ALMOST 90% OF LIMERICK CAPITAL COSTS TO ENERGY IS INCONSISTENT WITH HIS OTHER RECOMMENDATIONS?

A Mr. King's recommendation resulted from a simple comparison between the cost of a peaking unit ($396 per kW) to the cost of Limerick ($3,621 per kW)--i.e., one minus $396 divided by $3,621 equals 89.1%. However, in the first part of his testimony, Mr. King recommends that the Limerick capital cost recovery "be distributed more evenly over the life of the plant in a pattern more consistent with the incurrence of the benefits from the plant" (Testimony at Page 9). These positions are inconsistent. While Mr. King has recommended the use of a "benefits received" standard for recovering capital costs, his classification of Limerick capacity costs is based solely on the relative capital costs between a peaking unit and Limerick without considering the benefits received. If Mr. King had applied the same "benefits received" test for cost allocation purposes as he recommends for revenue requirement purposes, substantially more of the Limerick capital costs would have been classified to demand.

Q ARE YOU ADVOCATING THE USE OF A BENEFITS RECEIVED TEST TO DETERMINE

COST CLASSIFICATION?

A No, I am not, but neither is Mr. King (Testimony at Page 14). Mr. King recognizes that the determination of Limerick benefits is imprecise, subject to controversy and totally unpredictable. If applied to rate design, it could lead to wide variations in cost classification depending on the actual performance of the unit. If the unit failed to perform adequately, more of the cost would be classified to demand and vice-versa if the unit performed better than expected. The result would be a potentially unstable cost allocation process which, in turn, would send conflicting price signals to customers. Thus, a benefits received approach would not only be unworkable, but it would be contrary to generally-accepted rate-making practice, in my opinion.

Q DOES THE FACT THAT THE COST OF LIMERICK, IN RETROSPECT, TURNED OUT TO BE NEARLY TWELVE TIMES MORE EXPENSIVE THAN THE COST OF A PEAKING UNIT HAVE ANY RELEVANCE IN DETERMINING COST ALLOCATION AND RATE DESIGN ISSUES IN THIS DOCKET?

A No, it has no meaning or relevance whatsoever. The differences in cost that we now observe are a relatively recent phenomenon, resulting from a variety of factors that have little to do with the inherent economics of generating plants. For example, according to PECO's 1984 FERC Form 1 Report, the Peach Bottom Units were installed in 1974 and have a cost of about $442/kW, while the Croydon Peaking Units (which also became operational in 1974) have an

installed cost of $122/kW. Thus, the cost differential (between nuclear base load and peaking units) used to be considerably lower than it is presently. In particular, many base load plants completed in recent years have shown higher capacity costs because of delays and cost overruns that had nothing to do with the objective of obtaining lower cost energy. Therefore, it is wrong to conclude that observed differences in capacity cost are the result of conscious decisions to spend more per kilowatt in order to achieve lower fuel costs.

Q TURNING NOW TO THE TESTIMONIES OF MESSRS. OLIVER AND STERZINGER, IS THERE ANY INCONSISTENCY BETWEEN THEIR RESPECTIVE RECOMMENDATIONS ON PRODUCTION CAPACITY COST ALLOCATION AND ANY OF THEIR OTHER COST ALLOCATION RECOMMENDATIONS?

A Yes, there is. Both Messrs. Oliver and Sterzinger contend that PECO's classification and allocation of distribution plant result in "double-counting." Both witnesses contend that double-counting occurs because the distribution demand allocators include the portions of customers' demand requirements that are fully satisfied by PECO's predominant minimum system facilities. Because the cost of the predominant minimum system facility determines the customer-related component of distribution costs, both witnesses contend that, to prevent double-counting, the demand fully satisfied by these facilities should be eliminated from the demand allocators. The validity of this argument, notwithstanding, it is obvious that

the very same criticism can be applied to the peak and average method, which both witnesses recommend.

Q CAN YOU EXPLAIN WHY THERE IS DOUBLE-COUNTING UNDER THE PEAK AND AVERAGE METHOD?

A Yes. The peak and average method double-counts energy consumption. As illustrated in Exhibit JP-2 ( ), Schedule 8, double-counting occurs because:

(1) The energy component of fixed cost is allocated relative to year-round energy consumption or average demand, and

(2) The demand component of fixed cost is allocated based on the total coincident peak demand of each customer class.

The allocation of fixed costs based on year-round energy consumption is indicated by the shaded area at the bottom of the chart. If this investment is truly related to average demand, then the only reason that any utility would invest in any other type of investment would be to meet the demands in excess of the average demand satisfied from the energy-related investment. In other words, the production demand allocator should be modified by removing the average demand supplied from the energy-related investment.

Q HOW CAN THE DOUBLE-COUNTING PROBLEM BE ELIMINATED UNDER A PEAK AND AVERAGE ALLOCATION METHOD?

A The correction of the double-counting problem under the peak and average method is shown in Exhibit JP-2 ( ), Schedule 9. In

order to correct the double-counting problem, it is necessary to subtract that portion of the four summer coincident peaks which is being supplied by the energy-related investment. This process is shown in Columns 4 and 5. Thus, the remaining, demand-related investment is allocated relative to excess demand; that is, the difference between the four coincident peak demands and the demand supplied by the energy-related plant.

CONSEQUENCES OF CLASSIFYING A SUBSTANTIAL PORTION OF PRODUCTION CAPACITY COSTS TO ENERGY

Q ARE THERE ANY POTENTIAL CONSEQUENCES THAT WOULD RESULT FROM CLASSIFYING A PORTION OF PRODUCTION CAPACITY COSTS TO ENERGY?

A Yes. There are several possible consequences of classifying a portion of production capacity costs to energy, all of which militate against the principle of cost-minimization. With respect to inter-class revenue allocations, the primary consequence is a worsening of system load factor. If some capacity costs are classified as energy costs, as well as being allocated on that basis, and if the demand and energy charges of rate schedules are determined on the basis of such classifications, then revenue and income instability are additional likely consequences.

Q HOW WOULD CLASSIFYING A PORTION OF PRODUCTION CAPACITY COSTS TO ENERGY RESULT IN A WORSENING OF SYSTEM LOAD FACTOR?

A Under such a classification procedure, any customer class can reduce its allocation of revenue responsibility by reducing its

consumption even if its maximum demand and demand at the time of (monthly) system peak(s) are held constant. This is true because the class will be allocated both less variable costs and less fixed costs. To the extent that less variable costs are allocated to the class, this is a proper reflection of the fact that less total variable costs are incurred by the utility. A reduced allocation of fixed costs to a particular class, however, must be offset by an increased allocation of fixed costs to other classes because these costs are not avoided when customers reduce their level of consumption. This would follow even if the other classes did not exhibit any change in consumption or demand.

Over time the reward for reduced load factors inherent in this approach will lead to a reduction in system load factor relative to methods that classify all production capacity costs to demand. This occurs for two reasons:

(1) At any point in time, each individual class has an incentive to worsen its own load factor (based on its demand at the time of system peak) by reducing energy use, since this will reduce its allocation of capital costs, and

(2) Over time, growth of low load factor classes is encouraged vis-a-vis high load factor classes, which leads to a decreasing average system load factor.

In the short run, a lower system load factor means higher costs per kWh because fixed costs must be spread over fewer kWh. In the long run, a lower system load factor also means higher costs per kWh, because the plant that must be added to meet growth in

sales at a low load factor exceeds the required additions if growth is occurring at a high load factor.

As an example of the short-run impact, consider a utility with a 1,000-MW load with annual fixed capital carrying costs of $100/kW. A reduction in load factor from 55% to 50% would increase the fixed costs per kWh of sales by 2 mills per kWh. This would add $1 per month to the electric bill of a residential customer consuming 500 kWh monthly and over $20,000 per month to the electric bill of a 20-MW industrial customer operating at an 80% load factor.

The long-term impact can be illustrated by considering a utility that must add 100 MW of capacity in order to meet growth in load at a 50% load factor. If that same growth had occurred at a 55% load factor, a 91-MW addition to capacity would be sufficient to meet the added load.

Q ARE THERE ANY OTHER POSSIBLE CONSEQUENCES RESULTING FROM CLASSIFYING A PORTION OF PRODUCTION CAPACITY COSTS TO ENERGY?

A Yes, there are two other potential consequences: (1) income stability and (2) a reduced incentive to shift or increase power and energy requirement to off-peak.

If, as a result of classifying some capacity costs to energy, these costs are recovered in the energy charges, and if the level of kilowatthour sales decreases (as often happens during an economic downturn), the utility's revenues will drop more than its costs, since fixed costs are being recovered from the energy or

variable portion of the rate. On the other hand, a proper recognition of the differentiation between demand and energy costs would, under these circumstances, cause revenues to decline in closer correspondence to the decline in costs, because the energy charges basically would recover only those costs which do, in fact, vary with the number of kilowatthours sold.

Classification of a portion of capacity costs on the basis of energy reduces the savings to the customer that would result from increased use during off-peak hours. For example, if a customer were to increase his consumption during off-peak hours (without changing his demands or energy consumption during on-peak hours), this classification method would allocate more fixed costs to him than before, since the number of kilowatthours added during the off-peak period would increase the allocation of fixed costs, even though the system's total capacity and capacity-related costs had not increased. This reduces the savings that would be available to the customer as a result of adding load off-peak as opposed to on-peak, and therefore, provides less incentive to improve system load factor.

CORRECTIONS TO INTERVENOR COST-OF-SERVICE STUDIES

Q THUS FAR, YOU HAVE CRITICIZED THE SPECIFIC RECOMMENDATIONS OF MESSRS. STERZINGER, OLIVER, KING AND DR. WIRTSHAFTER CONCERNING THE ALLOCATION OF PRODUCTION CAPACITY COSTS. IN PARTICULAR, YOU CONTEND THAT THE COST ALLOCATION TECHNIQUES RECOMMENDED BY THESE

WITNESSES ARE FLAWED BECAUSE OF THE ABSENCE OF ANY FUEL SYMMETRY AND BECAUSE ENERGY CONSUMPTION IS DOUBLE-COUNTED. HAVE YOU DEVELOPED A REVISED COST-OF-SERVICE STUDY TO DEMONSTRATE TO THE ALJ AND TO THE COMMISSION THE IMPACT OF CORRECTING THE TWO MAJOR FLAWS?

A Yes, I have. The results of the revised cost-of-service study--corrected to recognize fuel symmetry and to eliminate double-counting--are summarized in Exhibit JP-2 ( ), Schedule 10. (It should be noted that the four coincident peak demands used in this revised study were based on the 1985 EDH analysis sponsored by Dr. Bloom.)

Q ARE THE RESULTS OF THIS REVISED COST-OF-SERVICE STUDY MATERIALLY DIFFERENT FROM THE FOUR COINCIDENT PEAK COST-OF-SERVICE STUDY WHICH FORM THE BASIS FOR YOUR VARIOUS RATE SPREAD AND RATE DESIGN RECOMMENDATIONS IN THIS DOCKET?

A No, at least for the major customer classes, the results of a peak and average study corrected for double-counting (Schedule 9) and with a fuel symmetry adjustment (Schedule 11) are quite comparable to the revised 4CP study (based on 1985 EDH), as shown in the chart below:

	Index of Return	
	Corrected Peak and Average	4CP
High Tension	95	99
Primary	117	116
Secondary	130	126
Residential	87	84
Street Lighting	147	198
AMTRAK	114	119
SEPTA	133	144

Q COULD YOU PLEASE ELABORATE ON HOW THE FUEL SYMMETRY PROBLEM WAS CORRECTED IN THE REVISED COST-OF-SERVICE STUDY SHOWN IN EXHIBIT JP-2 ( ), SCHEDULE 10?

A Yes, I can. Exhibit JP-2 ( ), Schedule 11, sets forth an alternative allocation of fuel costs which is more consistent with system planning theory. Essentially, this alternative method identifies the fuel costs associated with base load units (Page 3) and allocates these costs relative to the base energy requirements of each customer class (Page 2, Column 4). The remaining fuel costs are allocated to those classes relative to the energy requirement met from the nonbase load units (Page 2, Column 6). Summing the nonbase costs and the base costs results in total fuel costs by customer class (Page 1, Column 3). The total fuel costs are then used to develop allocation factors (Page 1, Column 4) which are then input into the cost-of-service study.

RATE HT TAIL BLOCK ENERGY CHARGE

Q HAVE YOU REVIEWED THE TESTIMONY OF MR. FIGLEY (ON BEHALF OF PBUUG) AND DR. WIRTSHAFTER CONCERNING THE RATE HT TAIL BLOCK ENERGY CHARGE?

A Yes, I have. A comparison between the PECO, PBUUG and UP/UUC proposed HT Rate designs is shown in Exhibit JP-2 ( ), Schedule 12. Both Mr. Figley and Dr. Wirtshafter are recommending substantially higher increases in the Rate HT tail block energy charge than PECO. Mr. Figley's recommendation of 5.41¢ would result in a 43.9% increase in the tail block, while Dr. Wirtshafter's recommendation of

5.91¢ would result in a 57.2% increase. By contrast, PECO is proposing a 0.3% decrease in the tail block energy charge.

Q WHAT IS THE BASIS FOR MR. FIGLEY'S AND DR. WIRTSHAFTER'S PROPOSED TAIL BLOCK ENERGY CHARGES?

A Because both witnesses used the same Bary curve analysis as did PECO in developing their recommendations, it may be concluded that the differences between their respective proposals and PECO's (and also PAIEUG et al's) result from their reclassification of up to 90% of Limerick Unit No. 1 capacity costs to energy. As I previously testified, this reclassification is inappropriate. Therefore, their respective Rate HT tail block energy charges are similarly inappropriate.

Q WHAT WOULD BE THE IMPACT OF A VERY HIGH RATE HT TAIL BLOCK ENERGY CHARGE ON THE MEMBERS OF PAIEUG ET AL?

A As shown in Exhibit JP-2 ( ), Schedule 13, the UP/UUC recommendation would have a substantial impact on the members of PAIEUG et al. Relative to PECO's proposed rate design, PAIEUG et al base rates would be increased by 37.5% instead of 24.1% under PECO's proposal--an increase of about 56% over the PECO proposal. Of course, one cannot take the fuel cost savings for granted as they depend on the performance of PECO's base load nuclear units. Consequently, the nonfuel percent increase is more meaningful. On this basis, the UP/UUC recommendation would increase PAIEUG et al

nonfuel rates by 98.2% compared to 71.9% under PECO's proposal--an increase of about 37% over the PECO proposal. These differences would cost PAIEUG et al members nearly $15 million per year in addition to PECO's proposed increase.

Q WOULD HIGH LOAD FACTOR CUSTOMERS CONTINUE TO HAVE A STRONG INCENTIVE TO OPERATE AT A HIGH LOAD FACTOR UNDER THE PBUUG AND UP/UUC PROPOSALS?

A No, they would not. Exhibit JP-2 ( ), Schedule 14, sets forth the equivalent capacity and nonfuel energy charges as a function of hours' use under the PECO, PBUUG and UP/UUC rate design proposals. The equivalent capacity charges would be increased by a much smaller amount under the PBUUG and UP/UUC proposals for all customers, but particularly for those utilizing their demands for 300 hours' use and higher (which equates to a 41% or higher load factor). At this level, the equivalent capacity charge would increase by only 10% under the PBUUG proposal and, incredibly, by only 1% under the UP/UUC proposal. By contrast, the nonfuel energy charges would increase by nearly 300%, which is almost four times the proposed nonfuel percent increase to the Rate HT class. Thus, any notion of gradualism has been cast aside by the PBUUG and UP/UUC--contrary to generally-accepted rate design practice. This unprecedented "energy tilt," coupled with the elimination of the 80% demand ratchet, would substantially reduce the price differential between on and off-peak hours. Thus, high load factor customers do not have a

strong incentive to remain high load factor. Because a similar tilt would occur even at lower load factors, these customers would not have an incentive to improve their load factors under the PBUUG and UP/UUC proposals. Further, by reducing the relative price of on-peak capacity and energy, these proposals would certainly discourage additional off-peak use and may even encourage on-peak use.

Q YOU PREVIOUSLY TESTIFIED THAT REVENUE AND INCOME INSTABILITY COULD RESULT FROM RATE DESIGNS IN WHICH A SUBSTANTIAL AMOUNT OF FIXED COSTS ARE RECOVERED THROUGH A KILOWATTHOUR CHARGE. WHAT IMPACT WOULD THE PBUUG AND UP/UUC PROPOSALS HAVE ON THE STABILITY OF RATE HT?

A Relative to PECO's proposal, the PBUUG and UP/UUC proposals would seriously exacerbate the instability problem of Rate HT. This is shown in Exhibit JP-2 ( ), Schedule 15.

Schedule 15 measures the percentage change in income resulting from a 2% change in kilowatthour consumption under both the PECO and UP/UUC proposed HT Rate designs. The results are summarized on Page 1. Page 2 shows the impact of a 2% reduction in kilowatthour consumption based on PECO's proposed rate design. Pages 3 and 4 show the same analysis based on the PAIEUG et al and UP/UUC recommended rate designs, respectively.

Referring to Schedule 15, Page 1, it is obvious that the UP/UUC proposed HT Rate design would be considerably less stable than either the PECO or PAIEUG et al rate designs.

Q IS IT REALISTIC THAT THE BILLING DEMANDS WOULD CHANGE IN THE SAME PROPORTION AS KILOWATTHOUR CONSUMPTION?

A No, it isn't. As long as a customer continues to operate at least one daytime shift, the demand imposed should not change from the level prior to the reduced consumption. Thus, Column 3 (no demand fluctuation) is the most realistic scenario.

RATE HT DEMAND RATCHET

Q HAVE YOU REVIEWED THE TESTIMONY OF MR. FIGLEY AND DR. WIRTSHAFTER CONCERNING THEIR PROPOSALS TO ELIMINATE THE 80% DEMAND RATCHET?

A Yes, I have. Mr. Figley's primary criticisms are that:

(1) The ratchet fails to recognize diversity because an individual customer's peak demand may not be a valid representation of the impact (of that demand) on the growth in system peak, and

(2) It may discourage conservation because up to 80% of the maximum summer peak demand would be virtually cost free.

Dr. Wirtshafter's criticisms are that:

(1) The ratchet is obsolete,

(2) It overstates the cost of peaking capacity, and

(3) Ratchets are not generally used by other utilities.

None of these arguments are well-founded, and there appear to be some inconsistencies with other positions taken by these witnesses.

Q DOES THE RATCHET PROVISION FAIL TO RECOGNIZE DIVERSITY?

A No, it does not. Mr. Figley's argument would only be valid if the ratchet were 100% of the maximum summer demand, rather than 80%.

Because it is only an 80% demand ratchet, there is not a one-to-one correspondence between an individual customer's maximum summer demand and his contribution to PECO's summer peak demands. A customer having an 80% coincidence factor and a maximum summer peak demand of 1,250 kW would have a coincident demand of 1,000 kW. If this customer's billing demand during the nonsummer months were below 1,000 kW, he would continue to be billed for only his coincident demand. Thus, an 80% demand ratchet does recognize diversity, contrary to Mr. Figley's assertions.

Q ARE DEMAND RATCHETS INCONSISTENT WITH PROMOTING CONSERVATION?

A No. Demand ratchets provide a strong incentive for customers to conserve capacity and, therefore, utilize electricity more efficiently than would otherwise be the case absent a demand ratchet. This is especially important during the summer peak months because they determine the amount of capacity required by PECO to maintain nearly continuous service. By eliminating the ratchet, the incentive to conserve capacity would be severely diminished during the summer peak period. This could only hasten the day when PECO would have to install additional capacity to meet this increase in peak demand.

It is inconceivable that any businessman, manufacturer, university or other entity would deliberately increase his nonsummer demand to up to 80% of his maximum summer demand, particularly if this would mean an overall increase in on-peak energy consumption.

In an era of increased competition where there is considerable pressure to hold down costs, it would simply be imprudent for a customer to increase his overall cost of electricity just to take advantage of a lower per unit energy charge, unless, of course, the benefits of doing so would outweigh the cost. Nevertheless, this should not be an excuse to diminish the important pricing signal conveyed by the 80% demand ratchet; namely, to conserve capacity during the critical summer peak months.

Q MR. FIGLEY CITED A FEDERAL ENERGY REGULATORY COMMISSION (FERC) DECISION DISAPPROVING A 95% DEMAND RATCHET ON THE GROUNDS THAT IT WAS "INCOMPATIBLE WITH PUBLIC POLICY TOWARD ENERGY CONSERVATION. . . ." ET CETERA. HAVE YOU REVIEWED THE FERC DECISION TO WHICH HE REFERRED?

A No. Instead of providing the decision in Carolina Power & Light Company, Docket No. ER76-495, Mr. Figley supplied various Orders issued in a Connecticut Light and Power Company proceeding, Docket No. ER78-517. However, the quotation cited on Page 12 of Mr. Figley's testimony is referred to on Page 30 of the Administrative Law Judge's Initial Decision on Rate Design dated September 9, 1980.

Q IS THE FERC CASE REFERRED TO BY MR. FIGLEY DISTINGUISHABLE FROM THIS DOCKET?

A Yes, I believe it is. It is my understanding that the FERC has consistently eliminated demand ratchets because they were "patently

incongruent" with the 12CP method of cost allocation. According to the Initial Decision,

> "Having employed that [the 12CP] method of cost allocation to determine the wholesale class responsibility, it makes little sense to allocate the burden of demand costs within the class by switching to a different method, and one which looks only to a single month's peak demand to do the job." (Page 30) [Information added]

On the very next page, the ALJ ordered that the 100% twelve-month demand ratchet for full requirement customers be eliminated to provide for the allocation of demand costs for those same customers in accordance with the 12CP method (see Page 31). Mr. Figley failed to mention that a 100% demand ratchet remained intact at least for the partial requirement customers of CL&P.

Because Mr. Figley has apparently adopted the 4CP method (and not the 12CP method) of allocating demand-related production and transmission capacity costs, it follows that the PECO case is clearly distinguishable from the FERC case. However, to be consistent, the billing demand provision should allocate demand costs within the Rate HT class in a similar manner as the 4CP method allocates these same costs to the class. This is precisely the reason why an 80% summer demand ratchet is appropriate for PECO.

Q PLEASE EXPLAIN.

A The 80% summer demand ratchet is nothing more than a tool to reallocate the Rate HT demand cost responsibility to those customers within the class who utilize relatively more demand during the

summer peak months than at other times. To illustrate, let's assume that a particular class is allocated $1 million of demand cost responsibility and that the total coincident demand of this class is 1,000 MW. Further assume that this class can be subdivided into two customer groups--A and B. Both Customers A and B have a summer coincident demand of 500 MW. Therefore, as shown in Exhibit JP-2 ( ), Schedule 16, both Customers A and B would be responsible for 50% or $500,000 of demand costs.

Referring to Schedule 16, let's assume that Customer A is a nonseasonal user, while Customer B utilizes more capacity during the summer peak months. In this example, the total monthly maximum demand of Customers A and B would be 6,500 MW and 4,900 MW, respectively. Absent any demand ratchet, demand cost responsibility would be allocated relative to the monthly maximum demands. Consequently, Customer A would be responsible for about 57% (6,500 MW ÷ 11,400 MW) of demand costs, while Customer B would be responsible for only 43% (4,900 MW ÷ 11,400 MW) of demand costs. Thus, Customer A would overpay by about $70,000, while Customer B would underpay by about the same amount, both relative to their respective demand cost responsibility.

However, if an 80% demand ratchet were implemented, then Customer B's nonsummer billing demands would be 500 MW, rather than only 300 MW, and its total monthly maximum demand would be 6,500 MW--the same as Customer A. The result would be that both Customer A and Customer B would be allocated 50% of the total class demand

cost responsibility which precisely matches the demand costs caused by each customer group.

Thus, contrary to Mr. Figley's and Dr. Wirtshafter's assertions, the demand ratchet does provide appropriate pricing signals and is certainly not obsolete if the rates within the Rate HT class are to closely track the demand cost responsibility imposed by individual customers within this class.

Q DR. WIRTSHAFTER CLAIMS (ON PAGE 19 OF HIS DIRECT TESTIMONY) THAT DEMAND RATCHETS ARE NOT GENERALLY USED BY OTHER UTILITIES, AND HE CITED ONLY TWO UTILITIES OF THE ELEVEN WHICH HE REVIEWED HAVING DEMAND RATCHETS. IS THAT AN ACCURATE ASSESSMENT?

A No, it is not. Besides Delmarva Power & Light and Metropolitan Edison, at least five of the remaining nine utilities have some type of billing demand ratchet. Exhibit JP-2 ( ), Schedule 17, summarizes the various provisions of each utility examined by Dr. Wirtshafter. In some cases, the ratchet is in the form of a minimum charge rather than an explicit adjustment to the monthly billing demand.

Q HOWEVER, AREN'T THE EXPLICIT AND IMPLICIT BILLING DEMAND RATCHETS OF THESE UTILITIES GENERALLY LOWER THAN FOR PECO?

A Yes, they are. However, several of these utilities having lower effective billing demand ratchets have seasonal demand charge differentials, time-of-use differentials and/or fifteen-minute demand

intervals. Any of these characteristics would make it more costly to increase demand during the summer on-peak hours.

Q DOES THAT CONCLUDE YOUR REBUTTAL TESTIMONY?

A Yes, it does.

Before the

Pennsylvania Public Utility Commission

Docket No. R-850152

PHILADELPHIA ELECTRIC COMPANY

Rebuttal Exhibit of

JEFFRY POLLOCK

On Behalf of

Philadelphia Area Industrial Energy Users Group

(Allied Corporation, Fibers Division
Boeing Vertol Company
BP Oil, Inc.
The Budd Company
Liquid Air Corporation of North America
Lukens Steel Company
Nabisco Brands, Inc.
SDC (a Burroughs Company)
Smith Kline Beckman Corporation
Sun Refining and Marketing Company
3M Company)

and

United States Steel Corporation

February, 1986
Project 4035

Drazen-Brubaker & Associates, Inc.
St. Louis, Missouri 63141-0110

PHILADELPHIA ELECTRIC COMPANY

Net Production Plant per Kilowatt of Peak Demand
and Fuel Cost per Kilowatthour Generated
Peak and Average Method
Year Ending June 30, 1986

Line	Customer Class	Net Production Plant				Fuel and Purchased Power Expense			
		Amount (000) (1)	Peak Demand (kW) (2)	Per kW (3)	Index (4)	Amount (000) (5)	Energy Required (MWh) (6)	Per MWh (7)	Index (8)
1	High Tension	$2,351,756	2,143,078	$1,097	111	$262,569	13,320,283	$19.71	100
2	Primary	463,359	469,779	986	99	48,471	2,458,984	19.71	100
3	Secondary	750,180	816,090	919	93	74,666	3,787,866	19.71	100
4	Residential	1,869,599	2,083,422	897	91	182,682	9,267,598	19.71	100
5	Street Lighting	21,376	297	N/M	N/M	3,703	187,844	19.71	100
6	Other Utilities	93,340	103,977	898	91	9,123	462,817	19.71	100
7	Interdepartmental	11,895	11,248	1,058	107	1,300	65,953	19.71	100
8	SEPTA	49,186	45,498	1,081	109	5,445	276,232	19.71	100
9	AMTRAK	74,210	60,844	1,220	123	8,751	443,926	19.71	100
10	Total Company	$5,684,900	5,734,233	$ 991	100	$596,710	30,271,503	$19.71	100

PHILADELPHIA ELECTRIC COMPANY

Comparison of Total Cost
Between Base Load and Peaking Units
(Dollar Amounts in Thousands)

Line	Description	Base Load (1)	Peaker (2)
1	Fuel Type	Nuclear	Residual
2	Construction Cost ($/kW)	$1,150.00	$235.00
3	Levelized Carrying Charge	x 20.00%	x20.00%
	Annual Fixed Cost ($/kW):		
4	Construction	$ 230.00	$ 47.00
5	O&M	13.38	0.60
6	Total	243.38	47.60
	Levelized Variable Costs:		
7	Fuel ($/MWh)	14.13	152.43
8	Other O&M ($/MWh)	2.56	5.56
9	Total	$ 16.69	$157.99
10	Average Capacity Factor	15.82%	15.82%
11	Hours' Use	1,386	1,386
12	Capacity	1,055	75
13	Energy Generated (MWh)	1,461,716	103,913
14	Capital Cost	$ 256,766	$ 3,570
15	Variable Cost	24,396	16,418
16	Total Cost	$ 281,162	$19,988
17	Total Per Unit Cost	$ 192.35	$192.35

PHILADELPHIA ELECTRIC

TOTAL SYSTEM LOAD SHAPE

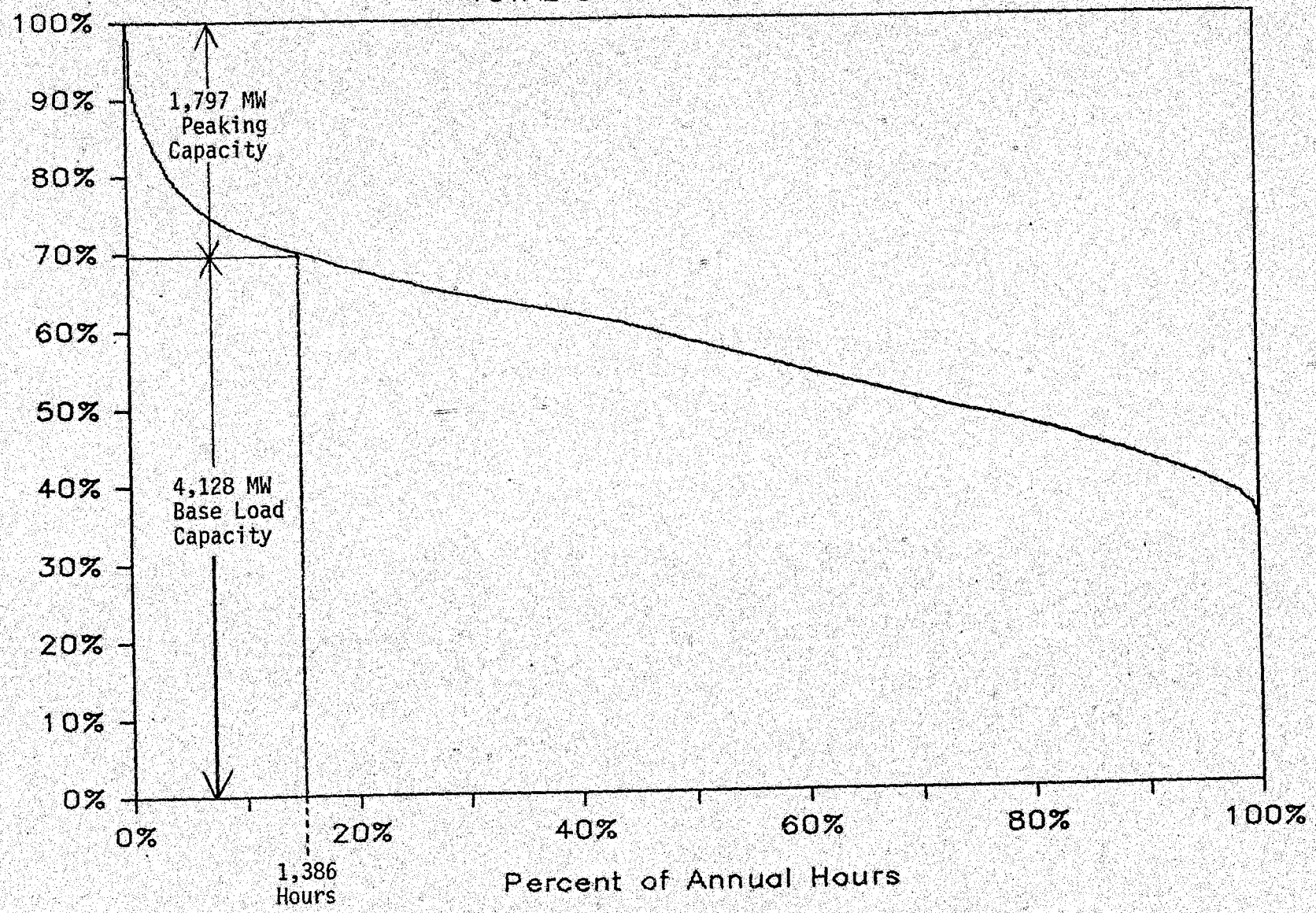

Exhibit JP-2 ( )
Schedule 3

PHILADELPHIA ELECTRIC

HIGH LOAD FACTOR CLASS LOAD SHAPE

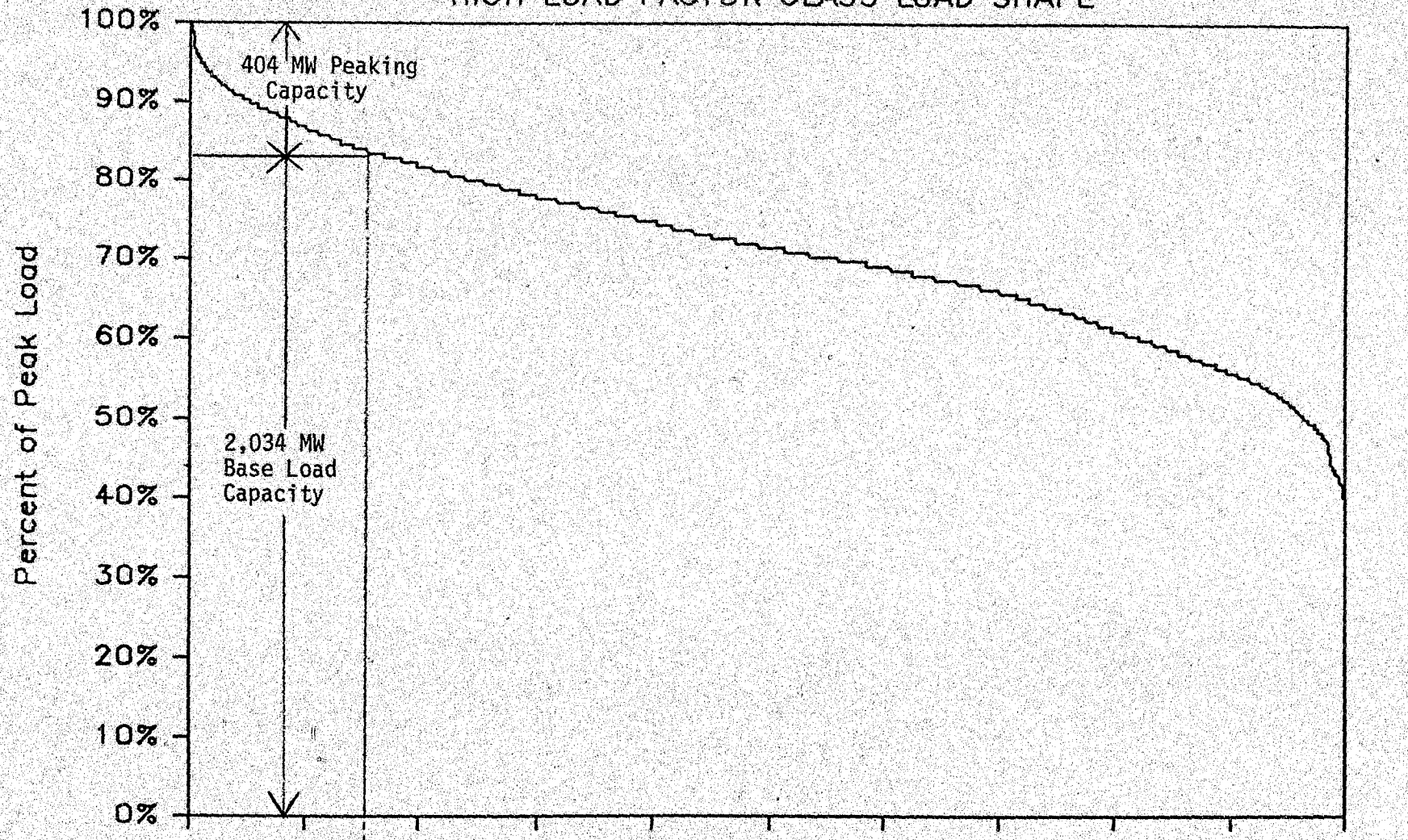

Exhibit JP-2 ( )
Schedule 4

PHILADELPHIA ELECTRIC COMPANY

Lowest Cost System Analysis
Capacity Requirements

Line	Description	Total Company (1)	High Load Factor (2)
	Capacity (MW):		
1	Base	4,128	2,034
2	Peaking	1,797	404
3	Total	5,925	2,438
	Percent Capacity Mix:		
4	Base	70%	83%
5	Peaking	30%	17%

PHILADELPHIA ELECTRIC COMPANY

Lowest Cost System Analysis
Energy Requirements and Generation Mix

Line	Description	Total Company (1)	High Load Factor (2)
	Energy Requirements (MWh):		
1	Base	29,631,716	15,135,981
2	Peaking	531,192	168,749
3	Total	30,162,908	15,304,729
	Generation Mix:		
4	Base	98.2%	98.9%
5	Peaking	1.8%	1.1%

PHILADELPHIA ELECTRIC COMPANY

Lowest Cost System Analysis
Fixed and Variable Costs

Line	Description	Base (1)	Peaking (2)	Total (3)	Units (4)	Per Unit Cost (5)
1	Fixed Costs	$243.38/kW*	$47.60/kW*	-	-	-
2	High Load Factor	$495,065	$19,232	$ 514,298	2,438 MW	$211/kW
3	Total System	$1,004,673	$85,537	$1,090,210	5,925 MW	$184/kW
4	Variable Costs	$.01669/kWh*	$.15799/kWh*	-	-	-
5	High Load Factor	$252,620	$26,661	$ 279,280	15,304.7 GWh	$.01825/kWh
6	Total System	$494,553	$83,923	$ 578,476	30,162.9 GWh	$.01918/kWh
	Total Cost					
7	High Load Factor			$ 793,578		
8	Total System			$1,668,686		

*Schedule 2.

