

BEFORE THE
PENNSYLVANIA PUBLIC UTILITY COMMISSION

EXTRA

PENNSYLVANIA PUBLIC UTILITY COMMISSION

v.

PHILADELPHIA ELECTRIC COMPANY et al.

R-79060865

RECOMMENDED DECISION

(Subject to Commission Approval)

JOSEPH J. KLOVEKORN

Administrative Law Judge

DUPLICATE RECORD.
ORIGINAL CERTIFIED
TO COMMONWEALTH COURT.

APPEARANCES

Walter H. Hall, II, Esquire
Robert H. Young, Esquire
Thomas Gadson, Esquire
Morgan, Lewis & Bockius
123 South Broad Street
Philadelphia, Pennsylvania 19109
For Philadelphia Electric Company

Albert Johnson, III, Esquire
Gregg C. Sayre, Esquire
Pa. P.U.C., Law Bureau
P. O. Box 3265
Harrisburg, Pennsylvania 17120
For Commission Trial Staff

Jack J. Aloff
The Plaza Apartment-16F
The Parkway at 18th Street
Philadelphia, Pennsylvania 19103
Pro se

Michael J. Ettner, Esquire
Regulatory Law Division
Room 4012
General Services Administration
18th and F Streets N.W.
Washington, D.C. 20405
For General Services Administration

Kenneth Barna, Esquire
Begley & Ferriter
6 Beacon Street
Boston, Massachusetts 02108

Andre Dasent, Esquire
Nicholas Scobbo
National Consumer Law Center
11 Beacon Street
Boston, Massachusetts 02108
For ACORN

Joseph Fierstein
916 Tyson Avenue
Philadelphia, Pennsylvania 19111
Pro se

Arthur Schwartz
2201 Tremont Street
Apartment B-314
Philadelphia, Pennsylvania 19101
Pro se

Kristin Dawkins, Chairperson, Utilities Committee
The Philadelphia Council of Neighborhood Organizations
1522 West Girard Avenue
Philadelphia, Pennsylvania 19130
For Philadelphia Council of Neighborhood Organizations

Eleanor Inouye
Keystone Alliance
527 Shoemaker Road
Elkins Park, Pennsylvania 19117
For Keystone Alliance

Louise Dufour
Limerick Ecology Action
Box 10
Oaks, Pennsylvania 19456
For Limerick Ecology Action

John V. Buffington, Esquire
Governor's Energy Council
1625 N. Front Street
Harrisburg, Pennsylvania 17102
For The Governor's Energy Council

David C. Thomsen
P. O. Box 15030
Philadelphia, Pennsylvania 19130
Pro se

Edward H. Huss, Staff Counsel
Southeastern Pennsylvania Transportation Authority
2028 PSFS Building
12 South 12th Street
Philadelphia, Pennsylvania 19107
For SEPTA

S. Lizzio
1119 Stetser Avenue
Yeadon, Pennsylvania 19050
Pro se

Henry R. MacNicholas, Esquire
Edward Riehl, Esquire
McNees, Wallace & Nurick
100 Pine Street
Harrisburg, Pennsylvania 17108
For Lukens Steel, et al.

Ronald S. Schwebel
Dr. Carl Mamone
Cross Keys Building
Doylestown, Pennsylvania 18901
For Intermediate Unit No. 22

Mark Haas
7832 Lister Street
Philadelphia, Pennsylvania 19152

Jennifer Nash
Institute of Civic Values
401 North Broad Street
Philadelphia, Pennsylvania 19104
For Consumer Action in the Northeast

Edward R. Paul, Esquire
Milon & Paul
18 West Second Street
P. O. Box D
Media, Pennsylvania 19063
For First Chester Corporation

M. Mark Mendel, Esquire
Harris T. Bock, Esquire
Howard A. Finkelman, Esquire
1620 Locust Street
Philadelphia, Pennsylvania 19103
For City of Philadelphia

Henry M. Wick, Jr., Esquire
Charles J. Streiff, Esquire
2310 Grant Building
Pittsburgh, Pennsylvania 15219
For United States Steel Corporation

Edward J. Morris, Esquire
Reed, Smith, Shaw & McClay
P. O. Box 864
Harrisburg, Pennsylvania 17108
For University of Pennsylvania, et al

Michael P. Kerrigan, Esquire
Pepper, Hamilton & Scheetz
10 South Market Street
P. O. Box 1181
Harrisburg, Pennsylvania 17108
For Delaware Valley Hospital Council

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I. HISTORY

On July 27, 1979, Philadelphia Electric Company ("PECO" or the "Company") filed Supplement No. 6 to Tariff Electric - Pa. P.U.C. No. 25 to become effective September 25, 1979. Supplement No. 6, if approved, would increase the Company's revenues from electric operations by approximately \$122,731,000 per year, or 10.9% of adjusted base rate revenue, based upon a future test year ended March 31, 1980.

By Orders entered August 14, 1979 and September 10, 1979 the Pennsylvania Public Utility Commission ("PUC" or the "Commission") directed that an investigation be held on Commission motion into the lawfulness, justness, and reasonableness of the proposed rates and of existing rates. Supplement No. 6 was suspended by operation of law for the seven-month period ended April 25, 1980, in accordance with Section 1308(d) of the Public Utility Code (66 Pa. C.S. §1308). Thereafter, the matter was assigned for hearing and the issuance of a Recommended Decision to the undersigned Administrative Law Judge.

A total of seventeen complaints were filed against the proposed rates. These complaints were consolidated with the Commission's investigation for hearing and decision purposes. In addition, after the hearings had commenced, three additional parties filed Petitions to Intervene and were permitted to participate in the proceeding.

A pre-hearing conference attended by all active parties was held on September 5, 1979. A total of 29 days of evidentiary hearings were held in Philadelphia and Harrisburg, producing 4,242 pages of transcript.

During the course of the hearings, PECO submitted 32 written statements prepared by 18 witnesses and filed 40 exhibits. The Commission's Trial Staff (Trial Staff) presented 17 statements from 18 witnesses in its direct case and 6 oral and written statements on surrebuttal. The Consumer Advocate presented 7 witnesses in its direct case and 5 on surrebuttal. All other parties presented 16 witnesses.

In addition to these evidentiary hearings, five non-evidentiary hearings were held in order that the general public might participate in this proceeding. In order to permit the widest possible public participation, these hearings, which were attended by the members of the Commission, in addition to the Administrative Law Judge, were held in various locations in the PECO service territory during evening hours and on Saturdays.

Briefs have been filed by PECO, Trial Staff, Office of Consumer Advocate (OCA), Jack Aloff, The General Services Administrative (GSA), The Governor's Energy Council (GEC), Limerick Ecology Action, Delaware Valley Hospital Council, United States Steel, The City of Philadelphia (City), Lukens Steel Company, et al. (Industrial Complainants), and the Consumer Education and Protective Association, et al. (CEPA).

Oral Argument before the Administrative Law Judge was held on February 1, 1980.

After reviewing the testimony, exhibits and briefs were filed in this proceeding, my recommendation to the Commission is that the company has demonstrated the need for additional revenue relief of \$79,871,000 in lieu of the \$122,731,000 requested. The reasons leading to this conclusion will be set forth below.

II. THE PHILADELPHIA ELECTRIC COMPANY

Philadelphia Electric Company will render electric service to a total of approximately 1,272,499 retail customers at March 31, 1980, the end of the test period here (PECO Exhibit DPS-2, p. A.-5). Its service territory of 2,255 square miles has a population of approximately 3.9 million and includes Philadelphia and surrounding territory in Bucks, Chester, Delaware, Montgomery and York Counties (PECO St. 9, p. 2; Exhibit VSB-2, p. 1). Respondent has two wholesale customers served under rates regulated by the Federal Energy Regulatory Commission.