PHILADELPHIA ELECTRIC COMPANY

Double Counting Illustration

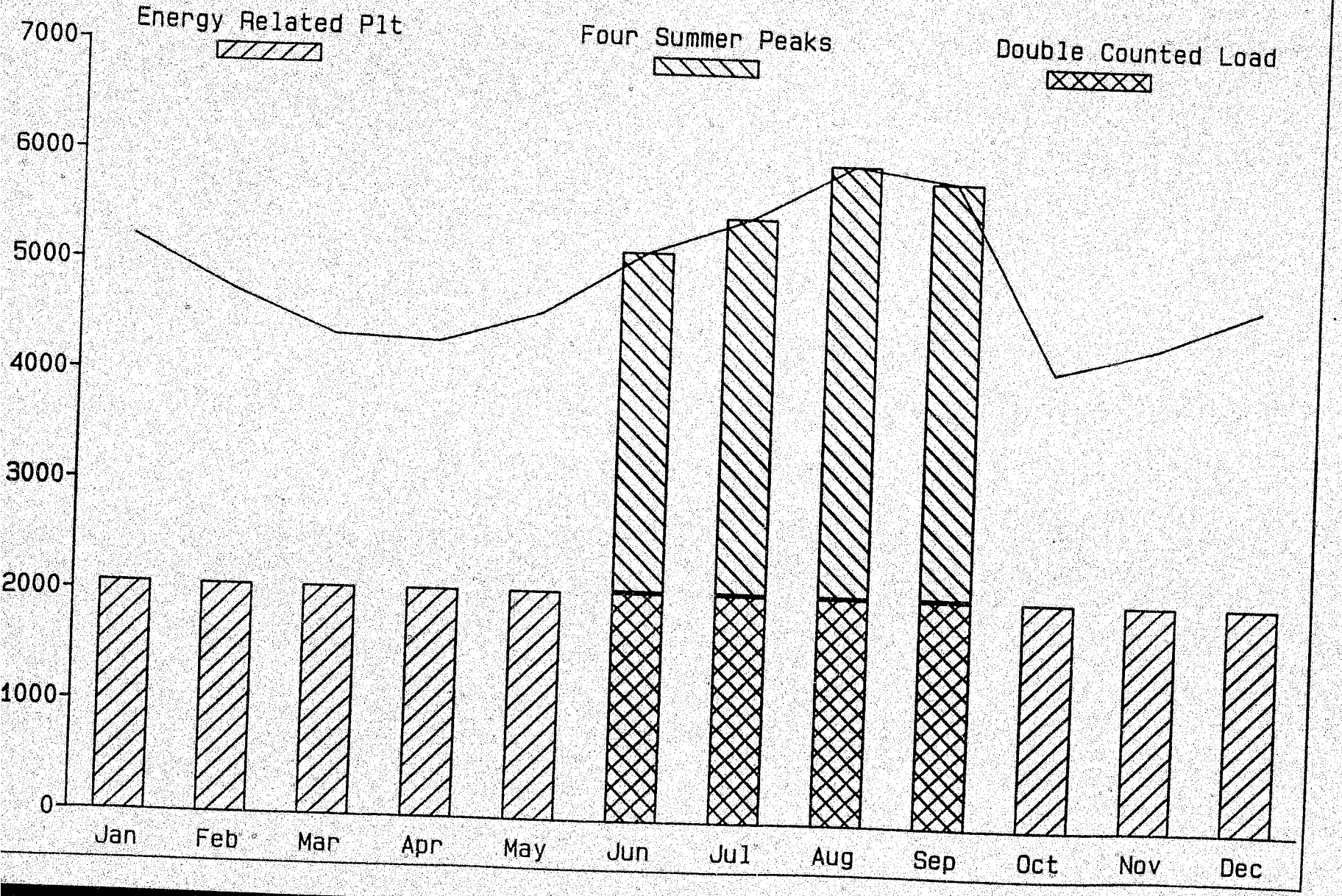

Exhibit JP-2 ( )
Schedule 8

PHILADELPHIA ELECTRIC COMPANY

Derivation of Peak and Average Demand
Allocation Factor Corrected for the Double-Counting Problem
Year Ending June 30, 1986

Line	Customer Class	Four Peak Demand (kW) (1)	Average Demand Amount (kW) (2)	Average Demand Percent (3)	Demand Supplied by Energy-Related Plant* (kW) (4)	Excess Demand Amount (kW) (5)	Excess Demand Percent (6)	Corrected Peak and Average Percent** (7)
1	High Tension	2,143,078	1,520,580	44.00271%	916,355	1,226,723	33.20952%	39.71388%
2	Primary	469,779	280,706	8.12310	169,163	300,616	8.13819	8.12910
3	Secondary	816,090	432,405	12.51298	260,582	555,508	15.03856	13.51655
4	Residential	2,083,422	1,057,945	30.61493	637,555	1,475,394	39.94149	34.32097
5	Street Lighting	297	21,443	0.62053	12,923	0	0.00000	0.37395
6	Other Utilities	103,977	52,833	1.52889	31,839	72,138	1.95290	1.69737
7	Interdepartmental	11,248	7,529	0.21787	4,537	6,711	0.18167	0.20349
8	SEPTA	45,498	31,533	0.91251	19,003	26,495	0.71726	0.83493
9	AMTRAK	60,844	50,676	1.46648	30,539	30,305	0.82040	1.20975
10	Total Company	5,734,233	3,455,651	100.00000%	2,082,497	3,693,888	100.00000%	100.00000%

*Average demand times 60%
**Column (3) times 60%, Column (6) times 40%

PHILADELPHIA ELECTRIC COMPANY
COST OF SERVICE
CORRECTED PEAK AND AVERAGE WITH A FUEL SYMMETRY ADJUSTMENT
1985 EDH STUDY
TWELVE MONTHS ENDING JUNE 30, 1986
(DOLLAR AMOUNTS IN THOUSANDS)

	TOTAL	HIGH TENSION	PRIMARY	SECONDARY	RATE RH	RATE R	RATE OP
RATE BASE							
ELECTRIC PLANT IN SERVICE	$8,893,834	$3,041,725	$ 667,578	$1,174,207	$ 500,189	$2,973,225	$ 84,707
ACCUMULATED PROVISION FOR DEPREC	1,665,850	502,063	118,270	212,147	100,908	618,551	17,930
NET PLANT IN SERVICE	7,227,984	2,539,662	549,308	962,061	399,281	2,354,674	66,776
RATE BASE ADJUSTMENTS							
ADDITIONS							
WORKING CAPITAL	272,153	101,732	20,233	34,280	15,672	83,691	3,871
DEDUCTIONS							
ACCELERATED AMORTIZATION	2,323	923	189	314	120	657	20
LIBERALIZED DEPRECIATION	526,166	180,720	39,652	69,531	29,560	174,806	5,030
RECOVERABLE FUEL COST	0	0	0	0	0	0	0
TOTAL RATE BASE	6,963,532	2,459,046	529,317	925,538	384,643	2,258,279	65,480
REVENUE							
SALES	2,251,817	785,557	178,729	328,244	121,780	699,286	23,392
OTHER	38,962	10,407	2,314	4,334	2,087	15,345	1,077
TOTAL REVENUE	2,290,779	795,964	181,043	332,578	123,867	714,631	24,469
EXPENSES							
OPERATION AND MAINT EXP	1,440,907	516,520	105,852	184,995	81,662	470,302	19,006
DEPRECIATION AND AMORT	264,877	93,722	20,306	34,609	14,578	85,084	2,820
TAXES OTH THN INCOME TAX	82,178	27,652	6,221	11,417	4,594	27,880	941
INCOME TAXES	34,032	16,955	8,124	19,896	151	-16,239	-451
PROV FOR DEFERRED INC TAX	41,011	-963	2,474	6,937	1,806	26,438	-399
INC TX DEF IN PRIOR YR	-13,606	-5,351	-1,100	-1,836	-708	-3,897	-117
INVESTMENT TAX CREDIT	-3,401	-1,168	-256	-449	-191	-1,130	-33
GAIN FROM DISPOSITION OF UTL PROP	0	0	0	0	0	0	0
TOTAL EXPENSES	1,845,998	647,367	141,621	255,569	101,891	588,437	21,769
NET OPERATING INCOME	444,781	148,597	39,422	77,008	21,976	126,194	2,700
RATE OF RETURN	6.39%	6.04%	7.45%	8.32%	5.71%	5.59%	4.12%
INDEX OF RETURN	100	95	117	130	89	87	65
DEVIATION	.00	-.34	1.06	1.93	-.67	-.80	-2.26
REVENUE SUBSIDY	0	-17,204	11,402	36,344	-5,267	-36,664	-3,012
PROPOSED OPERATING INCOME	$ 884,369	$ 324,465	$ 76,406	$ 140,887	$ 45,010	$ 259,135	$ 4,160
PROPOSED RATE OF RETURN	12.70%	13.19%	14.43%	15.22%	11.70%	11.47%	6.35%
PROPOSED INDEX OF RETURN	100	104	114	120	92	90	50
PROPOSED DEVIATION	.00	.49	1.73	2.52	-1.00	-1.23	-6.35
PROPOSED REVENUE SUBSIDY	0	24,713	18,653	47,419	-7,801	-56,202	-8,442

Exhibit JP-2 ( )
Schedule 10
Page 1 of 2

PHILADELPHIA ELECTRIC COMPANY
COST OF SERVICE
CORRECTED PEAK AND AVERAGE WITH A FUEL SYMMETRY ADJUSTMENT
1985 EDH STUDY
TWELVE MONTHS ENDING JUNE 30, 1986
(DOLLAR AMOUNTS IN THOUSANDS)

RATE BASE	RATE SLP	RATE SLS	OTH SL	OTHER UTILITIES	INTER DEPARTMT	SEPTA	AMTRAK
ELECTRIC PLANT IN SERVICE	$ 62,651	$ 75,959	$ 7,877	$ 127,306	$ 15,750	$ 68,459	$ 94,200
ACCUMULATED PROVISION FOR DEPREC	17,869	24,543	2,245	20,571	2,638	11,968	16,147
NET PLANT IN SERVICE	44,782	51,416	5,632	106,735	13,113	56,491	78,053
RATE BASE ADJUSTMENTS							
ADDITIONS							
WORKING CAPITAL	1,364	1,299	211	3,568	479	2,134	3,619
DEDUCTIONS							
ACCELERATED AMORTIZATION	5	3	1	39	5	19	28
LIBERALIZED DEPRECIATION	3,726	4,515	468	7,568	935	4,067	5,589
RECOVERABLE FUEL COST	0	0	0	0	0	0	0
TOTAL RATE BASE	42,163	47,845	5,347	102,696	12,652	54,500	76,026
REVENUE							
SALES	13,431	17,722	2,300	29,633	4,803	18,244	28,696
OTHER	63	40	33	283	35	213	2,733
TOTAL REVENUE	13,494	17,762	2,333	29,916	4,838	18,457	31,429
EXPENSES							
OPERATION AND MAINT EXP	7,117	7,163	1,101	15,290	1,918	10,904	19,077
DEPRECIATION AND AMORT	1,545	2,601	249	3,945	483	2,053	2,881
TAXES OTH THN INCOME TAX	540	672	84	497	62	626	992
INCOME TAXES	612	1,311	245	-482	489	959	2,461
PROV FOR DEFERRED INC TAX	539	894	52	3,016	367	69	-220
INC TX DEF IN PRIOR YR	-33	-25	-5	-228	-27	-113	-163
INVESTMENT TAX CREDIT	-24	-29	-3	-49	-6	-26	-36
GAIN FROM DISPOSITION OF UTL PROP	0	0	0	0	0	0	0
TOTAL EXPENSES	10,297	12,586	1,722	21,988	3,285	14,473	24,993
NET OPERATING INCOME	3,198	5,175	611	7,928	1,553	3,984	6,436
RATE OF RETURN	7.58%	10.82%	11.42%	7.72%	12.27%	7.31%	8.47%
INDEX OF RETURN	119	169	179	121	192	114	133
DEVIATION	1.20	4.43	5.04	1.33	5.88	.92	2.08
REVENUE SUBSIDY	1,025	4,305	547	2,779	1,512	1,022	3,210
ROPOSED OPERATING INCOME	$ 3,560	$ 5,400	$ 664	$ 7,929	$ 1,553	$ 6,447	$ 8,754
OPOSED RATE OF RETURN	8.44%	11.29%	12.42%	7.72%	12.27%	11.63%	11.52%
OPOSED INDEX OF RETURN	66	89	98	61	97	93	91
OPOSED DEVIATION	-4.26	-1.41	-.28	-4.98	-.43	-.87	-1.18
OPOSED REVENUE SUBSIDY	-3,646	-1,373	-31	-10,387	-110	-964	-1,830

Exhibit JP-2 ( )
Schedule 10
Page 2 of 2

PHILADELPHIA ELECTRIC COMPANY

Adjusted Fuel Cost Allocation Factors by Customer Class
to Correct the Fuel Symmetry Problem
Year Ending June 30, 1986

Line	Customer Class	Fuel and Purchased Power Cost Of Non-Base Units[a] (1)	Fuel and Purchased Power Cost Of Base Units[b] (2)	Fuel and Purchased Power Cost Total (3)	Fuel Cost Allocation Factor (4)
1	High Tension	$118,266,952	$123,915,633	$242,182,586	40.58628%
2	Primary	30,251,152	19,264,378	49,515,529	8.29808
3	Secondary	54,435,442	26,314,089	80,749,530	13.53245
	Residential:				
4	Heating	14,863,509	16,622,125	31,485,635	5.27653
5	Regular	119,598,825	41,583,896	161,182,721	27.01188
6	Rate OP	0	5,627,430	5,627,430	0.94308
7	Total Residential	134,462,334	63,833,451	198,295,786	33.23149
	Street Lighting:				
8	Rate SLP	0	1,371,087	1,371,087	0.22977
9	Rate SLS	0	866,110	866,110	0.14515
10	All Other	0	225,656	225,656	0.03782
11	Total Street Ltg.	0	2,462,854	2,462,854	0.41274
12	Other Utilities	6,958,521	3,083,319	10,041,840	1.68287
13	Interdepartmental	666,576	578,803	1,245,379	0.20871
14	SEPTA	2,591,567	2,510,111	5,101,677	0.85497
15	AMTRAK	2,267,555	4,847,754	7,115,309	1.19242
16	Total Company	$349,900,098	$246,810,392	$596,710,490	100.00000%

(a) Allocated on Page 2, Column 6

(b) Allocated on Page 2, Column 4

PHILADELPHIA ELECTRIC COMPANY

Derivation of Class Energy Requirements Met from Base and Nonbase Units
Year Ending June 30, 1986

Line	Customer Class	Energy Required (MWh) (1)	Load Factor (2)	Base Energy Requirement Amount (MWh) (3)	Base Energy Requirement Percent (4)	Nonbase Energy Requirement Amount (MWh) (5)	Nonbase Energy Requirement Percent (6)
1	High Tension	13,320,283	71.0%	9,451,154	50.21%	3,869,129	33.80%
2	Primary	2,458,984	59.8	1,469,311	7.81	989,673	8.65
3	Secondary	3,787,866	53.0	2,006,999	10.66	1,780,867	15.56
	Residential:						
4	Heating	1,754,047	72.3	1,267,784	6.73	486,263	4.25
5	Regular	7,084,342	44.8	3,171,640	16.85	3,912,702	34.18
6	Rate OP	429,209	N/M	429,209	2.28	0	0.00
7	Total Residential	9,267,598	50.8	4,868,633	25.86	4,398,965	38.43
	Street Lighting:						
8	Rate SLP	104,574	N/M	104,574	0.56	0	0.00
9	Rate SLS	66,059	N/M	66,059	0.35	0	0.00
10	All Other	17,211	N/M	17,211	0.09	0	0.00
11	Total Street Ltg.	187,844	N/M	187,844	1.00	0	0.00
12	Other Utilities	462,817	50.8	235,167	1.25	227,650	1.99
13	Interdepartmental	65,953	66.9	44,146	0.23	21,807	0.19
14	SEPTA	276,232	69.3	191,448	1.02	84,784	0.74
15	AMTRAK	443,926	83.3	369,742	1.96	74,184	0.65
16	Total Company	30,271,503	60.3%	18,824,444	100.00%	11,447,059	100.00%

PHILADELPHIA ELECTRIC COMPANY

Fuel Expense and Energy Supplied from Base Load Units
July 1986 - June 1988

Line	Description	Fuel Expense (1)	Energy (MWh) (2)	Average Cost per kWh (Mills) (3)
	Base Load Resources:			
1	Coal - PE Steam	$127,142,000	5,698,000	22.31
2	Coal - Minemouth	111,573,000	7,779,000	14.34
3	Nuclear	215,962,998	31,206,601	6.92
4	Total Base Load	454,677,998	44,683,601	10.18
5	Nonbase Load Resources	506,728,850	15,899,874	31.87
6	Total	$961,406,848	60,583,475	15.87

PHILADELPHIA ELECTRIC COMPANY

Comparison Between PECO, PBUUG and UP/UUC
Proposed HT Rate Designs

Line	Description	Present Rates (1)	Proposed Rates (2)	Percent Increase (3)
	PECO			
1	Customer Charge	$220.45	$264.15	19.8 %
2	Capacity Charge	5.37	9.44	75.8
	Energy Charges:			
3	First 150 Hours	.0739	.0964	30.4
4	Next 150 Hours	.0556	.0668	20.1
5	Additional	.0376	.0375	(0.3)
	PBUUG (Exhibit RLF 7)			
6	Customer Charge		$230.20	4.4 %
7	Capacity Charge		6.18	15.1
	Energy Charges:			
8	First 150 Hours		.0928	25.6
9	Next 150 Hours		.0733	31.8
10	Additional		.0541	43.9
	UP/UUC (Exhibit RMW-19)			
11	Customer Charge		$264.15	19.8 %
12	Capacity Charge		5.77	7.4
	Energy Charges:			
13	First 150 Hours		.0940	27.2
14	Next 150 Hours		.0764	37.4
15	Additional		.0591	57.2

PHILADELPHIA ELECTRIC COMPANY

Impact of UP/UUC Recommended HT Design
on PAIEUG et al Electricity Cost

Line	Description	PAIEUG et al (1)	Total High Tension Class (2)
	Base Rate Percent Increase		
1	PECO Proposed	24.1%	29.6%
2	UP/UUC Recommended	37.4%	31.0%
3	Percent Difference	55%	5%
	Nonfuel Percent Increase		
4	PECO Proposed	71.9%	70.6%
5	UP/UUC Recommended	98.0%	73.0%
6	Percent Difference	36%	3%

PHILADELPHIA ELECTRIC COMPANY

Comparison Between PECO, PBUUG and UP/UUC
Proposed HT Rate Designs
Equivalent Capacity and Energy Rates*

Line	Description	Present Rates (1)	PECO Proposed (2)	PBUUG Recommended (3)	UP/UUC Recommended (4)
	Up to 149 Hours' Use				
1	Capacity Charge	$ 5.37	$ 9.44	$ 6.18	$ 5.77
2	Percent Increase		76%	15%	7%
3	Nonfuel Energy Charge	.04515	.07515	.07155	.07275
4	Percent Increase		66%	58%	61%
	150-299 Hours' Use				
5	Capacity Charge	$ 8.115	$ 13.88	$ 9.105	$ 8.41
6	Percent Increase		71%	12%	4%
7	Nonfuel Energy Charge	.02685	.04555	.05205	.05515
8	Percent Increase		70%	94%	105%
	300 Hours' Use and Above				
9	Capacity Charge	$13.515	$22.670	$14.865	$ 13.60
10	Percent Increase		68%	10%	1%
11	Nonfuel Energy Charge	.00885	.01625	.03285	.03785
12	Percent Increase		84%	271%	328%

*Below 50 MW of demand.

PHILADELPHIA ELECTRIC COMPANY

Rate HT Income Versus Consumption
Summary

Line	Proposal	Income Fluctuation Due to a 2% Fluctuation in Consumption: Equal Fluctuations in Demand and Energy Percent (1)	Equal Fluctuations in Demand and Energy Index (2)	Demand Fluctuation =50% of Energy Fluctuation Percent (3)	Demand Fluctuation =50% of Energy Fluctuation Index (4)	No Demand Fluctuation Percent (5)	No Demand Fluctuation Index (6)
1	PECO	2.39%	103	1.99%	105	1.59%	110
2	PAIEUG et al	2.33%	100	1.90%	100	1.45%	100
3	UP/UUC	2.47%	106	2.22%	117	1.98%	137

PHILADELPHIA ELECTRIC COMPANY

Rate HT Income Versus Consumption
at PECO Proposed Rates

Line	Description	Amount (1)	Reference (2)
1	Energy Sold (MWh)	12,947,425	DR-Staff-RSC-1
2	2% Variation (MWh)	258,949	Line 1 x .02
3	Margin in Energy Rate (6.620¢ - 2.604¢)	4.016¢	WFS-1, Page 39
4	Billing Demand (kW)	27,933,000	Estimated
5	1% Variation	279,330	Line 4 x .01
6	Rate	$9.44	JP-2, Schedule 12
	Revenue Effect:		
7	Energy	$ 10,399,392	Line 2 x Line 3
8	Demand	2,636,875	Line 5 x Line 6
9	Total	13,036,267	
10	Income Effect	6,417,381	Line 9 ÷ 2.0314
11	Net Operating Income	$322,508,000	MPB-3, Schedule 2
12	Variation in Income	1.99%	Line 10 ÷ Line 11

PHILADELPHIA ELECTRIC COMPANY

Rate HT Income Versus Consumption
at PAIEUG et al Proposed Rates

Line	Description	Amount (1)	Reference (2)
1	Energy Sold (MWh)	12,947,425	DR-Staff-RSC-1
2	2% Variation (MWh)	258,949	Line 1 x .02
3	Margin in Energy Rate (6.309¢ - 2.604¢)	3.705¢	WFS-1, Page 39
4	Billing Demand (kW)	27,933,000	Estimated
5	1% Variation	279,330	Line 4 x .01
6	Rate	$10.19	JP-1, Schedule 8
7	Revenue Effect:		
8	Energy	$ 9,594,060	Line 2 x Line 3
9	Demand	2,846,373	Line 5 x Line 6
	Total	12,440,433	
10	Income Effect	6,124,068	Line 9 ÷ 2.0314
11	Net Operating Income	$322,508,000	MPB-3, Schedule 2
12	Variation in Income	1.90%	Line 10 ÷ Line 11

PHILADELPHIA ELECTRIC COMPANY

Rate HT Income Versus Consumption
at UP/UUC Proposed Rates

Line	Description	Amount (1)	Reference (2)
1	Energy Sold (MWh)	12,947,425	DR-Staff-RSC-1
2	2% Variation (MWh)	258,949	Line 1 x .02
3	Margin in Energy Rate (7.608¢ - 2.604¢)	5.004¢	WFS-1, Page 39
4	Billing Demand (kW)	27,933,000	Estimated
5	1% Variation	279,330	Line 4 x .01
6	Rate	$5.77	JP-2, Schedule 12
	Revenue Effect:		
7	Energy	$ 12,957,808	Line 2 x Line 3
8	Demand	1,611,734	Line 5 x Line 6
9	Total	14,569,542	
10	Income Effect	7,172,168	Line 9 ÷ 2.0314
11	Net Operating Income	$322,508,000	MPB-3, Schedule 2
12	Variation in Income	2.22%	Line 10 ÷ Line 11

PHILADELPHIA ELECTRIC COMPANY

Hypothetical Example Demonstrating the Intraclass Revenue Allocation With and Without a Demand Ratchet

Line	Description	Total Class (1)	Customer "A" (2)	Customer "B" (3)
1	Demand Cost	$1,000,000	$500,000	$500,000
2	Coincident Demand (MW)	1,000	500	500
	Monthly Maximum Demand (MW)			
3	January	825	525	300
4	February	825	525	300
5	March	825	525	300
6	April	825	525	300
7	May	825	525	300
8	June	1,200	575	625
9	July	1,200	575	625
10	August	1,200	575	625
11	September	1,200	575	625
12	October	825	525	300
13	November	825	525	300
14	December	825	525	300
15	Total	11,400	6,500	4,900
	Demand Cost if Allocated on Sum of Monthly Maximum			
16	Demands	$1,000,000	$570,175	$429,825
	Billing Demand With			
17	80% Ratchet (MW)	13,000	6,500	6,500*
	Demand Cost if Allocated on			
18	Billing Demand	$1,000,000	$500,000	$500,000

*80% of 625 MW x 8 months + 625 MW x 4 months.

PHILADELPHIA ELECTRIC COMPANY

Survey of Utility Tariff Provisions

Line	Utility	Rate Schedule (1)	Demand Ratchet/ Minimum Charge (2)	Demand Interval (Minutes) (3)	Seasonal Differential (4)
1	Atlantic City Electric Company	AGS	80% of Highest Demand (June - October)	15	Yes
2	Baltimore Gas and Electric Company	P	Customer Charge + Demand Charge x 1,500 kW	30	Yes*
3	Consolidated Edison Company of New York, Inc.	SC-4	-	30	Yes*
4	Delmarva Power & Light Company	GP	25% On-Peak + 75% of Average Billing Demands for Prior June - September	60	Yes*
5	Duquesne Light Company	L	Greater of 70% of Contract On-Peak Demand or 5,000 kW	15	No
6	Jersey Central Power & Light Company	GP	Monthly Charges plus $3.50/kW of Highest of: (1) On or Off-Peak (Prior 12 Months) or (2) Contract Demand	15	Yes*
7	Metropolitan Edison Company	GP	50% of Highest Demand (Prior 11 Months)	15	No*
8	Pennsylvania Electric Company	GP	Customer Charge + 50% of Highest Demand (Prior 11 Months)	15	No*
9	Pennsylvania Power Company	GP	60% of Highest Demand (Prior 11 Months) or Contract	15	No
10	Pennsylvania Power & Light Company	LP-4	-	15	No
11	Potomac Electric Power Company	GT	Customer Charge + Distribution Charge	30	Yes*
12	Public Service Electric and Gas Company	LPL	Demand Charge + $1.75/kW On-Peak Demand (Current Month or Prior June - September)	15	Yes*

*Time-of-use differentials.

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February 26, 1986

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Public Utility Commission

Mr. Jerry Rich, Secretary
Pennsylvania Public Utility Commission
Room G-18, North Office Building
North and Commonwealth Avenue
Harrisburg, Pennsylvania 17120

Re: Pennsylvania Public Utility Commission, et. al. v. Philadelphia Electric Company, Docket No. R-850152

Dear Mr. Rich:

Enclosed for filing with the Commission are the original and three (3) copies of the Rebuttal Testimony of Richard J. Rudden (SEPTA-Amtrak Statement 1A) concerning rate structure, on behalf of the Southeastern Pennsylvania Transportation Authority and the National Railroad Passenger Corporation.

Very truly yours,

J. Thomas Morris

J. Thomas Morris

JTM:heg
Enclosures

cc: Honorable Joseph P. Matuschak
Administrative Law Judge
Pennsylvania Public Utility Commission

All parties

DOCUMENT FOLDER

CERTIFICATE OF SERVICE

I hereby certify that I am, this 26th day of February, 1986 serving either by special messenger or by first-class mail, the Rebuttal Testimony of Richard J. Rudden on behalf of Southeastern Pennsylvania Transportation Authority and National Railroad Passenger Corporation, upon the persons listed below:

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Public Utility Commission

SEPTA/Amtrak Statement No. 1A

PENNSYLVANIA PUBLIC UTILITY COMMISSION

v.

PHILADELPHIA ELECTRIC COMPANY

DOCKET NO. R-850152

REBUTTAL TESTIMONY OF RICHARD J. RUDDEN

on behalf of

THE SOUTHEASTERN PENNSYLVANIA TRANSPORTATION AUTHORITY

and

THE NATIONAL RAILROAD PASSENGER CORPORATION

Concerning Rate Structure

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February 26, 1986

DOCKETED
FEB 26 1986

Rebuttal Testimony of Richard J. Rudden
on Behalf of SEPTA and Amtrak

Q. Mr. Rudden, what is the purpose of your rebuttal testimony?

A. My purpose is to respond to testimony that has been submitted by various intervenors proposing alternative revenue allocations for SEPTA and Amtrak.

Q. Would you please summarize the conclusions of your rebuttal testimony?

A. Yes. PECO's proposed separate rate classification and cost based rates for SEPTA and Amtrak represent an appropriate response to the Commission's order in the last case (Docket No. R-842590) in which PECO was directed to submit: (1) cost studies indicating the cost of providing service to SEPTA and Amtrak; and (2) alternative rate designs reflecting the results of such studies. In complying with the Commission's order, PECO has used the 4CP cost allocation methodology approved in that case.

By contrast, various intervenor groups have submitted alternative cost allocation methodologies and/or class revenue apportionments which differ from those proposed by PECO. These alternative proposals are inappropriate in that they (1) fail to give proper effect to the Commission's order in Docket No. R-842590; (2) propose inappropriate departures from the 4CP cost allocation methodology that has been repeatedly accepted by

the Commission; and/or (3) fail to take into account the unique supply and cost characteristics of SEPTA and Amtrak.

Q. Could you please explain the circumstances surrounding the Commission's order in Docket No. R-842590?

A. In the last case, both SEPTA and Amtrak argued that the available evidence indicated that the costs of providing electric traction power are lower than the costs of providing service to HT customers in general, and that the railroads should be separated from the HT class for costing and ratemaking purposes. Although it did not adopt or implement the recommendations of SEPTA and Amtrak regarding a separate rate classification or rider at that time, the Commission was sufficiently concerned about the issue to direct PECO to submit studies indicating the cost of providing service to SEPTA and Amtrak as well as alternative rate designs reflecting the results of those studies.

Q. Did the Company perform such a study in compliance with the Commission's order?

A. Yes. The study submitted in this case is the basis upon which PECO proposes separate ratemaking treatment for SEPTA and Amtrak relative to the HT class. The PECO study results confirm that the costs of serving SEPTA and Amtrak are significantly less than serving HT customers in general. The cost allocation

process used by PECO in its special study, utilizing the 4CP method, is the same as that adopted by this Commission in the last seven rate cases. This method has been approved by the Commission in past cases even where a substantial portion of the relevant rate base (i.e. approximately 50%) consisted of nuclear generating plant. In addition, PECO's cost allocation has been improved in this case by inclusion of a detailed analysis of specific distribution facilities serving SEPTA and Amtrak.

Q. Under PECO's proposal, do SEPTA and Amtrak pay their full cost of service?

A. Yes. They pay for all costs allocated to them, including the full system average rate of return. In my opinion, this result is entirely consistent with the Commission's order in the last case.

Q. In your summary of conclusions, you state that several of the intervenors fail to give proper effect to the Commission's order in Docket No. R-842590. Please explain.

A. First, the Philadelphia Area Industrial Energy Users Group ("P.A.I.E.U.G.") has offered a proposal which perpetuates the past inequities or subsidies which the Commission in Docket No. R-842590 apparently sought to investigate and, if appropriate, remedy. Specifically, the P.A.I.E.U.G. has proposed that SEPTA and Amtrak continue to pay the same interclass subsidy which

they pay under the present HT rate, i.e. more than $5 million. While proposing the system average rate of return for itself, the P.A.I.E.U.G. proposes that SEPTA and Amtrak pay rates substantially higher than the system average rate of return in their new rate classifications. Significantly, P.A.I.E.U.G.'s own cost of service study shows that, under PECO's proposed rates, SEPTA and Amtrak would pay very close to the system average rate of return (See Exhibit JP-1, Schedule 6).

Similarly, the Utility Users Committee/University of Pennsylvania ("UUC/UP") has effectively urged an abandonment of cost-based rates not only for SEPTA and Amtrak but for all classes through its recommendation that the revenue increase be allocated on a uniform percentage across all classes. Ironically, the UUC/UP has recommended that this equal percentage increase be applied to existing rates which were developed on the basis of PECO's 4CP methodology, as approved in the last case. Even though the UUC/UP thus implicitly adopts the 4CP methodology, this intervenor ignores the two current 4CP studies of record in this case (those of PECO and the P.A.I.E.U.G.). Both of the current 4CP studies demonstrate that under PECO's proposed rates, SEPTA and Amtrak would pay the system average rate of return, or very close to it.

As noted above, in the last rate case, PECo was ordered to perform studies to determine the actual costs of serving SEPTA and Amtrak. In my opinion, the uniform percentage increase

proposed by the UUC/UP renders any such studies irrelevant and the proposal represents an unwarranted departure from cost based ratemaking.

Q. You have also stated above that certain intervenors have proposed inappropriate departures from the cost allocation methodologies accepted by this Commission in past cases. Please explain.

A. The Commission has reaffirmed its acceptance of the 4CP cost allocation methodology as it applies to PECO in a large number of past rate cases. Most significantly, it adopted the 4CP methodology in the last case, when approximately 50% of PECO's net production and transmission plant in service was accounted for by nuclear generation. Expressed as a percentage of total net generation plant only, the cost of nuclear generation facilities accounted for more than 60%.

In this case, some intervenors have argued that the allocation methodology should be changed to give weight to average demand in the determination of the A.1 allocator, citing the energy versus demand cost trade-offs inherent in the economics of nuclear power. I have three major problems with their proposals.

Q. What are they?

A. First, an essential ingredient of the "reasonableness" of any cost allocation methodology is its past acceptance by regulators.

In PECO's case, the Commission has clearly found the 4CP methodology acceptable, even where a significant portion of rate base was related to nuclear plant investments. The alternative cost allocation proposals put forth in this case do not appear to have any past acceptance by this Commission in PECO's rate cases.

Second, the applications of the alternative approaches are assymetrical, yielding inequitable results. While attempting to apportion the capital related costs of nuclear power as between demand and energy, the intervenors give no recognition to the differences in fuel costs associated with peak load versus base load energy. If they had recognized these fuel cost differences, off-peak and high load factor customers who use proportionately more base load power would have been allocated lower than average fuel costs. Proper recognition of these fuel cost differences could significantly reduce the cost responsibility of these customers relative to that shown by the proponents of the energy-weighted demand allocation methodologies. In this case, we have seen just one side of the coin; to accept the one-sided, energy-weighted demand allocation methodologies proposed in this case would be, in my opinion, discriminatory against off-peak and high load factor customers.

Third, the departure away from the 4CP methodology to an energy-weighted demand allocation method has been rationalized by some of the intervenors by arguing that a new allocation

methodology is required to reduce the "rate shock" of Limerick. In my opinion, this is entirely inappropriate.

Q. Please explain why.

A. The proper mechanism for reducing rate shock is the phasing-in of Limerick's prudently incurred costs, not a change in cost allocation methodology. If a change in allocation methodology is to be adopted, it should be adopted for reasons related to basic utility design, operating and cost criteria, and not to achieve some predetermined objective, such as the mitigation of adverse rate impacts. If mitigation is to be an objective, it should be accomplished through rate design, as PECO has proposed. Moreover, a change in cost allocation methodology simply shifts relative impacts among classes, and does not reduce total costs for the system as a whole.

Q. You stated above that various intervenors have failed to take into account the unique service, supply and cost characteristics applicable to SEPTA and Amtrak. Please explain.

A. By and large, each intervenor rate structure witness who has proposed alternative cost and/or interclass revenue allocations in this proceeding has disregarded the unique load and supply characteristics of SEPTA and Amtrak which result in significantly lower costs of providing traction power. Most notably, none of the intervenor rate structure witnesses have

taken into account (or even professed familiarity with) the special circumstances under which power is delivered to Amtrak at Thorndale and Perryville, as detailed in my direct testimony. Had they familiarized themselves with that testimony, they would have learned that nearly 38% of Amtrak's total energy requirements from PECO represent deliveries of power generated by other utilities and not by PECO. In fact, PECO neither generates the power which it meters at Thorndale and Perryville, nor transmits it to Amtrak. Moreover, the power metered at Thorndale and Perryville is 25Hz power, the vast majority of which is generated at Safe Harbor, a hydroelectric plant jointly owned by Pennsylvania Power & Light Company and Baltimore Gas and Electric Company, and delivered directly to Amtrak entirely outside of the PECO system.

Q. How does the failure to take into account the circumstances surrounding the delivery of power to Amtrak at Thorndale and Perryville affect the allocations of costs and revenue distributions proposed by the various intervenors?

A. In general, all of the cost allocation proposals submitted by the various intervenors overstate the amount of PECO production and transmission costs that should be allocated to Amtrak by a significant amount, corresponding to the amount of demand and/or energy metered at those delivery points.

Q. In your direct testimony, you discussed the impact upon Amtrak's revenue allocation resulting from the inclusion of power deliveries at Thorndale and Perryville in PECO's 4CP demand allocator. How do the circumstances surrounding the delivery of power at Thorndale and Perryville affect the cost allocation proposals submitted by those intervenors (i.e. the OCA, CEPA and PBUUG) who are recommending that a portion of PECO production and transmission costs be allocated on an energy basis?

A. These proposals are intended to allocate the costs of energy-related production capacity to customers who receive the benefit of this generating capacity in proportion to the energy generated and consumed from these facilities. Since the energy metered at Thorndale and Perryville is not generated (or transmitted) by any PECO facility, Amtrak cannot be expected to bear responsibility for PECO's energy-related production plant costs based on the amount of energy metered at Thorndale and Perryville. If an energy-weighted demand allocator were to be accepted by the Commission, the energy delivered at Thorndale and Perryville should be excluded from the computation of the demand allocation factor for SEPTA/Amtrak.

Q. Have you quantified the impact on the revenue allocation to Amtrak under the various parties' proposals if the Thorndale and Perryville demands and energies had been properly excluded from the allocation of PECO's production and transmission plant?

A. Yes, I have. In my direct testimony at pages 24-27, I addressed PECO's cost allocation study. To the extent that power deliveries at Thorndale and Perryville are included in the 4CP for allocation of production and transmission plant, an over-allocation of demand costs results. Such overstatement of demand costs results in an overstatement of revenue requirement of $5-6 million for Amtrak. For the cost study sponsored by the P.A.I.E.U.G. witnesses, I removed from the 4CP demands used in their A.1 allocator a level of demand which represents the lowest proportionate share of Amtrak's total 4CP demand historically provided at Thorndale and Perryville (i.e. 13,000 KW adjusted for losses). This results in a decrease in the P.A.I.E.U.G. revenue allocation for Amtrak of $4.6 million and a decrease, relative to PECO's proposal, of $4.2 million in the revenues required from Amtrak.

With regard to the peak and average method of cost allocation proposed by the OCA witness (and also apparently by the CEPA witness because his average and excess allocation factors are identical to Mr. Oliver's peak and average allocation factors), I again removed the lowest proportionate share of Amtrak's 4CP demand historically provided at Thorndale and Perryville from the peak allocator. I also removed the test year MWH delivered at Thorndale and Perryville from the average demand allocator. This modification to the A.1 allocator resulted in a reduction in the Amtrak revenue requirement of

about $9.4 million relative to that proposed by Mr. Oliver. Adjusted in this manner, Mr. Oliver's revenue requirement from Amtrak is also some $2.4 million less than the revenue level proposed by PECO. I was unable to duplicate the cost study performed by the PBUUG witness. However, I estimate that if Thorndale and Perryville demands were removed from the allocation factors which PBUUG developed for production and transmission plant, the results would fall somewhere between the 4CP and the peak and average results since PBUUG recommends an allocation method which essentially combines both methods.

Q. Are you at this time modifying your position regarding PECO's proposed revenue allocation to SEPTA and Amtrak?

A. No. As stated in my direct testimony, we believe that PECO has treated SEPTA and Amtrak equitably in the allocation of the large rate increase it is requesting in this proceeding. In summary, we wish to note the following at this time:

(1) To date, it appears that no party, including PECO, objects to treating SEPTA and Amtrak as a <u>single</u> separate class of service, as I have proposed in my direct testimony.

(2) PECO, OCA, and PBUUG agree with SEPTA and Amtrak that the traction service customers should pay the system average rate of return.

(3) P.A.I.E.U.G. and UUC/UP propose revenue allocations to SEPTA and Amtrak which would perpetuate past over-allocations of revenues above the cost of service.

(4) Under all the proposed cost of service allocation methods, if power and energy

deliveries at Thorndale and Perryville are properly excluded from the calculation used to allocate PECO's production facilities, the resulting revenue requirement needed to produce the system average rate of return is anywhere from $2 million to $10 million less than proposed by PECO in its full requested rate increase.

Q. If the Commision grants PECO its full rate request, what should SEPTA's and Amtrak's rate increase be?

A. It should be no more than that proposed by PECO.

Q. Should the Commission grant PECO less revenues than it requested, do you have any recommendation concerning the level of revenue increase to applied to SEPTA and Amtrak?

A. Yes. PECO should rerun its cost of service study at the allowed revenue level and set the revenue requirement for SEPTA and Amtrak at the system average rate of return.

Q. Does this conclude your rebuttal testimony?

A. Yes.

R-850152

PENNSYLVANIA
PUBLIC UTILITY COMMISSION
Harrisburg, PA 17120

Public Meeting held February 20, 1986

DOCUMENT FOLDER

Commissioners Present:

Linda C. Taliaferro, Chairman
Frank Fischl
Bill Shane

DOCKETED
FEB 27 1986

Pennsylvania Public Utility Commission
v.
Philadelphia Electric Company

Docket No. R-850290

ORDER

BY THE COMMISSION:

This investigation by the Pennsylvania Public Utility Commission involves, inter alia, the proposed rates, rules, and regulations contained in a tariff supplement designated Supplement No. 18 to Tariff Electric-Pa. P.U.C. No. 26, filed December 30, 1985 by respondent, Philadelphia Electric Company (PECO), to become effective February 28, 1986. Because it appears that the proposed tariff supplement will change rates, rules, and regulations, and that these changes may be unlawful, unjust, unreasonable and contrary to the interest of the public, the Commission believes that the effective date of the said supplement should be postponed pending hearing and decision in this proceeding.

It also appears that consideration should be given to the reasonableness of respondent's existing rates, rules and regulations, particularly Supplement No. 6 to Tariff Electric-Pa. P.U.C. No. 26. The issue of the reasonableness of Supplement No. 6 has been raised by a participant in our proceedings at Pennsylvania Public Utility Commission v. Philadelphia Electric Company, Docket No. R-850152. We believe all germane issues should be considered in one proceeding, so we will direct consolidation of these issues at the docket herein and removal of the issues from the docket at R-850152. However, any matters of record therein shall be deemed part of the record in the instant case, and any discovery therein undertaken shall be usable in this proceeding to the extent otherwise permissible.

Finally, we note that provisions of proposed Supplement No. 18 and existing Supplement No. 6 do not appear to comply with our final Order at Pennsylvania Public Utility Commission v. Philadelphia Electric Company, R-79060865, nor to comply with our regulations at 52 Pa. Code §57.35. We thus direct consideration of how the supplements may be brought into compliance with those authorities. And, to insure that no party is disadvantaged by delaying full resolution of these issues beyond the suspension period applicable in the proceedings at R-850152, we will direct suspension of Supplement No. 18 only to the same date, June 27, 1986, and direct expedited proceedings herein; THEREFORE,

IT IS ORDERED:

1. That an investigation on Commission motion is hereby instituted to determine the lawfulness, justness and reasonableness of the rates, rules and regulations proposed in Supplement No. 18.

2. That the operation of the said tariff supplement filed December 30, 1985 is suspended until June 27, 1986, or such earlier date as the Commission may decide the issues herein.

3. That, in accordance with the Tariff Regulations of the Pennsylvania Public Utility Commission, respondent file a suspension supplement effectuating this order.

4. That this investigation shall include consideration of the lawfulness, justness and reasonableness of respondent's existing rates, rules and regulations, in particular currently effective Supplement No. 6 to Tariff Electric-Pa. P.U.C. No. 26 (predecessor to the proposed supplement), which became effective September 25, 1984.

5. That to the extent the Commission's investigation at Pennsylvania Public Utility Commission v. Philadelphia Electric Company, Docket No. R-850152, has included consideration of any issues pertaining to proposed Supplement No. 18 or existing Supplement No. 6, investigation of such issues shall not proceed further at Docket No. R-850152, but instead shall be removed from that proceeding and consolidated with the investigation of proposed Supplement No. 18 herein. All testimony and exhibits germane to either supplement, previously admitted at R-850152, shall be deemed admitted in the instant proceeding; any testimony and exhibits proffered but not admitted shall be admissible in the instant proceeding to the extent not objectionable; and, any discovery undertaken therein may be used in the instant proceeding to the same extent otherwise usable by the parties.

6. That any testimony, exhibits and discovery, germane to the issues, first available in the proceeding at R-850152, shall be made available to Trial Staff and any additional parties to the instant proceeding.

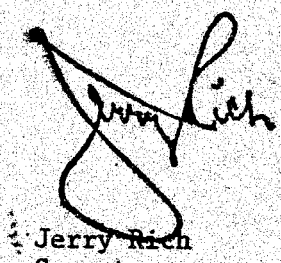
7. That this investigation shall include consideration of the extent to which both Supplement No. 6 and proposed Supplement No. 18 comply or fail to comply with our final Order entered May 9, 1980, at Pennsylvania Public Utility Commission v. Philadelphia Electric Company, Docket No. R-79060865, and our regulations at 52 Pa. Code §57.35, and modifications necessary to achieve compliance, consistent with subsequent Commission Orders, justness and reasonableness of rates and the public interest.

8. That the Office of Administrative Law Judge shall assign this matter to an Administrative Law Judge for recommended decision, which shall be rendered on or before May 28, 1986, and shall schedule, on an expedited basis, such hearings as may be necessary.

9. That any pending or future complaints against either Supplement No. 6 or Supplement No. 18 shall be consolidated with the Commission's investigation herein.

10. That a copy of this order shall be served upon respondent, all parties to the proceeding at Docket No. R-850152 and any persons who have filed formal complaints against Supplement No. 6 or respondent's proposed rate changes as set forth in Supplement No. 18.

BY THE COMMISSION,



Jerry Rich
Secretary

(SEAL)

ORDER ADOPTED: February 20, 1986

ORDER ENTERED: February 21, 1986

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SECRETARY'S OFFICE
Public Utility Commission

VIA FEDERAL EXPRESS

Honorable Joseph P. Matuschak
Pennsylvania Public Utility
Commission
97 East Main Street
Uniontown, Pennsylvania 15401

Re: **Pennsylvania Public Utility Commission v. Philadelphia Electric Company**
Docket No. R-850152

Dear Judge Matuschak:

On behalf of Occidental Chemical Corporation, enclosed please find three copies of a document entitled "Corrected Testimony of James A. Ross." This document is the corrected version of a document entitled "Testimony of James A. Ross on Behalf of Occidental Chemical Corporation," filed in the above-captioned proceeding on January 22, 1986. Also enclosed please find three copies of a document entitled "Errata Sheet re Testimony of James A. Ross," which lists each of the changes to Mr. Ross' January 22, 1986 testimony now contained in the corrected version. (For your information, we have served copies of each of the above-described documents on the parties to this proceeding.)

Occidental Chemical Corporation respectfully requests that the corrected version of Mr. Ross' testimony be accepted in lieu of Mr. Ross' testimony of January 22, 1986. The corrected version merely makestechnical and typographical corrections to the earlier version of Mr. Ross'testimony.

We have enclosed one extra copy of the above described documents. We would appreciate it if your office would time-stamp these copies and return them to us in the enclosed self-addressed, stamped envelope for our files.

DOCUMENT
FOLDER

We would like to bring to your attention the fact that we have recently received certain data from Philadelphia Electric Company ("PECO") which we requested in our First Set of Interrogatories to PECO, dated December 23, 1986. We expect to file very brief supplemental testimony on this additional data later this week.

Sincerely,

Earle H. O'Donnell

Earle H. O'Donnell

Attorney for
Occidental Chemical Corporation

Enclosures

cc: All Active Parties
Secretary Rich

RECEIVED

FEB 27 1986

SECRETARY'S OFFICE
Public Utility Commission

COMMONWEALTH OF PENNSYLVANIA
BEFORE THE PUBLIC UTILITIES COMMISSION

THE PENNSYLVANIA
PUBLIC UTILITIES COMMISSION
V. PHILADELPHIA ELECTRIC
COMPANY

DOCKET NO. R-850152

UUC/UP STATEMENT #1A

SURREBUTTAL TESTIMONY OF PAUL CHERNICK ON BEHALF OF THE UTILITY USERS COMMITTEE/ UNIVERSITY OF PENNSYLVANIA

February 27, 1986

DOCKETED

FEB 28 1986

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SURREBUTTAL TESTIMONY OF PAUL CHERNICK

OF BEHALF OF

UNIVERSITY OF PENNSYLVANIA/UTILITY USERS COMMITTEE

Q: Are you the same Paul Chernick who presented direct testimony in this proceeding?

A: Yes.

Q: What topics will you cover in your surrebuttal testimony?

A: I will discuss the following issues raised by PECo's rebuttal testimony:

1. projections of Limerick 1 operating costs and performance,

2. the measurement of Limerick 1 capacity value,

3. projections of oil prices,

4. discount rates,

5. the cost and benefits of the Limerick 1 construction delays, and

6. miscellaneous issues.

Due to the limited time available, my comments on these topics will be very brief.[1]

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1. The testimony indicates that it was filed on Wednesday, February 19. PECo did not serve a copy on me until Saturday, February 22.

1 Projections of Limerick 1 Operating Costs and Performance

Q: What PECo rebuttal witness addresses the issues of Limerick 1 operating costs and performance?

A: Dr. Hieronymus addresses these issues at pages 28 - 40 of his testimony. He disagrees with the various projections of Limerick 1 O&M, capital additions, and capacity factor offered by Mr. Komanoff, Mr. Falkenburg, and me. He makes some interesting technical arguments: it is unfortunate that PECo did not present these arguments in its original justification for its projections,[2] which would have allowed for a full and fair review of these points. Unfortunately, it is not possible to fully evaluate Dr. Hieronymus's arguments in the time available for surrebuttal. Most of these technical issues are relatively unimportant, since Limerick 1 will be an economic disaster for current customers, regardless of whether PECo's projections, or those based on historical experience, turn out to be correct.

Dr. Hieronymus also touches on similar issues on pages 20-22. The only interesting point I see in that discussion is the claim that the difference in utility-claimed economics for Limerick 1 and Susquehanna 2 is the avoided fuel savings.

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2. PECo generally offered only very limited, arbitrary computations to support its projections, or offered no data at all.

Dr. Hieronymus appears to use the total claimed Susquehanna 2 benefits, including capacity credits, as if they were all energy savings. He also ignores the fact that Susquehanna 2 (and the entire plant) was only about half as expensive as Limerick 1 and common.

Q: Do you wish to respond to any of Dr. Hieronymus's specific points?

A: Yes, there are seven such points. First, Dr. Hieronymus states that "Mr. Chernick simply assumes that O&M will grow at the geometric rate he derives. . . " (PECo Statement 15B, page 29). This is incorrect, as Dr. Hieronymus acknowledges later in his testimony: I assume linear growth, not geometric growth. Much of Dr. Hieronymus's criticism of my projection is directed to the geometric projection which I present for comparison purposes, and which is not used in any of my cost-effectiveness analyses. The geometric projection is a straw man.

Second, Dr. Hieronymus incorrectly suggests that introducing Mr. Komanoff's TMI dummy would have a dramatic effect on my O&M projections.[3] The linear projection, which I actually use in my analyses, changes rather modestly when the TMI variable is introduced: Dr. Hieronymus's calculations in Exhibit WHH 40B, page 2, indicate that the present value of

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3. The modeling tradeoff between time trends, individual year dummies, and period dummies (such as the TMI variable) deserves more study than is possible in this time frame.

the O&M costs, at his preferred discount rate, decreases only 19% from my specification to the TMI-dummy specification, while the present value of the PECo projection is 61% less than mine. For a higher, more reasonable discount rate, the present value difference due to the TMI dummy would be smaller.

Third, Dr. Hieronymus proposes a very major change to my model, while implying that such a change would be consistent with my approach (ibid., page 31, lines 1-9). In my model, O&M is assumed to display constant economies of scale (increasing unit size by a fixed percentage reduces $/kW by a fixed percentage), constant economies of duplication (adding a second unit causes a fixed percentage reduction in $/kW), and a constant percentage cost differential for northeastern plants. The specification I selected is the standard one used in situations in which economies of scale are important, and most importantly, it makes sense.

Dr. Hieronymus's model has none of these features, since he assumes that the effect of unit size, year, and unit number are additive. He assumes, for example, that O&M is $8.164 million higher for each northeastern plant in each year, regardless of whether the plant is a single 500 MW unit in 1973, or a twin 1100 MW plant in 1984. Similarly, he assumes that a second twin unit costs $18.894 million extra (27260*ln(2)), regardless of whether that unit is a 500 MW Midwestern unit in 1970, or an 1100 MW Northeastern unit in

1984. Dr. Hieronymus's proposed model design is clearly inferior to my design, on its face, and he provides no evidence to indicate that it represents a better model of nuclear O&M.[4]

Fourth, Dr. Hieronymus observes that a significant portion of capital additions occur during major outages for major repairs and upgrades. His analysis covers only the last two years of the five years which form the basis of my projection of Limerick 1 capital additions, and is thus primarily anecdotal.[5] Nonetheless, his basic point is probably true, even though his quantification of this effect is suspect: major capital additions are often due to major repairs and refits, or are accomplished during the same outages required by the repairs and refits. Dr. Hieronymus appears to suggest that it is proper to assume that Limerick 1 will have many fewer repairs and retrofits than existing plants, simply because he and I do not know what problems Limerick 1 will have. Of course, when the units listed on page 32 of PECo Statement 15B entered service, their owners did not anticipate the problems which have resulted in their capital additions.

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4. Dr. Hieronymus has simply demonstrated that arbitrary regressions, such as his, can yield arbitrary results. Since my specification is not arbitrary, he has said very little about my projections.

5. No justification is offered for this limited review of the data.

The nuclear utilities have repeatedly presented Pollyanna projections of nuclear construction costs, and of operating parameters, which have turned out to be incorrect. For example, Dr. Perl (a PECo witness in this case) repeatedly projected in the late 1970's and early 1980's that nuclear construction cost overruns and schedule slippages were over, and that costs would stabilize. He was repeatedly wrong. In 1983, Dr. Hieronymus filed testimony on behalf for the Public Service Company of New Hampshire, supporting the company's $5.2 billion cost estimate for the two-unit seabrook plant and rejecting estimates by intervenor witnesses (including me) in the $7-$10 billion range. Before Unit 2 was canceled in 1984, the cost estimates for the plant had reached the $9-$10 billion range. Current utility estimates for Unit 1 alone are $4.5 billion or more. The nuclear utilities, and their witnesses in regulatory proceedings, have generally been wrong in projecting that the bad news is over. I that hope Dr. Hieronymus is correct, and that the bad news in capital additions (at least as it affects Limerick 1) is over. I believe the Commission would not be well advised to accept the assurances of PECo or Dr. Hieronymus in this regard.[6]

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6. As I noted above, the appropriate ratemaking treatment for Limerick 1 in this decade is probably not very sensitive to the operating cost projections, since Limerick 1 is uneconomical even with PECo's cost projections.

Fifth, Dr. Hieronymus criticizes Mr. Komanoff's capital additions regressions for explaining only a small portion of the variation. As I explained on redirect, it is unrealistic to expect regression analyses to accurately predict individual annual results for such highly variable parameters as capital additions and capacity factor. The timing of outages and additions will cause large swings from year to year for individual units, which have no relationship to underlying conditions and which have little significance in projecting average values for the lifetime of Limerick 1.

Sixth, Dr. Hieronymus misstates the significance of the "confidence interval" around my best estimates of Limerick 1 capacity factors. The ranges displayed in his Exhibit WHH-43 are prediction intervals for individual annual capacity factors, and in that sense, Dr. Hieronymus is correct: Limerick 1 will probably have annual mature capacity factors which range from the 20% range to near 90%. However, these variations will tend to average out, so that units similar to Limerick 1 (the Susquehanna units, for example) will have life-time average capacity factors which are much more closely clustered. If the annual variation not explained by my model are independent (e.g., there are no inherently good or bad plants), the variability decreases with the square root of the number of years in the average: for 25 mature years, 95% of the <u>unit averages</u> would be expected to fall in the 50% - 63% range, even while 95% of the <u>annual data</u> was

spread over the 26% - 88% range Dr. Hieronymus displays.[7] I have not tested the independence hypothesis, but Easterling (1981)[8] did sort out plant-related and random variations, and found that the 95% prediction interval for years 2-10 of a BWR's life was a range of 13% around his best estimate.[9] For 25 years, the range would decrease further, to 9%-10%.

Seventh and finally, from page 36, line 37 to page 39, line 3, in PECo Statement 15B, Dr. Hieronymus alleges that some unspecified data for newer reactors "suggest at a minimum that Limerick is likely to outperform Mr. Chernick's forecast in the short term." Since the data is not provided, I can not determine what Dr. Hieronymus thinks he is talking about, but he appears to be suggesting that since someone else used historical data and underprojected a year or two of performance at new units, the same will be true for my projections. Due to the lack of data, the absence of any connection with my model, and his admission that his putative data is "less clear for BWRs," Dr. Hieronymus's allegations must be dismissed as being without substantial basis.[10]

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7. Actually, the spread would be greater, since my projections already average out the effects of refuelings.

8. The full cite is listed in the bibliography to my direct testimony.

9. Since Easterling did not include as much unit-specific detail as I did (he used no size variable, where I have two), my formulation would be expected to leave less unexplained unit-specific variability.

10. At the end of this rambling and contradictory discussion, Dr. Hieronymus refers to "the perhaps premature declaration of LaSalle in commercial operation" as a partial explanation for

the poor performance of new BWRs. Since LaSalle 1 took 20.5 months from first operating license to COD, and Unit 2 took 10 months, compared to an average of 13 months, a median of 11 months and a minimum of 4 months for post-TMI units, this concern does not appear to be supported by the data. See Table R-4.

2 The Measurement of Limerick 1 Capacity Value

Q: Which PECo rebuttal witnesses discuss the capacity value of Limerick 1?

A: This topic is addressed in various ways by Dr. Hieronymus and Mr. Rush.

Q: How does Dr. Hieronymus address the issue of the capacity value of Limerick 1?

A: He discusses capacity-related issues in two sections of his testimony. The first section is entitled "Excess Capacity" (PECo Statement 15B, pages 16-18) and the second is entitled "Capacity Payments" (ibid., pages 22-26).

Q: Please comment on Dr. Hieronymus's "Excess Capacity" discussion.

A: For the most part, Dr. Hieronymus appears to have established another straw man. He spends a couple of pages defining and arguing with a position which he attributes to me, but which I did not take.[11] I do not argue that PECo should retain capacity which will be uneconomical with Limerick 1 in service. I do express some concern that PECo not retire existing units simply to make Limerick 1 appear to be more

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11. Dr. Hieronymus even notes that a plain reading of my testimony indicates that I am simply advocating that PECo make economic decisions, but he is apparently having too much fun beating on the straw man to stop.

necessary: the CTs, in particular, are so inexpensive that it is difficult to believe that PECo and its customers will not be better off with the capacity than without it. Nevertheless, it is possible that even the minimal cost of the CT capacity exceeds its value to PECo for internal purposes, or for sale to other systems,[12] in which case the plants should be retired.

My concern about the merits of PECo's planned retirements is really peripheral to the major topics of my testimony. For the most part, I accept PECo's assertions that the existing capacity will be retired as Limerick 1 enters service, but that it could have been retained to meet PJM obligations in the absence of Limerick 1. Dr. Hieronymus pauses in his denunciation of a non-existent ratemaking proposal to endorse the only substantive use I made of the existing capacity (PECo Statement 15B, page 17, lines 39-47).

Q: Please comment on Dr. Hieronymus's discussion of "Capacity Payments".

A: Dr. Hieronymus starts by basically restating earlier arguments for his hypothesized increase in the PJM capacity

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12. Remember that PECo, and Dr. Hieronymus, are predicting that were it not for Limerick 1, the cost of peaking capacity purchases within PJM would be about $200/kW in 1995. If PJM is that close to a severe capacity crisis, it is likely that the CT capacity could be sold for more than its cost of less than $15/kW. If PJM is not on the verge of a capacity crunch, then Dr. Hieronymus's capacity charge projections are not only unrealistic and inefficient, but also fanciful.

charge. He then acknowledges that these original arguments for the higher capacity charge are irrelevant, since PECo could build its own peakers, rather than paying PJM the price of new peakers every year. He therefore introduces an entirely new argument: that if PECo had not built Limerick 1 (or some other baseload plant), PJM would change its split-savings calculation for economy energy to require splitting capacity costs as well.[13]

Dr. Hieronymus does not provide any evidence that PJM, or any power pool, has ever considered, let alone implemented, such a scheme. The GPU system has been a major buyer from PJM since the TMI accident, has no plan for base-load additions, and appears likely to continue buying large amounts of economy energy for some time: Dr. Hieronymus offers no PJM document suggesting a revision of the split-savings formula for GPU. Many NEPOOL members are projecting capacity deficiencies throughout the 1990's, and many of those members already have (and will continue to have) relatively small

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13. Dr. Hieronymus assumes that the capacity costs to split would be based on new capacity every year, rather than on the costs of actual PECo peakers, which would be much less expensive, and the cost of the sellers' actual plants, which would usually be less expensive than the most recent unit in the pool. Under economic dispatch, the most recent and most efficient plants would be used first by their owners, and the sales to PECo would tend to be from older plants. Under Dr. Hieronymus's proposal, the seller of economy power from a new 1985 coal plant, for example, would recover more than the cost of the capacity, and more than would be paid for a unit capacity sale, in addition to receiving split energy savings. This is illustrated in Table R-1. Dr. Hieronymus's fixation with the cost of new plant in the capacity savings calculation simply leads to absurd results.

baseload entitlements: I know of no NEPOOL proposal comparable to Dr. Hieronymus's hypothesized response, and again Dr. Hieronymus offers no evidence that other NEPOOL utilities are acting the way he predicts the PJM utilities would act toward PECo.

In fact, Dr. Hieronymus's hypothesized split-capacity charge for economy energy is quite unlikely to be adopted by any pool. Utilities generally charge for capacity only when they guarantee the buyer access to the plant's power.[14] Under economy sales arrangements, the buyer gets only the power for which the seller has no other use, including serving its own load and making short-term and long-term sales. The buyer has no claim on any particular unit, and always pays more than the seller's incremental cost of production. Since the seller gives up nothing, and always gains, the split energy savings arrangement should be more than adequate to compensate sellers of economy energy. And since the buyer receives no guarantees at all, a payment of half the difference in capacity costs between the two units would be rather extravagant.

Dr. Hieronymus does not address other major flaws in his projection of replacement capacity costs, which I identified in my direct testimony. For example, he yet to explain why

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14. That guarantee may be conditioned by allowing some limited interruptions of delivery, but the buyer is at least getting first call on the capacity most of the time.

the massive hypothetical increases in the PJM capacity charge, which he attributes to a prolonged shortage of capacity, would in 1986, before any prolonged PECo capacity deficiency.[15] Similarly, Dr. Hieronymus has failed to reconcile the very high avoided energy and avoided costs PECo projects in the absence of Limerick 1, with PECo's failure to include economic capacity (particularly cogeneration) which would be built by PECo or other parties, for less than those costs.

Q: What are Mr. Rush's comments on the capacity value of Limerick 1, and are they valid?

A: Mr. Rush makes eight points relevant to my direct testimony. First, he claims that I "apparently consider [retention of existing units and construction of new CTs] more suitable than the PECo addition of Limerick Unit No. 1" (PECo Statement 14A, page 3). This is hardly a fair statement of my position, and blames me for PECo's actions. PECo chose to compare Limerick 1 to a case in which existing peaking plants were retired, no new capacity was built, and capacity deficiencies were made up by very expensive PJM charges. As I noted on direct, the proper alternative to which Limerick 1 should be compared would be an efficient program of capacity additions, upgrades, and purchases (especially from

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15. Indeed, it is hardly realistic to assume that PECo would have retired the existing units, if that would have triggered a capacity deficiency.

cogenerators): since PECo did not perform production costing runs for an optimized alternative expansion plan, it was not possible for me to compare Limerick 1 to an efficient program.

Since I was forced to use PECo's energy savings figures -- which included no fuel-saving investments -- I simply found the least-cost capacity sources which would be consistent with those energy sources. Mr. Rush does not dispute my observation that it would be foolish (in the absence of Limerick 1) for PECo to throw away the existing capacity and instead purchase capacity at costs higher than the cost of PECo-owned turbines. Yet this is the alternative to Limerick 1 which PECo proposes. I propose a slightly more efficient expansion plan to compare with Limerick 1, which substitutes inexpensive PECo-owned peaking capacity for expensive PJM capacity purchases.[16] Since my expansion plan eliminates the limited and belated benefits PECo claims for Limerick 1, comparison to a truly efficient expansion plan would reveal that Limerick 1 is even less economical than my modification to PECo's non-Limerick expansion plan would indicate.

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16. The oil-fired steam plants which are being retired as Limerick 1 enters service do have some fuel savings, even with Limerick on line, and would have greater fuel savings without Limerick. I subtracted PECo estimates of their fuel savings (with Limerick) from their O&M, to produce a slightly overstated but reasonable estimate of their net capacity costs.

Second, Mr. Rush claims that the existing oil-fired plants "are uneconomical to run" (ibid.). In fact, the oil steam plants do produce fuel savings, even with Limerick 1 on line. More important, using PECo's assumptions regarding interchange energy, it would be less expensive for the customers to use the existing plants and interchange, rather than to pay for Limerick 1, for many years and probably for the unit's life as a whole.

Third, Mr. Rush points out that excessive reliance on oil has its risks. The same is true for PECo's very heavy reliance on nuclear power for its energy requirements: both the cost and availability of that power has been difficult to predict, highly variable over time, and much more expensive than PECo expected.

Fourth, Mr. Rush raises the specter of massive capacity retirements in the first decade of the next century. He does not explain why he believes that Keystone, Conemaugh, or Eddystone 3 and 4 will have to be retired at age 35, when Eddystone 1 and 2 and Cromby 1 are to be extended to age 50, or indeed why the process of rebuilding boilers and turbines can not continue indefinitely. Historically, power plant retirements usually have resulted from technical obsolescence (e.g., high heat rates) rather than physical deterioration.[17]

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17. Of course, units which are marginally efficient are often retired at the point when major repairs would otherwise be needed. A more efficient unit which required even more extensive repairs might well be kept on line: if the state

It is perfectly possible that the fossil units Mr. Rush lists (ibid., page 6) will be retired by 2010, if a superior technology (e.g., modular fluidized bed units, fuel cells, a new generation of nuclear plants, photovoltaics) is available to replace them.[18] If the new technology, or the industrial capacity for delivering it, do not exist, then relatively few fossil plants will be retired. In any case, I agree with Mr. Rush that PECo's hypothetical alternative non-Limerick expansion plan is inefficient, and that in the absence of Limerick PECo would have invested in (or purchased) new capacity which used less oil than the PECo hypothetical alternative. Once again, Mr. Rush is blaming the intervenors for PECo's alternative supply plan.

Sixth, Mr. Rush claims that my alternative expansion plan relies "on resurrecting retired units" (page 3). This is not correct. I assume that, had Limerick 1 not been under construction, Richmond and Southwark would not have been retired: no resurrection would have been necessary.

Seventh, Mr. Rush garbles the entire retirement issue (page 6, line 47, to page 8, line 41). He focuses on semantic issues, such as whether PECo assumes early retirements or the intervenors assume late retirements, whether the retirement

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of the art has not progressed much, it will almost always be cheaper to fix an old plant than to build a new one.

18. If such superior technologies become available, they will tend to decrease the benefits of Limerick 1.

is justified with Limerick 1 nearing operation, and whether the plants have "served their original objective," rather than the real economic issues. He also makes various vague statements about units wearing out. The fact is that I have relied PECo assumptions and conclusions about the cost and effectiveness of extending the lives of these units, primarily drawn from PECo studies used to justify the retirement of the units. Mr. Rush does not dispute those studies, or my use of them. Given those PECo assumptions, it would be cheaper to replace Limerick 1 with retained capacity (including some life extensions) than with the PJM purchases PECo assumes in its cost-benefit studies.

Eighth and last, I would like to discuss Mr. Rush's response to my demonstration that Limerick 1 is a poor source of reliability. The lack of substance in his response presents a sad picture of PECo's capacity planning ability. Mr. Rush criticizes me for estimating the size-sensitivity of the PJM system (the m factor in my Table 2.7), but he offers no estimate of his own, nor does he demonstrate that any reasonable variation in the m factor would change my basic conclusions. Instead, he makes vague claims about effects of the size of PJM's system and the size of certain other units,[19] and then simply asserts -- without any analysis or

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19. Mr. Rush appears to be confusing the effect of the first large unit on operating reserve requirements, which is very important, to the effect of that first large unit on installed reserve requirements (which is the measure of

calculation -- that my observations about the Limerick 1 contribution to PJM reliability are incorrect.[20] I scaled up the NEPOOL size parameter to reflect PJM's larger system, so Mr. Rush's arguments about the differences between NEPOOL and PJM are irrelevant: the central point is that I have a reasonable estimate of the reliability benefits of Limerick 1, and he has only bald assertions.

Contrary to Mr. Rush's assertion, my reliability sensitivity calculations were performed for a PJM-sized system, not for NEPOOL, and no arbitrary changes were necessary. Other than the value of m, which was adjusted for PJM conditions, no inputs to my calculation relied on NEPOOL figures. Indeed, most of my inputs came from PECo.[21]

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reserve relevant to this case), for which it is much less important.

20. Actually, he is rather vague on his bottom line. He couches the "reliability impact of Limerick 1" in terms of the retirement of an unspecified amount of smaller units, and asserts that there would be "essentially no change in the reliability of the PJM system". If he means that retiring 458 MW of gas turbines, and bringing on 1055 MW of Limerick 1 will cause only a small increase in the frequency of blackouts, spread over all of PJM, he is probably correct. My point is not that Limerick 1 will cause massive reliability problems, but only that it does not replace the reliability value of 1055 MW in smaller, more reliable units.

    Similarly, Mr. Rush says that "Limerick . . . will not have the negative impact that Mr. Chernick suggests," he may either be referring to his error, in believing that I have suggested that Limerick 1 will cause blackouts, or he may be suggesting that the "negative effect" will be slightly smaller than I suggest, which is always possible.

21. Mr. Rush even criticizes me for using PECo data for the oil-fired plants. I relied on PECo estimates of forced outage rates for refurbished steam units at Delaware, Cromby, and Schuylkill, given PECo's familiarity with the specific units

Mr. Rush does not mention the reason I was forced to estimate the size-sensitivity of PJM. PECo refused to provide PJM-specific studies of the relationship between capacity, load and reliability, on the grounds that such studies are proprietary (IR-UCC/UP-2-6 and 2-7). This is perhaps the most extraordinary claim I have ever seen a utility make on discovery. I can not imagine how any PJM member could be harmed by the release of such studies, unless they demonstrate that PJM reserve requirements are excessive, in which case this Commission should certainly know their contents. NEPOOL has suffered no apparent harm from releasing estimates of the relationship between reserves and reliability.

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when they were in good repair, and for new CTs, since there was no data readily available for the type of plants PECo says it would build. For the other steam units and the existing CTs, I use the average experience in the last 5 years. For Limerick 1, I use a forced outage rate intermediate between PECo's optimistic estimate and my own historically-based projection. Table R-2 presents the relative reliability value of a MW in each of the various units, compared to a MW of Limerick 1, if the latter achieves PECo's 20% outage rate. Even if Mr. Rush were right about Limerick's forced outage rate, he is incorrect in asserting (again without evidentiary support) that it provides the same reliability as an equal rated capacity in smaller units.

3 Projections of Fuel Prices

Q: Which PECo rebuttal witnesses address fuel cost projections?

A: Various aspects of this issue are discussed by Dr. Hieronymus, Dr. Hogan, and Mr. English.

Q: Do you have any comments on their testimony?

A: Yes, I have two comments. First, the extensive discussion of coal prices by Mr. English and Dr. Hieronymus is largely irrelevant to this proceeding. As I demonstrate in Table 2.5 of my direct testimony, PECo's replacement fuel costs are at the level of oil-fired steam or combustion turbines: coal prices clearly have little effect on the economics of Limerick 1, as PECo has constrained this case. If PECo had provided comparisons of the cost of Limerick 1 to that of a contemporaneous coal plant, coal prices would be very important. Since PECo has chosen to compare Limerick 1 to existing oil-fired capacity and largely oil-based purchases, coal prices do not matter very much.

Second, PECo's rebuttal on oil prices simply indicates that PECo does not believe their usual oil price consultant, DRI, and that PECo has found one part-time forecaster, Dr. Hogan, who agrees. No oil price forecasts are offered from other independent commercial forecasters (comparable to DRI), whose incentives are oriented to correct predictions, or even from

corporate forecasters (such as for the oil companies) who may have axes to grind. In the absence of such alternative forecasts (which PECo could certainly have found and presented, had any agreed with its positions), we must assume that the DRI forecasts represent the consensus in the industry, at least before the current downturn in prices.[22]

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22. Dr. Hogan's description of the reasons for rising prices contains an apparent inconsistency. He correctly observes that "expensive tertiary recovery projects" will be delayed by falling prices: this is undoubtedly correct. However, both he and PECo project rising real prices from 1985 to 1990, and the OCA price projections show real prices returning to 1985 levels by about 1995, so the tertiary recovery projects which are delayed in the short term will be developed a few years later, or perhaps a decade later. Unlike exploration for new supplies, refitting existing fields for more efficient extraction does not involve long time lags or high risks. Actually, the rising interest in cogeneration development in such oil-producing areas as California, Texas, and Oklahoma, may accelerate tertiary recovery with steam-injection cogeneration systems.