The company also renders gas service outside of Philadelphia and steam service in portions of central Philadelphia. A subsidiary, Conowingo Power Company, provides retail electric service to customers in Northern Maryland. Two other subsidiaries, Susquehanna Power Company and Philadelphia Electric Power Company, own the Conowingo Hydroelectric Project and land adjoining the pool above the dam. A third subsidiary, Susquehanna Electric Company, operates the Project and sells the electric power output to PECO and Conowingo Power Company.

The Company's sources of generation include, in addition to the above-mentioned hydroelectric dam, the Muddy Run Pumped Storage Project, a share in two large nuclear units at Peach Bottom Station and one large nuclear unit at Salem, a share in mine mouth stations at Keystone and Conemaugh, wholly owned coal burning facilities at Eddystone and Cromby,

five other oil burning stations, and numerous internal combustion units (gas turbines or diesels) (PECO Exhibit VSB-2, p. 3). The generating capacity in service during the summer of 1979 was 7,727 MW (PECO Statement 9, p. 3; PECO Exhibit VSB-1, p. 3).^{1/} The Company has under construction Salem Unit No. 2, a large nuclear facility in which the Company has an approximate 43% ownership interest, and the Limerick Nuclear Generating Station, a 2110 MW nuclear facility presently scheduled for completion in 1975/1987.

Within its territory, Respondent operates approximately 1,100 miles of transmission lines (69 kv or higher), approximately 23,000 miles of distribution lines (33 kv or lower) and several hundred substations (PECO Statement 9, p. 3).

Philadelphia Electric Company is a member of the Pennsylvania New Jersey - Maryland Interconnection (PJM).

^{1/} A list of PECO's generating stations, contained in PECO Ex. VSB-1, p.3, is attached as Appendix A.

The PJM Interconnection consists of eleven operating companies in Pennsylvania, New Jersey, Maryland, Delaware and the District of Columbia combined into six member systems as follows:

Public Service Electric & Gas Company

Philadelphia Electric Company Group

Philadelphia Electric Company
Atlantic Electric Company
Delmarva Power & Light Company

Pennsylvania Power & Light Company Group

Pennsylvania Power & Light Company
United Gas Improvement Company
Luzerne Electric Division

Baltimore Gas and Electric Company

General Public Utilities System

Jersey Central Power and Light Company
Metropolitan Edison Company
Pennsylvania Electric Company

Potomac Electric Power Company

The management of this interconnection or pool coordinates the bulk power system of these utilities. PJM schedules the operation of the lowest cost available generating units to meet the forecasted peak demands of the pool. By interchanging power generated at low cost, the PJM Companies provide economical service for customers. As the demand for power increases, additional generating units are placed into service on the basis of cost efficiency, regardless of where these units are located in relation to the demand. Any company in this interconnection may be purchasing power during part of the day but as demand shifts, may be selling power to members at other times.

Before ending this discussion of the PJM Interconnection, one further area should be explained. In accordance with typical agreements between interconnected electric utilities, the economy dispatched energy mentioned above, is sold at a price midway between the cost of generation of the selling utility and the cost to the buying utility of its next available generation. This is the so-called "split-savings" pricing mechanism. Reference will be made to this concept during discussions of PECO's reserve margin and rate structure.

III. INTRODUCTION

Before discussing the many specific rate case issues presented in this proceeding, it would be appropriate at this time to address the concerns expressed with undoubted sincerity by three groups of citizens who usually are not personally present in this type of proceeding. These three are the Philadelphia Electric ratepayers, who are struggling to maintain their standard of living in the face of double-digit inflation; the PECO shareholders who are watching their limited investment decline both relatively and absolutely in the face of inflation and poor earnings; finally, the many serious, responsible citizens who fear that nuclear energy presents unacceptable risks to our society and who, as a result, vehemently oppose the company's reliance on this form of power to meet the energy needs of the future.

No person who attended the hearings in this proceeding could fail to be moved by the eloquent statements of the many ratepayers who took time to come to the Commission hearings to present their views. The range of speakers included teenagers from the inner city and senior citizens from the suburb. While their immediate concern was this rate increase, one could not help but reach the conclusion that this proceeding was being used as a forum to vent their anger and express their general feeling of helplessness against the economic conditions which exist in this country today. While it is of small consolation to those on limited or fixed incomes, for whom each trip to the food market or gas station is an exasperating and depressing experience, the record here shows that most of PECO's residential electric rates, have experienced rate increases well below the general level of inflation. For example, 62% of residential (Rate R) customers have experienced increases of approximately 1% per year during the period 1975-1979 (Trial Staff Exhibit MPB-L3). A statewide comparison of the percentage increase for an average 250 kwh/month residential bill shows that increases for this customer have been the smallest in the Commonwealth (Trial Staff Exhibit MPB-L4).^{2/} Despite the relatively moderate increase in electric rates during this

^{2/} Indeed, a residential customer of PECO using 250 kwh per month in December 1974 had a bill of \$14.75. The use of that 250 kwh decreased to \$14.64 by July 1979 (PECO Statement 2A, p.7).

period, compared to other items, it is clear that the inflationary pressures buffetting our economy necessitates that any rate increase approved here be kept to the minimum consistent with the requirements of the Public Utility Law and the needs of the company to assure safe and adequate service in the future.

While the ratepayer has suffered from inflation, so has the company's shareholder. During the last 12 years PECO's dividend has increased but once, from \$1.64 to \$1.80 in 1977 (PECO Statement 1, p.7), yet inflation has risen steadily. PECO's real common stock dividends per share, adjusted by the Consumer Price Index, declined about 44% since 1967 in spite of this 10% increase. As adjusted for inflation, as represented by the Consumer Price Index, the dividend that was worth \$1.64 in 1967 is now worth 92 cents (PECO Statement 13, p.10; PECO Exhibit FEJ-3). If the PECO shareholder has not suffered enough as a result of the failure of the company's dividend to keep up with inflation, he has also been forced to watch the value of his investment decline. In current unadjusted dollars, the average price of PECO's common stock has declined from \$31.69 a share in 1967 to \$17.44 in 1978.^{3/} Adjusted for inflation as measured by the Consumer Price Index, the value of the common stockholder's investment has declined from \$31.69 a share in 1967

^{3/} At the time of this writing, the price has declined still further to \$14.00.

to \$8.93 in 1978, or 72% (PECO Statement 13, p.12). This Commission also has a responsibility to the shareholders of a utility to assure them that their investment, the life blood of the utility industry, will not be eaten away by improper regulation and that documented proven costs will be recovered within a reasonable time and not postponed to an indefinite time in the future. "Today is never an easy time to raise rates, and strictly speaking, tomorrow never comes."^{4/} Finally, utility investors have heard little in recent years but exhortations that they must share or, indeed shoulder the burdens of hard times. This carries with it a concomitant obligation, in the interests of consumers, to permit stockholders to share in good times also.

The potentially disasterous events that occurred at Three Mile Island last March have given added impetus to the movement, already wide-spread in the Philadelphia Electric Company's service territory, to halt construction and operation of PECO's nuclear generating plant. No one can doubt the seriousness and sincerity of the members of such groups as the Keystone Alliance or Limerick Ecology Action as they appeared in both the evidentiary and non-evidentiary parts of this proceeding. These parties have, however, approached the wrong forum. The health and safety aspects of nuclear energy, which they seek to

^{4/} Niagara Mohawk Power Corp., 16 PUR 4th 317, 344 (New York PSC, Chairman Alfred Kahn, concurring).

address, are better left to the Nuclear Regulatory Agency than this Commission. This Commission has only those duties, powers, responsibilities and jurisdiction given it by the General Assembly, Western Pa. Water Co. v. P.U.C., 10 Commw. Ct. 533 (1973). It is especially pertinent here to note that the General Assembly has consistently failed to approve legislation designed to give this Commission authority over the planning and siting of generating plants. These parties request, however, that the Commission do tangentially, through its authority to set rates, what it cannot do directly, that is, shut down nuclear generation in this Commonwealth.

By suggesting that these parties approach a different forum, no reflection is made on the issues advanced by them. They raise serious, well-considered arguments and these arguments deserve a full hearing before a forum with the expertise and the time to consider them; something this Commission, with no specific statutory mandate in this respect and a maximum seven-month suspension period lacks.

We now turn to specific rate case issues.

IV. TEST YEAR

The ultimate purpose of this proceeding is to establish rates which will yield a level of revenues for the company sufficient to permit it the reasonable opportunity to cover its operating expenses and enable it to earn a fair return on the fair value of its property used and useful in providing utility service to its ratepayers. This level of revenues is established in the context of a test year; that is, a 12-month period which is assumed to be representative of the period during which the rates set here will be in effect. Since a test year based on solely historical data would, due to inflation and changed conditions, fail to be representative of such a period, the General Assembly has provided that a utility may utilize a future test year in setting forth its basis for rate relief. In this proceeding PECO presented two test years; one historical covering the period ended March 31, 1979; the other a future test year covering the period ending March 31, 1980. The parties have agreed to use the March 31, 1980 test period and the company has submitted, in accordance with Commission regulations, quarterly updates comparing actual results to its forecasts.^{5/}

As noted above, the test year concept assumes that the operating results during the test period with appropriate adjustments, will be sufficiently representative of the time in which new rates will be in

^{5/} PECO Exhibits DPS-3 and 4.

effect. As the Commission noted in PECO's last rate case, adjustments to test year revenue and expense data may not reflect normal conditions or may not account for known changes, Pa. P.U.C. v. Philadelphia Electric Co. (R.I.D. 438, Order entered February 5, 1979, p.6). To the extent that revenues and expenses for the test year do not accurately indicate future revenue and cost trends the Commission has the duty to make adjustments. Bell Telephone Co. v. Pa. P.U.C., _____ Commw. Ct. _____, No. 149 C.D. 1978 (Order filed December 12, 1979). Yet, such a duty is not a license since as the United States Supreme Court teaches us, "elaborate calculations which are at war with realities are of no avail . . ." Lindheimer v. Illinois Bell Tel. Co., 292 U.S. 151 (1934).

V. MEASURES OF VALUE

Under the existing law Philadelphia Electric is entitled to the opportunity to earn a fair return on the fair value of its plant, used and useful in providing service to its ratepayers.^{6/} Before reaching a final conclusion as to what actually is the fair value of PECO's investment, two areas of controversy will be considered: one immediately

^{6/} Also included are such items as materials and supplies used to carry out the operations of the company and the cash working capital needed to sustain the company's operations until it receives payment from its customers.

affects the value of this investment, one bears on it only slightly at this time but looms large prospectively. The first is the question of PECO's reserve capacity margins; the second is the company's Limerick plant.

PECO presented four measures of value for its electric and allocated common plant as of March 31, 1980; an original cost less depreciation; depreciated trended original costs at price levels in effect at December 31, 1978 and average price levels for the three-year period ended December 31, 1978 and for the five-year period ended December 31, 1979 (PECO Ex. HTW-4). The company's claimed measures of value are summarized below and on Table I:

Philadelphia Electric Company
Measures of Value
March 31, 1980
(\$000)

Original Cost	1-Year Trended Cost	3-Year Trended Cost	5-Year Trended Cost
2,501,616	4,339,391	4,182,764	3,980,585

Source: PECO Brief, p. 56A.

Trending original cost is a procedure for converting the original cost value of property installed in earlier years into more current value levels based upon more recent prices for the same property. The purpose of this exercise is to express the cost of the utility's property in terms which are relevant to the final determination of fair value, to

which a fair rate of return may be applied so as to determine the overall required return on investment.

Original Cost

PECO claims as the undepreciated original cost of its electric plant at the end of the historic test year ended March 31, 1979, the amount of \$3,342,907,000 (PECO Exhibit DPS-1, p.C-9). In addition, the company has claimed that portion of its common plant (i.e., plant used by all its operations including the gas and steam divisions) which is allocated to its electric operations or \$100,321,000 (PECO Statement B, p.10; PECO Exhibit DPS-1, pp. B-17, C-9 and C-11). These amounts have been developed from the company's books of account which were originally approved by the Commission in the mid-1940's. These books have been maintained in accordance with the uniform system of accounts prescribed by the Federal Energy Regulatory Commission and adopted by this Commission. The accounts were last audited by the Federal Power Commission in 1973 and have also been audited annually by a firm of independent certified public accountants.

In deriving the original cost measures of value for electric and common plant in service at March 31, 1980, the end of the future test year, the company used the plant balance at December 31, 1979, as indicated by 1979 budgeted figures. PECO then analyzed its 1980 Forecast to determine which plant additions would be placed in service during the first three months of 1980. The resulting figure was \$3,455,500,000

(PECO Exhibit DPS-5, p. A-2). To this, PECO added that portion of common plant allocable to electric operations, as calculated in accordance with the same methodology and allocation factor used in determining the historic test year amount (Peco Exhibit DPS-2, pp. B-17, C-9, C-10, C-11), or \$99,370,000. The resulting original cost claim is \$3,554,870,000.

Three areas of discussion have appeared regarding the company's original cost claim. They involve the appropriate regulatory treatment of PECO's Salem Unit No.2; the Salem Unit No.1 construction program; and the retirement of the Richmond No.12 and Barbadoes Nos. 3 and 4 generating plants.

Salem Unit No. 2

PECO and the Jersey Central Power & Light Company (Jersey Central), a General Public Utilities subsidiary, entered into an agreement shortly before this rate application was filed, under which PECO would sell its share of the energy and capacity equivalent to the output of the Salem No. 2 Nuclear Generating Unit, which the company forecasts will go into commercial operation in October 1980. Under the agreement Jersey Central will pay PECO a rate per kilowatt hour for the unit's production equal to 95% of the PJM Interconnection running rate at the time of sale. In addition Jersey Central will pay PECO for the capacity of Salem No. 2 at a price equal to 90% of the PJM capacity charge. Capacity sales will be the lesser of Jersey Central's need for capacity, the output of the unit or PECO's available capacity for sale as determined under the PJM Agreement.

PECO notes that the instant rate proceeding includes no costs associated with Salem No. 2. ^{7/} PECO is proposing in this case that the sale be treated as a below-the-line transaction. All costs attributable to Salem No. 2's operation will be segregated and excluded from rate base and expense claims for ratemaking purposes. Revenues from this sale will also be excluded from ratemaking considerations. The company estimates that based on the anticipated PJM running rate and Salem capacity factors of approximately 65%, the revenues from this sale would approximately equal the unit's capital and operating costs. Specifically, it appears that a base rate increase of \$467.5 million over the life of the contract would be required if Salem No. 2 were included in cost of service (PECO Statement No. 1, Table 8). PECO estimates that it will receive \$467.7 million in revenue from Jersey Central (Tr.1383-84).

In its order of August 9, 1979 the Commission directed that consideration be given to whether this sale is in the public interest and whether all revenue and expense aspects of this sale have been considered. Former Chairman W. Wilson Goode in a memo to Chief Administrative Law Judge William Shane (the Goode memo is appended to this initial decision as Appendix B) also requested that the sale be explored in this proceeding.