4 Discount Rates

Q: What PECo rebuttal witnesses address the issue of discount rates?

A: Dr. Hieronymus, Mr. Hill, and Dr. Perl all touch on this issue.

Q: What response would you like to make to their comments?

A: I will avoid getting any deeper into complex theoretical issues, and will only mention a few points. At the end of the next section, I propose a regulatory solution which cuts through the tangle of detailed arguments, by letting PECo demonstrate its faith in its claimed discount rate, to the benefit of consumers. The specific points I would like to make include:

1. No PECo witness has disputed the fact that utility carrying costs (return and taxes) for investments are about 20%, once depreciation and investment-related tax credits are accounted for.

2. PECo witnesses correctly state that tax effects must be considered in establishing a discount rate. In applying this rule, they err in including only the tax deduction for debt expense, and ignore the tax multiplier which must be applied to pay the income taxes on funds collected from ratepayers to pay for

non-deductible financing costs (equity funds, as well as debt for which the tax effect has already been taken, as in net-of-tax AFUDC).

3. The after-tax discount rate is generally correct in competitive industries. Tax effects are generally subtracted from projected revenue streams, and there is in any case no connection between the cost of the investment and the resulting revenues streams. Therefore, paying a dollar in interest costs only about 50 cents, since income taxes go down by 50 cents, all other things being equal. For rate-regulated utilities, all other things are not equal: paying $1 in interest generally creates a $1 in allowed revenues, which neutralizes the tax benefit. For equity funds, which generate no tax benefits, earning $1 requires a charge to customers of $2. Thus, the net effect of taxes is to reduce the financing costs of competitive industries, and increase the financing costs of regulated utilities.

4. Dr. Hieronymus agrees that the issue is whether "ratepayers would prefer to pay the cost of Limerick sooner or later,"[23] but then uses the utility's cost of capital for comparing costs over time. This is inconsistent and contradictory. The figures we are

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23. Alternatively, the cost may that required by some alternative to Limerick.

discounting are charges to ratepayers, not the utility's cash expenditures.

5. Dr. Hieronymus quotes EPRI on the after-tax discount rate, which simply demonstrates that utilities (and their captive organizations, such as EPRI) have preferred low discount rates to justify their questionable capital investments.

6. Dr. Hieronymus argues that the utility cost of capital should be used as the discount rate, because "it is used to build the plant." This is an argument for using the utility net-of-tax cost of capital as the AFUDC rate, which no one appears to dispute. Dr. Hieronymus has created yet another straw man.

7. Dr. Hieronymus correctly observes that the discount rate for a project should be based on "the market cost of capital for a project with its risk characteristics." PECo has not attempted to find a market price for taking the risks of operating Limerick 1,[24] but we do know that when corporations, institutions, or individuals are given the opportunity to invest in much less risky projects which reduce future energy costs, they require projected returns in excess of 20%.

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24. For example, an insurer might guarantee PECo's projections of Limerick 1 operating costs and capacity factor, but only at a very high premium.

8. Dr. Hieronymus's observation that the discount rate for a project should be based on "the market cost of capital for a project with its risk characteristics" contradicts Mr. Hill's first two points (PECo Statement 18D, pages 9-11), in which he argues that the appropriate discount rate is determined only by ratemaking, and is independent of Limerick 1 characteristics.

9. Mr. Hill generally appears to confuse cost recovery issues with discount rate issues. Whether PECo recovers its investments, whether shareholders are compensated for the risk of their total investment in PECo (not just Limerick 1), whether rates are set using embedded or incremental costs of capital, and whether AFUDC rates are net or gross of tax rates, has little relevance for determining the discount rate to be applied to Limerick 1. Mr. Hill is also mistaken in his impression that I "seek to remove" tax benefits: I accept PECo's projections of Limerick 1 carrying charges (except for the treatment of common plant), which are lower due to the deductibility of interest, or higher due to taxation on equity return, depending on how one views the situation.

10. Dr. Hieronymus notes that "[h]igh hurdle rates are used to counter optimism in forecasting project cash flows." The same high hurdle rates can be applied to PECo's

optimistic projections of Limerick 1 cash flows: Limerick 1 is uneconomical at the 25%+ hurdle rates Dr. Hieronymus endorses, or even at 15% rates. Thus, if we apply to PECo's projections only a small part of the skepticism which industries and institutions apply to their own projections, Limerick 1 would not be expected to break even in discounted terms.

5 The Costs and Benefits of the Limerick 1 Construction Delays

Q: Which PECo rebuttal witness addresses the costs and benefits of the Limerick 1 construction delays?

A: Dr. Perl discusses this issue, in connection with discount rates.

Q: What is his position, and what is your response?

A: Basically, he asserts that PECo can finance costs over time at less than consumer discount rates, and that the alleged benefits of the delayed plant in the third decade of the next century were fully comparable to the increased costs of delay in the 1980's. Dr. Perl has distorted the argument somewhat on pages 12 and 13: he suggests that the critical issue is the credibility of projected savings in the 30th year of the plants operation (regardless of when it enters service) or the comparative credibility of savings in the 30th year, versus the 31st year. The only substantial difference between the delayed plant and the non-delayed plant is that the delayed plant is not available in the early years (say, 1984 and 1985) but is operating in the years after retirement of the undelayed plant (say, 2023 and 2024). Thus, we must compare savings in 2024 to costs in 1984: for most of the customers who paid the extra costs in 1984, the benefits in 2024 are irrelevant, since they will not be on the system.

The costs in 1984 are quite real and known, while the benefits in 2024 are speculative and highly uncertain.

Presumably, Dr. Perl's logic would also suggest that homeowners delay installing storm windows with a 15 year useful life, since the present value of the savings due to having the windows in year 16 will exceed the costs of not having the windows in year 1. It is not clear where Dr. Perl's rationalization for delay would end: if two years of delay are good, then would not ten years be better? Why would Dr. Perl ever bring a plant on line, install storm windows, or do anything which had a limited useful life?

Q: How would you suggest that the Commission resolve the disputes regarding the cost of delay and of the appropriate discount rate?

A: PECo asserts that 9.7% is the effective annual cost at which it can finance projects for the benefit of ratepayers. PECo further insists that the benefits it projects in 2024 are just as real as the costs in 1986. The Commission can simply take the Company at its word, and let it recover its investment,[25] including 9.7% financing, from the benefits it expects Limerick 1 to produce late in this century and into the next. To be generous, the Commission could allow PECo to

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25. Net of any penalties imposed, such as for construction imprudence.

retain its projected energy savings per kWh,[26] as forecasted in this case, plus the capacity benefits I have quantified. The real benefits of Limerick 1, compared to an efficient expansion plan, would be lower than the combined energy and capacity value calculated in this way. If Dr. Perl, Dr. Hieronymus, and the other PECo witnesses are correct about the operating costs, capacity factor, and discount rate for Limerick 1, the Company would be fully compensated.

Q: Would this approach cause major financial problems for PECo?

A: It should not do so, <u>if investors believe PECo's projections</u> of the costs, performance, and risks of Limerick 1. An investor who agrees with Dr. Perl would have no reluctance to invest in Limerick 1 at an expected after-tax return of 9.7%, with the time pattern of costs and benefits PECo projects. Whether the FASB considers PECo's deferrals to be earnings should be irrelevant to an investor who believes PECo's projections. The value of securities is determined by the investor's expectations of future cash returns, not by accounting reports.

Q: Why would PECo not embrace your approach?

A: I can only speculate on that point, since I obviously have not discussed this issue with top PECo management. One

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26. Note that this approach would protect PECo from variation in fuel costs or power availability, and would lock in recovery based on fuel costs higher than current consensus projections.

possibility is that PECo does not expect to be able to convince investors of the economic viability of Limerick 1, which it has asked the Commission to accept. In that case, PECo's projections would fail the market test Dr. Hieronymus proposes: the discount rate for an investment as risky as Limerick 1 is higher than 9.7%. The other possibility is that PECo does not believe its own projections, and anticipates that it would never recover the cost of Limerick 1 if cost recovery was tied to plant performance and operating costs.

5.1 Miscellaneous Issues

Q; Do you have any other response to PECo rebuttal testimony?

A: Yes. Mr. Wroblewski (PECo Statement 21A) asserts that sinking-fund depreciation (and hence presumably other deferred cost recovery mechanisms) can not represent "the loss in service value," which is the FERC definition of depreciation.[27] As measured by its projected benefits, the value of Limerick 1 rises for the first twenty-odd years of its life, so its economic depreciation would be negative in that period. This is demonstrated in Table R-3, which displays the present value over time of the future benefits, both for PECo assumptions and for one of my estimates of Limerick 1 benefits. The results are essentially unchanged if net operating benefits are used as the definition of "service value," rather than the gross benefits displayed in Table R-3. To avoid any extraneous dispute, Table R-3 uses PECo's preferred 9.7% discount rate.

Q: Does this conclude your surrebuttal testimony?

A: Yes.

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27. Most of Mr. Wroblewski's testimony involves such non sequiturs as whether banks charge transaction cost ("points") to small borrowers, and whether PECo has a claim against individual customers for cost recovery.

TABLE R-1: COMPARISON OF HIERONYMUS' HYPOTHETICAL SPLIT-CAPACITY-COST CHANGES TO THE COST OF A NEW 1986 COAL PLANT

YEAR	PJM CAP CHARGE $/KW-YR [1]	YEARLY REV REQ COAL-$/KW [2]	AVERAGE OF COLUMNS [1] + [2] [3]	ANNUAL COST 1986 COAL PLANT
1985				
1986	$52.93	$229.94	$141.44	$229.94
1987	$56.58	$241.44	$149.01	$229.94
1988	$60.23	$255.92	$158.08	$229.94
1989	$63.88	$271.28	$167.58	$229.94
1990	$68.26	$287.56	$177.91	$229.94
1991	$72.36	$304.81	$188.58	$229.94
1992	$76.70	$323.10	$199.90	$229.94
1993	$81.30	$342.48	$211.89	$229.94
1994	$86.18	$363.03	$224.61	$229.94
1995	$91.35	$384.81	$238.08	$229.94
1996	$96.83	$407.90	$252.37	$229.94
1997	$102.64	$432.38	$267.51	$229.94
1998	$108.80	$458.32	$283.56	$229.94
1999	$115.33	$485.82	$300.57	$229.94
2000	$122.25	$514.97	$318.61	$229.94
2001	$129.59	$545.87	$337.73	$229.94
2002	$137.37	$578.62	$357.99	$229.94
2003	$145.61	$613.33	$379.47	$229.94
2004	$154.35	$650.13	$402.24	$229.94
2005	$163.61	$689.14	$426.38	$229.94
2006	$173.43	$730.49	$451.96	$229.94
2007	$183.84	$774.32	$479.08	$229.94
2008	$194.87	$820.78	$507.83	$229.94
2009	$206.56	$870.03	$538.29	$229.94
2010	$218.95	$922.23	$570.59	$229.94
2011	$232.09	$977.56	$604.83	$229.94
2012	$246.02	$1,036.22	$641.12	$229.94
2013	$260.78	$1,098.39	$679.58	$229.94
2014	$276.43	$1,164.29	$720.36	$229.94
2015	$293.02	$1,234.15	$763.59	$229.94
2016	$310.60	$1,308.20	$809.40	$229.94
2017	$329.24	$1,386.69	$857.97	$229.94
2018	$348.99	$1,469.89	$909.44	$229.94
2019	$369.93	$1,558.09	$964.01	$229.94
2020	$392.13	$1,651.57	$1,021.85	$229.94
2021	$415.66	$1,750.67	$1,083.16	$229.94
2022	$440.60	$1,855.71	$1,148.15	$229.94
2023	$467.04	$1,967.05	$1,217.04	$229.94
2024	$495.06	$2,085.07	$1,290.07	$229.94
NPV AT 9.70%			$2,809.30	$2,306.43

TABLE R-2: EFFECTIVE LOAD CARRYING CAPABILITY
Limerick at 20% EFOR

	INPUTS: MW	n	EFOR	AVE MW	ELCC	ELCC/MW	ELCC/AVE MW	Ratio of ELCC/MW to Lim. ELCC/MW	WEIGHTED AVERAGES USED IN TABLE 2.8
Limerick 1	1055	800	20.0% [1]	844.00	705.56	66.9%	83.6%	1.000	
	1055	800	25.0%	791.25	637.74	60.4%	80.6%		
	1055	800	27.5%	764.88	605.87	57.4%	79.2%		
	1055	800	30.0%	738.50	575.22	54.5%	77.9%		
	1055	800	35.0% [2]	685.75	517.23	49.0%	75.4%		
Existing Combustion Turbines	30	800	18.4% [3]	24.48	24.39	81.3%	99.7%		
	30	800	28.4%	21.48	21.37	71.2%	99.5%	1.065	
	30	800	38.4%	18.48	18.35	61.2%	99.3%		
New Combustion Turbines	75	800	8.0% [6]	69.00	68.73	91.6%	99.6%	1.370	
Richmond 9	166	800	18.7% [4]	134.96	132.23	79.7%	98.0%		
	166	800	28.7%	118.36	114.73	69.1%	96.9%	1.033	
	166	800	38.7%	101.76	97.61	58.8%	95.9%		
Southwark 1	163	800	18.9% [4]	132.19	129.54	79.5%	98.0%		
	163	800	28.4%	116.71	113.24	69.5%	97.0%		
	163	800	38.4%	100.41	96.42	59.2%	96.0%	1.039	1.054
Southwark 2	173	800	15.2% [4]	146.70	144.17	83.3%	98.3%		
	173	800	25.2%	129.40	125.75	72.7%	97.2%		
	173	800	35.2%	112.10	107.75	62.3%	96.1%	1.087	
Delaware 7	126	800	17.7% [5]	103.70	102.20	81.1%	98.6%	1.213	
Delaware 8	124	800	23.3% [5]	95.11	93.34	75.3%	98.1%	1.126	1.170
Cromby 2	201	800	16.8% [5]	167.23	163.50	81.3%	97.8%	1.216	
Schuylkill 1	166	800	24.2% [5]	125.83	122.56	73.8%	97.4%	1.104	

Notes: MW Ratings are summer ratings (from PECo Statement No.14).

1. Consistent with PECo Capacity Factor projection in non-refueling years.
2. Consistent with my Capacity Factor projection in non-refueling years.
3. From Appendix E: Overall average, best annual average and worst annual average. Assumes FOR = 1 - EAF. = (1-EAF), for average EAF, plus or minus 10%.
4. From Appendix E, no improvement assumed from life extension. Assumes FOR
5. From PECo Statement 15, I-840381, page 1-6.
6. From IR-OCA-19-11.
7. Middle value used for units with more than one value presented.

TABLE R-3: PRESENT VALUE OF LIMERICK 1 GROSS BENEFITS,
AS FUNCTION OF AGE

YEAR	TOTAL BENEFITS [1]	PRESENT VALUE OF REMAINING BENEFITS [2]	ECONOMIC DEPRECIATION -d(P.V.)	GROSS REALISTIC BENEFITS [3]	PRESENT VALUE OF REMAINING BENEFITS [2]	ECONOMIC DEPRECIATION -d(P.V.)
1986	$231	$11,013		$168	$8,101	
1987	$275	$11,850	($837)	$163	$8,719	($618)
1988	$307	$12,725	($875)	$187	$9,402	($683)
1989	$466	$13,652	($928)	$274	$10,127	($725)
1990	$435	$14,510	($858)	$285	$10,835	($708)
1991	$483	$15,483	($972)	$353	$11,601	($766)
1992	$652	$16,502	($1,019)	$461	$12,374	($773)
1993	$608	$17,451	($949)	$457	$13,113	($739)
1994	$756	$18,536	($1,085)	$575	$13,928	($815)
1995	$1,050	$19,577	($1,042)	$765	$14,704	($776)
1996	$954	$20,425	($849)	$746	$15,366	($661)
1997	$1,032	$21,453	($1,027)	$847	$16,110	($744)
1998	$1,319	$22,502	($1,049)	$1,012	$16,826	($716)
1999	$1,096	$23,365	($863)	$892	$17,447	($621)
2000	$1,256	$24,536	($1,171)	$945	$18,247	($801)
2001	$1,549	$25,660	($1,124)	$1,143	$19,072	($825)
2002	$1,487	$26,600	($940)	$1,159	$19,779	($707)
2003	$1,488	$27,693	($1,094)	$1,113	$20,539	($760)
2004	$2,034	$28,892	($1,199)	$1,490	$21,419	($880)
2005	$1,748	$29,661	($769)	$1,322	$22,006	($588)
2006	$1,895	$30,790	($1,130)	$1,398	$22,819	($813)
2007	$2,501	$31,882	($1,092)	$1,812	$23,634	($815)
2008	$2,268	$32,473	($591)	$1,714	$24,115	($481)
2009	$2,291	$33,355	($882)	$1,673	$24,740	($625)
2010	$3,181	$34,300	($944)	$2,304	$25,467	($727)
2011	$2,752	$34,446	($147)	$2,069	$25,633	($166)
2012	$2,943	$35,035	($589)	$2,158	$26,050	($417)
2013	$3,984	$35,490	($455)	$2,887	$26,420	($369)
2014	$3,572	$34,949	$541	$2,710	$26,095	$325
2015	$3,675	$34,766	$182	$2,703	$25,916	$179
2016	$5,214	$34,464	$302	$3,807	$25,727	$189
2017	$4,471	$32,593	$1,871	$3,401	$24,416	$1,311
2018	$4,587	$31,283	$1,310	$3,385	$23,383	$1,033
2019	$6,326	$29,730	$1,553	$4,615	$22,266	$1,117
2020	$5,546	$26,289	$3,442	$4,224	$19,811	$2,455
2021	$5,890	$23,293	$2,996	$4,388	$17,508	$2,303
2022	$8,315	$19,662	$3,630	$6,119	$14,818	$2,690
2023	$7,332	$13,255	$6,407	$5,665	$10,136	$4,682
2024	$7,908	$7,209	$6,046	$5,983	$5,454	$4,682

Notes: 1. See Attachment IR-OCA-2-25b, Item 1, page 1, column 4.
2. Present Value at 9.7%
3. See Chernick Testimony, Table 3.4, Column 5.

TABLE R-4: RECENT EXPERIENCE IN START-UP INTERVALS

Unit	Date of Issuance, First Operating License [1] (OLIS)	Commercial Operation Date[2] (COD)	Start-up Interval [3] (months)
Three Mile Island 2	08-Feb-78 (F)	30-Dec-78	10.7
Hatch 2	13-Jun-78 (F)	05-Sep-79	14.8
Arkansas 2	01-Sep-78 (L)	26-Mar-80	18.8
Sequoyah 1	29-Feb-80 (L)	01-Jul-81	16.0
North Anna 2	11-Apr-80 (L)	14-Dec-80	8.1
Salem 2	18-Apr-80 (L)	13-Oct-81	17.9
Farley 2	23-Oct-80 (L)	30-Jul-81	9.2
McGuire 1	23-Jan-81 (Z)	01-Dec-81	10.3
Sequoyah 2	25-Jun-81 (L)	01-Jun-82	11.2
San Onofre 2	16-Feb-82 (L)	08-Aug-83	17.7
LaSalle 1	17-Apr-82 (Z)	01-Jan-84	20.5
Susquehanna 1	17-Jul-82 (L)	08-Jun-83	10.7
Summer 1	06-Aug-82 (L)	01-Jan-84	16.9
San Onofre 3	15-Nov-82 (L)	01-Apr-84	16.5
McGuire 2	03-Mar-83 (L)	01-Mar-84	11.9
St Lucie 2	06-Apr-83 (L)	08-Aug-83	4.1
WPPSS 2	20-Dec-83 (L)	13-Dec-84	11.8
Diablo Canyon 1	19-Apr-84 (L)	07-May-85	12.6
LaSalle 2	16-Dec-83 (L)	19-Oct-84	10.1
Susquehannna 2	23-Mar-84 (L)	12-Feb-85	10.7
Grand Gulf 1	16-Jun-82 (L)	15-Jul-85	37.0
Callaway 1	11-Jun-84 (L)	19-Dec-84	6.3
Catawba 1	06-Dec-84 (L)	15-Jun-85	6.3
Byron 1	31-Oct-84 (L)	15-Sep-85	10.5
Waterford 3	18-Dec-84 (L)	15-Sep-85	8.9
Wolf Creek	11-Mar-85 (L)	15-Sep-85	6.2

AVERAGE: 12.91

MEDIAN: 10.96

Notes: [1] From NRC Gray Books, NRC Summary Information Report, 10/85, and "Historical Profile of U.S. Nuclear Power Development", Atomic Industrial Forum, 12/31/81 and 1/1/83. Full licenses are indicated by (F), low power licenses by (L), and zero-power licenses by (Z).
[2] Same sources as for OLIS. Updated in 11/85.
[3] All months are treated as having 30.5 days.

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TO ACCOMPANY SURREBUTTAL TESTIMONY

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A. Seabrook Station is currently projected to cost $5.242 billion. Messrs. Dennis McLain and Alan Ebner will discuss the Seabrook cost estimates and in-service dates in greater detail.

Q. Mr. Plett, do these revisions change the Company's long-term demand and supply strategies that were outlined in your initial testimony?

A. No. The strategies outlines in "New Energy Horizons" (Attachment Plett 1 to my direct testimony filed on October 27, 1982) indicate that PSNH plans to manage its peak load growth at an average annual rate of increase of 1.5 percent to the year 2001. PSNH also plans to complete construction of both of the Seabrook units as rapidly as possible and reduce its ownership in the project from 35 percent to 28 percent if it is at all possible. As I indicated in my original testimony, PSNH continually evaluates its strategies to see if they are still appropriate when key assumptions change - such as the cost of fuel or the cost of Seabrook Station. We recently used our models to test the appropriateness of the strategies outlined in "New Energy Horizons" using revised assumptions that reflect recent revisions for the cost of fuel and Seabrook cost and in-service dates. We also conducted further "sensitivity analysis" to test the appropriateness of our strategies under different ownership scenarios, a delay scenario and a significantly higher Seabrook cost estimate. These scenarios are described in the matrix labeled Plett Exhibit 1. All scenarios use a 1.5% growth rate in sales and demand and the new oil and coal forecast.

What our sensitivity analysis showed us is that even when we revised our assumptions to very high levels, i.e., a $7 billion cost projection for Seabrook Station, the strategies outlined in "New Energy Horizons" remain reasonable and desirable for both our stockholders and customers.

Q. Mr. Plett, you apparently have assumed three different cost and schedule combinations for Seabrook. Which of the three represent PSNH's official estimate?

A. As mentioned previously, a cost of $5.242 billion and in-service dates of December 31, 1984 and July 31, 1987 respectively.

Q. What do the other cost and schedule combinations represent?

A. The other trajectories, leading to total costs of approximately $6 and $7 billion respectively, are simply sensitivity tests. The $5.242 billion estimate is a good estimate, not subject to further escalation in the order of magnitude previously experienced, since the only remaining cost to complete is essentially labor. NRC regulation is unlikely to escalate as it did in the immediate post-TMI period. However, in recognition of the possibility of some further cost increase, we tested the $6 billion trajectory and the very high $7 billion trajectory as well.

Q. Mr. Plett, will you describe the results of these latest scenarios in greater detail.

THE STATE OF NEW HAMPSHIRE
BEFORE
THE PUBLIC UTILITIES COMMISSION

Public Service Company of New Hampshire
Investigation Into Supply/Demand

REBUTTAL TESTIMONY OF WILLIAM H. HIERONYMUS

Q. Are you the same William H. Hieronymus who has filed testimony previously in this proceeding?

A. Yes, I am.

Q. And are your occupation history and qualifications stated in that testimony?

A. Yes, they are.

Q. What is the purpose of your rebuttal testimony in this case?

A. I will be critiquing aspects of the direct testimony of certain witnesses for the Conservation Law Foundation and the staff of the New Hampshire Public Utilities Commission. The main portion of my testimony will focus on their use of regression-based techniques to forecast the cost of Seabrook as well as its capacity factor. Regression analysis underlies the estimates of Seabrook cost presented by Dr. Rosen and Messrs. Chernick and Gantz, as well as Dr. Rosen's capacity factor estimate. Mr. Chernick's supplemental testimony also contains a pseudo-regression estimate of capacity factor based on other Yankee plants. I will also comment briefly on Dr. Rosen's regression analysis of O&M escalation for nuclear plants.

Q. You have stated that your testimony will focus on regression-based forecasts of Seabrook cost and performance. Can you briefly explain the theory which underlies the use of regression analysis in forecasting?

A. The application of regression techniques to forecasting relies on fundamental assumptions. The first assumption is that statistical analysis can be used to untangle the complex relationships between the quantity of interest (e.g., plant cost) and its causes as those relationships existed in the past. The second assump-

Table 16 provides a quick comparison of the various regressions discussed so far. The cost per kilowatt and total station cost figures are given for both Dr. Rosen's and PHB's database.

Q. Please describe this table.

A. The first column gives the results of regressions without a regulation related variable. The second column uses the regulation variable, and shows the attendant reduction in estimated cost. The third column assumes the 1976 licensing date is used along with the regulation related variable. Finally, the fourth column assumes PSNH's in-service dates are used as well as their inflation and AFUDC rates.

The upper portion of the table relates to Dr. Rosen's database. The first row uses the Northeast regional dummy throughout, while the second row uses the Mid-Atlantic and New England regional dummies. The third row uses no regional dummies. The last three rows repeat the same analysis, but applied to PHB's database.

One can find, for example, Dr. Rosen's original specification and $7.6 billion plant cost in the upper left-hand corner.

As explained in the text of this testimony, a better, more accurate model would involve using a regulation related variable, the 1976 licensing date and the two regional dummies. This corresponds to column 3, row 2 for Dr. Rosen's data, and column 3, row 5 for PHB's data.

My estimate of cost for Seabrook based on Dr. Rosen's commercial operation dates is as follows:

	Direct Cost $/kW ±2 Std. Errors
SEA1:	$1,291 ± 246
SEA2:	$1,179 ± 236

Total Cost = $5.7 billion

This, of course, assumes Dr. Rosen's in-service dates, AFUDC rates, and inflation rates through the construction period. As can be seen from column 4, if PSNH's assumptions for these variables are used, the estimated cost drops to $5.1 billion.

Thus, in as far as is possible with regression analysis, it appears the company's estimate of cost is in line with the historical record.

Q. Dr. Hieronymus, what reservations do you have about your estimate of a 1980 direct construction dollar cost of $5.7 billion for the Seabrook plants?

A. I think that it is as reasonable an estimate as can be achieved using the methodology that was employed by Dr. Rosen; that is, the use of regression analysis to estimate historical relationships which are then projected into the future. I do, however, have reservations about the use of regression analysis for forecasting capital costs.

Q. What are your reservations in this regard?

A. First, as noted earlier, the available data are not very good for this type of analysis. The historical time frame for the primary variable is very short, less than six years for the critical LICDATE variable. Furthermore, the relevant factors, those influencing plant capital costs, were undergoing changes that are highly correlated, making reliable regression analysis extremely difficult. Second, the Seabrook plants fall well outside the range of data that was used to estimate the regression equations. This inability to predict with accuracy can be seen by the 95 percent confidence interval of the cost estimate, which is roughly plus or minus 20 percent. Even this relatively broad interval understates the true range of forecast error since it assumes we know each of the components of the forecast with certainty. This is clearly untrue with respect to inflation and AFUDC rates, the completion date of the plant, and the level of regulatory activity. Finally, the use of a regression equation estimated with historical data to forecast the future assumes that causal relationships, many unobserved and undefined, will remain unchanged in the future.

Further, in applying this methodology to forecasting the cost of partially completed plants, no use is made of information on the cost and construction progress to date. Applied literally, the regression approach would predict the same constant dollar direct dollar construction cost for Seabrook irrespective of whether the plant was barely begun or nearly complete, and irrespective of whether construction cost to date had been markedly low or markedly high. While the regression approach may provide useful insights into the likely cost of plants which are substantially incomplete, I would be very reluctant to assert that it yields a superior alternative to engineering-based cost estimates for plants for which a major portion of outlays have been made.

I note that both Dr. Rosen's equation and your equation forecast direct construction costs for Seabrook Unit 2 which are very close to

NUREG/CR-1881
SAND81-0018

Statistical Analysis of Power Plant Capacity Factors Through 1979

Manuscript Completed: December 1980
Date Published: April 1981

Prepared by
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Prepared for
Applied Statistics Branch
Office of Management and Program Analysis
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555
NRC FIN B1321

PSNH PUBLIC SERVICE
Company of New Hampshire

January 14, 1983

Mr. Vincent J. Iacopino
Executive Director and Secretary
State of New Hampshire
Public Utilities Commission
Eight Old Suncook Road, Building #1
Concord, NH 03301

Re: NHPUC Docket No. DE 81-312, Supply and Demand

Dear Mr. Iacopino:

In accordance with the "PSNH Motion For Leave To Withdraw and Refile Direct Case", filed by PSNH on December 1, 1982 and granted by the NHPUC on the same date, PSNH herewith submits its revised direct testimony in NHPUC Docket No. DE81-312, an Investigation into the Supply and Demand for electricity.

PSNH is also submitting, as part of its revised direct case, portions of the October 27, 1982 direct testimony. The portions of the October 27, 1982 testimony which are being resubmitted are the direct testimonies of:

a) Frederick R. Plett
b) Kathlyne M. Hadley
c) William H. Hieronymus
d) Joseph J. Staszowski
e) John E. Lyons
f) John M. Perkins
g) Ian A. Forbes
h) James T. Rodier

PSNH withdrew its entire October 27, 1982 direct case on December 1, 1982 since it was not clear at the time we withdrew the case how much of the information contained within that filing would have to be revised.

Since the entire October 27, 1982 case is on file with the NHPUC and is in the possession of all of the parties in this docket, PSNH is not physically reproducing the portions of its October 27, 1982 direct testimony which it is resubmitting today, to do so would be merely a mechanical exercise.

Very truly yours,

Frederick R. Plett

Frederick R. Plett
Director
Corporate Strategic Planning

FRP:sk

cc: Service List

Data: Same as 2.2.

Fitted Model: $\hat{CF} = 40.5 + \hat{P}_i + 4.9\ (AGE5)$,
where $\hat{P}_i$ denotes the estimated plant effect. For the purpose of estimation, the plant effects are treated as fixed. For the subsequent purpose of prediction for a hypothetical plant, the plant effects are treated as random and $\hat{P}_i$ is set equal to zero in order to obtain a nominal prediction.

A.O.V.

Source	df	SS	MS	EMS
Regression (AGE5)	1	2763.4	2763.4	
Plants (adj. for AGE5)	14	3316.1	236.9	$\sigma_e^2 + 6.6\ \sigma_p^2$
Residual	84	9403.5	111.9	σ_e^2

Estimated Variance components:

Within plant variation: $\hat{\sigma}_e^2 = 111.9$

Among plants variation: $\hat{\sigma}_p^2 = 18.9$

Test Statistics: The F-test statistic for comparing the among plants variation to the within plant variation is F = 2.12, on 14 and 84 degrees of freedom, which is significant at about the 2% level. The F-statistic for regression equals 24.7, which is significant at much less than the .05% level.

3. PWR Results

3.1. Data: All unit-year capacity factors (163 observations)

Fitted Model: $\hat{CF} = 75.7 - 3.5\ (MGN/100) + 3.4\ (AGE)$

Residual Mean Square = 187.4

3.2. Data: Same as 3.1 except three outliers omitted.

Fitted Model: $\hat{CF} = 73.1 - 3.3\ (MGN/100) + 4.0\ (AGE)$

Residual Mean Square = 137.1

3.3. Data: Same as 3.2.

Fitted Model: $\hat{CF} = 77.3 - 3.2\ (MGN/100) + 2.4\ (AGE5)$

Residual Mean Square = 139.9

Test Statistics: The t-statistics for MGN and AGE5 are -6.8 and 3.0 respectively, and these are both significant at less than the 0.1% level.

5. Statistical Prediction Intervals

5.1. Nuclear Plants

Statistical prediction intervals for the capacity factors of hypothetical plants have three components:

1. the nominal, or point value, estimated from the fitted model,
2. the imprecision of that estimate,
3. the inherent variability of annual capacity factors.

Prediction intervals also account for the amount of data going into the various estimates. Their purpose is to identify a range in which the capacity factor of a hypothetical plant should fall, in order to be consistent with the observed data. Three time periods will be considered: years 2-5, 6-10, and 2-10. Predictions for the life of a plant, say 30 years, can be obtained under appropriate assumptions, but because ten years is about the maximum experience of any plants in the data base, attention is limited here to that period.

The analysis results of subsections 2.5, 3.5, and 3.6 give the models from which predicted capacity factors are calculated. For years 2-5, the average AGE5 value is $(2 + 3 + 4 + 5)/4 = 3.5$, for years 6-10, AGE5 = 5, and for years 2-10 the average AGE5 value is 4.33. For a hypothetical plant, P_i is taken to be zero. The following nominal predictions are thus obtained:

	Years		
Plants	2-5	6-10	2-10
BWRs	57.7%	65.0%	61.7%
PWRs (450-600MW)	68.8	72.5	70.8
PWRs (760-1216MW)	55.5	57.9	56.8

The estimated variance of these estimates is given by

$$s^2(\hat{CF}) = \frac{\hat{\sigma}_p^2}{p} + \frac{\hat{\sigma}_e^2 \sum (1/n_i)}{p^2} + s_b^2(AGE5_o - \overline{AGE5})^2,$$

where p is the number of plants in the data base used to obtain CF, $\hat{\sigma}_p^2$ and $\hat{\sigma}_e^2$ are estimated variance components among and within plants, n_i is the number of observations for plant i, s_b^2 is the estimated variance of the coefficient of AGE5 (obtained from the regression analyses), $AGE5_o$ is the particular value of AGE5 for which the prediction is made, and $\overline{AGE5}$ is the average value of AGE5 over the data on which the prediction is based. This average is an unweighted average of the individual plant average AGE5s. The following table gives values of $s^2(\hat{CF})$:

Plants	Years 2-5	6-10	2-10
BWRs	2.8	4.4	3.1
PWRs (450-600MW)	4.1	5.1	3.9
PWRs (760-1216MW)	5.2	8.5	6.5

The variance of a plant average over r unit-years is

$$\sigma^2(CF) = \sigma_p^2 + \sigma_e^2/r. \qquad \approx 111.9/r = 23.4 \text{ for } r = 25$$

This variance can be estimated by replacing σ_p^2 and σ_e^2 by their estimates. The estimates for σ_e^2 used here are different from those obtained from the analysis of variance because the outlying observations, not included in the A.O.V., are now included. The residuals for the outliers were squared and added to the Within Plant SS and then the MS calculated as an estimate of σ_e^2. The total prediction error is then obtained by adding the estimate of $\sigma^2(CF)$ to $s^2(\hat{CF})$. This yields the following prediction error variances, s^2. Parenthetic entries are the effective degrees of freedom associated with these estimated prediction error variances.

Plants	Years 2-5	6-10	2-10
BWRs	57.1 (23)	51.7 (21)	37.8 (12)
PWRs (450-600MW)	40.5 (12)	36.7 (10)	27.1 (5)
PWRs (760-1216MW)	119.0 (23)	112.4 (23)	92.9 (18)

(The prediction errors variances are linear combinations of independent mean squares, so by methods given, e.g., in Reference [7], p. 369, an effective degrees of freedom can be obtained.)