^{7/} PECO Witness Paquette testified that had the agreement not been entered PECO would be claiming, either in this case or in a subsequent one, an additional \$100 million in annual revenues on account of this unit (PECO statement No. 1, p. 15).

The Commission's Trial Staff notes that Salem 2 will not be placed in service until October 1980, well beyond the test year here (PECO Statement 1-A, p.3) and the possibility exists for more delays (Tr. 3760-61). In view of this delay and the uncertainty of actual operating costs which will affect revenues, Trial Staff proposes that Salem No. 2 not be included in rate base; this is not in approval of PECO's proposal, but solely because Salem No. 2 will not be used and useful until a minimum of six months after the future test year end. Trial Staff also proposes that PECO be required to file with the Commission, on an annual basis, a comprehensive report detailing all costs incurred in connection with Salem No. 2 as well as the revenues received from Jersey Central.

The Consumer Advocate opines that the Commission should offer no opinion at this time on the Salem No. 2 sale. Due to the delay in Salem's licensing, there is not yet, in OCA's opinion, a definite set of revenue/expense assumptions that could indicate the effect of the sale with respect to the ratemaking treatment of the unit. It should be noted that the company is not seeking here regulatory approval for the sale. PECO is simply stating its treatment of Salem No. 2 in this case. No party disputes this treatment; no party claims that any revenues, expenses or return requirements relating to Salem No. 2 are included in the company's claim. It is the Commission that has inquired as to

whether the sale is in the public interest and, the answer to that query is that, on the basis of the information available now, there is no way to determine an answer. Salem No. 2 has been delayed due to the NRC's licensing moratorium (Tr. 3760-61). Under the agreement the billing rates for energy and the operating capacity purchased by Jersey Central will vary each hour and will depend on the PJM running rate which, in turn, depends on the availability of equipment on the interconnection, the level of fuel prices and the capacity factor of the plant. As the time when this agreement will become operative is pushed further and further back due to the moratorium, estimates as to capacity factors and running rates become more and more speculative. Trial Staff's proposed comprehensive reporting requirement should be adopted by the Commission in order that the operations of this agreement can be monitored.

Salem No. 1

As a result of increases in the cost of constructing the nuclear units at Salem, the Consumer Advocate and the Public Advocate of New Jersey engaged Theodore Barry & Associates (TB&A), a management consulting firm, to evaluate the construction practices of Public Service Electric and Gas Company (PSE&G) on the Salem Project. PSE&G was the utility responsible for the design, construction and operation of the Salem Units. Philadelphia Electric, with a 42.59 percent interest in the units, is one of four utilities owning Salem.

The report filed by TB&A concluded that if the preferred management procedures had been adhered to in the construction of the Salem Project, a savings of from \$22 million to \$70 million could have been achieved and that PECO's possible savings on Salem No. 1 would be from \$5.9 to \$15.2 million. In addition, the report was critical of PECO's level of involvement in the project.

The report was in issue in PECO's last rate case (R.I.D. 438). Administrative Law Judge Joseph Matuschak, who presided at that investigation and heard the evidence and testimony, concluded that TB&A had showed a lack of prudent management by PECO in connection with the construction of Salem No. 1.

At the Commission's Public Meeting of December 28, 1978, Judge Matuschak's recommendation and the company's exceptions thereto were considered. The Commission adopted Judge Matuschak's recommendations. PECO, in this proceeding, presented two witnesses who testified as to the construction of Salem No. 1 (PECO Statement No. 11; PECO Statement No. 9, pp. 6-9). By Order of October 29, 1979, the Administrative Law Judge granted a motion filed by OCA and CEPA to strike this testimony. That order was stayed pending appeal to the Commission (Order dated December 11, 1979). On February 8, 1980, the Commission upheld the Administrative Law Judge's ruling. Consistent with the Commission's decision in R.I.D. 438, a \$10.5 million adjustment to rate base will also be made here.

Richmond 12 and Barbadoes 3 and 4

PECO stated that it has eliminated from both its historic and its future test year measures of value its investment in the Richmond No. 12 and Barbadoes Nos. 3 and 4 generating plants. These units, which had been mothballed previously (see R.I.D. 438, p.11), are now retired and, according to the company, will not be used in future operations. PECO also states that the expenses associated with these plants have been eliminated from claimed expense levels (PECO Exhibits DPS-1, p. D-11, DPS-2, p. D-11). This claim is disputed, in part, by Trial Staff, which proposes certain adjustments to plant in service and claimed expenses relating to this plant. These adjustments will be discussed below.

Accrued Depreciation

As explained by the Commission in R.I.D. 438, in determining the rate to be charged by a utility, it is appropriate to include in operating expenses an allowance for consumption of capital in order to maintain the integrity in the service rendered. This allowance for the depreciation of the company's investment can be looked at from two angles:

- (a) Accrued depreciation, which is the amount of value which the property has lost in the past - or the difference between its "brand new" and the "present" value.

- (b) Annual depreciation, which is the name of the allowance permitted to be charged by a utility against the operating expenses in order to build up a reserve for the future retirement of property units as they become consumed in public service and thus keep the value of the utility property intact for future public service.

Accrued depreciation is a plant or capital account deduction from valuation in connection with rate base purposes. Annual depreciation is an annual operating charge, to be paid out of expenses, just as wages and other operating expenses.

In this proceeding, Philadelphia Electric Company claims accrued depreciation applicable to the original cost measures of value as of March 31, 1980, in the amount of \$1,013,688,000 (PECO Statement 8; PECO Exhibit DPS-5, p. A-27). The accrued depreciation claim was presented by PECO witness Waddington, who employed procedures previously approved by the Commission. Both Trial Staff and CEPA dispute the company's claim for both accrued and annual depreciation on the basis that a longer life span should be used to calculate depreciation on its base load plants. Trial Staff proposes to increase the company's original cost rate base by \$45,114,000 and to decrease depreciation expense by \$5,432,000 (Trial Staff Statement DLB-1, App. E). CEPA proposes no explicit rate base adjustment, but does join in Trial Staff's reduction to operating expenses.

Specifically, PECO, in this proceeding, claims a 30-year life span on its Eddystone 1 and 2 and Keystone 1 and 2 fossil plants, and a 35-year life span on its Conemaugh 1 and 2 fossil units. It claims a 35-year life span for its nuclear units, Peach Bottom 2 and 3 and Salem 1. (PECO Exhibit HTW-2, p. 23, and PECO Statement 9A, page 4). Trial Staff recommends a forty-year life span for each of these base load plants.

In general, the shorter the period over which a company is permitted to depreciate its plants, the greater its revenue requirements in the early years of a plant's life, because it will be recovering its investment over a shorter period of time.

As explained by the company (PECO Brief, pp. 172-79), the depreciation expense attributable to major generating plants has been determined by use of the life-span procedure. This methodology consists of the determination of a life-span or retirement date for the generating unit in question which, when combined with a curve reflecting anticipated interim component retirements, yields the amount of annual depreciation expense required to permit recovery of generating plant investment costs (PECO Exhibit DPS-2, p. C-12).

The 35-year life span used by the company has been approved by the Commission in the last two PECO rate cases (R.I.D. 295 and R.I.D. 438) and is the same life-span used by the Commission in depreciating

other nuclear facilities. See Pa. P.U.C. v. Metropolitan Edison Co., R.I.D. 626 (Order adopted March 22, 1979); Pa. P.U.C. v. Pennsylvania Electric Co., R.I.D. 599 (Order adopted January 11, 1979).

It should be noted that the company opposed this life-span in R.I.D. 438 (mimeo pp. 24-25) and in this proceeding, PECO witness Boyer testified that a 25-to 30-year life-span would be more appropriate but that the company had acceded to use of a 35-year life-span in light of the repeatedly affirmed Commission position on this matter (PECO Statement 9-A, p.4).