Statistical prediction intervals are given by the nominal prediction plus and minus a multiple of the square root of these prediction error variances. The multiple is obtained from tables of the Student's t distribution and is a function of the desired confidence level (95% is used here) and the appropriate degrees of freedom. The results of these calculations, also given in section 1 of the main report, are:

	Years 2-5	6-10	2-10
BWRs	58 ± 16%	65 ± 15%	62 ± 13%
PWRs (450-600 MW)	69 ± 14%	73 ± 14%	71 ± 13%
PWRs (760-1216 MW)	56 ± 23%	58 ± 22%	57 ± 20%

$\sqrt{23.4} \times 1.96 = 9.48$

TABLE 3.4: LIMERICK 1 RATE IMPACT, Case 3a: Historical Capacity Factors, Realistic Capacity Costs
($ million)

YEAR	TOTAL COSTS	ACID RAIN SAVINGS	FUEL SAVINGS	CAPACITY COSTS AVOIDED	TOTAL BENEFITS	Ben-OC	PV econ Dep	
	(1)	(2)	(3)	(4)	(5)			
1986	$1,008	$0	$130	$37	$168	$57	$5,819	
1987	$974	$0	$124	$39	$163	$46	$6,326	($507)
1988	$949	$0	$150	$37	$187	$61	$6,894	($568)
1989	$933	$0	$236	$38	$274	$133	$7,501	($607)
1990	$906	$0	$246	$38	$285	$140	$8,096	($595)
1991	$885	$0	$285	$68	$353	$198	$8,741	($645)
1992	$866	$0	$396	$65	$461	$296	$9,391	($650)
1993	$845	$3	$390	$64	$457	$282	$10,006	($615)
1994	$820	$3	$500	$72	$575	$394	$10,695	($689)
1995	$815	$2	$688	$74	$765	$559	$11,338	($643)
1996	$806	$3	$666	$77	$746	$541	$11,879	($540)
1997	$807	$3	$720	$124	$847	$629	$12,490	($611)
1998	$819	$2	$886	$124	$1,012	$770	$13,072	($582)
1999	$807	$4	$772	$116	$892	$650	$13,570	($498)
2000	$814	$3	$833	$109	$945	$685	$14,236	($666)
2001	$829	$2	$1,038	$102	$1,143	$858	$14,932	($696)
2002	$820	$3	$1,060	$95	$1,159	$872	$15,523	($591)
2003	$828	$4	$1,020	$89	$1,113	$807	$16,157	($634)
2004	$850	$3	$1,404	$83	$1,490	$1,152	$16,917	($760)
2005	$843	$5	$1,240	$77	$1,322	$981	$17,406	($489)
2006	$854	$5	$1,321	$72	$1,398	$1,036	$18,113	($707)
2007	$882	$4	$1,739	$69	$1,812	$1,413	$18,835	($721)
2008	$878	$6	$1,642	$66	$1,714	$1,310	$19,249	($414)
2009	$894	$6	$1,604	$63	$1,673	$1,244	$19,807	($557)
2010	$931	$5	$2,239	$60	$2,304	$1,829	$20,484	($677)
2011	$928	$7	$2,005	$57	$2,069	$1,589	$20,641	($157)
2012	$951	$7	$2,096	$55	$2,158	$1,648	$21,054	($413)
2013	$998	$6	$2,830	$52	$2,887	$2,324	$21,448	($394)
2014	$998	$8	$2,654	$49	$2,710	$2,141	$21,205	$244
2015	$1,028	$8	$2,649	$46	$2,703	$2,098	$21,120	$84
2016	$1,082	$6	$3,759	$41	$3,807	$3,137	$21,071	$49
2017	$1,083	$9	$3,354	$38	$3,401	$2,725	$19,978	$1,094
2018	$1,122	$9	$3,342	$34	$3,385	$2,666	$19,191	$787
2019	$1,197	$7	$4,578	$30	$4,615	$3,821	$18,387	$804
2020	$1,214	$10	$4,188	$26	$4,224	$3,419	$16,349	$2,037
2021	$1,278	$10	$4,356	$22	$4,388	$3,533	$14,516	$1,833
2022	$1,397	$8	$6,104	$7	$6,119	$5,174	$12,391	$2,125
2023	$1,467	$12	$5,649	$5	$5,665	$4,708	$8,418	$3,972
2024	$1,671	$12	$5,966	$5	$5,983	$4,966	$4,527	$3,892

YEAR	ORIG COST & ADDITIONS CARRYING CHARGES	STATION O&M	OTHER O&M
	[1]	[2]	[3]
1986	$858	$79	$31
1987	$831	$85	$32
1988	$812	$93	$33
1989	$801	$101	$40
1990	$780	$111	$34
1991	$765	$117	$37
1992	$751	$124	$41
1993	$736	$132	$44
1994	$717	$140	$41
1995	$717	$148	$58
1996	$710	$157	$48
1997	$713	$166	$52
1998	$728	$176	$65
1999	$719	$187	$55
2000	$728	$198	$62
2001	$745	$210	$76
2002	$739	$222	$65
2003	$749	$236	$70
2004	$774	$250	$88
2005	$769	$265	$76
2006	$783	$281	$82
2007	$814	$298	$102
2008	$812	$315	$89
2009	$831	$334	$95
2010	$870	$354	$120
2011	$870	$376	$104
2012	$895	$398	$111
2013	$944	$422	$141
2014	$947	$447	$122
2015	$980	$474	$131
2016	$1,037	$503	$166
2017	$1,040	$533	$143
2018	$1,081	$565	$154
2019	$1,159	$599	$195
2020	$1,178	$635	$170
2021	$1,245	$673	$182
2022	$1,366	$713	$232
2023	$1,439	$756	$201
2024	$1,645	$801	$216

SEPTA/Amtrak Statement No. 1A

PENNSYLVANIA PUBLIC UTILITY COMMISSION

v.

PHILADELPHIA ELECTRIC COMPANY

DOCKET NO. R-850152

REBUTTAL TESTIMONY OF RICHARD J. RUDDEN

on behalf of

THE SOUTHEASTERN PENNSYLVANIA TRANSPORTATION AUTHORITY

and

THE NATIONAL RAILROAD PASSENGER CORPORATION

Concerning Rate Structure

February 26, 1986

Rebuttal Testimony of Richard J. Rudden
on Behalf of SEPTA and Amtrak

Q. Mr. Rudden, what is the purpose of your rebuttal testimony?

A. My purpose is to respond to testimony that has been submitted by various intervenors proposing alternative revenue allocations for SEPTA and Amtrak.

Q. Would you please summarize the conclusions of your rebuttal testimony?

A. Yes. PECO's proposed separate rate classification and cost based rates for SEPTA and Amtrak represent an appropriate response to the Commission's order in the last case (Docket No. R-842590) in which PECO was directed to submit: (1) cost studies indicating the cost of providing service to SEPTA and Amtrak; and (2) alternative rate designs reflecting the results of such studies. In complying with the Commission's order, PECO has used the 4CP cost allocation methodology approved in that case.

By contrast, various intervenor groups have submitted alternative cost allocation methodologies and/or class revenue apportionments which differ from those proposed by PECO. These alternative proposals are inappropriate in that they (1) fail to give proper effect to the Commission's order in Docket No. R-842590; (2) propose inappropriate departures from the 4CP cost allocation methodology that has been repeatedly accepted by

the Commission; and/or (3) fail to take into account the unique supply and cost characteristics of SEPTA and Amtrak.

Q. Could you please explain the circumstances surrounding the Commission's order in Docket No. R-842590?

A. In the last case, both SEPTA and Amtrak argued that the available evidence indicated that the costs of providing electric traction power are lower than the costs of providing service to HT customers in general, and that the railroads should be separated from the HT class for costing and ratemaking purposes. Although it did not adopt or implement the recommendations of SEPTA and Amtrak regarding a separate rate classification or rider at that time, the Commission was sufficiently concerned about the issue to direct PECO to submit studies indicating the cost of providing service to SEPTA and Amtrak as well as alternative rate designs reflecting the results of those studies.

Q. Did the Company perform such a study in compliance with the Commission's order?

A. Yes. The study submitted in this case is the basis upon which PECO proposes separate ratemaking treatment for SEPTA and Amtrak relative to the HT class. The PECO study results confirm that the costs of serving SEPTA and Amtrak are significantly less than serving HT customers in general. The cost allocation

process used by PECO in its special study, utilizing the 4CP method, is the same as that adopted by this Commission in the last seven rate cases. This method has been approved by the Commission in past cases even where a substantial portion of the relevant rate base (i.e. approximately 50%) consisted of nuclear generating plant. In addition, PECO's cost allocation has been improved in this case by inclusion of a detailed analysis of specific distribution facilities serving SEPTA and Amtrak.

Q. Under PECO's proposal, do SEPTA and Amtrak pay their full cost of service?

A. Yes. They pay for all costs allocated to them, including the full system average rate of return. In my opinion, this result is entirely consistent with the Commission's order in the last case.

Q. In your summary of conclusions, you state that several of the intervenors fail to give proper effect to the Commission's order in Docket No. R-842590. Please explain.

A. First, the Philadelphia Area Industrial Energy Users Group ("P.A.I.E.U.G.") has offered a proposal which perpetuates the past inequities or subsidies which the Commission in Docket No. R-842590 apparently sought to investigate and, if appropriate, remedy. Specifically, the P.A.I.E.U.G. has proposed that SEPTA and Amtrak continue to pay the same interclass subsidy which

they pay under the present HT rate, i.e. more than $5 million. While proposing the system average rate of return for itself, the P.A.I.E.U.G. proposes that SEPTA and Amtrak pay rates substantially higher than the system average rate of return in their new rate classifications. Significantly, P.A.I.E.U.G.'s own cost of service study shows that, under PECO's proposed rates, SEPTA and Amtrak would pay very close to the system average rate of return (See Exhibit JP-1, Schedule 6).

Similarly, the Utility Users Committee/University of Pennsylvania ("UUC/UP") has effectively urged an abandonment of cost-based rates not only for SEPTA and Amtrak but for all classes through its recommendation that the revenue increase be allocated on a uniform percentage across all classes. Ironically, the UUC/UP has recommended that this equal percentage increase be applied to existing rates which were developed on the basis of PECO's 4CP methodology, as approved in the last case. Even though the UUC/UP thus implicitly adopts the 4CP methodology, this intervenor ignores the two current 4CP studies of record in this case (those of PECO and the P.A.I.E.U.G.). Both of the current 4CP studies demonstrate that under PECO's proposed rates, SEPTA and Amtrak would pay the system average rate of return, or very close to it.

As noted above, in the last rate case, PECo was ordered to perform studies to determine the actual costs of serving SEPTA and Amtrak. In my opinion, the uniform percentage increase

proposed by the UUC/UP renders any such studies irrelevant and the proposal represents an unwarranted departure from cost based ratemaking.

Q. You have also stated above that certain intervenors have proposed inappropriate departures from the cost allocation methodologies accepted by this Commission in past cases. Please explain.

A. The Commission has reaffirmed its acceptance of the 4CP cost allocation methodology as it applies to PECO in a large number of past rate cases. Most significantly, it adopted the 4CP methodology in the last case, when approximately 50% of PECO's net production and transmission plant in service was accounted for by nuclear generation. Expressed as a percentage of total net generation plant only, the cost of nuclear generation facilities accounted for more than 60%.

In this case, some intervenors have argued that the allocation methodology should be changed to give weight to average demand in the determination of the A.1 allocator, citing the energy versus demand cost trade-offs inherent in the economics of nuclear power. I have three major problems with their proposals.

Q. What are they?

A. First, an essential ingredient of the "reasonableness" of any cost allocation methodology is its past acceptance by regulators.

In PECO's case, the Commission has clearly found the 4CP methodology acceptable, even where a significant portion of rate base was related to nuclear plant investments. The alternative cost allocation proposals put forth in this case do not appear to have any past acceptance by this Commission in PECO's rate cases.

Second, the applications of the alternative approaches are assymetrical, yielding inequitable results. While attempting to apportion the capital related costs of nuclear power as between demand and energy, the intervenors give no recognition to the differences in fuel costs associated with peak load versus base load energy. If they had recognized these fuel cost differences, off-peak and high load factor customers who use proportionately more base load power would have been allocated lower than average fuel costs. Proper recognition of these fuel cost differences could significantly reduce the cost responsibility of these customers relative to that shown by the proponents of the energy-weighted demand allocation methodologies. In this case, we have seen just one side of the coin; to accept the one-sided, energy-weighted demand allocation methodologies proposed in this case would be, in my opinion, discriminatory against off-peak and high load factor customers.

Third, the departure away from the 4CP methodology to an energy-weighted demand allocation method has been rationalized by some of the intervenors by arguing that a new allocation

methodology is required to reduce the "rate shock" of Limerick. In my opinion, this is entirely inappropriate.

Q. Please explain why.

A. The proper mechanism for reducing rate shock is the phasing-in of Limerick's prudently incurred costs, not a change in cost allocation methodology. If a change in allocation methodology is to be adopted, it should be adopted for reasons related to basic utility design, operating and cost criteria, and not to achieve some predetermined objective, such as the mitigation of adverse rate impacts. If mitigation is to be an objective, it should be accomplished through rate design, as PECO has proposed. Moreover, a change in cost allocation methodology simply shifts relative impacts among classes, and does not reduce total costs for the system as a whole.

Q. You stated above that various intervenors have failed to take into account the unique service, supply and cost characteristics applicable to SEPTA and Amtrak. Please explain.

A. By and large, each intervenor rate structure witness who has proposed alternative cost and/or interclass revenue allocations in this proceeding has disregarded the unique load and supply characteristics of SEPTA and Amtrak which result in significantly lower costs of providing traction power. Most notably, none of the intervenor rate structure witnesses have

taken into account (or even professed familiarity with) the special circumstances under which power is delivered to Amtrak at Thorndale and Perryville, as detailed in my direct testimony. Had they familiarized themselves with that testimony, they would have learned that nearly 38% of Amtrak's total energy requirements from PECO represent deliveries of power generated by other utilities and not by PECO. In fact, PECO neither generates the power which it meters at Thorndale and Perryville, nor transmits it to Amtrak. Moreover, the power metered at Thorndale and Perryville is 25Hz power, the vast majority of which is generated at Safe Harbor, a hydroelectric plant jointly owned by Pennsylvania Power & Light Company and Baltimore Gas and Electric Company, and delivered directly to Amtrak entirely outside of the PECO system.

Q. How does the failure to take into account the circumstances surrounding the delivery of power to Amtrak at Thorndale and Perryville affect the allocations of costs and revenue distributions proposed by the various intervenors?

A. In general, all of the cost allocation proposals submitted by the various intervenors overstate the amount of PECO production and transmission costs that should be allocated to Amtrak by a significant amount, corresponding to the amount of demand and/or energy metered at those delivery points.

Q. In your direct testimony, you discussed the impact upon Amtrak's revenue allocation resulting from the inclusion of power deliveries at Thorndale and Perryville in PECO's 4CP demand allocator. How do the circumstances surrounding the delivery of power at Thorndale and Perryville affect the cost allocation proposals submitted by those intervenors (i.e. the OCA, CEPA and PBUUG) who are recommending that a portion of PECO production and transmission costs be allocated on an energy basis?

A. These proposals are intended to allocate the costs of energy-related production capacity to customers who receive the benefit of this generating capacity in proportion to the energy generated and consumed from these facilities. Since the energy metered at Thorndale and Perryville is not generated (or transmitted) by any PECO facility, Amtrak cannot be expected to bear responsibility for PECO's energy-related production plant costs based on the amount of energy metered at Thorndale and Perryville. If an energy-weighted demand allocator were to be accepted by the Commission, the energy delivered at Thorndale and Perryville should be excluded from the computation of the demand allocation factor for SEPTA/Amtrak.

Q. Have you quantified the impact on the revenue allocation to Amtrak under the various parties' proposals if the Thorndale and Perryville demands and energies had been properly excluded from the allocation of PECO's production and transmission plant?

A. Yes, I have. In my direct testimony at pages 24-27, I addressed PECO's cost allocation study. To the extent that power deliveries at Thorndale and Perryville are included in the 4CP for allocation of production and transmission plant, an over-allocation of demand costs results. Such overstatement of demand costs results in an overstatement of revenue requirement of $5-6 million for Amtrak. For the cost study sponsored by the P.A.I.E.U.G. witnesses, I removed from the 4CP demands used in their A.1 allocator a level of demand which represents the lowest proportionate share of Amtrak's total 4CP demand historically provided at Thorndale and Perryville (i.e. 13,000 KW adjusted for losses). This results in a decrease in the P.A.I.E.U.G. revenue allocation for Amtrak of $4.6 million and a decrease, relative to PECO's proposal, of $4.2 million in the revenues required from Amtrak.

With regard to the peak and average method of cost allocation proposed by the OCA witness (and also apparently by the CEPA witness because his average and excess allocation factors are identical to Mr. Oliver's peak and average allocation factors), I again removed the lowest proportionate share of Amtrak's 4CP demand historically provided at Thorndale and Perryville from the peak allocator. I also removed the test year MWH delivered at Thorndale and Perryville from the average demand allocator. This modification to the A.1 allocator resulted in a reduction in the Amtrak revenue requirement of

about $9.4 million relative to that proposed by Mr. Oliver. Adjusted in this manner, Mr. Oliver's revenue requirement from Amtrak is also some $2.4 million less than the revenue level proposed by PECO. I was unable to duplicate the cost study performed by the PBUUG witness. However, I estimate that if Thorndale and Perryville demands were removed from the allocation factors which PBUUG developed for production and transmission plant, the results would fall somewhere between the 4CP and the peak and average results since PBUUG recommends an allocation method which essentially combines both methods.

Q. Are you at this time modifying your position regarding PECO's proposed revenue allocation to SEPTA and Amtrak?

A. No. As stated in my direct testimony, we believe that PECO has treated SEPTA and Amtrak equitably in the allocation of the large rate increase it is requesting in this proceeding. In summary, we wish to note the following at this time:

(1) To date, it appears that no party, including PECO, objects to treating SEPTA and Amtrak as a single separate class of service, as I have proposed in my direct testimony.

(2) PECO, OCA, and PBUUG agree with SEPTA and Amtrak that the traction service customers should pay the system average rate of return.

(3) P.A.I.E.U.G. and UUC/UP propose revenue allocations to SEPTA and Amtrak which would perpetuate past over-allocations of revenues above the cost of service.

(4) Under all the proposed cost of service allocation methods, if power and energy

deliveries at Thorndale and Perryville are properly excluded from the calculation used to allocate PECO's production facilities, the resulting revenue requirement needed to produce the system average rate of return is anywhere from $2 million to $10 million less than proposed by PECO in its full requested rate increase.

Q. If the Commision grants PECO its full rate request, what should SEPTA's and Amtrak's rate increase be?

A. It should be no more than that proposed by PECO.

Q. Should the Commission grant PECO less revenues than it requested, do you have any recommendation concerning the level of revenue increase to applied to SEPTA and Amtrak?

A. Yes. PECO should rerun its cost of service study at the allowed revenue level and set the revenue requirement for SEPTA and Amtrak at the system average rate of return.

Q. Does this conclude your rebuttal testimony?

A. Yes.

9:00 - 12:00

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APPEARANCE SHEET

DOCKET NO. R-850152

CASE NAME PUC, et al, vs. Philadelphia Electric Company

HEARING LOCATION Harrisburg, PA.

HEARING DATE Feb. 25 & 26, 1986

ALJ Matuschak

ALJ HEARING REPORT

CHECK THOSE BLOCKS WHICH APPLY.

Hearing held YES ✓ NO ___

Testimony taken YES ✓ NO ___

Hearing concluded YES ___ NO ✓

Further hearing needed YES ✓ NO ___

Estimated add'l days ___

RECORD CLOSED YES ___ NO ✓

Date ___

Briefs to be filed YES ___ NO ___

Date ___

BENCH DECISION YES ___ NO ___

REMARKS: Kept leaving Award 5, 6, 7

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Public Utility Commission

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NAMES, ADDRESSES AND TELEPHONE NUMBERS OF PARTIES OR COUNSEL OF RECORD
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BEFORE THE
PENNSYLVANIA PUBLIC UTILITY COMMISSION

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SECRETARY'S OFFICE
Public Utility Commission

PENNSYLVANIA PUBLIC UTILITY COMMISSION :
:
v. :
:
PHILADELPHIA ELECTRIC COMPANY :

Docket No.
R-850152

DOCUMENT FOLDER

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FEB 28 1986

BRIEF OF JOSEPH FARRELL, DIRECTOR, BUREAU OF CONSUMER SERVICES, PENNSYLVANIA PUBLIC UTILITY COMMISSION IN OPPOSITION TO PETITION FOR COMMISSION REVIEW AND ANSWER TO A MATERIAL QUESTION FILED BY CEPA, et al.

Charles D. Shields, Jr.
Assistant Counsel

Charles F. Hoffman
Chief Counsel

Counsel for Joseph Farrell, Director, Bureau of Consumer Services, Pennsylvania Public Utility Commission

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COUNTER-STATEMENT OF THE QUESTION PRESENTED

May an intervenor to a Commission proceeding compel the production of a Commission employee and certain documents when said employee is not a member of the Commission Trial Staff participating in the proceeding and the subpoenaed documents and the testimony to be elicited concern the performance of the Commission employee in his capacity as advisor to the Commission?

COUNTER-STATEMENT OF THE CASE

On Thursday, January 30, 1986, Charles D. Shields, Jr., Assistant Counsel with the Commission Law Bureau appeared before Administrative Law Judge Joseph Matuschak at a hearing in the instant proceedings, held at 10:00 a.m. in Harrisburg, Pennsylvania. Attorney Shields stated that his appearance was made on behalf of a Commission employee, Joseph Farrell, Director of the Commission's Bureau of Consumer Services (See Attachment A - Transcript Excerpt of Hearing held January 30, 1986). Mr. Farrell was the subject of an Application for Subpoena filed by Consumers Education and Protective Association, et al (CEPA), an intervenor in the present proceedings.

The Application for Subpoena requested that Mr. Farrell or his designee appear and testify and further requested the production of certain documents generated by the Bureau of Consumer Services regarding residential billing services provided by Philadelphia Electric Company (PECO). At the hearing of January 30, 1986, ALJ Matuschak denied CEPA et al's Application for Subpoena, after hearing the arguments presented by Mr. Shields.

On February 7, 1986, in response to the denial of the subpoena request, CEPA et al filed a Petition for Commission Review and Answer of a Material Question and served the Petition on all parties, including the Commission Trial Staff. However, it is presently submitted that Assistant Counsel Shields, acting as attorney for Joseph Farrell and

on behalf of the Commission, is not a member of the Commission Trial Staff participating in the instant proceedings and therefore service on Trial Staff should not be deemed to be service on Mr. Shields. In fact, Mr. Shields only recently had an opportunity to review the filed Petition for Commission Review and Answer of a Material Question. It is further asserted that Mr. Shields has never received formal service of the Petition and therefore the response time constraints of Sections 5.301-5.304 of the Commission's Rules of Practice and Procedure concerning Intelocutory Review are, as yet, not applicable.

REASONS AGAINST FAVORABLY ANSWERING PETITION

I. ALJ MATUSCHAK'S DECISION DENYING CEPA, et al's REQUEST TO SUBPOENA JOSEPH FARRELL AND CERTAIN DOCUMENTS IS CONSISTANT WITH THE PROVISIONS OF THE PUBLIC UTILITY CODE AND THE COMMISSION'S RULES OF PRACTICE AND PROCEDURE

The subpoena requested by CEPA et al. seeks discovery of documents prepared by the Commission's Bureau of Consumer Services in the course of its role as advisor to the Commission (See Attachment B-Application foe Subpoena). The subpoena also requests the appearance of Joseph Farrell Director of the Bureau of Consumer Services or a designee in order to seek explanation of the documents and the manner of their preparation. It is submitted that the production of such documents and the appearance of the requested witnesse(s) is not required by either the Public Utility Code or the Commission's Rules of Practice and Procedure.

Section 333 of the Public Utility Code, 66 Pa. C.S. §333 states in pertinent parts:

> (f) Subpoena duces tecum.--A party to a proceeding may obtain in accordance with commission rules a subpoena duces tecum requiring the production of or the making available for inspection, copying or photographing of relevant necessary designated documents at a prehearing conference or other specific time and place.
>
> (j) Other subpoenas.--The presiding officer shall have the power in accordance with commission rules to issue subpoenas ad testificandum and duces tecum at any time during the course of the proceeding.

(Emphasis added).

The Commission's comprehensive Rules of Practice & Procedure specifically exempt Commission staff serving in an advisory or adjudicatory capacity from being subject to discovery in Commission proceedings. Section 5.321(c) of the Rules of Practice & Procedure limits the scope of discovery in Commission proceedings where it states:

> (c) Exceptions. This subchapter shall not apply to discovery sought of Commissions or Commission staff serving in an advisory or adjudicatory capacity.

Further, the Commission's Rules also exempt from discovery the types of documents requested by CEPA et al. in its subpoena request. Section 5.349 of the Rules, entitled "Requests for documents, entry for inspection and other purposes" contains a subsection(e) which provides:

> (e) This section shall not apply to official files of the Commission, or materials which are the product of or within the control of Commission advisory or adjudicatory staff, but shall apply only to materials within the control of staff as may be participating in the action as a participant. Access to official files of the Commission shall be as prescribed in §§1.71 - 1.77 (relating to public access to Commission records).

(Emphasis added)

Further, Section 333 of the Code, 66 Pa. C.S. §333, also provides at subsection (d) that a Commission employee shall not be subject to deposition or interrogatory in a Commission proceeding absent a specific finding that the inquiring party is seeking significant, unprivileged information not discoverable by alternative means. A similar finding should be a prerequisite to the issuance of a subpoena for testimony from a Commission employee.

The testimony sought by CEPA et al. from Mr. Farrell has none of the qualities identified above. The testimony sought by subpoena is not significant since it has no logical connection with the issues contained in the instant proceeding. Specifically, it is submitted that documents concerning residential billing services provided by a utility are not "significant" to a proceeding involving a rate request.

Also, the testimony sought by the subpoena is available to CEPA et al. by alternative means. The proper method for CEPA et al. or any interested party to seek review of the types of services provided by PECO to its customers would be to file a Complaint with the Commission. In such a Complaint proceeding, the types of documents requested by CEPA et al. would, in all probability, be deemed significant [(at least for purposes of satisfying the requirements of 66 Pa. C.S. §333(d)].

Petitioners, CEPA et. al. argue that language of Section 308(f) of the Public Utility Code, 66 Pa. C.S. §308(f), compels the appearance of Mr. Farrell where it states in part, that "Members of the staff of the Commission shall appear and present testimony in any proceeding before the Commission when called by the Commission or any of the parties to the proceeding."

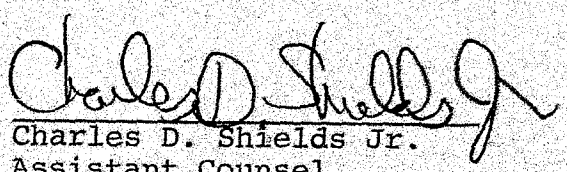
It should be noted, however, that this language twice refers to particular proceedings and the logical definition of "staff", given the context of the entire language of 66 Pa. C.S. §308(f), would be a reference to members of the Commission staff actually participating in

a prosecutorial or party capacity in the particular proceeding involved. This interpretation would be consistent with the intent of the previously discussed Commission procedural rules to exempt advisory staff and documents from the discovery process.

CONCLUSION

For reasons stated, Joseph Farrell, Director, Bureau of Consumer Services, Pennsylvania Public Utility Commission prays that the Commission decline to answer or answer in the negative the instant Petition for Allowance of Appeal.

Respectfully submitted,



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PROCEEDINGS

ADMINISTRATIVE LAW JUDGE JOSEPH MATUSCHAK: Is counsel ready to proceed?

MR. MacGREGOR: Yes, Your Honor.

MR. RUBIN: Your Honor, the Office of Consumer Advocate would call as its next witness Michael A. Bleiweis.

MS. SMITH: Excuse me, Your Honor. Before we proceed, there is a preliminary matter you may wish to address. At present in the courtroom is Mr. Shields from the Office of Counsel at the Law Bureau. You indicated you would like to have a response from the Commission on the subpoena.

JUDGE MATUSCHAK: Yes. We have some requests for subpoenas. Do you have a copy of those requests?

MS. SMITH: I have a copy, Your Honor, of the applica- for a subpoena of Joseph Farrell or his designee that was served by CEPA. This is an extra copy.

(Document handed to Judge Matuschak by Counsel Smith.)

JUDGE MATUSCHAK: Yes.

MS. SMITH: Mr. Shields is available to directly respond to any questions you may have or make a statement.

JUDGE MATUSCHAK: We want to hear from you. Does the Commission have any objections?

MR. SHIELDS: Again, for the record, my name is Charles Shields. I am an attorney with the Commission's Law Bureau. I am here today in an advisory capacity on behalf

of the Commission.

I would state also for the record that I have had no involvement with Trial Staff's participation as prosecutorial counsel here. I am here on behalf of Mr. Farrell objecting to the issuance of the subpoena.

Essentially, the Commission's attitude and the Law Bureau's attitude is that we want to discourage issuances of subpoenas across the board in any proceedings, the reason being that we feel that it is a burden upon the Commission to have what in essence are public servants, employees of the Commission, in an advisory or adjudicatory responsibility being called on behalf of parties, whether they be public interest groups or utilities.

Specifically, the Commission's rules and regulations of practice and procedure demonstrate the Commission's position. I refer you specifically to Section 5.321 of those Rules of Practice and Procedure, which, in fact --

JUDGE MATUSCHAK: What rule is that?

MR. SHIELDS: It is Section 5.321 of the Rules of Practice and Procedure. They, in essence, exempt Commission advisory and adjudicatory staff from the provisions for discovery under those rules.

Again, we find that same exemption under 5.349, again making reference to advisory or adjudicatory Commission staff members, who again I assert here today is Mr. Farrell in his

responsibilities regarding his Bureau of Consumer Services listing and filing and responding to any complaints concerning PECo's service under the provisions of Chapter 56 of the Commission's rules and regulations located at 52 Pa. Code.

Again, we find some legislative intent to limit the types of circumstances where Commission adivsory and adjudicatory employees are to be called upon in proceedings at 66 Pa. CSA of the Public Utility Code, Section 333(d) entitled "Interrogatories," where near the end of the section the legislature puts the criteria for interrogatories directed to the Commission and, of course, Commission employees, where it says, "Interrogatories directed to the Commission shall be allowed only upon an order of the Commission based upon a specific finding that the interrogating party is seeking significant, unprivileged information not discoverable by alternative means."

Going to the application itself or the issuance of a subpoena, which CEPA has requested, I assert to you that the application at least procedurally and structurally is deficient in that it doesn't allege that the information requested in the testimony of Mr. Farrell or his designee is, in fact, unprivileged.

I also assert that the Commission has in prior proceedings attempted to bifurcate the issue of service as opposed to rates. As I understand these proceedings before

Your Honor, it is a rate request filed by the utility; and as I say, the Commission has in the past attempted to limit the introduction of testimony and evidence regarding service.

I suggest that the proper method, if CEPA or any interested party is concerned about the providing of services by PECo, that they do so through the complaint procedure, which, of course, then they would be able to avail themselves of any of the discovery rules under the Commission's Rules of Practice and Procedure as a party.

The issue certainly in that case then would be the service that is being provided by PECo.

I do notice an intent by counsel for CEPA to attempt to assert on pages 2 and 3, numbers 1, 2, 3 and 4, that there is some correlation between PECo's adherence to Chapter 56 of Pa. Code 52. I'm not necessarily convinced and the Commission isn't convinced that those assertions in 1, 2, 3 and 4 do, in fact, disclose that the requested documents and testimony is relevant to a rate proceeding.

That is essentially it, Your Honor. I would say again that for practical -- in citing applicable rules and regulations, it is the Commission's intention to discourage and also legislative intent to ensure that Commission staff employees are not testifying in any and all proceedings on behalf of any interested party.

JUDGE MATUSCHAK: It is my recollection that there may be some provisions relating to the subpoenaing of Commission adivsory personnel. We will rule -- well, we may as well rule on that today.

On the application for subpoena of Joseph Farrell or his designee to attend the rebuttal phase of the hearings in the above case -- that is in this case at R-850152 -- submitted to us by John Hanger, Attorney for CEPA, AASC, ACORN, PCIA and Mr. Bradshaw, Mr. Hanger representing Community Legal Services, the petition for subpoena is denied.

MR. SHIELDS: Your Honor, with your permission, I will retire.

JUDGE MATUSCHAK: Very well.

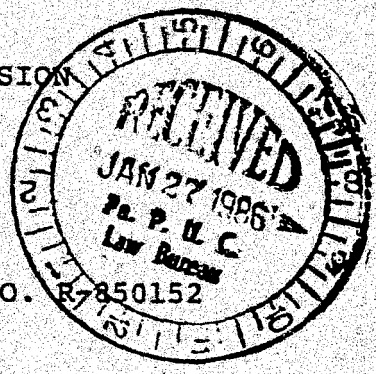
MR. RUBIN: Your Honor, I would like to have marked for identification as OCA Statement No. 4 a multi-page document which has previously been served on all of the parties and which is so marked in the upper right-hand corner.

JUDGE MATUSCHAK: Very well. The motion is granted.

(Whereupon, the document was marked as OCA Statement No. 4 for identification.)

MR. RUBIN: Thank you, Your Honor.

BEFORE THE
PENNSYLVANIA PUBLIC UTILITY COMMISSION



PENNSYLVANIA PUBLIC UTILITY COMMISSION	:	
v.	:	DOCKET NO. R-850152
PHILADELPHIA ELECTRIC COMPANY	:	

APPLICATION FOR SUBPOENA OF
JOSEPH FARRELL OR HIS DESIGNEE
TO ATTEND THE REBUTTAL PHASE
OF THE HEARINGS IN THE ABOVE CASE

NOW COME CONSUMERS EDUCATION AND PROTECTIVE ASSOCIATION, et al (CEPA), pursuant to Section 5.421 of the Commission's Regulations (52 Pa. Code Section 5.421), to apply for a subpoena of Mr. Joseph Farrell, Director, Bureau of Consumer Services, Pennsylvania Public Utility Commission, or his designee to attend with requested documents the rebuttal phase of the hearings in this case.

Mr. Farrell or his designee is requested to bring with him and have available at the hearing the following:

(a) A summary of all citations for violation of 52 Pa Code Chapter 56 issued to the Philadelphia Electric Company (PECO) for the last 2 years or other evidence of PECO's violation of 52 Pa Code Chapter 56 during the last 2 years;

(b) Any memoranda or other documents regarding PECO's compliance with 52 Pa Code Chapter 56 or with programs benefiting ratepayers with incomes at or below 150% of the Office of Management and Budget (OMB) poverty line;

(c) Any memoranda or documents concerning the effectiveness of PECO's programs in eliminating or ameliorating the ability-to-pay problem of PECO ratepayers at or below 150% of the poverty line;

(d) Any evidence, memoranda, or documents evaluating PECO's implementation of 52 Pa Code Chapter 56.

CEPA et al's request for the issuance of a subpoena for Mr. Farrell or his designee should be granted because:

1. Mr. Farrell wil testify about PECO's implementation of 52 Pa Code Chapter 56 which establishes the rights and responsibilities of ratepayers regarding billings, collection, and termination and which particularly impacts low-income ratepayers' ability to pay PECO's proposed rates.

2. Mr. Farrell will testify about the effectiveness of PECO's programs to remedy the ability-to-pay problem experienced by many PECO ratepayers and particulary low-income PECO ratepayers and clarify whether these programs by themselves, without rate design changes, will protect low-income ratepayers.

3. Mr. Farrell will comment on the testimony of PECO witness Raymond Williams (Tr. 1994-1997; January 8, 1986) concerning the alleged effectiveness of PECO's response to the ability-to-pay problem of low-income ratepayers.

4. The documents that CEPA, et al request Mr. Farrell bring with him to the hearing pertain directly to PECO's response to the ability-to-pay problems of low-income ratepayers which will worsen if PECO's rate request in this proceeding is not severely slashed and if PECO's rate design is not altered.

5. The filing contains a claim for revenue to fund various PECO conservation and weatherization programs for low-income customers, including tighten-up Low-Cost Conservation Program (TLC), Utility Emergency Services Fund (UESF) and others, as set forth in PECO's response to IR-OCA 11-12.

6. Consequently, the funding level and cost effectiveness of these programs are issues in this proceeding and questions on which Mr. Farrell or his designee can comment.

WHEREFORE, for all the foregoing reasons, CEPA, et al pray that your Honor issue a subpoena for Mr. Farrell or his designee.

Respectfully submitted,

John Hanger

JOHN HANGER
Attorney for CEPA, AASC, ACORN, PCIA and Mr. Bradshaw

Community Legal Services,
3638 North Broad Street
Philadelphia, PA. 19140
(215) 227-2400

DATED: January 23, 1986

NOTICE TO PARTIES CONCERNING DATE
BY WHICH RESPONSE TO
APPLICATION FOR SUBPOENA IS DUE

All parties are, hereby, notified that, pursuant to 52 Pa Code 5.421(b), all parties wishing to respond to the foregoing application for a subpoena must do so by January 29, 1986.

John Hanger

JOHN HANGER

Community Legal Services, Inc.
3638 North Broad Street
Philadelphia, PA. 19140
(215) 227-2400

DATED: January 23, 1986

CERTIFICATE OF SERVICE

I, hereby certify that I am this 25th day of February, 1986, serving by first class mail the attached Public Utility Commission's Objections to the Petition for Interlocutory Review upon the following:

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DATED: February 27, 1986

R-850152

PENNSYLVANIA
PUBLIC UTILITY COMMISSION
Harrisburg, PA 17120

Public Meeting held February 13, 1986

Commissioners Present:

Linda C. Taliaferro, Chairman, Abstaining
Frank Fischl
Bill Shane

DOCKETED
FEB 27 1986

Keystone Alliance, et al.
v.
Philadelphia Electric Company C-78080459

DOCUMENT FOLDER

TENTATIVE AMENDED ORDER

BY THE COMMISSION:

On September 4, 1985, the Commission issued an Order in the above-proceeding which adopted, in its entirety, the Initial Decision of Administrative Law Judge (ALJ) Isador Kranzel dated August 31, 1983. All exceptions to ALJ Kranzel's Initial Decision were denied.

In view of the time elapsed (approximately two years) between the date of ALJ Kranzel's Initial Decision and the issuance of the Commission's Order, we find that it is necessary to make certain modifications to that Order for the purpose of clarifying the Commission's intent and to establish a procedure which will enable us to implement the directives contained therein.

The fundamental inconsistency of our September 4, 1985 Order is that it directed numerous unquantified adjustments to be made to the Philadelphia Electric Company (PECO or Company) expense allowance at the conclusion of the Company's rate case at Docket No. R-822291. However, that rate proceeding ended with a Commission Order entered on November 22, 1983. The PECO rates which resulted from the investigation at Docket No. R-822291 went into effect on November 23, 1983 or more than 21 months before the issuance of our Order in this complaint proceeding.

A further complication arose when PECO filed a general rate increase request on April 27, 1984. A Commission investigation of that request was held at Docket No. R-842590 and concluded with our Order adopted on January 24, 1985. No adjustment was made to the Company's expense allowance to comply with ALJ Kranzel's determinations at Docket No. C-78080459 since, as of January 24, 1985, the

Commission had not taken final action in this complaint proceeding. The Company's current base rates, which were established as a result of the investigation at Docket No. R-842590, became effective on January 25, 1985.

In summary, we find it appropriate to amend the Commission Order issued on September 4, 1985 at Docket No. C-78080459 which directed the adjustment, without quantification, of PECO base rates which became effective on November 23, 1983. Furthermore, we must take into account the Company's current base rates which have not been adjusted to accommodate the directives contained in our September 4, 1985 Order in this complaint proceeding. Finally, we must provide for the future and insure that the expenses which we have disallowed here are not incorporated in PECO's prospective rates.

We wish to make it clear that our ultimate goal is to order refunds to PECO customers of those expenses which we have disallowed here, but which have been recovered by the Company through base rates since November 23, 1983, and to make provision for the prospective disallowance of those expenses.

For the period November 23, 1983 to January 24, 1985, that interval of time when the base rates established in Docket No. R-822291 were in effect, we will direct PECO to submit to the Commission a calculation of the annual expenses disallowed here based upon the test year ended October 31, 1983, which was the future test year in Docket No. R-822291. We find that there is insufficient information on the record in this complaint proceeding to determine, with any degree of accuracy, the magnitude of an appropriate adjustment. Moreover, since we will be ordering refunds associated with rates put in effect at the close of the proceeding at Docket No. R-822291, we deem it appropriate to base the adjustment on future test year claims made in that rate proceeding. We expect the Company's data to be essentially the same in form and detail as that which it supplied in response to information requested by the Office of Consumer Advocate (OCA) in its subsequent rate proceeding at Docket No. R-842590.

The PECO base rates currently in effect were established at the conclusion of the Company's last general rate case at Docket No. R-842590 and have been in effect since January 25, 1985. In that rate proceeding, the OCA requested that PECO quantify the items in its 1984 budget which were disallowed by ALJ Kranzel in this complaint proceeding at Docket No. C-78080459. It is important to note that the year ended December 31, 1984 was the future test year in the rate case at Docket No. R-842590. The Company provided information showing that its 1984 budget

included $4,723,000 for the accounts in question (OCA Exh. 59). There is no apparent dispute regarding the accuracy of the Company's calculation. Accordingly, we find that, on an annual basis, the amount of $4,723,000 is the correct expense disallowance to be refunded to PECO customers relative to the base rates currently in effect.

On September 27, 1985 PECO filed a general rate increase request which has been suspended by the Commission and is currently under investigation at Docket No. R-850152. The suspension period ends on June 27, 1986. We noted earlier that we intend to ensure that the various expense items disallowed in this proceeding will not be recovered prospectively by the Company. To accomplish this objective we will direct PECO to submit, for the record in its current rate case at Docket No. R-850152, a quantification of the expense items which we disallowed in this proceeding based upon the future test year in the current rate proceeding.

There are approximately five months remaining to the end of the Company's current rate investigation. In consideration of this, and the fact that we are here directing PECO to submit further information to the Commission and for the record in the current rate case, we will postpone implementation of the rate impact of this complaint proceeding to coincide with our final determination in the rate investigation at Docket No. R-850152.

Except as amended by the foregoing discussion, we affirm the September 4, 1985 Order which adopted the Initial Decision of ALJ Isador Kranzel dated August 31, 1983, and we incorporate herein, the findings, conclusions, and directives contained in the Initial Decision; THEREFORE,

IT IS ORDERED:

1. That all expenditures by PECO on behalf of its Energy Education Advisory Council programs, including program materials, payments to consultants and salaries of PECO employees engaged in EEAC-related activities, shall henceforth be classified as a contribution, with such expenditures being disallowed as an expenditure to be borne by the ratepayers in the PECO rate proceeding at Docket No. R-822291.

2. That the salary, including fringe benefits, of Ms. Mollie McCormick of PECO's Law Department shall henceforth be classified entirely as lobbying and, therefore, disallowed as an expense charged to the ratepayers in the PECO rate proceeding at Docket No. R-822291.

3. That all payments to Reverend Cecil D. Gallup, a consultant to the Corporate Communications Department, shall be classified entirely as lobbying and,

therefore, disallowed as an expense charged to the ratepayers in the PECO rate proceeding at Docket No. R-822291.

4. That the salaries, including fringe benefits, of all PECO employees engaged in Speakers Bureau activities shall be reported to the PUC and a calculation shall be made in order to determine that proportion of each employee's time spent on Speakers Bureau activities, so that in future rate cases an appropriate disallowance shall be made for the amount of time spent by PECO employees which is of no direct benefit to the ratepayers.

5. That expenditures by PECO on behalf of the Utility Nuclear Waste Management Group (UNWMG) shall be classified as a contribution and, therefore, shall not be chargeable to the ratepayers in the rate proceeding at Docket No. R-822291.

6. That expenditures by PECO on behalf of Edison Electric Institute's TMI-related projects shall be classified as a contribution and, therefore, shall not be chargeable to the ratepayers in the rate proceeding at Docket No. R-822291.

7. That expenditures by PECO on behalf of Life Jobs shall be classified as a contribution and, therefore, shall not be chargeable to the ratepayers in the rate proceeding at Docket No. R-822291.

8. That expenditures by PECO on behalf of the American Nuclear Society shall be classified as a contribution and, therefore, shall not be chargeable to the ratepayers in the rate proceeding at Docket No. R-822291.

9. That expenditures by PECO on behalf of Americans for Energy Independence shall be classified as a contribution and therefore, shall not be chargeable to the ratepayers in the rate proceeding at Docket No. R-822291.

10. That expenditures by the Corporate Communications Department in the amount of $2,829,970, less already disallowed expenditures related to the Energy Education Advisory Council, the Utility Nuclear Waste Management Group, Life Jobs, the American Nuclear Society, the Edison Electric Institute-TMI, and the Americans for Energy Independence, are to be disallowed as expenses to be borne by the ratepayers in the PECO rate investigation at Docket No. R-822291.

11. That in all future rate proceedings, PECO is required to specify hours spent by PECO employees in lobbying and to notify the PUC as to the same, so that such expenditures will no longer be borne by the ratepayers.

12. That all litigation costs incurred by PECO in the instant case (Keystone Alliance v. Philadelphia Electric Company, Docket No. C-78080459) shall be disallowed as an expense to be borne by the ratepayers in the PECO rate proceeding at Docket No. R-822291 and any future rate proceedings where allowances for such costs are requested.

13. That in all future rate proceedings PECO is required to specify any payments to industry associations such as the Atomic Industrial Forum, the Edison Electric Institute, the Pennsylvania Electric Association and any other industry association to which PECO pays monies, either on behalf of PECO or its employees, in order to determine whether any such expenditures are of a direct benefit to the ratepayers.

14. That PECO is directed to quantify the annual revenue impact of the disallowances contained in paragraph Nos. 1, 2, 3, 5, 6, 7, 8, 9, 10 and 12 above, on base rates put in effect on November 29, 1983 at the close of our investigation at Docket No. R-822291, and to serve its analysis on the Commission and the parties to this proceeding within twenty (20) days of the entry of this Order.

15. That the revenue impact of the expense disallowance made here upon PECO's current base rates which have been in effect since January 25, 1985, is $4,723,000 on an annual basis.

16. That PECO is directed to quantify the annual revenue impact of the disallowances contained in paragraph Nos. 1 through 13 above for the record in its current base rate investigation at Docket No. R-850152; to base this analysis on future test year data in that proceeding and place it on the record in Docket No. R-850152 within twenty (20) days of the entry of this Order.

17. That a copy of this Order be served upon the parties to this proceeding at Docket No. C-78080459 and all parties to PECO's current rate investigation at Docket No. R-850152.

18. That any party to this proceeding may file comments or exceptions to this Order no later than twenty (20) days from the date that it is entered.

19. That if no comments or exceptions are received by the Commission within twenty (20) days of the entry of this Order it will be deemed a Final Amended Order.

BY THE COMMISSION,

Jerry Rich
Secretary

(SEAL)

ORDER ADOPTED: February 13, 1986

ORDER ENTERED: February 19, 1986

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RECEIVED
FEB 27 1986
SECRETARY'S OFFICE
Public Utility Commission

February 25, 1986

Jerry Rich, Secretary
Pennsylvania Public Utility Commission
North Office Building
Commonwealth & North Streets
Harrisburg, PA 17120

DOCUMENT FOLDER

Re: Pennsylvania Public Utility Commission
v. Philadelphia Electric Company
Docket No. R-850152

Dear Secretary Rich:

Enclosed for filing with the Commission are the original and two copies of Transcript Corrections of Philadelphia Electric Company in the above-captioned proceeding for hearings on February 10, 1986.

As shown on the attached Certificate of Service, I have today served copies of this document on all Active Parties.

Sincerely,

Frederick H. Knight

ddq
Enclosure

cc: The Honorable Joseph Matuschak
All Active Parties

RECEIVED

FEB 27 1986

SECRETARY'S OFFICE
Public Utility Commission

BEFORE THE
PENNSYLVANIA PUBLLIC UTILITY COMMISSION

PENNSYLVANIA PUBLIC UTILITY COMMISSION	:	
V.	:	Docket No. R-850152
PHILADELPHIA ELECTRIC COMPANY	:	

TRANSCRIPT CORRECTIONS
OF
PHILADELPHIA ELECTRIC COMPANY
FOR HEARINGS ON FEBRUARY 10, 1986

DOCUMENT FOLDER

DOCKETED

FEB 27 1986

February 25, 1986

PECO Transcript Corrections for the hearings held on February 10, 1986

Page	Line	Correction
2843	14	Change "in" to "is"
2852	22	Change "Radway" to "Radwaste"
2856	14	Change "or" to "on"
2859	1	Change "Loper" to "Loder"
2860	17	Change "There" to "But there"
2860	23	Change "having" to "halving"
2868	23	Change "and" to "in"
2886	13	Change "is" to "as"

CERTIFICATE OF SERVICE

I hereby certify that on February 25, 1986 I served copies of the Transcript Corrections of Philadelphia Electric Company for Hearings on February 10, 1986, at Docket No. R-850152, upon the following by regular mail:

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Frederick H. Knight

APPEARANCE SHEET

DOCKET NO. R-850152

CASE NAME PUC, et al. vs. Philadelphia Electric Company

HEARING LOCATION Philadelphia, PA.

HEARING DATE Feb. 18, 19, 20 & 21, 1986

ALJ J. Matuschak

RECEIVED

FEB 25 1986

Office of A. L. J.
Public Utility Commission

ALJ HEARING REPORT

CHECK THOSE BLOCKS WHICH APPLY:

Hearing held YES ✓ NO

Testimony taken YES ✓ NO

Hearing concluded YES NO ✓

Further hearing needed YES ✓ NO

Estimated add'l days

RECORD CLOSED YES NO

Briefs to be filed YES Date NO

BENCH DECISION Date

YES NO

REMARKS:

DOCUMENT FOLDER

DOCKET

FEB 28 1986

NAMES, ADDRESSES AND TELEPHONE NUMBERS OF PARTIES OR COUNSEL OF RECORD
PLEASE PRINT CLEARLY
INCOMPLETE INFORMATION MAY RESULT IN DELAY OF PROCESS

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February 28, 1986

Re: Pennsylvania Public Utility Commission, et al.,
v. Philadelphia Electric Company
Docket No. R-850152

RECEIVED
FEB 28 1986
SECRETARY'S OFFICE
Public Utility Commission

Jerry Rich, Secretary
Pennsylvania Public Utility Commission
New Filing Section
Room B-18 - North Office Building
P. O. Box 3265
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Dear Secretary Rich:

Enclosed for filing with the Commission please find the original and nine (9) copies of the Surrebuttal Testimony and Exhibits of Randall J. Falkenberg of Kennedy and Associates on behalf of the Philadelphia Area Industrial Energy Users Group (PAIEUG) in the above-captioned proceeding.

Mr. Falkenberg will be available for cross-examination on March 14, 1986 at hearings to be conducted in Harrisburg.

As evidenced by the attached Certificate of Service, all parties of record to this proceeding have been provided with copies.

Very truly yours,

McNEES, WALLACE & NURICK

By David M. Kleppinger
David M. Kleppinger

DOCUMENT FOLDER

DMK/jf
Enclosures
HAND DELIVERED
cc: All Parties of Record (w/encl.)

CERTIFICATE OF SERVICE

Pennsylvania Public Utility Commission, et. al., :
v. : Docket No. R-850152
Philadelphia Electric Company :

I hereby certify that I have served a copy of the foregoing document on all known parties of record to this proceeding, all by first class mail (unless otherwise indicated) properly addressed as follows:

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Attn: Charles E. Rainey, Jr.
Assistant City Solicitor
Law Department - 15th Floor
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Philadelphia, PA 19102-1692

David M. Kleppinger

Dated this 28th day of FEBRUARY, 1986, at

Harrisburg, PA

BEFORE THE

PENNSYLVANIA PUBLIC UTILITIES COMMISSION

DOCKET NO. R-850152 (LIMERICK 1)

PHILADELPHIA ELECTRIC COMPANY

SURREBUTTAL AND EXHIBITS

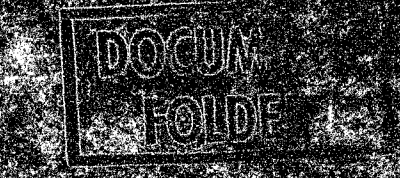
OF

RANDALL J. FALKENBERG

ON BEHALF OF

PHILADELPHIA AREA INDUSTRIAL ENERGY USERS' GROUP

*Allied Corporation, Fibers Division
Boeing-Vertol Co.
BP Oil
The Budd Company, Inc.
Liquid Air Corp.
Lukens Steel Co.
Nabisco Brands, Inc.
SDC/A Burroughs Corp.
Smith Kline Beckman Corp.
Sun Refining & Marketing Co.
3M Company
U. S. Steel Corp.



February 1986

Kennedy and Associates
Atlanta, Georgia

PENNSYLVANIA PUBLIC UTILITIES COMMISSION
DOCKET NO. R-850152 (LIMERICK 1)
SURREBUTTAL OF RANDALL J. FALKENBERG

RECEIVED
FEB 28 1986
SECRETARY'S OFFICE
Public Utility Commission

Q. Please state your name and business address.

A. Randall J. Falkenberg, Suite A-1220, 1150 Hammond Drive, Atlanta, Georgia 30328.

Q. Have you testified previously in this proceeding?

A. Yes, I was cross-examined on February 14, 1985 on my prepared direct testimony.

Q. What is the purpose of the testimony you are about to give?

A. I would like to respond to the testimony of various PECO witnesses concerning the ratemaking proposals and regulatory principles contained in my original direct testimony. I would like to provide the PUC some additional information on sinking fund depreciation in light of Mr. Wroblewski's testimony.

Without restating my entire original testimony, I would like to point out that I stand by my original work and do not find that my reasoning is swayed by the arguments presented by various Company witnesses.

As a result I will concentrate only on the most significant aspects of these witnesses' testimony. However I would like to point out that in several cases it is not necessary for me to rebut the Company witnesses, because they have

already presented substantial rebuttal to each other.

SINKING FUND DEPRECIATION

Q. Have you reviewed the testimonies of Mr. Farling and Mr. Wroblewski concerning Sinking Fund Depreciation?

A. Yes, I have. I originally proposed Sinking Fund Depreciation to be computed utilizing a 6% sinking fund rate. I have no substantial objection to adoption of the PP&L style sinking fund depreciation discussed by Mr. Wroblewski. I have verified his calculations and I am submitting Falkenberg Surrebuttal Exhibit 1, a revision to my original Falkenberg Exhibit 3, which details the impact of the Wroblewski calculation of the PP&L style sinking fund depreciation on our modified and corrected phase-in proposal. Under this proposal PECO would be granted a total rate increase of $417 million, an amount not substantially different from my original calculation. This amount would be phased-in as $139 million in year 1, $278 million in year 2, $417 million in year 3, and $556 million in years 4, 5 and 6. Provided that the Commission finds this approach more acceptable then the traditional sinking fund depreciation computed at a 6% rate, I will endorse this approach.

Q. Mr. Wroblewski points out that the modified sinking fund depreciation technique was not used in conjunction with the PP&L phase-in proposal. Do you have a comment on this?

A. Yes, I do. It is interesting to note that the reason that the PP&L sinking fund was not combined with the phase-in proposal was that the Commission rejected the phase-in on the grounds that it was moot point. In other words, the Commission reduced the PP&L claim to such a significant degree that it perceived no need to phase-in the rate increase. I presume that Mr. Wroblewski would prefer to have the rate increase I recommend in my Surrebuttal Exhibit 1 as opposed to the rate increase implied by the PP&L order.

Q. Mr. Farling, PECO's auditor, suggests that sinking fund depreciation is not a generally accepted accounting principle. Would you care to comment on this statement?

A. Yes. I've attached as Falkenberg Surrebuttal Exhibit 2 the auditor's opinion from Pennsylvania Power and Light Company's 1984 annual report. The opinion states that the financial statements of PP&L were prepared in accordance with "generally accepted accounting principles". I note that the auditor of PP&L, Deloitte, Haskins and Sells, has not qualified its PP&L opinion on the basis of utilization of sinking fund depreciation. However, it is pointed out as a note to the financial statement that PP&L did utilize the modified sinking fund depreciation. As a result, I would suggest that adoption of the PP&L style sinking fund depreciation should not cause Mr. Farling any undue anguish in certifying PECO's financial statements. If it does cause Mr. Farling a significant problem, PECO could apparently use Deloitte, Haskins and Sells as

an auditor.

DECLINING REVENUE REQUIREMENTS

Q. Mr. Falkenberg, two PECO witnesses have suggested that your correction to the phase-in proposal is unwarranted because it rests upon the notion that Limerick revenue requirements will decline over the next six years. Mr. Wroblewski and Mr. Hill take issue with your correction to the PECO phase-in. Do you have any comments?

A. Mr. Hill and Mr. Wroblewski seem to be adopting positions which support the O&M and capital additions projections of Mr. Chernick and Mr. Komanoff. This is in direct contradiction to testimony of other PECO witnesses. In effect, Mr. Hill and Mr. Wroblewski are arguing that the capital additions to Limerick would be so substantial as to offset any decline in rate base due to depreciation expense and deferred taxes. I have not assumed that capital additions will reach such high levels. However, it does appear that the testimony of Dr. Hieronymus is in direct contradiction to the assumptions of Mr. Hill and Mr. Wroblewski. Turning to Falkenberg Surrebuttal Exhibit 3, we see Dr. Hieronymus's calculation of Limerick I requirements during the first 6 years of operation of the plant. As is clearly seen in Dr. Hieronymus's calculations, revenue requirements on Unit 1 and 50% of common plant decline substantially. Under Dr. Hieronymus's assumptions they decline from $857 million in 1986 to $764 million in 1991. This level of cost reduction is comparable to the amount

that I predicted in my original Exhibit 2 which assumed unit 1 and 50% of common plant is in included in rate base without sinking fund depreciation. The amount of decline in revenue requirements predicted by Dr. Hieronymus is actually substantially greater than that utilized in my Falkenberg Surrebuttal Exhibit 1 under the modified form of sinking fund depreciation.

Q. What is the implication for the Limerick cost/benefit analysis if Mr. Hill and Mr. Wroblewski are correct that Limerick rate base wil never decrease through time?

A. If Mr. Hill and Wroblewski are correct, then the $2 billion benefit of Limerick cited by Dr. Hieronymus would be reduced by over $1.5 billion during the life of the plant. Thus, Dr. Hieronymus' testimony seems to completely contradict the testimony of Mr. Hill and Mr. Wroblewski.

Q. Mr. Hill testifies that the projection of decline in revenue requirements upon which your correction to the phase-in is based is unwarranted. Mr. Hill testifies that:

"Finally, the arguments presented by Mr. Falkenberg are not unique to Limerick 1. Over the period of 1974 to 1985, the Company placed 4 nuclear units in service at Peach Bottom and Salem for ratemaking purposes, all of which were reflected in rates in the same manner ..... As Limerick 1. At no time during the period 1974-85 was there any base rate reduction made either by filing of Philadelphia Electric Company or a specific rate order by the Commission".

Please comment on Mr. Hill's testimony.

A. The circumstances of Philadelphia Electric are substantially different today than they were during the period of time from 1974 to the early 1980's. This is not my conclusion, rather this is evident from the testimony of Mr. Joseph F. Paquette, Jr. His testimony points out that several conditions had a severe impact on rates in the 1970's and early 1980's:

"1) Escalating inflationary pressures affected all cost and expenses since 1970 with annual inflation rates consistently were in excess of 5.0% and in the 8.0 to 9.5% range during several periods (1974, 1975, 1979, 1980 and 1981);

2) Interest rates escalated, increasing our costs and decreasing our interest coverage ratios;

3) Coupled with the general inflation was the effect of the Middle East boycott on fuel oil prices beginning in the fall of 1973. The Arab oil embargo drove up fuel prices which pushed up electricity prices;

4) The development of nuclear power as an essential, economical source of generation for growth and oil displacement inherently required more capital. Moreover, as the decade progressed the capital costs of nuclear power plants grew, requiring the attraction of greater and greater amounts of capital. Additional capital attraction requirements were also associated with our coal generating equipment, principally due to the need to add costly new equipment for environmental protection;

5) Environmental restrictions forced the Company to use low sulfur oil which increased costs further;

6) The higher electric prices resulted in reduced consumer demand for electricity."

Many of these factors are no longer present today. We are now in a period of falling oil prices, falling inflation, declining interest rates and most significantly a period of time when PECO does not need to build new nuclear generation in order to economically serve load. If the Company would adopt the

economically prudent and sensible course of action of pursuing the alternatives to Limerick Unit 2, the need for future rate increases would be substantially reduced.

Q. Please summarize your points concerning the decline in Limerick revenue requirements.

A. PECO's own witnesses have projected that the revenue requirements from Limerick will decline. Either the revenue requirements will decline or Limerick is much less economically viable than both PECO and I have projected. Secondly, there is nothing inherent in my proposal which would prevent PECO from earning the allowed return on the Limerick plant during the six year phase-in period. In fact, should any increase in cost occur PECO is free at any time to seek additional rate increases to reflect the increased cost of service. Thus there is nothing inherent in my proposal which would result in PECO earning below its allowed rate of return. In effect, all I have done is removed a hidden attrition allowance of significant proportion from PECO's rates. The Commission should adopt this adjustment which amounts to $28 million under the PP&L style sinking fund depreciation. PECO should not be granted a $28 million attrition allowance.

DISCOUNT RATE

Q. Mr. Falkenberg it appears your choice of discount rate is substantially

responsible for your conclusion that Limerick 1 is not a cost effective capacity addition for PECO over its life. Several PECO witnesses, notably Messrs. Hill, Hieronymus and Perl take issue with your choice of discount rate. Please explain the significance of this concept and why you believe that these witnesses are wrong.

A. The discount rate utilized in an economic analysis such as this plays a central role in determining the conclusion of whether the investment alternative is attractive or not. The analysis I utilized an incremental cost of capital as the discount rate. This is common practice within the utility today. According to Mr. Hill, PECO has used the after tax discount rate for all economic studies performed at PECO for the past thirty years.

Q. What is the justification that PECO uses for its after-tax discount rate?

A. Aside from Mr. Hill's justification which is that it has been used for 30 years at PECO, the general consensus seems to be that it is the discount rate which is neutral as to accounting conventions. This, in effect, is Dr. Perl's argument for the use of the after-tax discount rate. While this is an interesting point, to some degree, it misses the point. I would like to return to the subject of sinking fund depreciation to illustrate what is wrong with this line of reasoning. In the Limerick 2 proceeding, Dr. Perl testified that the after-tax discount rate was correct because it was neutral as to accounting conventions. He testified that, if, under a higher discount rate an

alternative plan looked more attractive, then the Commission could simply change accounting conventions and produce revenue requirements for the nuclear plant which were identical to the alternative. Dr. Perl testified "For example, the Commission could shift from straight line to sinking fund depreciation, or put the plant into rate base gradually over several years." The problem with this approach, of course, is that while different accounting conventions produce identical revenue requirements under the after tax cost of capital, not all accounting conventions are created equal, at least in the eyes of PECO or its auditors. Mr. Farling testified in this case that sinking fund depreciation is not a generally accepted accounting principle. Mr. Wroblewski testified that PECO does not support any form of sinking fund depreciation. Apparently they would not support the view of Dr. Perl or myself that the PUC could simply shift to sinking fund to mitigate nuclear rate shock. The implication of Mr. Farling's testimony, as I read it, is that he might have to qualify his opinion on PECO's financial statement. The only reason I can think of why Mr. Farling would have to do this is that he does not believe that the quality of PECO's financial position as reported, is correct. In effect, he is suggesting that there is some <u>risk</u> that future rates might not be allowed which recover the full amount of sinking fund depreciation over the life of the Limerick plant. Now, according to Dr. Hieronymus and Dr. Perl, the present value of the revenue requirements of Limerick would be the same at the after-tax cost of capital under sinking fund depreciation or straight line. In fact any phase-in, even what might be called a "zero coupon" phase-in (i.e., waiting until the last year of the plant's life and then collecting all of the

revenue requirements) could be considered equal under the discount rate used by Dr.'s Perl and Hieronymus. Dr. Perl and Dr. Hieronymus could show Mr. Farling's numerous revenue requirements calculations that would show PECO will collect the same amount of money under either of the depreciation plans I've discussed. With Dr. Hieronymus and Perl convinced that PECO is getting the same amount of money under sinking fund depreciation why should Mr. Farling be concerned about the correctness of the financial statements? The answer is quite simple. Mr. Farling has a higher discount rate than Dr. Perl or Dr. Hieronymus. His discount rate is apparently equal to an after-tax cost of capital plus some additional risk premium which accounts for the uncertainty of future cost recovery. In effect, Dr. Perl's and Dr. Hieronymus' calculation of revenue requirements overstates the value of those revenues in Mr. Farling's mind. Considering that Mr. Farling is the representative of the shareholders who is supposed to see that the books are kept straight, it is not surprising that he would be reluctant to put off into the future the benefit of regular amounts of straight line depreciation. He would rather have it all today, even if Dr. Perl and Dr. Hieronymus contended that the revenue requirements collected under straight line or sinking fund depreciation were identical.

In effect it is Mr. Farling's contention that PECO's financial statements might be qualified, that is the ultimate proof that the after-tax discount rate is inappropriate. In my view there is much less uncertainty as to the future collection of sinking fund depreciation for the shareholders, than there is of the projected future benefits of the Limerick Nuclear Plant for the customers.

I am adopting an approach similar to Mr. Farling's. I am suggesting that a discount rate higher than the after-tax cost of capital be utilized. In the case at hand, I am utilizing the industry norm, the pretax incremental cost of funds.

Mr. Farling's testimony is interesting in light of Dr. Perl's recent testimony. I believe that if Dr. Perl had been honest with us, for example, in the Limerick 2 proceeding, he would have said that the "Commission could switch to sinking fund depreciation or adopt a phase in proposal. However, at that point in time PECO would bring in witnesses such as Mr. Farling who would dispute the use of these approaches and the Company would argue that they were not a good idea." Thus, if you accept the notion that reasonable changes in accounting conventions, which the Company won't support, will be made then you can accept the after-tax discount rate proposal of Dr. Perl and Dr. Hieronymus. If you believe these accounting changes won't be made without extreme resistance from PECO you are left with choice of a higher discount rate. I find it disappointing, however, that these two gentlemen can testify that the after-tax discount rate is the proper rate. However, when the expensive new capacity comes into rate base, the utility companies which they represent never seem to be in favor of a phase-in longer than a few years and seldom favor adoption of reasonable accounting convention such as sinking fund depreciation. It is disingenuous for Dr. Perl and Dr. Hieronymus' to support the use of the after-tax discount rate on the basis that it is neutral to accounting conventions. Their clients certainly are not neutral to accounting

conventions.

Q. You have stated that the after-tax discount rate is not the industry norm and that the pretax discount rate is. However, the EEI survey which you presented in your original testimony does not use the term "discount rate". Please comment.

A. I have examined the questionnaire which accompanied the EEI survey and reread the survey. I do not find the term "discount rate" utilized anywhere in the survey. However, the survey is absolutely absurd unless the term "cost of capital used for internal economic evaluation" is interpreted as the discount rate. The reason for this is that it makes absolutely no sense to interpret the after-tax cost of capital as the cost of capital for internal revenue requirements analysis in any sense other than as a discount rate. The reason is that any revenue requirements analysis takes the cost of capital and adjusts it for the fact that debt interest is an expense while equity is taxable. Mr. Hill and Dr. Hieronymus should know this very well. These gentlemen are simply hiding behind semantics in order to protect their position. As further evidence of the absurdity of the position taken by PECO witnesses on this point I would like to quote from a brief written by Northeast Utilities in 1985 concerning the proper discount rate (note that Northeast Utilities uses the pre-tax discount rate):

"The order states that the use of pre-tax or after-tax discount rates is a highly controversial issue within the utility industry and that both approaches are used. The order fails to recognize, however, that unrefuted

record evidence shows that a large majority of utilities employ the pre-tax rate. Late Filed Exhibit - 8."

The evidence to which Northeast Utilities was referring was the EEI survey. Northeast Utilities could be considered to be an outside, unbiased observer of what this survey means, and they clearly interpret it as I do: it is discussing the discount rate. The position of Dr. Hieronymus, that the survey simply requests the inputs to various utility revenue requirements models is downright silly at best and insincere at worst.

Q. What implications would using PECO's stated discount rate have for the analysis which you performed previously?

A. I have performed my analysis using Mr. Paquette's response to the EEI survey. Thus, the analysis I performed now tests whether Mr. Paquette would have considered Limerick to be cost effective utilizing the information he had provided to the Edison Electric Institute. The results of this analysis are provided in Falkenberg Surrebuttal Exhibit 4. It shows that under this analysis using a 14.52% cost of capital and the after-tax discount rate of 11.3% that Limerick 1 and common result in over $600 million in higher rates for customers over the life of the plant. Thus using the Company's after-tax discount rate and the cost of capital which PECO uses for its internal economic evaluations, the Company would not consider Limerick to be a cost effective addition. Note that I have utilized (but don't adopt) the benefits and O&M expenses computed by Dr. Hieronymus. Thus, there should be no dispute as to

the difference between my results and those which PECO would obtain.

Q. What are some of the other problems with the after-tax discount rate?

A. One of the key problems with the after-tax discount rate is that it imputes a tremendous benefit from the tax deductibility of debt interest to the present value of the benefits created by the project. In effect, the debt used to finance the project is an expense which is simply passed through to customers. Thus, in computing the after-tax discount rate and applying it to the capital charges, one finds a discount rate which is, as stated, neutral to accounting conventions. However, applying this same discount rate to avoided capacity or energy costs is a highly dubious procedure which produces some counterintuitive results.

Q. Please explain.

A. Falkenberg Surrebuttal Exhibit 5 shows my calculation of Limerick costs and benefits under assumptions essentially identical to those utilized by Dr. Hieronymus. Under these conditions my model predicts lifetime benefits of $1928 million over its life while Dr. Hieronymus predicts $1956 million. This is utilizing PECO's 12.7% cost of capital and the after-tax discount rate. The Exhibit shows case 2, which computes the costs and benefits using the after tax discount rate and cost of funds obtained from the Paquette response to the EEI survey. Under his assumptions the Limerick plant now produces lifetime

benefits of only about $413 million. Thus, simply correcting for the cost of capital substantially reduces the benefits Dr. Hieronymus would perceive in the Limerick plant. However, some surprising results emerge if one speculates as to possible changes in federal tax laws. It has been suggested that marginal tax brackets be lowered for corporations from 46% to 35%, for example. If one performs the analysis using a 35% marginal tax bracket, instead of the current figure, the present value of benefits of Limerick decline from $413 million to $384 million over the life of the plant. Under this analysis I have assumed for the sake of argument only, that the benefits in avoided capacity and energy cost don't change any as a result of the change in tax code. Thus, what has happened is simply the cost of Limerick has been reduced because the taxes associated with the plant have been reduced. President Reagan suggested on at least one occasion that corporate income taxes might be eliminated entirely. Thus, I have run another scenario utilizing a 0% income tax rate. The interesting result is that rather than producing a $413 million benefit over its life under all of PECO's assumptions, the plant would produce only a $10 million benefit over its life. In every year before 2022 the plant would produce substantial losses to customers on a present worth basis. The absurdity of this result points out the unreasonableness of the use of the after-tax discount rate. In these analyses all that has happened has been that the cost of the Limerick plant to customers has been reduced. None of the benefits have been reduced in nominal terms. Thus, one is left to question the following: if tax laws changed in such a way to reduce the cost of Limerick, why is it that the lifetime benefit of the plant would be reduced? The answer

is simply that the after-tax discount rate has increased. In effect, by reducing the discount rate for the tax deductibility of debt interest, we are giving much greater credit to avoided capacity and energy cost savings created by the plant in future years. In other words, the future is worth more to us if we have to pay high income taxes. This is just the opposite of what many people believe. It is often asserted by supply side economists that reducing marginal tax rates will stimulate investment in productive capacity. This seems to be the opposite conclusion one would draw from careful analysis of the economics of the Limerick nuclear plant. These results are hard to reconcile with common sense and clearly leads one to question the use of the after-tax discount rate.

Q. Do you have any further evidence that supports your contention that the majority of American utility companies use the pre-tax discount rate?

A. Yes. Falkenberg Surrebuttal Exhibit 6 shows a portion of the Technical Assessment Guide prepared by EPRI. The report states that EPRI uses the incremental cost of capital as a discount rate because it is in more general use in American utilities.

Q. Please summarize your testimony concerning discount rates.

A. The testimony I have given illustrates clearly that PECO's auditor is unimpressed by the notion that the after-tax discount rate is neutral to

accounting conventions. PECO's auditor seems to prefer generally accepted accounting principles and not simply accounting principles which produce the same revenue requirements under the after-tax discount rate. Application of Mr. Paquette's cost of capital to Limerick plant even using the Company's net of tax approach would produce results showing that Limerick 1 is not a cost effective addition over its life. In addition, it is clear from the interpretation of one other utility company and myself that the EEI survey was discussing the discount rate and not simply an input to a revenue requirement model. Finally, the absurdity of the use of the after-tax discount rate was vividly illustrated by showing that using this discount rate under reduced levels of income taxes, actually reduces lifetime benefits of the Limerick plant under company assumptions. From this discussion it is clear that the methodology proposed by the Company produces unreasonable results.

GUTH, HOCH AND PERL REBUTTAL TESTIMONY

Q. Have you reviewed the rebuttal testimony of Dr. Perl concerning the capital cost estimate of the Limerick Plant?

A. Yes, I have. Dr. Perl's analysis is quite unimpressive and simply misleading. Dr. Perl has redone my regression analyses and shown that even making different assumptions and including different data, when he performs the analysis correctly, he simply finds that PECO underestimated the cost of Limerick based on historic trends. However, in an apparent attempt to simply produce a result

lower than the Company projected in 1978, Dr. Perl simply eliminates a significant variable from his regression. This can be seen in his testimony on schedule 23. The COD-squared variable has a higher degree of significance than the variable which Dr. Perl includes in his regression analysis. Dr. Perl suggests that this variable should be removed because it is related to the COD variable. However, this variable is significant for the following reason: it shows that the annual increase in capital costs for nuclear plants was accelerating through time. In essence this variable is necessary to measure the trend towards substantial increases in the capital costs of nuclear plants. There is no rational basis for excluding the significant variable from an analysis such as this without replacing it with a variable which is designed to compensate its effect. In effect, what Dr. Perl has shown is that if done improperly, regression analysis will produce unreasonable results. I agree with this, and I am sure Dr. Perl agrees as well.

Q. What specifically is Dr. Perl's complaint about your analysis, and do you have a remedy?

A. Dr. Perl is bothered by the fact that COD and COD-squared variable are related. Thus, he simply drops the COD-squared term and obtains his erroneous result. Falkenberg Surrebuttal Exhibit 7a shows my calculation of Limerick cost projections circa 1978 under Perl's linear regression approach. The indicated result is $1285/KW. However, inspection of the data suggests an alternative

specification using a single time related variable was more reasonable. I used a variable equal to (COD-1970) squared. This single variable properly accounts for the decline in costs until 1970 and the rapid increase thereafter without using two related variables in the model. The new model has vastly superior statistics (R-square of 86.2 vs. 77.8 and standard error of $77.2/KW vs $97.8/KW) to Dr. Perl's linear model. These statistics are comparable to my original 2 variable model and yield a prediction of $2,590/KW, slightly higher than my original result. Thus, correcting for Dr. Perl's concern and properly re-estimating the model produces a result almost twice as high as Dr. Perl's erroneous result.