Trial Staff Witness Birx recommended use of a 40-year life-span on the basis of his conclusions that nuclear plants are constructed more soundly than fossil units which have a life of 40 years (Trial Staff Statement DLB-1, p.7) and on the basis of conversations with various NRC personal and utility engineers that a life span of 50 years for a nuclear plant is probable.

Trial Staff's adjustment should not be adopted. Dr. Birx' recommendation is essentially the same as he presented in the Metropolitan Edison and Penelec cases cited above which the Commission rejected in favor of a 35-year life estimate.

Nothing in the record here warrants a modification of the Commission's oft-stated finding that although "there is simply not

sufficient experience with nuclear plants to establish a useful life with precision," ^{8/} a 35-year life-span for nuclear plants is reasonable.

PECO claims a 30-year life-span on its Eddystone 1 and 2 fossil generating units and its Keystone 1 and 2 fossil plants and a 35-year life-span on its Conemaugh 1 and 2 fossil units. Trial Staff here again recommends a forty-year life-span. PECO's estimates were determined by its witness Boyer. Mr. Boyer stated that the 30-year life claimed for depreciating the Eddystone units reflects their status as "state-of-the-art" generation. ^{9/}

Eddystone No. 1 was designed for turbine steam conditions of 5000 psi pressure and 1200[/1050[/1050[temperature (double reheat unit). Eddystone No. 2 was designed for turbine steam conditions of 3500 psi pressure and 1050[/1050[/1050[temperature (double reheat unit). These supercritical steam conditions with double reheat were selected in order to obtain high efficiency units (about 40%). These units were not designed for cycling operation. For example, each of

8/ Pa. P.U.C. v. Pennsylvania Electric Co., 51 Pa. P.U.C. 649, 659 (1978)

9/ By this, Mr. Boyer stated, he meant that these units were at the forefront of the technology (Tr. 3742).

these units has only one critical pressure steam generator. Older coal-fired plants usually had more than one boiler and were capable of cycling operation. As a consequence, the Eddystone Units No. 1 and 2 cannot be expected to have as long a life as older coal-fired units.

In addition, the pollution control system (flue gas scrubbers system which are presently being installed) is estimated to have a life of between 10 and 15 years. Since the flue gas scrubber system also is a state-of-the art system, its life expectancy can be expected to be shorter than normal.

For those reasons PECO expects Eddystone Nos. 1 and 2 to have a life expectancy of about 30 years (PECO Statement 9-A, p.7).

Mr. Boyer described the Keystone and Conemaugh units as standard high pressure (3500 psi) high temperature (1000°/1000°) supercritical single reheat units. The Conemaugh units are expected to have a life of 35 years which is associated with reheat units of the 800 mw-1000 mw size. Keystone is similar to Conemaugh except that the units have forced draft boilers. Since any leakage from the boiler is out, not in, the very hot corrosive gasses tend to destroy the boiler structure. In addition, flyash tends to gather at the inside top of the boiler which causes boiler tubes to fail more often. There has been much concern over the unexpected erosion of turbine blades. As a consequence of these problems PECO estimates that the Keystone unit has a life expectancy of only 30 years compared to Conemaugh unit's life expectancy of 35 years (PECO Statement 9-A, p.8).

In proposing a 40-year life-span for these plants, Trial Staff relies on the testimony of its witness Birx, who in turn relies in part on studies of actual retirement dates of generating units made by Mr. Joseph Egg of Duquesne Light Company (Trial Staff Statement DLB-1, Appendix C) and a September 1979 study by Joseph J. Sivulich of the Commission's Staff (Trial Staff Statements DLBL-1, p.11). These studies show that on the average life-spans of over 44 years were expected for fossil-fueled generating plants (Trial Staff Statement DLB-1, App. C, pp. 26,29). PECO argues that the studies referred to use the concept of economic life-spans which, if averaged, result in the 44 year figure. This, the company argues, should not be confused with actual retirement ages or experienced life-spans. PECO's witness Waddington defines "experienced life span" to mean the actual ages of retirement, or, put another way, the life-spans actually experienced. He stated that the economic life-span, as presented in the Egg report is the point at which the plotted and extrapolated power production curves reach a point of zero output (PECO Statement 9-A, p.5). Mr. Waddington cited, as an example, page 11 of Appendix C to Statement DLB-1 where the historic progression of the annual kilowatt hour output of the generating units of "Company A" is plotted. ^{10/} He stated that the plotted points indicate

^{10/} This page is appended as Appendix C.

that Company A's units produced approximately 90 percent of the possible output when they were new and approximately 20 percent at age 35. There are no data beyond age 35. Those points are smoothed and extrapolated by a mathematical equation which, if relied upon, would indicate that the units should have produced over 100 percent when they were new and should continue to produce to age 47.5, at which time production reaches zero. The "economic life span" as used in the Egg study is that age (47.5) where the smooth curve reaches zero output. It is not the average life or average age of retirement, but is only a rough indication of possible maximum life. A straight-line mathematical curve fit to the same points would result in an indication of an approximate 40-year, rather than a 47.5-year, maximum life. He noted that the actual retirement ages for Company A are also shown on the chart on page 11, plotted as the open circles at the bottom of the chart. Retirements occurred at ages 18, 20, and 21, which are ages where the curve shows approximately 40 percent output. This, he stated, is substantially greater than the zero output age which the report designates as "economic life span" (PECO Statement 9-A, p.6). In sum, Mr. Waddington stated, the Egg study demonstrates a wide range of both experienced life spans and economic life spans. The actual experienced average life or life span of the units upon which the Egg study was based equalled 31 years which the actual experienced life spans for the Sivulich study was 43 years compared

with an economic life span of 61 years (PECO Statement 9-App 7, 9). Finally, the company notes, the generating units used as the basis of these studies differ substantially in their operating characteristics from the PECO units under consideration.

On the basis of the record here, I recommend that the Trial Staff's adjustment not be made. In my opinion PECO has met its burden of showing that the Conemaugh unit's life expectancy is more properly 35 years than 40 and that the Keystone and Eddystone units' lives are more properly 30 years than 40. To the extent that this disagrees with the Commission's finding in West Penn Power Company (R-78100685, Order entered August 30, 1979), it may be explained by the fact that in West Penn the life span for super-critical coal-fired plants was established by West Penn's management, which submitted no testimony of its own supporting this determination. Such is not the case here. PECO Witness Boyer explained the reasons which led the company to conclude that these life spans are appropriate. It should further be noted that the Egg and Sivulich studies, upon which Dr. Birx places great reliance, cover a great variety of generating plants, not just these super critical ones. Reliance on these studies for purposes of determining the life spans of these special plants must, therefore, be limited.

One other issue relating to depreciation remains. This concerns the amortization of unrecovered costs relating to the Barbadoes Nos. 3 and 4 and Richmond No. 12 generating units and will be discussed in relation to the company's expense claims, below.

Additions to Plant In Service

PECO has included as additions to its net plant in service certain amounts reflecting its claimed investment in Salem No. 1 Nuclear Fuel, non-revenue producing construction work in progress, land held for future use, materials and supplies and cash working capital. These items will be discussed individually.

Sale Unit No. 1 Nuclear Fuel

PECO claims \$13,414,000 in its original cost rate base for its share of the average balance of nuclear fuel in the reactor at Salem Unit No. 1 (PECO Exhibit DPS-2, p. B-21). PECO arrived at this amount by averaging the actual fuel balance at the beginning of the test year, as adjusted for the reload which began in April 1979 and the estimated balance at March 31, 1980, after a year of operation. PECO notes that this same methodology was used in determining its nuclear fuel inventory in its last rate case (R.I.D. 438).