Q. Do you have any comments regarding the testimony of Mr. Guth and Mr. Hoch?

A. These witnesses have misinterpreted my testimony. I did not imply PECO should have relied exclusively on trend line modeling for load forecasting in the 1970's. I simply implied it is a useful yardstick to measure PECO's forecasts against. Mr. Guth has done the same thing. We are both attempting to find out to what extent bad luck prevented PECO from producing more accurate forecasts.

It is not an unusual expectation to believe that past trends will continue for some time into the future. To the extent that past trends do not persist, then decisions based on the assumption of those continued trends will prove to be wrong. This can perhaps justifiably be considered bad luck. In the case at hand, PECO's load falling below or above that predicted by past trends is bad luck whether the result is negative or positive. The analysis performed was designed to find out how different PECO's forecasts were from historic trends. The analysis which I performed suggests that there were critical periods of time when PECO's forecasts were substantially worse than those produced by other methods available at the time. Thus, it is simply incorrect for PECO to state they couldn't have done a better job of load forecasting than they did. In effect I have shown that a very simple approach could have been used which would have produced results which were more reasonable vis-a-vis history. The utilization of this trend technique was commonplace in the utility industry. Attached as Falkenberg Surrebuttal Exhibit 8 is a portion of the 1970 Federal Power Commission report entitled The Methodology of Load Forecasting. The report clearly states that extrapolation or trending had proven to be a successful form of forecasting up to that point in time. Thus there was no inherent reason to suspect it would not at least provide a reasonable basis for comparison.

Q. PECO witness Hoch states that trending has been rejected by many Public Service Commissions as being the worst method. He also cites a PUF article that suggests the end use technique is the best approach. Please comment.

A. I don't disagree that end use techniques have proven more successful in forecasting residential sales than trending or econometric models. I also don't dispute that some Commissions don't believe trending provides an adequate means of forecasting. However, these are recent developments. The period of time in question, the early 1970's, was a time when trending was not as widely criticized and when end use techniques were not widely available within the industry. To a large extent these criticisms are simply PECO's means of injecting hindsight into the process. In effect what PECO is saying is that because an article published in 1985 suggests that trending has not turned out to be as effective as end use forecasting, then PECO's use of forecasts that were substantially different from past trends in the early 1970's was acceptable. In effect what PECO is doing, as Dr. Hieronymus would describe it, is using hindsight as a filter to interpret past events.

Q. What about Mr. Guth's contention that PECO struggled for a period of time before adopting better forecasting techniques?

A. Mr. Guth seems to be implying that he agrees with my analysis. He states that his analysis shows that PECO's forecasts were higher than proceeding trend data suggested from at least 1972 to 1977 or 1978. What seems to be different is Mr. Guth's degree of tolerance. Mr. Guth seems to think it is acceptable for a company to struggle for 5 years with the fact that load is not materializing as expected. I don't have a problem with the idea it takes time for a company to

respond to the types of changes which occurred in the utility industry in the 1970's. However, 5 years is a long time to wait, particularly in light of load forecasts which predicted growth the first year of each forecast to be 2 or 3 times higher than the actual level achieved during the prior 10 year period.

One is led to question why the forecasts were so high at that time. I believe examination of Mr. Hoch's testimony explains part of the problem. Mr. Hoch testifies that

"On top of our history of a steady growth, we were experiencing a rapid growth in air conditioning load which seriously affected our summer peak, and we were suffering from capacity shortages. This experience led us to project that our sales on load would go faster than the historic trend." (emphasis added)

One is led to question why capacity shortages would influence the load growth projection. In effect what Mr. Hoch is saying, is the Company was afraid it wasn't going to have enough capacity in the short run to meet demand. To compensate the Company raised its forecast above the level they expected. In addition, Mr. Hoch's testimony regarding the fact that load was growing rapidly due to air conditioner saturation suggests another one of the reasons why the forecast might have been biased. Air conditioning saturation advanced rapidly in the 60's. However, once people had an air conditioner and had their houses sufficiently chilled they didn't need to go out and buy an additional air conditioner. By projecting a growth greater than the historic figures, PECO in effect was suggesting that air conditioner purchases would accelerate rather than decline as saturation took place.

Q. Please summarize you comments concerning PECO'S load forecast.

A. I believe that the PECO witnesses have misinterpreted my testimony on this subject. The testimony I have given was not designed to suggest that PECO should have relied exclusively on trend models to predict load growth in the 1970's or even today. However, the analysis which I have performed suggests that PECO's load growth projections were inconsistent with experienced trends. The argumemts put forth by PECO's witnesses suggest that unforeseen events i.e. events which could not have been predicted, were the primary reason for PECO's load forecasts turning out to be too high. The analysis which I have performed clearly establishes that PECO'S forecasts would have been much too high even had no unforeseen events taken place and past trends continued. I have shown that PECO's errors in forecasting can be broken into two components. One component which I will call bad luck is the result of unexpected events taking place. The second component is simply avoidable forecast error due to mistakes in judgment. During a critical period of Limerick planning, PECO forecasts were in error, due to avoidable errors, not due to bad luck alone.

THE PRUDENCE STANDARD

Q. Have you reviewed the rebuttal testimony of Dr. Hieronymus and Perl concerning the prudence standard?

A. Yes, I have. There are some substantial flaws in the reasoning of these witnesses. Dr. Hieronymus' view of prudence seems to stem from his notion of rate of return regulation. Dr. Hieronymus is suggesting that because PECO subjects itself to rate of return regulation, it is insulated from the risk of making a bad investment. What Dr. Hieronymus seems to suggest is that only if PECO did not have rate of return regulation, would it be reasonable for its owners to take the risk of making bad investments. Of course, PECO has rate of return regulation because it is a monopoly. According to Dr. Hieronymus, if we're agreeable to allowing PECO to charge any rates that they desired, then the Company will take the risk of making bad investments. Of course, if PECO could charge any rates they wanted, then there would also be little risk of ever having the burden of a bad investment placed upon the shareholders. Thus the fundamental premise of Dr. Hieronymus' prudence theory is unsound. At the very best Dr. Hieronymus could only argue that the level of return that has been allowed, needs to be raised in order to reflect the degree of risk placed upon the Company. It is my testimony that the level of return that PECO is requesting is supposed to reflect the risk placed upon the Company in the market place. Inasmuch as the Pennsylvania PUC has, at least according to Dr. Hieronymus, for the last 7 years now adopted a "used and useful" philosophy for ratemaking, it seems that the marketplace must already be placing this risk premium upon PECO.

Q. Dr. Hieronymus agrees that he has misinterpreted the implicit contract between customers and investors, at least as it has been interpreted in Pennsylvania.

However, he seems to think that the contract didn't change dramatically until the PP&L excess capacity order in 1983. Do you agree?

A. No, I do not. Under Dr. Hieronymus' view that prudence only is the appropriate standard, it would appear that in 1979 when Three Mile Island went out of service, Metropolitan Edison could have been allowed to accumulate AFUDC on the undamaged reactor. Under Dr. Hieronymus' vision of prudence, TMI, being a prudent investment, would have been entitled to a return. Since the plant was not used and useful the Commission might not have allowed a current return. Certainly if prudence was the only standard, the Commission would have allowed a deferred return on the unit. The fact that the Commission has not allowed a current or deferred return for these past several years suggests that at least since 1979 the Commission has taken a stand that the used and useful principle carries more weight than the prudence principle.

Q. **Dr. Hieronymus seems to contend that what he calls a "quasi-prudence" test which you propose is too easily failed. Please comment.**

A. I disagree completely. I believe that Dr. Hieronymus prudence standard is much too easily passed. According to Dr. Hieronymus the only way that one can fail the prudence test is to have acted unreasonably. Thus it doesn't matter if PECO's management was pursuing a questionable course of action, a risky course of action, or a dubious course of action. All that matters is that it simply wasn't unreasonable.

In order to demonstrate the significance of this I would like to point out some of the falacies in Dr. Hieronymus' standard. Under Dr. Hieronymus' standard, it would be almost impossible for anyone ever to be held to blame for an accident while driving in excess of the speed limit. While traffic laws require that individuals who exceed the speed limit pay penalties, under Dr. Hieronymus' standard it would appear that the claim could be made that the speeders aren't unreasonable. After all, every day of the year people drive in excess of the speed limit and don't have accidents. Under Dr. Hieronymus' approach, the driver who was involved in an accident while speeding would most likely be able to avoid liability claims. I would be quite interested in seeing Dr. Hieronymus testifying in such a case. It would appear that Dr. Hieronymus would say that only if it could be proven that the same driver, while driving within the speed limit, would not have become involved in the accident could the individual be considered liable. If Dr. Hieronymus could prove that the driver couldn't stop in time while driving within the speed limit then he would not be liable for economic damages. While the individual might be guilty of a traffic charge of speeding, he could not be liable for any economic damages for the accident. The reason of course is that it is not unreasonable to believe that it's possible to drive safely in excess of the speed limit. Thousands of people do it every day and don't get involved in accidents.

The analogy to PECO is relevant. PECO utilized load forecasts which were

substantially higher than historic experience would have suggested. PECO utilized capital cost assumptions which were substantially lower than historic data would have suggested. PECO, has at least in the Limerick 2 investigation, assumed that nuclear plant O&M expenses would hold constant in real dollars. PECO uses the discount rate which is "accounting neutral" and favorable to Limerick. However, the problem ratepayers have is that PECO is not required to assume responsibility for any of their projections. In effect, PECO has nothing to lose by projecting, for example, that nuclear O&M expenses will remain constant in real dollars. It may not be unreasonable to estimate that any cost will remain constant in real dollars. When oil prices were going through the roof, there were always those who said they might fall, for example. There were others who said they might go up at the rate of inflation. Thus by making a series of assumptions favorable to the desired course of action, i.e. completion of the plant, PECO was able to produce a set of projections which show the benefits outweighted the costs of the facility in question. When the rate case arrives and PECO files for an increase in rates to recover the cost of the plant, it no longer feels bound by any prior projections. Case in point: while PECO testified in the Limerick 2 proceeding that nuclear plant O&M expenses would not rise in real terms, as the basis for the claim in this PECO rate case it has included a real rate of escalation in its O&M expenses for Limerick. In addition, PECO is no longer "accounting neutral" concerning sinking fund. While the Company can support any one of their assumptions as being reasonable or at least not unreasonable, the fact remains that the project has turned out to be an economic failure for the

Company and the customers. Thus the Company now seeks to include the cost of the plant in rates, on the basis that its projections were not imprudent or more precisely that the Company's projections were not unreasonable. Dr. Hieronymus' testimony regarding prudence may be summarized as follows:

> "As long as we are not unreasonable or imprudent, then we are presumed to be prudent. While our projections may be irresponsible, and we may not live up to our previous rhetoric about accounting conventions, we can not be proven unreasonable. In effect, the reward for not being unreasonable is that we get all the money we want when we want it."

I don't believe that this is a reasonable ratemaking standard for the Commission to utilize. Prudence is not a haven for the irresponsible or insincere. Truth in advertising laws are in effect to prevent situations of this sort.

Q. Please summarize your rebuttal testimony.

A. I stand by my original presentation. The criticisms leveled by PECO witnesses either missed the point of my testimony entirely or are simply logically incorrect. The sinking fund depreciation proposal presented by Mr. Wroblewski is acceptable to me and results in only a slight change in my recommended rate increase. The arguments raised by Company witnesses regarding the decline in revenue requirements, the proper choice of discount rates, load forecasting, and the prudence standard are simply incorrect. What is more interesting is that in fact many of the Company witnesses testimonies contradict and rebut the arguments presented by PECO in this case.

Q. Does this conclude your testimony?

A. Yes.

Randall J. Falkenberg

State of Georgia
County of Fulton

Subscribed and sworn to before me, a notary public in and for the State and County aforesaid.

My commission expires

MY COMMISSION EXPIRES SEPT. 12, 1988

This 27th day of February 1986

Notary Public

BEFORE THE

PENNSYLVANIA PUBLIC UTILITIES COMMISSION

DOCKET NO. R-850152 (LIMERICK 1)

PHILADELPHIA ELECTRIC COMPANY

EXHIBITS

OF

RANDALL J. FALKENBERG

ON BEHALF OF

PHILADELPHIA AREA INDUSTRIAL ENERGY USERS' GROUP:

Allied Corporation, Fibers Division
Boeing Vertol Co.
BP Oil
The Budd Company, Inc.
Liquid Air Corp.
Lukens Steel Co.
Nabisco Brands, Inc.
SDC/A-Burroughs Corp.
Smith Kline Beckman Corp.
Sun Refining & Marketing Co.
3M Company
U. S. Steel Corp.

February 1986

Kennedy and Associates
Atlanta, Georgia

Falkenberg Surrebuttal Exhibit I

Modified and Corrected Phase-In with 50% Common Plant
Using Witness Wroblewski's PP&L Sinking Fund Depreciation

Year	Limerick Fix Charge	Other Change	Total Revenue Reqmt.	Peco Phase-In	Corrected Phase-In
1986	724	279	445	148	696
1987	707	279	428	297	139
1988	695	279	416	445	278
1989	688	279	409	593	417
1990	682	279	403	593	556
1991	678	279	399	593	556
Total 1986:1991	4174	1673	2500	2670	556
Six Year Average	696				2500

Auditor's Opinion in PP&L 1984 Annual Report

Notes to Financial Statements

1. Summary of Accounting Policies

Accounting Records

Accounting records are maintained in accordance with the Uniform System of Accounts prescribed by the Federal Energy Regulatory Commission (FERC) and adopted by the Pennsylvania Public Utility Commission (PUC).

Associated Companies

Investments in unconsolidated subsidiaries (all wholly owned) and in Safe Harbor Water Power Corporation (of which the Company owns one-third of the outstanding capital stock representing one-half of Safe Harbor's voting securities) are recorded using the equity method of accounting. Unconsolidated subsidiaries operate in the United States and are engaged in coal mining, holding coal reserves, oil pipeline operations and real estate investment.

The Company believes that its financial position and results of operations are best reflected without consolidation of these subsidiaries since they are not engaged in the business of generating or distributing electricity. All unconsolidated subsidiaries considered in the aggregate would not constitute a "significant subsidiary" as that term is defined by the Securities and Exchange Commission.

Utility Plant and Depreciation

Additions to utility plant and replacement of units of property are capitalized at cost. The cost of units of property retired or replaced is removed from utility plant accounts and charged to accumulated depreciation. Expenditures for maintenance and repairs of property and the cost of replacement of items determined to be less than units of property are charged to operating expenses.

For financial reporting purposes, depreciation is computed on a straight-line method using rates based on the estimated useful lives of property, with the exception of the Susquehanna nuclear plant which is depreciated on a modified sinking fund method, which method is also used for rate-making purposes. Provisions for depreciation, as a percent of average depreciable property, approximated 2.5% in 1984, 2.7% in 1983 and 3.3% in 1982.

Cost of Decommissioning Nuclear Plant

An annual provision for decommissioning costs of the Susquehanna nuclear plant equal to the amount

Auditors' Opinion

Deloitte Haskins+Sells
Certified Public Accountants

One World Trade Center
New York, New York 10048

To the Shareowners and Board of Directors of Pennsylvania Power & Light Company:

We have examined the balance sheets of Pennsylvania Power & Light Company as of December 31, 1984 and 1983 and the related statements of income, earnings reinvested, and changes in financial position for each of the three years in the period ended December 31, 1984. Our examinations were made in accordance with generally accepted auditing standards and, accordingly, included such tests of the accounting records and such other auditing procedures as we considered necessary in the circumstances.

In our opinion, such financial statements present fairly the financial position of the Company at December 31, 1984 and 1983 and the results of its operations and the changes in its financial position for each of the three years in the period ended December 31, 1984, in conformity with generally accepted accounting principles applied on a consistent basis, after restatement for the change, with which we concur, in the method of accounting for leases as described in Note 2 of the financial statements.

Deloitte Haskins & Sells

February 4, 1985

Source: Auditor's Report in PP&L 1984 Annual Report

FALKENBERG SURREBUTTAL EXHIBIT 3

Hieronymus Calculation of Decline in Limerick 1
and 50% Common Revenue Requirements.

	Year	Orig. Cost Additions Carrying Charges (a) (1)	Station O&M (2)	Other O&M (3)	Total Costs (4)x(1) +(2)+(3)
1	1986	$747.27	$79.01	$31.24	$857.52
2	1987	$713.90	$85.33	$31.62	$830.85
3	1988	$685.60	$93.01	$32.98	$811.59
4	1989	$660.09	$101.39	$39.96	$801.44
5	1990	$635.23	$110.51	$33.90	$779.64
6	1991	$610.30	$117.14	$37.10	$764.54

FALKENBERG SURREBUTTAL EXHIBIT 4
Limerick 1 and 100% Common Plant
Cost/Benefit Analysis using Paquette EEI Survey
Response and After Tax Discount Rate

	Cumulate Net P.V.R.R. (1) (millions)
1990	-2766
2000	-3075
2010	-1967
2022	-619

1. A negative value indicates Limerick produces higher rate. A positive value indicates Limerick produces lower rates. This exhibit shows that by using Mr. Paquette's response to the EEI survey and the after tax discount rate, Limerick 1 and 100% of Common results in a $619 million penalty to customers' rates over the life of the plant.

FALKENBERG SURREBUTTAL EXHIBIT 5
Limerick 1 and 50% Common Plant
Cost/Benefit Analysis at Various Tax Rates
Using After Tax Discount Rate

Case	1986-2022 PVRR 1.) (millions)	
12.7% Cost of Funds	1928	(Hieronymus Result 1956)
Paquette EEI Cost of Funds 50% Tax Rate	413	
Same as 2. with 35% Tax Rate	384	
Same as 2. with 0% Tax Rate	11	

A negative value indicates Limerick produces higher rates.
A positive value indicates Limerick produces savings.
In these examples, using assumptions highly favorable to PECO, the lifetime benefits of Limerick decline substantially as taxes on the plant are reduced. This shows the unreasonable results obtained from use of after tax discount rate.

Falkenberg Surrebuttal Exhibit 6

TAG™ Technical Assessment Guide

Keywords:
Alternatives
Evaluation Methods
Utility Economics
Fuel Prices
Cost Data
Performance Data

EPRI

EPRI P-2410-SR
Special Report
May 1982

ELECTRIC POWER RESEARCH INSTITUTE

candidate technology if the revenue code is substantially revised. For convenience, the illustrative tables appended to Chapter B-3 of the yellow pages and Appendix A of the white pages that are to be used in economic evaluations performed for EPRI, include tables both with and without the tax preferences.

While a government owned utility system does not pay income taxes, a payment in lieu of income taxes is often included in carrying charges. Accordingly, the carrying charge tables in Appendix A (white pages) and those appended to Chapter B-3 for illustrative purposes (yellow pages) both with or without the tax preferences can be used for all types of utility systems.

B-2.5 PROPERTY TAXES AND INSURANCE

In this Guide, property taxes and insurance are assumed to be levelized at 2% of the installed cost of an investment item and are included as a carrying charge.

B-2.6 DISCOUNT RATE

The discount rate to be used in present value calculations is related to the weighted cost of capital. Most utilities use a discount rate equal to the weighted cost of capital, but some use an "after tax cost" equal to the weighted cost of capital less the tax rate times the debt return. Neither method is completely appropriate under all circumstances for all electric utilities. A discount rate equal to the weighted cost of capital has been selected for use at EPRI because of its more general use in the electric utility industry.

For illustrative purposes in the yellow pages, the weighted cost of capital is assumed to be 10 percent and is reflected in the tables appended to Chapter B-3. The actual weighted cost of capital to be used in all economic evaluations performed for EPRI is reflected in Appendix A of the white pages.

B-2.7 FURTHER DISCUSSION OF ESCALATION AND INFLATION

Section B-1.3 introduced the general concepts of escalation and inflation and Section B-2.4.2 discussed return on investment and cost of money. This section will present the effect of escalation and inflation on the cost of money.

The discount rate is dependent upon the current money market which has experienced a general increase in inflation for a number of years. In general,

FALKENBERG SURREBUTTAL EXHIBIT 7a

Regression Equation Relating Total Cost Per KW
of Nuclear Plants Completed from 1968 to 1978
to Commercial Operation Date and other Factors

Variable	Variable Mean	Regression Coefficient	t-Statictic
Installed Cost $/KW (1)	-	-	-
Constant	-	-5683.6173	-
C.O.D.(2)	74.1973	81.8536	11.284
INITIAL/ADD-ON (3)	0.7059	153.5125	4.997
MW (4)	808.3529	-0.216	-2.209
Northeast (5)	0.3725	88.4733	3.103

Number of Observations

Adjusted R Squared = .7782
R Squared = .7959
Multiple R = .8921

Standard Error of Est. = 97.7677
Predicted Limerick Cost $/kW = 1285.

Sources and Notes

1. Installed cost per KW is measured in total installed cost (including AFUDC) per KW of capacity. Source is Alabama Power Co.'Power Plant Cost Trends' -January 1984 and 1983 TVA Survey of Nuclear Plant Costs.

2. C.O.D. is year and month of commercial operation; source TVA and APCO surveys.

3. Initial Add-On Indicator = 1 for First Unit at Site, 0 for subsequent units.

4. Gross Capacity in Megawatts for the unit.

5. Northeast Indicator = 1 for Utilities in FERC region 1, 0 otherwise.

FALKENBERG SURREBUTTAL EXHIBIT 7b

Regression Equation Relating Total Cost Per KW of Nuclear Plants Completed from 1968 to 1978 to Commercial Operation Date and other Factors

Variable	Variable Mean	Regression Coefficient	t-Statictic
Installed Cost $/KW (1)	-	-	-
Constant	-	91.8233	-
(COD - 1970) xx2 (2)	23.6221	9.6528	15.231
INITIAL/ADD-ON (3)	0.7059	128.8656	5.347
MW (4)	808.3529	-0.1009	-1.417
Northeast (5)	0.3725	72.9107	3.244

Number of Observations

Adjusted R Squared = .8617
R Squared = .8728
Multiple R = .9342

Standard Error of Est. = 77.1981
Predicted Limerick Cost $/kW = 2590

Sources and Notes

1. Installed cost per KW is measured in total installed cost (including AFUDC) per KW of capacity. Source is Alabama Power Co.'Power Plant Cost Trends' -January 1984 and 1983 TVA Survey of Nuclear Plant Costs.

2. C.O.D. is year and month of commercial operation; source TVA and APCO surveys. This variable equals the squared differnece between commerical operation and 1970.

3. Initial Add-On Indicator = 1 for First Unit at Site, 0 for subsequent units.

4. Gross Capacity in Megawatts for the unit.

5. Northeast Indicator = 1 for Utilities in FERC region 1, 0 otherwise.

The 1970 National Power Survey, Federal Power Commission; Part IV
Section 4

A REPORT TO THE FEDERAL POWER COMMISSION

THE METHODOLOGY OF LOAD FORECASTING

PREPARED BY

THE TECHNICAL ADVISORY COMMITTEE
ON LOAD FORECASTING METHODOLOGY
FOR THE NATIONAL POWER SURVEY

1969

FALKENBERG SURREBUTTAL EXHIBIT 8

PREFACE

The need for a comprehensive study of the methodology of electric utility load forecasting has been recognized by many in the electric utility industry and government. No basic reference source has existed covering the data requirements and current methods and techniques used in this area of utility operations. The Federal Power Commission, cognizant of this need, established the Load Forecasting Methodology Committee as one of four technical advisory committees formed to assist the Commission in updating the National Power Survey of 1964. The assignment given this Committee was to determine the state of the art of load forecasting, to assess the need for improved methods and techniques and to suggest means of meeting such need.

The Committee's study of which this report is the result was conducted in cooperation with many segments of the electric power industry. The Committee wishes to express its appreciation to all contributors who have given time and assistance in preparation of this study. There are too many to name here individually, but thanks are due particularly to members of the Commission staff who worked with the Committee, to the Regional Advisory Committees who helped obtain data from utilities and to the many electric utilities who submitted statistical data and other information regarding their operations and load forecasting procedures.

Committee Members:

William R. Brownlee, Chairman	Southern Services, Inc.
Dr. Clopper J. Almon, Jr.	University of Maryland
*Donald N. Anderson	Southern California Edison Company
Andrew J. Baldwin	Pennsylvania Power & Light Company
Walter M. Bowers	Southwestern Power Administration
*John R. Dunigan	Public Service Company of Indiana, Inc.
Edward L. Hoffman	Niagara Mohawk Power Corporation
*Hans H. Landsberg	Resources for the Future, Inc.
Frank W. Linder	Dairyland Power Cooperative
*René H. Malès	Commonwealth Edison Company
William R. New	Tennessee Valley Authority

Assisting the Chairman:

Carl E. Asbury	Southern Services, Inc.

Federal Power Commission Staff:

Phyllis H. Kline	Office of Economics
William W. Lindsay	Liaison to the Committee
Jerry R. Milbourn	Committee Secretary

* Member of Editing Subcommittee

CHAPTER V—CURRENT FORECASTING METHODS

Forecasting techniques are tools. No single method or group of techniques in itself assures success in forecasting. Knowledge and judgment of the forecaster in applying selected techniques in a given utility load situation are essential. So is final judgment of the elements used in arriving at the ultimate load forecast.

The number and kinds of forecasting methods used vary considerably from utility to utility. Use of several methods is common. Differences in methods result in part from variations in economic and geographic conditions, system characteristics and mix of loads in the utility areas.[1] For example, population may change rapidly in one utility area and be stable in another. Utilities with large cooling loads have an interest in developing estimates of historical cooling loads and load weather relationships and use these in forecasting cooling loads. Utilities serving industrial loads which are highly responsive to the business cycle and which constitute a large proportion of total load usually put more emphasis upon analysis of industrial loads than do utilities serving a stable and small industrial load.

A. Basic Forecasting Methods

Forecasting methods can be grouped into two categories: extrapolation and correlation.

1. Extrapolation

Extrapolation is based upon the assumption that future growth will be a continuation of a discernible pattern of past growth. Specific methods include compound rates of growth, annual increments, fitting of mathematical growth curves and use of graphs of treated or untreated historical data.

Extrapolation often produces acceptable results because electric loads exhibit stable growth over rather long periods. Residential, outdoor lighting and service loads appear to be largely insulated from the business cycle. However, forecasters relying predominantly upon this method may fail to recognize underlying changes which eventually will affect future growth. For example, a succession of very hot summers might mask declining growth in non-air conditioning loads.

2. Correlation

Correlation relates electric power loads to selected associated factors. Correlation methods include scatter diagrams, simple correlation, multiple correlation and simple or complex models. While results from these techniques, especially the more sophisticated methods, cannot be accepted at face value but must be evaluated in terms of the theories underlying the techniques, including their limitations, they provide insight into the causes of past growth and its variation and quantify relationships between load and factors which affect load. This leads to a clearer understanding of the factors which cause growth and of their relative importance. Further, when forecasts deviate from actual loads, the correlation approach is helpful in identifying causes of deviation.

One problem associated with correlation methods is the need to obtain and select forecasts of these associated factors, i.e., independent variables, such as population, income, appliance saturation, etc. There is no assurance that this can be done with any greater accuracy than forecasting electric loads directly. Despite this difficulty, correlation is useful because it forces the forecaster to consider and analyze future load in a context of other factors rather than as a completely independent phenomenon.

It is important, however, that the analyst/forecaster avoid the mistake of drawing conclusions from spurious correlations which have a high degree of statistical significance but no logical relationship.

B. Special Information and Judgment

Although extrapolation and correlation are fundamental to the art of load forecasting, they

[1] Specific forecasting methods employed by four electric systems are detailed in Appendix A.

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SAMUEL A. SCHRECKENGAUST, JR.

February 28, 1986

Re: Pennsylvania Public Utility Commission, et al.,
v. Philadelphia Electric Company
Docket No. R-850152

DOCUMENT FOLDER

RECEIVED
FEB 28 1986
SECRETARY'S OFFICE
Public Utility Commission

Larry B. Selkowitz, Esquire
Widoff, Reager, Selkowitz & Adler, PC
129 State Street
Harrisburg, PA 17101

Dear Mr. Selkowitz:

Enclosed please find the response of PAIEUG to the data request made by Utility Users Committee/University of Pennsylvania (UUC/UP) to Mr. Jeffry Pollock during the hearing held February 19, 1986.

Please advise if any further clarification is necessary.

Very truly yours,

McNEES, WALLACE & NURICK

By David M. Kleppinger
David M. Kleppinger

DMK/jf
Enclosure

cc: All Parties of Record (w/encl.)

CERTIFICATE OF SERVICE

Pennsylvania Public Utility Commission, et. al., :
v. :
Philadelphia Electric Company : Docket No. R-850152
:

I hereby certify that I have served a copy of the foregoing document on all known parties of record to this proceeding, all by first class mail (unless otherwise indicated) properly addressed as follows:

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Philadelphia, PA 19102-1692

David M. Kleppinger

Dated this 28th day of FEBRUARY, 1986, at Harrisburg, PA

PHILADELPHIA ELECTRIC COMPANY

PAIEUG et al Response to the
Utility Users Committee/University of Pennsylvania
Transcript Request of February 19, 1986

REQUEST: Please provide the percent increases to PAIEUG et al members under Mr. Pollock's recommended rate spread and rate design. Also provide the corresponding load factors.

RESPONSE: Per the agreement between Counsel, the percent increases and corresponding load factors are as follows:

DOCUMENT FOLDER

DOCKETED
MAR 0 3 1986

PAIEUG Recommended Tail Block
(JP-1, Schedule 8, Column 2)

	Base	Nonfuel	Load Factor*
Low	8.2%	52.9%	147%
High	35.2%	67.4%	43%
Average	18.5%	61.0%	89%

Equal Percent Increase
(JP-1, Schedule 8, Column 3)

	Base	Nonfuel	Load Factor*
Low	12.0%	61.6%	147%
High	33.3%	64.5%	43%
Average	20.2%	64.4%	89%

*Based on billing demands

Prepared by: Jeffry Pollock

RECEIVED
FEB 28 1986
SECRETARY'S OFFICE
Public Utility Commission

BEFORE THE

PENNSYLVANIA PUBLIC UTILITY COMMISSION

Pennsylvania Public Utility Commission	)	
v.	)	Docket No. R-850152
Philadelphia Electric Company	)	

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DOCKETED
MAR 03 1986

SURREBUTTAL TESTIMONY

OF

DR. JOHN W. WILSON

February 1986

GEC Statement No. 1D

J. W. WILSON & ASSOCIATES, INC.
ECONOMIC COUNSEL
THIRD FLOOR • WATERGATE OFFICE BUILDING
2600 VIRGINIA AVENUE, N.W. • WASHINGTON, D.C. 20037

BEFORE THE

PENNSYLVANIA PUBLIC UTILITY COMMISSION

Pennsylvania Public Utility Commission	)	
v.	)	Docket No. R-850152
Philadelphia Electric Company	)	

Surrebuttal Testimony

of

Dr. John W. Wilson

Q. ARE YOU THE SAME JOHN W. WILSON WHO PREVIOUSLY SUBMITTED DIRECT TESTIMONY IN THIS PROCEEDING IDENTIFIED AS GEC STATEMENT NOS. 1A, 1B, AND 1C?

A. Yes, I am.

Q. WERE YOU QUALIFICATIONS SET FORTH IN GEC STATEMENT NO. 1A?

A. Yes.

Q. WHAT IS THE PURPOSE OF YOUR SURREBUTTAL TESTIMONY?

A. The purpose of my surrebuttal testimony is to respond to arguments on incentives and phase-in that have been made by PECO witnesses Carroll, Farling, Hieronymus, Hill, Paquette, Sanders and Wroblewski.

Q. HOW IS YOUR SURREBUTTAL TESTIMONY ORGANIZED?

A. My surrebuttal testimony is divided into two parts. In the first part I respond to PECO's arguments pertaining to the regulatory incentives that I suggested in my Statement 1A, and in the second part I respond to the Company's arguments concerning the phase-in proposals I presented for the Commission's consideration.

I. Regulatory Incentives

Q. WHAT ARE THE ARGUMENTS THAT THE PECO WITNESSES HAVE MADE WITH RESPECT TO THE REGULATORY INCENTIVE YOU SUGGESTED IN YOUR STATEMENT 1A?

A. PECO's criticisms of the regulatory incentive testimony can be categorized under five headings. First, the Company contends that the proposed nuclear capacity

factor standard is too high and that the neutral zone (where there is neither an incentive reward or penalty) is too narrow. Second, the Company's witnesses argue that my testimony lacks "symmetry" in that the potential rewards and penalties are not equal. Third, the Company contends that penalty caps should be established so as to avoid the imposition of severe financial impacts on the Company's stockholders. Fourth, the PECO witnesses argue that the nuclear incentive formula is duplicative and unnecessary in view of the Commission's imposition of an 80/20 ECR approach. Fifth, PECO contends that there are various data errors in my analysis.

Q. HOW DO YOU RESPOND TO THE CONTENTION THAT THE NUCLEAR CAPACITY FACTOR STANDARD YOU SUGGEST IS TOO HIGH AND THAT YOUR PROPOSED NEUTRAL ZONE IS TOO NARROW?

A. The 65 percent capacity factor that I have suggested as a minimum operating standard is reasonable. While it is true that in recent years the national average has been slightly below that level, these averages understate the level of performance that should reasonably be expected in the future. That is so because the recent averages contain major post-TMI outages that were

required to modify plants to meet new safety standards. Those outages should not be expected to continue in the future and they should not be required for new plants, like Limerick, that have been built to modern specifications. Even PECO witness Hieronymus acknowledged that, except for the TVA units which were all taken off line in 1985 due to internal TVA management problems, the 1985 average capacity factor for all nuclear plants was 65 percent -- and that includes plants that were inoperative for extended periods because of major repair and retrofit requirements.

Likewise, the Company's argument that the proposed 60 to 70 percent neutral zone is too narrow is without merit. Dr. Hieronymus, for example, addresses this proposed zone as if it were to be applied on an individual plant basis. All of his conclusions in this regard are irrelevant to my actual proposal which would be applied to all of PECO's nuclear units as a group. Given the fact that, with a group-based application, the outages of one plant will be offset by the operations of another, the proposed ten percent neutral zone, if anything, may actually be a bit large.

Q. IN THEIR REBUTTAL TESTIMONY, MR. CARROLL AND MR. HILL CONTENDED THAT THE 60 TO 70 PERCENT RANGE FAILED TO TAKE PECO'S OWN HISTORICAL OPERATING RECORD INTO ACCOUNT. HOW DO YOU RESPOND TO THAT CONTENTION?

A. I have fully considered PECO's actual historical operating record, and I commented on it in my direct testimony. One reason for proposing the implementation of an incentive program now is to motivate PECO to improve upon its historical record. Clearly, then, it would be perverse to use PECO's historical record as the sole basis for an operating incentive in the future.

Q. DO YOU AGREE WITH THE PECO WITNESSES EMPHASIS ON SYMMETRY?

A. No. The PECO witnesses apparently misunderstand the significance of the 65 percent operating standard and the 60 to 70 percent neutral zones. I view these as <u>minimal</u> satisfactory operating results. They are not an average good performance target. It is, of course, true that during recent years many utilities have experienced operating records for nuclear plants below the 65 percent level because of major plant failures

and the need to meet new safety requirements. That does not mean, however, that continued extensive outages for these purposes should be built into operating expectations for the future. Looking forward, a 65 percent capacity factor for nuclear plants is a reasonable minimal operating standard. Viewed in that context, the symmetry which PECO advocates would be unwarranted.

Under the plan that I have presented for Commission consideration, if the nuclear capacity factor is below 60 percent, the Company would absorb all replacement fuel costs, whereas, at capacity factors above 70 percent, the Company's extra reward would be 50 percent of the realized fuel savings. There is no reasonable basis to support PECO's claim that an incentive program should be symmetrical -- i.e., that performance rewards and penalties should have equal size and probabilities of occurrence. Under traditional regulatory ground rules, a public utility company that is granted a service franchise is entitled to recover its cost and earn a fair rate of return on investments if it performs satisfactorily in meeting its public service obligations. To the extent that excessive costs are incurred, they are not properly recoverable from rate-

payers. Under these ground rules, there is no provision at all for extra profit rewards. Thus, the incentive program that I have discussed in my testimony actually offers PECO more than the Company would be entitled to under traditional regulation.

In this proceeding, PECO seems to be contending that if its performance exceeds a minimum acceptable standard, there should be an extra reward over and above the normal fair rate of return in an amount equal to disallowances that would occur if minimal operating standards failed to be achieved. In reality, the Commission would be entirely justified in disallowing all excess costs incurred due to poor operations, while providing no extra reward at all for good performance. Good performance is what the utility is expected and obligated to deliver in exchange for the privilege of its public utility franchise. The fact that the performance incentive program proposed here contains the additional carrot of some special reward for performance above a minimal acceptable standard constitutes more favorable regulatory treatment than, in theory, would be afforded under sound conventional rate regulation. The more favorable regulatory treatment could

lead to greater benefits for the utility and ratepayers alike.

Q. THE COMPANY WITNESSES HAVE ALSO CONTENDED THAT PENALTY CAPS SHOULD BE IMPLEMENTED AS PART OF ANY INCENTIVE PROGRAM SO THAT POOR PERFORMANCE WILL NOT RESULT IN SEVERLY ADVERSE FINANCIAL RESULTS FOR THE COMPANY AND ITS STOCKHOLDERS. DO YOU AGREE WITH THAT CONTENTION?