The OCA argues that PECO failed to weight properly the fuel-balance on hand during the future test year. Its witness Mr. Thomas Weiss proposed an adjustment which would reduce the

company's claim by approximately \$2.3 million (OCA Statement No. 5, p. 20, OCA Exhibit TW-1, p.2). As PECO notes in its brief (p.68) Mr. Weiss offers no explanation of this adjustment and that it is apparently based on the theory that the nuclear fuel attributable to the reload of Salem No. 1 should be disregarded for inventory purposes until the scheduled return to service of the unit on July 1, 1979. By not reflecting the reload fuel inventory until July 1, 1979, PECO's fuel balance is reduced during the first quarter of the test year.

PECO's witness Hill testified that this fuel was at the reactor in April, 1979 to begin the necessary reload process before the unit's scheduled return to service (PECO Statement 6, p.3).

The OCA adjustment should not be adopted since this fuel represented an investment of the company during the entire test year. The company's position that since the refueling procedure is a necessary service procedure, the fuel became "used and useful" in April, 1979 at the latest is reasonable.

Non Revenue-Producing Construction Work In Progress

PECO also claims \$955,000 for non-revenue producing construction work in progress (CWIP) (PECO Statement No. 6, p.4; PECO Exhibit DPS-5, p. C-22). The company states that this claim is based on experienced historic test year-end data and, in support of this claim, PECO provided a description of each project in progress at

March 31, 1979 (PECO Exhibit DPS-1, pp C-22, and 22A). But, as Trial Staff points out, the record does not show one single project that qualifies for CWIP treatment in the future test year (Tr. 116-117).

The general rule laid down by this Commission is that CWIP treatment will be permitted for specific construction projects which: (1) were completed, or to be completed within a short time past the end of the test year, (2) were reasonably identifiable as non-revenue producing, (3) were reasonably identifiable as nonexpense reducing, (4) did not affect the level of operations at the end of the test year, (5) improved environmental conditions, (6) improved the quality and reliability of service, (7) improved safety, (8) disclosed that the amount claimed was actually expended by a utility, and (9) were significant, relevant, and substantial. The Commission has interpreted its criteria to mean that projects not in service within approximately six months after the test year should not be considered in a fair value determination. Philadelphia Suburban Water Co., 50 Pa. P.U.C. 407, 420-21 (1971).

Here PECO did not identify any project but simply claimed that the company expects the level of CWIP to remain stable. The company has failed to sustain its burden of proof and its claim for \$955,000 should be rejected.

Land Held For Future Use

PECO has claimed rate base treatment for its investment in land for the expansion of existing or the location of future production, transmission and distribution facilities (PECO Exhibit DPS-2, pp C. 23 and 23a; PECO Exhibit DPS-5, pp. C-23 and 23a). The amount claimed totals \$3,391,000. The company notes that pursuant to the guidelines set forth in R.I.D. 295 and R.I.D. 438, it has included in its claim only land where there is a definite plan for its utilization and construction within 10 years from the end of the test year.

The Trial Staff, through its witness Mr. Henry Hagan, argues that the majority of the amount claimed should be disallowed. This position is based on an interpretation of the phrase "date of use" to mean the date actually in service, rather than the date construction is expected to start. This interpretation comports with the Commission's position in Pennsylvania Electric Company, (R.I.D. 392, mimeo p.4) and should be adopted. As Trial Staff notes PECO was unable to provide in-service dates (Tr. 2735-36). Mr. Hagan reviewed the history of the land claimed in this case and determined that most of these parcels have had revised construction start dates. 11/ Mr. Hagan recommended that the company's claim for \$357,000, representing

11/ Mr. Hagan's list of land parcels is appended to this decision as Appendix D.

investment in land for the Fulton generating site be rejected. This property was first claimed in 1972 with construction expected to start in 1980. The company has indefinitely delayed or canceled the Fulton project (TR. 120). Mr. Hagan's recommendation should be adopted.

Mr. Hagan noted that the most expensive single parcel of land claimed is that for the 500 KV Bradford-Newlinville transmission line amounting to \$1,253,000 (PECO Exhibit DPS-2, p. C-23). The company could not state when the line would be in service even though it initially included this plant in its claim for plant held for future use in R.I.D. 29, ^{12/} with construction expected to start in 1976. Now, PECO states that it expects to start construction in 1988. Mr. Hagan noted that for all the remaining parcels of land classified in the transmission group, PECO has changed the in-service dates at least once.

With respect to the property claimed for distribution use, each tract of land has had its in-service date changed once and in one instance the date has been changed three times.

^{12/} The test year in this proceeding ended August 31, 1972.

While the company's argument that the Commission has never required that the utilities predict with pinpoint accuracy their future operating needs is true, property in this category must be subject to a definite plan. The frequent changes of construction dates (as shown in Appendix D) supports the Trial Staff's argument that definite plans for use do not exist and that the land may not be in service in ten years. The company's claim for the Peach Bottom-Whitpain line (\$892,000) which has not had revised construction start dates, and for the Peach Bottom-Newlinville line (\$161,000) which also has not had revised construction start dates, should be allowed. With respect to the remainder of the claim (\$2,338,000), the company has not sustained its burden of proof that there is a definite plan for use of this land within ten years of the test year.

Materials and Supplies

PECO claims \$88,389,000 for materials and supplies. This represents the company's investment in coal and oil inventories, plant materials and supplies, tools and related equipment and undistributed stores expense (PECO Exhibit DPS-2, p. C-24). The only dispute arises from the OCA's claim that PECO's coal inventories are excessive (OCA Statement No. 5, p.19). ^{13/} Approximately \$25 million of the company's

^{13/} In its initial brief, the City supports OCA's position (pp. 20-21).

total claim for materials and supplies relates to its coal inventory. As explained by PECO witness Carrol, the Philadelphia area coal inventory is designed to provide a 60-day supply and afford protection against interruptions in coal deliveries (PECO Statement 5, p.4). PECO claims that this amount equals the level approved by the Commission in R.I.D. 438, after elimination of the inventory associated with Cromby Unit No. 2 where coal use in the immediate future is not anticipated (PECO Br., p. 73). This Philadelphia inventory is priced at the mid-point of the \$40-\$45 per ton range which the company expects to incur during the test year (PECO Exhibit DPS-2, p. C-24). The mine-mouth inventory at the Keystone and Conemaugh plants represents a 45-day supply of coal. This, according to the company, is in recognition of the smaller threat of delivery disruptions to these facilities and the inventory is priced at budgeted test year end levels (PECO Exhibit DPS-2, p. C-24). OCA claims that these inventories are excessive and are designed to guarantee against all possible interruptions during the test period, rather than being designed on the basis of historical experience (Tr. 1240). OCA witness Weiss developed his own estimate of the appropriate inventory levels which is based on the company's 1978 experience and which would reduce the company's claim by \$9,040,000 (OCA Statement No. 5, p. 19-20; OCA Exhibit THW-13). PECO argues that the 180,000 ton or 27% reduction urged by Mr. Weiss should be rejected and I agree with the company.

Mr. Weiss simply looked at the coal used during 1978, assumed that it was burned over a 365-day period and assigned one-sixth of that as the requirement for inventory. The methodology takes into account contingencies such as loss of energy, power or disruption of fuel supply only to the extent that such disruptions occurred in 1978 (Tr. 3045).

The issue of coal inventories was considered in R.I.D. 438 where the Commission affirmed its earlier position that a 60-day inventory in the Philadelphia area was appropriate. It rejected in that case a proposed adjustment which would reduce the level of these inventories based on the employment of normal burn rates and accepted the company's position that fuel inventories are maintained not only to meet normal operating requirements, but also to meet emergency requirements arising from supply disruption, equipment failure and other causes (mimeo, p.28). I see no reason to reduce the company's inventory of coal below the level which the Commission has previous found to be necessary for service reliability.