A. No. Poor performance will result in financial losses. The only question is who will bear them -- ratepayers or the Company and its stockholders. PECO's argument for a cap would greatly undermine any serious incentive program because it would assure the Company that ratepayers, not stockholders, will be called upon to shoulder the financial consequences of any major failures. Not only would this undermine productivity and efficiency incentives, it would also be grossly inequitable. Major performance failures will surely create major financial burdens. Both from a traditional consumer protection viewpoint and from an efficiency incentive perspective, it should be understood that stockholders (not ratepayers) will be financially responsible for carrying these burdens.

As for the contention that an incentive program may depress the company's profitability in the event that it is unable to achieve the established incentive standards, it should be recognized that without such a penalty, no meaningful incentive will exist. The point of an incentive program is to encourage a level of performance that is above the level which would be achieved absent an incentive program. To argue that the Company's rate of return and its stockholders' financial circumstances will be inpaired in the event that reasonable operating efficiency is not achieved is hardly a valid basis for objecting to the incentive program.

Of course, depending on the specific factual situation, there may be circumstances under which the Commission would decide to lift incentive disallowance provisions for some period to accommodate certain unforeseen events. For example, Mr. Carroll contrives an illustration at page 7-8 of his Statement 22C under which he assumes that in 1988 the NRC orders a 6-month shutdown of all GE reactors (including Limerick No. 1 and Peach Bottom No. 2) so as to coincide with an extended outage of Peach Bottom No. 3 for pipe replacement. Under the extreme hypothetical, Mr. Carroll calculates that there

could be a $240 million revenue shortfall. While the hypothetical is improbable, if it occurred (and depending on the factual basis for the ordered shutdown) the Commission may decide to modify the incentive formula for that period. In any event, the answer to Mr. Carroll's concern is to maintain reasonable regulatory flexibility -- not to discard sound regulatory principles because there may be some unusual unforseen circumstances where a variance is warranted.

Q. DO YOU AGREE THAT YOUR INCENTIVE TESTIMONY IS DUPLICATIVE AND UNNECESSARY IN VIEW OF THE COMMISSION'S NEW 80/20 ECR APPROACH?

A. No. The nuclear incentive that I suggest is substantively separate and distinct from whatever ECR methodology the Commission may adopt. For ease of implementation, I did show in GEC Exhibit 1C how the 80 percent ECR and my nuclear incentive approach could be administered jointly. But, it would be entirely wrong to mischaracterize the two approaches as being redundant. The 80/20 ECR approach deals generally with all aspects of fuel and purchased power cost recovery, whereas my nuclear incentive proposal focuses on a specific performance problem area. It would be

possible to implement the nuclear performance standard using a mechanism that is separate and independent from the ECR. For purposes of administrative ease and economy, I have suggested (in GEC Statement No. 1C) one way in which the nuclear performance incentive can be implemented jointly with the ECR. But it is wrong to miscontrue the possibility of joint implementation as evidence of duplication.

Q. WHAT ARE THE DATA ERRORS THAT PECO CONTENDS ARE INCORPORATED IN YOUR ANALYSIS?

A. Mr. Carroll characterizes the inclusion of reactors that operated for less than one year (and one small 70 MW reactor) in my computations as "errors or misrepresentations". The data for each of these reactors (and for all of the others in my analysis) is factually accurate and correct. Moreover, since I clearly showed the commercial operation date and size of each of these units in my exhibits, the representations are also entirely accurate. Likewise, Mr. Carroll labels my computation of an arithmetic average (rather than a weighted average) as an "error or misrepresentation." Again, my computation is entirely accurate. No doubt, what Mr. Carroll intended to convey was simply his view

that certain plants should be excluded from the analysis and that a weighted average rather than an arithmetic average should be computed. That, of course, is a matter of judgment; I included all plants for completeness. I certainly acknowledge that computations can also be made for subgroups and that weighted averages as well as arithmetic averages can be computed. I have presented all of the necessary data so that the Commission may make any of these computations which it deems relevant. In any event, my opinion as to the appropriateness of a 65 percent capacity factor standard and a 60 to 70 percent neutral zone is not affected by Mr. Carrolls' choice of plants and weighting.

Mr. Carroll also contends that there are two additional "errors or misrepresentations." First, he states that PECO's nuclear capacity is 2,871.84 MW rather than the 2,863.84 MW that I have used in Exhibit__(J.W.-4). My total is based on the following plant statistics:

Limerick 1	1,055 MW
Peach Bottom 2	447 MW
Peach Bottom 3	440 MW
Salem 1	456 MW
Salem 2	466 MW
	2,864 MW

If Mr. Carroll can now show which of these figures is wrong and that 2,872 MW is the correct total, then, of course, the corrected figure should be used. However, all of these figures were obtained from PECO's "Production Cost Model Imput Data" (sheet 5) which is contained in Exhibit JJC-1. I have rechecked each of these amounts, and they appear to correspond with PECO's own data. Since the difference between the two numbers is less than 3/10 of one percent (.00279), a change of this magnitude will have no significant impact on any of my results or conclusions.

Finally, Mr. Carroll construes my 1990 generation value in Exhibit__(J.W.-4) as an "error of misrepresentation" because it was not supplied by PECO. As I have already explained in previous testimony, PECO did not supply a 1990 value and, consequently, I used the average of PECO's 1987, 1988, and 1989 values as an estimate for 1990. If PECO is now in the position to supply a more accurate 1990 value to replace this estimate, they should certainly do that so as to assist the Commission with its determination in this case.

Q. WOULD YOU PLEASE SUMMARIZE THE WAYS IN WHICH YOUR INCENTIVE PLAN DIFFERS FROM PECO'S PROPOSAL AND COMMENT BRIEFLY ON THE DIFFERENCES?

A. There are three major differences. First, my proposal contemplates a 65 percent capacity factor standard with a 60 to 70 percent neutral zone, whereas PECO is advocating a 60 to 65 percent standard and a 55 to 70 percent zone. I believe that 65 percent is a reasonable standard -- especially in view of the fact that recent low levels of plant performance attributable to outages for post-TMI retrofits should not be expected to repeat in the future. I also believe that a 10 percentage point neutral zone is more than ample for a standard that applies to multiple plants as a group rather than to units individually.

Second, my testimony would require the Company to bear the full burden of increased energy costs attributable to nuclear performance rates below the neutral zone, whereas (in the interest of "symmetry") PECO would split these increased costs between its stockholders and ratepayers. In my opinion, PECO's symmetry arguments have no basis in logic or regulatory policy. Traditional regulatory policy could disallow the re-

covery of all excessive costs and pass through all of the benefits of good performance to ratepayers. That is part of the social contract (i.e., the quid pro quo) that a utility accepts for the privilege of its franchise. The proposal here, to share half of the extra benefits of superior performance with the Company is more than fair. In short, PECO's symmetry argument is entirely out of balance.

Third, the Company urges that a cap be established to limit cost disallowances that could result from poor performance. In my opinion such a cap would both undermine incentives and unfairly impose excessive costs on ratepayers. In the event of major unforeseen events that may necessitate reconsideration of any particular incentive program (e.g., a federal mandate to shut down all nuclear plants), the Commission would of course be free to consider the specific facts at hand and alter regulatory procedures as it deemed fit.

In short, PECO's proposed standards are too wide, too soft, and their impact is too limited to achieve optimal performance results.

II. Phase-In

Q. WHAT ARE THE ARGUMENTS THAT THE PECO WITNESSES HAVE MADE WITH RESPECT TO YOUR PHASE-IN TESTIMONY?

A. PECO's criticisms of my phase-in testimony can be categorized under three headings. First, the Company's witnesses contend that the phase-in proposals that I presented for Commission consideration will raise ratepayers' total nominal costs over time. Second, PECO implies that the sinking fund depreciation approach (which I used in two of the phase-in alternatives that I presented) "may" be inconsistent with generally accepted accounting principles (GAAP) and FASB-71. Third, PECO's witnesses maintain that my phase-in proposals worsen PECO's internal cash flow.

Q. HOW DO YOU RESPOND TO THE CONTENTION THAT THE PHASE-IN PROPOSAL YOU DISCUSS WILL RAISE TOTAL NOMINAL COSTS OVER TIME?

A. Any phase-in which defers cost recovery to the future and does not impose a return disallowance will raise total nominal revenue collections. But it will not necessarily raise the present value of revenue collec-

tions, and may decrease it. Neither regulation nor any other rational economic policy has ever been designed to minimize nominal costs over time. If we wished to minimize nominal rate totals, all investments would be expensed immediately (i.e., depreciated 100 percent at the time of plant acquisition), and then there would be no need for a rate base, a return or income taxes. But that is not the purpose of regulation. Rather, one purpose of regulation is to spread cost recovery over time so as to better match the time-distribution of benefits. Thus, investments are not expensed immediately -- they are capitalized, and a return is allowed on the undepreciated balance. A phase-in, with the capitalization of remaining balances, is a logical extension of this regulatory practice. PECO's inference that the objective should be to minimize nominal values (without giving proper allowance for the time value of money) is without merit.

Q. COMPANY WITNESSES WROBLEWSKI, FARLING, SANDERS AND PAQUETTE HAVE ALL OBJECTED TO THE SINKING FUND APPROACH WHICH YOU HAVE USED IN SEVERAL OF YOUR PHASE-IN ALTERNATIVES. ARE THEIR OBJECTIONS REASONABLE?

A. No. Mr. Wroblewski, for example, contends that the sinking fund approach is inappropriate because it fails to track loss of service value. For that reason, he would prefer the application of straight line depreciation. His argument fails, however, because straight line depreciation is certainly not reflective of loss of service value in a situation where service value increases over time. PECO has not denied that the value of its nuclear capacity (assuming that it functions properly throughout its economic life) will increase over time. Since that is the case, a sinking fund approach to depreciation will more closely mirror loss of service value than will the straight line approach. Naturally, PECO would prefer the straight line approach because that method permits the Company to recover costs more quickly from ratepayers, but that should not be the standard upon which a determination is made for ratemaking purposes in this proceeding.

Mr. Wroblewski also points out that under a sinking fund approach more dollars will be required from ratepayers at later dates whereas fewer dollars will be required currently. That, of course, is true. Indeed, it is the reason for implementing a phase-in. Given the circumstances pertaining to PECO's nuclear capacity

in this case, the adoption of a phase-in plan which includes a sinking fund approach for depreciation will improve the equity and time distribution of cost principles in electric utility ratemaking.

Q. MR. FARLING AND MR. SANDERS HAVE IMPLIED THAT A SINKING FUND APPROACH IS NOT CONSISTENT WITH GENERALLY ACCEPTED ACCOUNTING PRINCIPLES (GAAP) AND THAT IT MAY NOT QUALIFY UNDER THE PROPOSED REVISIONS TO FASB NO. 71. ARE THEIR CONCERNS VALID?

A. No. There is nothing whatsoever in the proposed revisions to FASB No. 71 which suggests that sinking fund depreciation procedures are unacceptable or inappropriate. Mr. Farling and Mr. Sanders have carefully qualified their statements in this regard with the use of words such as "may". In my opinion, the concerns which they are attempting to raise in this manner are unfounded, and their objections are unsubstantiated. There is no GAAP prohibition of sinking fund depreciation procedures, and, in fact, the materials which I supplied to PECO through discovery demonstrate that there are occasions on which investor-owned utilities have used sinking fund depreciation for generation capacity in the past.

Q. HOW DO YOU RESPOND TO THE COMPANY'S CONTENTION THAT A SINKING FUND PHASE-IN WILL REDUCE PECO'S INTERNAL CASH FLOW?

A. I have completed and presented a detailed analysis showing precisely how my phase-in (and performance incentive) proposals will affect PECO's cash flow and other financial indicators. This analysis was the subject of GEC Statement 1B. It shows conclusively that although under certain phase-in proposals cash flow will be reduced, PECO nevertheless will remain financially viable and the Company's ratepayers will receive significant benefits.

Because the Company's own phase-in plan is so limited, Mr. Paquette is certainly right in stating that my proposals will produce less revenue for PECO over the next ten years. That is exactly the point -- to reduce ratepayer burdens while maintaining PECO's financial viability. My proposals will defer revenue recovery until a later date so as to better match costs and benefits. My proposal will, indeed, result in less revenue to PECO and lower rates to PECO's customers during the next ten years than will the Company's plan.

In my opinion, however, that is a positive feature of the proposal, not a weakness.

Q. DOES THIS CONCLUDE THIS PORTION OF YOUR SURREBUTTAL TESTIMONY?

A. Yes, it does.

COMMONWEALTH OF PENNSYLVANIA
PENNSYLVANIA PUBLIC UTILITY COMMISSION
P.O. BOX 3265, HARRISBURG, PA 17120
February 28, 1986

In re: R-850152

(See letter dated 1/9/86)

Pennsylvania Public Utility Commission, et al.
vs.
Philadelphia Electric Company

NOTICE

This is to advise that an additional day of hearing, to be held March 17, has been added to the schedule in the captioned proceeding. Accordingly, further hearings will be held as follows:

Harrisburg - 10:00 a.m., available hearing room, Ground Floor, North Office Building

Wednesday through Friday - March 5, 6 & 7, 1986
Monday through Friday - March 10, 11, 12, 13 & 14, 1986
Monday - March 17, 1986

The record in this proceeding will be closed March 17, 1986. The briefing schedule remains as previously set with main briefs due to be served, not mailed, by April 7, and reply briefs by April 14, 1986.

Administrative Law Judge Joseph P. Matuschak will be the presiding officer in this case. Judge Matuschak's telephone number is (412) 437-3409. His address is 97 East Main Street, Uniontown, Pennsylvania 15401.

PLEASE NOTE - In any scheduled hearings of two or more consecutive days, if testimony scheduled for that sequence of hearings is concluded in less time, any subsequent date in that sequence is subject to cancellation without advance notice.

cc: Judge Matuschak
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Bureau of Rates
Mr. Bramson
Ms. Dickson
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February 28, 1986

Re: Pennsylvania Public Utility Commission, et al.,
v. Philadelphia Electric Company
Docket No. R-850152

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Public Utility Commission

David H. Wersan, Assistant
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Dear Dave:

Enclosed please find the response of PAIEUG witness Melvin P. Bloom to the data request made during his cross-examination on February 19, 1986. The attached page provides the EDH levels and the peak megawatt levels for each of the four summer peaks in Dr. Bloom's 1980-1983, 1985 and 213 EDH cost-of-service studies.

If any further clarification is required, please advise.

Very truly yours,

McNEES, WALLACE & NURICK

By David M. Kleppinger
David M. Kleppinger

DMK/jf
Enclosure

cc: All Parties of Record (w/encl.)

CERTIFICATE OF SERVICE

Pennsylvania Public Utility Commission, et. al., :
v. :
Philadelphia Electric Company : Docket No. R-850152
:

I hereby certify that I have served a copy of the foregoing document on all known parties of record to this proceeding, all by first class mail (unless otherwise indicated) properly addressed as follows:

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David M. Kleppinger

Dated this 28th day of FEBRUARY, 1986, at Harrisburg, PA

	JUNE		JULY		AUGUST		SEPTEMBER	
	EDH	MW	EDH	MW	EDH	MW	EDH	MW
1980-83	158	5,844	243	6,064	209	5,961	184	4,967
1985	121	5,503	212	5,816	234	6,158	182	4,960
213EDH	213	6,350	213	5,824	213	5,992	213	5,057

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DAVID M. WALLACE
1942-1967

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OF COUNSEL

GILBERT NURICK
EDWARD C. FIRST, JR.
ROBERT H. GRISWOLD
JEFFERSON C. BARNHART
SAMUEL A. SCHRECKENGAUST, JR.

February 28, 1986

Re: Pennsylvania Public Utility Commission, et al.,
v. Philadelphia Electric Company
Docket No. R-850152

RECEIVED
FEB 28 1986
SECRETARY'S OFFICE
Public Utility Commission

DOCUMENT FOLDER

William H. Zeiter
Morgan, Lewis & Bockius
2000 One Logan Square
Philadelphia, PA 19103

Dear Bill:

Enclosed please find the response of PAIEUG witness Randall J. Falkenberg to the data requests made by PECo during his cross-examination on February 14, 1986. The attached life cycle analysis for Limerick Unit I includes 50% of common plant, a 9.7% discount rate and Dr. Hieronymus' operating and maintenance expense projections.

Please advise if any further information is required.

Very truly yours,

McNEES, WALLACE & NURICK

By David M. Kleppinger
David M. Kleppinger

DMK/jf
Enclosure

cc: All Parties of Record (w/encl.)

CERTIFICATE OF SERVICE

Pennsylvania Public Utility Commission, et. al., :
v. : Docket No. R-850152
Philadelphia Electric Company :

I hereby certify that I have served a copy of the foregoing document on all known parties of record to this proceeding, all by first class mail (unless otherwise indicated) properly addressed as follows:

Administrative Law Judge
Joseph P. Matuschak
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97 East Main Street
Uniontown, PA 15401

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Veronica A. Smith, Asst. Counsel
Daniel P. Delaney, Deputy Counsel
Pa Public Utility Commission
Law Bureau
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P. O. Box 3265
Harrisburg, PA 17120

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Bureau of Rates
PA Public Utility Commission
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City of Philadelphia
Attn: Charles E. Rainey, Jr.
Assistant City Solicitor
Law Department - 15th Floor
Municipal Services Building
Philadelphia, PA 19102-1692

David M. Kleppinger

Dated this 28th day of FEBRUARY, 1986, at Harrisburg, PA

DOCKETED
MAR 0 3 1983

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
1 0.50 Year		1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
2	Base Data																	
3 Direct	1982																	
4 Afudc	1199																	
5 Book Value		3180	3180	3180	3180	3180	3180	3180	3180	3180	3180	3180	3180	3180	3180	3180	3180	3180
6 Book Depr.	37	86	86	86	86	86	86	86	86	86	86	86	86	86	86	86	86	86
7 Depr. Res.		32	86	172	258	344	430	516	602	688	774	860	946	1031	1117	1203	1289	1375
8 Base /tax Rate	0.49768																	
9 Tax Rates	0.49768	0.08	0.14	0.12	0.1	0.1	0.1	0.09	0.09	0.09	0.09	0	0	0	0	0	0	0
10 Tax Depr.		159	277	238	198	198	198	178	178	178	178	0	0	0	0	0	0	0
11 Bk/Tx Depr.		54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54
12 Defer Tax		52	111	92	72	72	72	62	62	62	62	-27	-27	-27	-27	-27	-27	-27
13 Def Tax Res	0	52	164	255	327	399	471	533	595	658	720	693	666	640	613	586	560	533
14																		
15 ITC Amort	0.236	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13
16 ITC Reserve	468	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
17																		
18 Other Rate Base		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
19 Rate Base		3096	2931	2753	2595	2437	2279	2131	1983	1835	1687	1628	1569	1509	1450	1391	1331	1272
20 Non Cash Ret.	0.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
21 Accum Non Cash		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
22 Amort Non Cash		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
23 Equity Ret.	0.072	223	211	198	187	175	164	153	143	132	121	117	113	109	104	100	96	92
24 Debt Ret.	0.055	170	161	151	143	134	125	117	109	101	93	90	86	83	80	76	73	70
25 Current Tax	0.99	188	117	124	133	121	110	109	99	88	78	162	158	154	150	145	141	137
26 Other tax	-3	35	34	33	32	31	30	29	28	27	26	25	24	23	23	22	21	20
27 Kennedy O&M	2.3	79	84	88	93	101	110	119	128	138	149	160	172	184	198	212	227	243
28 Station O&M	0.03	79	85	93	101	111	117	124	132	140	148	157	166	176	187	198	210	222
29 Other O&M	0.06	31	32	33	40	34	37	41	44	41	58	48	52	55	55	62	76	65
30 Total O&M	9	110	117	126	141	144	154	165	175	180	205	205	218	242	242	260	285	287
31 Fuel Savings	1	151	186	209	322	282	321	480	423	561	643	735	799	1073	834	979	1256	1176
32 Avd Cap Chrg	0.50	81	89	97	144	153	162	172	182	193	204	217	230	243	258	273	290	307
33 Total Benefit	$9.00	191	230	258	394	359	402	566	514	657	945	843	914	1194	963	1116	1401	1330
34 Rev. Req.	-1928	661	595	540	386	392	327	144	175	7	-286	-197	-268	-537	-319	-466	-738	-676
35 PW Factor	1	0.909	0.827	0.752	0.684	0.622	0.566	0.514	0.468	0.425	0.387	0.352	0.320	0.291	0.265	0.241	0.219	0.199
36 Cum PW RR	0.100	601	1093	1499	1763	2007	2192	2266	2348	2351	2240	2171	2085	1928	1844	1732	1571	1436

	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	
1	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
2																				
3																				
4																				
5	3180	3180	3180	3180	3180	3180	3180	3180	3180	3180	3180	3180	3180	3180	3180	3180	3180	3180	3180	3180
6	86	86	86	86	86	86	86	86	86	86	86	86	86	86	86	86	86	86	86	86
7	1461	1547	1633	1719	1805	1891	1977	2063	2149	2235	2321	2407	2493	2579	2665	2751	2837	2923	3009	3094
8																				
9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54	54
2	-27	-27	-27	-27	-27	-27	-27	-27	-27	-27	-27	-27	-27	-27	-27	-27	-27	-27	-27	-27
3	506	480	453	426	400	373	347	320	293	267	240	213	187	160	133	107	80	53	27	0
4																				
5	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13
6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7																				
8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
9	1213	1153	1094	1035	975	916	857	798	738	679	620	560	501	442	382	323	264	205	145	86
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3	87	83	79	75	70	66	62	57	53	49	45	40	36	32	28	23	19	15	10	6
4	67	63	60	57	54	50	47	44	41	37	34	31	28	24	21	18	15	11	8	5
5	133	129	124	120	116	112	107	103	99	95	90	86	82	78	74	69	65	61	57	52
6	20	19	18	18	17	17	16	16	15	15	14	14	13	13	12	12	12	11	11	10
7	260	277	296	317	338	360	384	410	437	465	495	527	561	597	635	676	719	764	812	863
8	236	250	265	281	298	315	334	354	376	398	422	447	474	503	533	565	599	635	673	713
9	70	88	76	82	102	89	95	120	104	111	141	122	131	166	143	154	195	170	182	232
0	305	338	341	362	399	404	429	475	480	510	563	569	605	669	676	719	794	805	855	945
1	1158	1684	1377	1502	2085	1827	1823	2665	2227	2386	3393	2947	3011	4511	3726	3798	5489	4659	4950	7319
2	326	345	366	388	411	436	462	490	519	550	583	618	655	695	736	781	827	877	930	985
3	1321	1857	1560	1696	2291	2045	2054	2929	2486	2861	3685	3256	3339	4859	4095	4188	5903	5097	5415	7811
4	-663	-1178	-891	-1018	-1588	-1349	-1346	-2188	-1752	-1910	-2892	-2469	-2528	-3996	-3237	-3300	-4952	-4147	-4427	-6746
5	0.181	0.165	0.150	0.136	0.124	0.113	0.102	0.093	0.085	0.077	0.070	0.064	0.058	0.053	0.048	0.044	0.040	0.036	0.033	0.030
6	1316	1122	989	850	654	502	364	161	12	-135	-337	-494	-641	-851	-1006	-1150	-1346	-1495	-1640	-1841

Pennsylvania Public Utility Commission v.

Philadelphia Electric Company, R-850152.

-NOTICE OF PETITION BY Philadelphia Electric Company at No. 453 C.D. 1986, Commonwealth Cour of Pennsylvania, from the order of the Commission dated January 21, 1986 in the above-captioned proceeding.

B-863064 Filed: 2-24-86

DOCUMENT FOLDER

DOCKETED MAR 0 6 1986

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WASHINGTON
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LONDON

FREDERICK H. KNIGHT, 3RD
DIAL DIRECT (215) 963-5377

February 28, 1986

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SECRETARY'S OFFICE
Public Utility Commission

Jerry Rich, Secretary
Pennsylvania Public Utility Commission
North Office Building
Commonwealth & North Streets
Harrisburg, PA 17120

Re: Pennsylvania Public Utility Commission
v. Philadelphia Electric Company
Docket No. R-850152

Dear Secretary Rich:

Enclosed for filing with the Commission are the original and two copies of Transcript Corrections of Philadelphia Electric Company in the above-captioned proceeding for hearings on February 10 and 14, 1986.

As shown on the attached Certificate of Service, I have today served copies of this document on all Active Parties.

Sincerely,

Frederick H. Knight

ddq
Enclosure

cc: The Honorable Joseph Matuschak
All Active Parties

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MAR3 1986

SECRETARY'S OFFICE
Public Utility Commission

BEFORE THE
PENNSYLVANIA PUBLIC UTILITY COMMISSION

PENNSYLVANIA PUBLIC UTILITY COMMISSION	:	
V.	:	Docket No. R-850152
PHILADELPHIA ELECTRIC COMPANY	:	

TRANSCRIPT CORRECTIONS
OF
PHILADELPHIA ELECTRIC COMPANY
FOR HEARINGS ON FEBRUARY 10 and 14, 1986

DOCKETED

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February 28, 1986

PECO Transcript Corrections for the hearings held on February 10, 1986 Cross-Examination of Paul Chernick

Page	Line	Correction
2907	12	Change "material" to "materials"
2908	1	Change "be assumed" to "assume"
2909	21	Change "equasion" to "equation"
2912	1	Change "a place" to "place"
2933	2	Change "particularly" to "particular"
2940	16	Change "that" to "a"

PECO Transcript Corrections for the hearings held on February 14, 1986 Cross-Examination of Randall Falkenberg

Page	Line	Correction
3482	11	Change "progress" to "projects"

CERTIFICATE OF SERVICE

I hereby certify that on February 28, 1986 I served copies of the Transcript Corrections of Philadelphia Electric Company for Hearings held on February 10 and 14, 1986, at Docket No. R-850152, upon the following by regular mail:

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Frederick H. Knight
Counsel for Philadelphia
Electric Company

General Services Administration
General Counsel
Washington, DC 20405

February 28, 1986

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Public Utility Commission

Jerry Rich, Secretary
Pennsylvania Public Utility Commission
North Office Building
Commonwealth & North Streets
Harrisburg, Pennsylvania 17120

Re: Pennsylvania Public Utility Commission
v. Philadelphia Electric Company
Docket No. R-850152

Dear Secretary Rich:

Enclosed for filing with the Commission are the original and two copies of Transcript Corrections of the General Services Administration in the above-captioned proceeding for hearings on January 22, 1986.

As shown on the attached Certificate of Service, copies of this document have been served today on all Active Parties.

If you have any question on this document, please contact GSA counsel Michael J. Ettner at (202) 566-1156.

Sincerely,

for R. COLETTE MCKENNA
Acting Assistant General Counsel

Enclosure

cc: The Honorable Joseph Matuschak
All Active Parties

BEFORE THE
PENNSYLVANIA PUBLIC UTILITY COMMISSION

PENNSYLVANIA PUBLIC UTILITY COMMISSION	)	
v.	)	Docket No. R-850152
PHILADELPHIA ELECTRIC COMPANY	)	

TRANSCRIPT CORRECTIONS
OF THE
GENERAL SERVICES ADMINISTRATION FOR HEARINGS
ON JANUARY 22, 1986

Page	Line	Reads	Should Read
2051	22	Streets,	Streets, N.W.,
2056	10	rate.	rate issues.
2071	19	load	growth
2074	10	dividends	dividend growth
2077	2	should	should not
2077	4	its decision	a decision
2080	21	Limerick	Limerick,

Dated at Washington, D.C. this 28th day of February, 1986.

Respectfully submitted,

TERENCE C. GOLDEN
Administrator of General Services

ALLIE B. LATIMER
General Counsel

WILLIAM F. SULLIVAN
Commissioner
Public Buildings Service

R. COLETTE MCKENNA
Acting Assistant General Counsel

By L W Blinn
For R. COLETTE MCKENNA

MICHAEL J. ETTNER
Attorney

By Michael J Ettner
MICHAEL J. ETTNER

GENERAL SERVICES ADMINISTRATION
Office of General Counsel (LK)
18th & F Streets N.W., Room 4002
Washington, D.C. 20405
(202) 566-1156

CERTIFICATE OF SERVICE

Re: Pennsylvania Public Utilities Commission, et al.
v.
Philadelphia Electric Company
Docket No. R-850152

I hereby certify that I am, this 28th day of February, 1986 serving either by special messenger or by first-class mail, the foregoing document, Transcript Corrections of the General Services Administration, upon the persons listed below:

Honorable Joseph P. Matuschak
Administrative Law Judge
Pennsylvania Public Utility Commission
97 E. Main Street
Uniontown, Pennsylvania 15401

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Assistant Counsel
Veronica A. Smith, Esquire
Daniel Delaney, Esquire
Office of Staff Counsel
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Naval Facilities Engineering Command
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Washington, D.C. 20274

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Mt. Laurel, New Jersey 08054

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Michael J. Ettner

MICHAEL J. ETTNER
Counsel for GSA

Services Administration General Counsel Washington, DC 20405

February 28, 1986

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Harrisburg, Pennsylvania 17120

Re: Pennsylvania Public Utility Commission
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Docket No. R-850152

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If you have any question on this document, please contact GSA counsel Michael J. Ettner at (202) 566-1156.

Sincerely,

for R. COLETTE MCKENNA
Acting Assistant General Counsel

Enclosure

cc: The Honorable Joseph Matuschak
All Active Parties

BEFORE THE
PENNSYLVANIA PUBLIC UTILITY COMMISSION

PENNSYLVANIA PUBLIC UTILITY COMMISSION	)	
v.	)	Docket No. R-850152
PHILADELPHIA ELECTRIC COMPANY	)	

TRANSCRIPT CORRECTIONS
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ON JANUARY 22, 1986

Page	Line	Reads	Should Read
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2071	19	load	growth
2074	10	dividends	dividend growth
2077	2	should	should not
2077	4	its decision	a decision
2080	21	Limerick	Limerick,

Dated at Washington, D.C. this 28th day of February, 1986.

Respectfully submitted,

TERENCE C. GOLDEN
Administrator of General Services

ALLIE B. LATIMER
General Counsel

WILLIAM F. SULLIVAN
Commissioner
Public Buildings Service

R. COLETTE MCKENNA
Acting Assistant General Counsel

By L W Glinn
for R. COLETTE MCKENNA

MICHAEL J. ETTNER
Attorney

By Michael J Ettner.
MICHAEL J. ETTNER

GENERAL SERVICES ADMINISTRATION
Office of General Counsel (LK)
18th & F Streets N.W., Room 4002
Washington, D.C. 20405
(202) 566-1156

CERTIFICATE OF SERVICE

Re: Pennsylvania Public Utilities Commission, et al.
v.
Philadelphia Electric Company
Docket No. R-850152

I hereby certify that I am, this 28th day of February, 1986 serving either by special messenger or by first-class mail, the foregoing document, Transcript Corrections of the General Services Administration, upon the persons listed below:

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February 28, 1986

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SECRETARY'S OFFICE
Public Utility Commission

Jerry Rich, Secretary
Pennsylvania Public Utility Commission
North Office Building
Commonwealth & North Streets
Harrisburg, Pennsylvania 17120

Re: Pennsylvania Public Utility Commission
v. Philadelphia Electric Company
Docket No. R-850152

Dear Secretary Rich:

Enclosed for filing with the Commission are the original and two copies of Transcript Corrections of the General Services Administration in the above-captioned proceeding for hearings on January 22, 1986.

As shown on the attached Certificate of Service, copies of this document have been served today on all Active Parties.

If you have any question on this document, please contact GSA counsel Michael J. Ettner at (202) 566-1156.

Sincerely,

for R. COLETTE MCKENNA
Acting Assistant General Counsel

Enclosure

cc: The Honorable Joseph Matuschak
All Active Parties

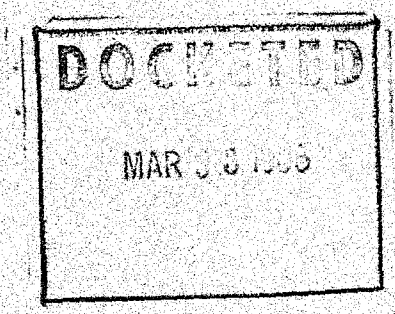
DOCUMENT FOLDER

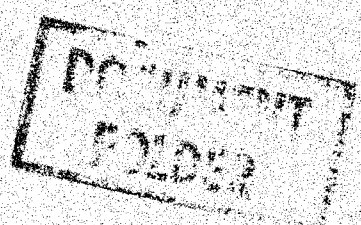
BEFORE THE
PENNSYLVANIA PUBLIC UTILITY COMMISSION

PENNSYLVANIA PUBLIC UTILITY COMMISSION	)	
v.	)	Docket No. R-850152
PHILADELPHIA ELECTRIC COMPANY	)	

TRANSCRIPT CORRECTIONS
OF THE
GENERAL SERVICES ADMINISTRATION FOR HEARINGS
ON JANUARY 22, 1986

Page	Line	Reads	Should Read
2051	22	Streets,	Streets, N.W.,
2056	10	rate.	rate issues.
2071	19	load	growth
2074	10	dividends	dividend growth
2077	2	should	should not
2077	4	its decision	a decision
2080	21	Limerick	Limerick,





Dated at Washington, D.C. this 28th day of February, 1986.

Respectfully submitted,

TERENCE C. GOLDEN
Administrator of General Services

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WILLIAM F. SULLIVAN
Commissioner
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March 5, 1986

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HAND DELIVERED

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Pennsylvania Public Utility Commission
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Re: Pennsylvania Public Utility Commission, et al. v. Philadelphia Electric Company, Docket No. R-850152

Dear Mr. Rich:

Enclosed for filing with the Commission are the original and three (3) copies of the Surrebuttal Testimony of Richard J. Rudden (SEPTA-Amtrak Statement 1B) concerning rate structure, on behalf of the Southeastern Pennsylvania Transportation Authority and the National Railroad Passenger Corporation.

Very truly yours,

J. Thomas Morris

JTM/ejz
Enclosures

cc: Honorable Joseph P. Matuschak
Administrative Law Judge
Pennsylvania Public Utility Commission

All parties

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SECRETARY'S OFFICE
Public Utility Commission

CERTIFICATE OF SERVICE

I hereby certify that I am, this 5th day of March, 1986 serving either by special messenger or by first-class mail, the Surrebuttal Testimony of Richard J. Rudden on behalf of Southeastern Pennsylvania Transportation Authority and National Railroad Passenger Corporation, upon the persons listed below:

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MAR 5 1986
SECRETARY'S OFFICE
Public Utility Commission

SEPTA/Amtrak Statement No. 1B

PENNSYLVANIA PUBLIC UTILITY COMMISSION

v.

PHILADELPHIA ELECTRIC COMPANY

DOCKET NO. R-850152

SURREBUTTAL TESTIMONY OF RICHARD J. RUDDEN

on behalf of

THE SOUTHEASTERN PENNSYLVANIA TRANSPORTATION AUTHORITY

and

THE NATIONAL RAILROAD PASSENGER CORPORATION

DOCKETED
MAR 6 - 1986

Concerning Rate Structure

March 5, 1986

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SURREBUTTAL TESTIMONY OF RICHARD J. RUDDEN

Q. Mr. Rudden, what is the purpose of your surrebuttal testimony?

A. My purpose is to respond to portions of Mr. Williams' rebuttal testimony regarding the treatment of power delivered to Amtrak at Thorndale and Perryville and the demands metered at those points which are used by PECO in the computation of demand allocation factors for Amtrak.

Q. Please explain.

A. At lines 16 through 19 of page 8 of his testimony, Mr. Williams in effect asserts that the transactions at Thorndale and Perryville are precisely the same as all other PJM interchange transactions. This is not true. No other PJM transaction within the PECO territory is even remotely similar to Amtrak's situation, where:

(1) A single customer initially receives delivery of power from another utility (PP&L and/or BG&E) before that power enters PECO's franchise service territory, as it does in Amtrak's case;

(2) A customer transmits the power it receives from the other utilities over facilities that the customer has built, owns, operates and maintains, as Amtrak has and does;

(3) The power purchased is 25 Hz in frequency, is exclusively used by one customer, and does not provide electricity to PECO's general grid. (According to Mr. Williams, this power ". . . is not fed back into the PE 60 Hertz system.");

(4) The customer has a contractual right to coordinate the dispatch of power out of a utility-owned hydroelectric plant from which it purchases the power, as Amtrak does; and

(5) PECO never takes possession of the interchange power, maintains no facilities of its own at the interconnect point (except for metering equipment) and does not in any way transmit or distribute the power to the customer.

Q. Mr. Williams states that "[If] it . . . was judged to be justifiable to exclude the loads at Perryville and Thorndale, it would be logical to exclude load at all other interconnection points." Do you agree?

A. No. Because the service characteristics at Perryville and Thorndale are so exceptional, it does not follow at all that it would be logical to treat the deliveries of power at other interconnection points the same. In fact, it is <u>because</u> of their unique nature, that the demands at Thorndale and Perryville should be treated entirely differently from other PJM deliveries and, for that matter, from the balance of power provided by PECO at Amtrak's other delivery points.

Q. Does that conclude your surrebuttal testimony?

A. Yes it does.