Cash Working Capital

PECO claims \$52.7 million for cash working capital. This claim consists of two parts: (1) cash working capital attributable to operating and maintenance expense of \$72.3 million, offset by the net of taxes accrued and collections payable against taxes prepaid and other prepayments of \$30.1 million and (2) compensatory bank balances of \$10.5 million (PECO Exhibit DPS-5, pp. A-2, C-25). Trial Staff, OCA, the City and CEPA all oppose this claim.

The standard definition of cash working capital and the necessity for its allowance as an item of rate base has been set forth by the Pennsylvania Supreme Court in City of Pittsburgh v. Pa. P.U.C., 370 Pa. 305, 309 (1952):

Cash working capital ordinarily is the amount of cash required to operate a utility during the interim between the rendition of service and the receipt of payment therefore. It is the blood stream that gives life to the physical plant and facilities of the enterprise. It can readily be seen that initially, at the commencement of operation, capital supplies by investors must, in order for the company to function, include such working cash in addition to the amount required for physical plant and facilities. Its allowance as an element of fair value for ratemaking purposes has been approved by decisions of both the Superior and Supreme Courts of this State and of the Appellate Courts of other jurisdictions.

PECO presented a revenue-expense lag study in this proceeding which, based on actual historic test year revenue and expense data, shows an average lag in the receipt of revenue of 57 days. This is offset by an average lag in the payment of cash expenses of 23 days (PECO Exhibit DPS-1, p. C-25a). The resulting net lag in the receipt of revenues (34 days) was then multiplied by the claimed average daily future test year operating and maintenance expense level of \$2,129,000 to arrive at the \$72,386,000 cash investment claimed (PECO Exhibit, DPS-5, p. C-25). This cash requirement was offset by \$30.1 million which is the net balance of accrued taxes and prepaid items determined on the basis of a

13-month average at the historic test year end, adjusted by a 6% inflation factor and the appropriate allocation factor for PECO's electric operation (PECO Exhibit DPS-2, p. C-25).

A principal issue of controversy is the company's revenue lag day claim. As explained in PECO's brief (p.78), this lag is comprised of three elements: (1) a 15-day revenue lag between the midpoint of the billing period and the end of the period in which service is being rendered; (2) a 4-day bill preparation and presentation period; and (3) a 38-day period during which the bill remains outstanding (PECO Exhibit DPS-1, p. C-25a). It is this 38-day period which is in question. This figure was determined by dividing the twelve-month average monthly accounts receivable balances by average daily revenue receipts (PECO Statement 7, p. 2; PECO Exhibit DPS-1, p. C-25a, Tr. 378).

Trial Staff, which takes the position that PECO has a negative cash working capital position, argued that this 38-day figure is unreasonable since PECO's residential customers and most of its commercial customers have 20 days from billing date to pay before late charges are assessed. Instead, Trial Staff, through its witness George Markovci calculated PECO's revenue lag at 45 days. In making this adjustment Mr. Markovci did not analyze PECO's accounts to determine directly the lag in revenues. Instead he started with PECO's four-day bill preparation figure, added 15.25 days from the midpoint of the average month, plus an appropriate

number of days for each revenue class to the end of the grace period before a late charge is assessed. For certain customers he also allowed 2.5 days to the midpoint of an additional five-day grace period allowed by PECO for payment by mail. Then he calculated the revenue associated with the later charges collected by PECO. He lagged this revenue for 45 days (Trial Staff Exhibit GFM-1C). ^{14/}

PECO criticized Mr. Markovci's presentation, noting that the lag days employed in his calculation are assumed, not measured. It notes also that while Trial Staff criticizes the company for determining its cash working capital calculation on the basis of a balance sheet and lead-lag approach, it uses the same basic approach.

The OCA also argues that PECO's claim is overstated. Through its witness Michael Arndt, it found that PECO had a cash working capital requirement of \$39,317,815. ^{15/} Mr. Arndt recommends use of a full lead-lag study and points out that PECO uses average monthly balances for determining accrued taxes, prepayments and bank balances (OCA Statement No. 5, pp. 5-6). The use of complete lead/lag analysis of operation and

^{14/} Trial Staff's position here would reduce PECO's cash working capital claim by \$25,368,000.

^{15/} CEPA supports the position of OCA.

maintenance expense, according to the witness, would result in an adjustment of "other" operation and maintenance expense of \$7,256,000 relating to the amortization of nuclear fuel assemblies, which OCA maintains is a non-cash expense (Tr. 444-46). Mr. Arndt also used Trial Staff's 45-day revenue lag estimate instead of the company's 57-day figure.

Another issue in controversy is whether accruals for long-term debt interest and preferred stock dividends should be deducted from the cash working capital requirement. Both Mr. Markovci and Mr. Arndt proposed such an adjustment. In addition, Mr. Arndt reflected these amounts with revenue receipt lags (OCA Exhibit MLA-1, p.1), but Mr. Markovci did not (PECO Statement 7-A, p.3).

A final issue of controversy concerns the allowance of minimum bank balances in the cash working capital claim. PECO claims \$10.5 million for this item based on the actual thirteen-month average of monthly bank balances for the historic test period (PECO Statement 7, p.3, PECO Exhibit DPS-1, p. C-25). The company takes the position that the level of required bank balances in the future test year should not differ significantly from the experienced level.

In support of its claim, PECO witness Rimerman stated that these balances support \$159.1 million in bank lines of credit out of a total \$209.1 million and provide PECO with a source of cash reserves.

These balances also permit PECO to obtain short-term loans at a lower interest cost than otherwise available (PECO Statement 7, p.5). The purposes for which these bank loans are employed are varied. PECO states that these loans are employed for interim financing construction activities, prepayment of various taxes, interim financing for debt retirement, general interim financing requirements, general management of cash requirements including payroll, interest and dividend payments, fuel payments, etc. and as a reserve against unforeseen operating, financial or other events which create unusual cash requirements or limit access to normal investment sources. (PECO Brief, p.86). Trial Staff and OCA oppose PECO's claim. Mr. Arndt stated that these balances represent a cost of money which is largely borrowed to finance construction. As such, Mr. Arndt recommends that the appropriate rate treatment should be to capitalize as part of the AFUDC rate, those short-term funds reasonably used to finance construction (OCA Statement No. 5, p. 12).

Trial Staff argues that the company's actual cash working capital is applied towards its compensating bank balance requirements and that PECO is seeking here a double return for these balances (Trial Staff Brief, pp. 42-43). Alternatively, it suggests that, if its first position is rejected, no more than one-quarter of PECO's compensating balances should be allowed. Trial Staff cites testimony by Mr. Rimerman

to the effect that to sell commercial paper, buyers of the paper require bank credit lines which require compensating balances (Tr. 432). Trial Staff maintains, however, that PECO is relying on the requirements for compensating balances by purchases of commercial paper and that no proof of these requirements has been provided (Trial Staff Brief, p.44).

Trial Staff maintains that the compensating balance claim with respect to commercial paper is unsupported and should be eliminated. According to this position only \$2,625,000, if any, should be allowed (Trial Staff Brief, pp. 45-46).

CEPA argues that PECO has not met its burden of proof in establishing that compensating balances are necessary, proper or economical to the ratepayer. It further argues that since these bank balances are chiefly used to secure short-term financing at a lower rate, the cost effect of these balances should be included as an item in the cost of capital (CEPA Brief, pp. 42-43).

With respect to the company's cash working capital calculation, and specifically its use of a 57 day revenue lag, I note that the Commission recently considered similar arguments in PECO's gas rate proceeding (R-79030781) and there held that PECO's use of a 57 day revenue lag was appropriate since "it was based upon its actual experience in receipt of revenues . . ." (mimeo, p. 79). No reason has been presented here for disturbing the Commission's recent determination.

The OCA argument that a full lead-lag methodology be used has appeal. If adopted here, using a 57-day lag, however, it would produce a cash working capital requirement significantly in excess of the amount believed necessary by the company. This simply demonstrates that there are many ways of determining cash working capital which would produce a reasonable amount. Since the company's proposed methodology has been recently considered and accepted by the Commission, I see no reason to recommend an alternative, which although reasonable, would require ratepayers to pay more for this item than believed necessary by the company. On the basis of my recommended operation and maintenance expenses of \$711,326,000, PECO's O&M cash working capital allowance is \$66,266,000.

The Commission, in R-79030781, also considered the arguments of Trial Staff and the OCA that PECO has available to it as sources of working capital, accrued interest on long-term debt and accrued preferred stock dividends. This position has been vociferously opposed by the company. Extended discussion on this point would not be beneficial to any party or to the public. The Commission has over the recent past consistently upheld the Trial Staff's and OCA's position. See, e.g. Pa. P.U.C. v. Philadelphia Electric Co., R.I.D. 438 (Order entered February 5, 1979); Pa. P.U.C. v. Peoples Natural Gas Co., R-78010545 (Order entered February 2, 1979). This position has been affirmed by the Commonwealth Court. UGI Corp. v. Pa. P.U.C., _____ Commw. Ct. _____ (No. 2242 C.D. 1978, Opinion filed January 25, 1980). However, as the

company points out (PECO brief, p.84), and the Commission has recognized, Pa. P.U.C. v. Philadelphia Electric Co. (R-79030781, mimeo pp. 17-18), the revenue lag associated with interest and dividend collection must also be considered. This reduces the claimed adjustment by \$16,431,000.

With respect to compensating balances, the answer to the OCA position is that this argument has been repeatedly considered and consistently rejected by the Commission. In R.I.D. 438 (p.31) the Commission stated:

The Consumer Advocate and Park Towne argue that PECO's bank balance claim should be disallowed because the balances are primarily employed to finance construction work in progress, and as advance payment of taxes or other items for which a working capital allowance has already been allowed. These arguments have been repeatedly rejected by the Commission. Pa. P.U.C. v. Pennsylvania Electric Co., R.I.D. 170 and 171; Pa. P.U.C. v. Metropolitan Edison Co., R.I.D. 170 and 171; Pa. P.U.C. v. Philadelphia Electric Co., R.I.D. 129 (1975). They ignore the many banking services received, and the need to support and obtain a ready source of cash for use in meeting all manners of emergency cash requirements. Such claim for compensating bank balances having been allowed the Company by the Commission heretofore, we see no reason, under all the circumstances presented here, to refuse such claim.

Nothing in the record supports a change from this position.

CEPA's argument is an alternative treatment for compensating the company for minimum bank balances. No reason is given, however, for preferring one methodology over the other. Since the Commission has traditionally treated this as a rate base item, consistency dictates that this be continued.

Trial Staff's position, that the cash working capital requirement includes the compensating balances requirement, is well supported on this record and should be adopted. The record in this proceeding does not support a finding that PECO requires a separate return on its claimed compensating balance requirements of \$12.3 million. As pointed out by Trial Staff the ratepayers are already providing a return on the normal balances that the company requires to operate. These normal balances amount to \$12 million (Tr. 429; PECO Exhibit 1, Vol. II, Section II A-16, p.3). PECO's Treasurer, Mr. Rimerman testified in the proceeding that the banks do not require that the funds used to support these lines of credit be kept separate and apart from the company's "normal" deposit. This exchange between Mr. Rimerman and Trial Staff Counsel Sayre is reproduced below (Tr. 423).

BY MR. SAYRE:

Q Now, let's say that the company uses some of these banks, as I am sure it does, to deposit the amounts that it receives from its customers and then uses those accounts to pay its expenses, its payroll and other expenses.

I presume that the banks with the high activity balance shown would be that kind of bank; is that right?

A Yes.

Q Now, that money, the average daily balance, let's say, that the company has in the bank, that it uses for financing its expenses, do these average daily balances count toward the five to ten per cent of line requirement or toward the activity balance requirement that the bank requires?

A It accounts toward both.

Q That is, the company is not required to maintain these amounts that you have shown in column E separately apart from the company's normal accounts and business that is transacted at the bank?

A Do I gather you are asking whether we segregate funds to satisfy activity requirements and segregate funds to satisfy line requirements?

Q I gather the answer is no?

A Is that what you are asking?

Q Yes.

A The answer is no.

Q And the bank doesn't obviously then require you to do so; right?

A That is right.

From this exchange, one can only conclude that these normal balances can be used to fulfill the bank's compensating balance requirement. Under these circumstances, it appears that Trial Staff is correct that the company is claiming a double return. PECO's total compensating bank balance claim is \$12.3 million (PECO Exhibit DPS-2, p. C-25). Its normal balance for operations is \$12 million. That leaves \$300,000

outstanding, not earning a return. The portion of this amount allocable to PECO's electric operations is 85.718%, or \$256,000. That amount will be included in PECO's measures of value. In summary, the recommended cash working capital allowance is \$19,991,000.

Unrecorded Retirements

Trial Staff Witness Russell W. Stover recommended the PECO's original cost rate base be reduced by some \$4,053,000 (Trial Staff Statement No. RWS-1). This recommendation is the result of an audit of PECO's Continuing Property Records. This audit determined that certain property totalling \$18,110,000 was recorded in Account 110-Electric Plant in Service, which is not used and useful in furnishing electric service to the public. The provision for depreciation reserve related to this plant is \$14,057,000 leaving a balance of \$4,053,000 which should be eliminated from rate base. Two items included in this list have caused controversy (PECO Statement 6-A, Part 3). The first adjustment relates to \$123,000 of land at the Barbadoes generating site. Mr. Stover noted that PECO has eliminated all depreciable property at this site and considers the plant as being mothballed. He stated that the land associated with the property should also be eliminated from the claimed original cost rate base. PECO witness Hill stated on rebuttal that the adjustment would be inappropriate since certain facilities will

remain at Barbadoes after the retirement of the mothballed units. ^{16/}
Mr. Stover explained, however, that the \$123,000 adjustment represents only the cost of land for the mothballed generating station (Trial Staff Statement No. RWS-2, p.1). The other facilities and their associated land cost are not affected. Mr. Stover also recommended an elimination of \$83,000 representing the net original cost of a structure at Eddystone housing auxiliary boilers. These boilers were retired in place in 1975 and 1976 (Trial Staff Statement No. RWS-1, p.3). PECO Witness Hill stated that the boilers have been removed and the building is now under rehabilitation for use for sulfur dioxide scrubber equipment. In addition, he stated that the building is attached to the main structure housing existing Eddystone facilities and cannot be removed except at great expense (PECO Statement 6-A, Part 3). Trial Staff argues that if the building is being rehabilitated for sulfur dioxide scrubbers, it is construction work in progress and not part of rate base. It also argues that a structure need not be physically removed to have it removed from rate base (Trial Staff Brief, p.48). Trial Staff's arguments are persuasive and the proposed adjustments should be made.

^{16/} These facilities are 3 gas turbines and 2 substations (PECO Statement 6-A, Part 3).

Trended Original Cost

PECO's trended original cost study was prepared by Mr. Harold Waddington who has frequently testified before this Commission in this field (PECO Statement 8, pp. 1-4). Mr. Waddington used the same methods and procedures which were approved by the Commission in PECO's most recent electric and gas rate proceedings (R.I.D. 438 and R-79030781).

Mr. Waddington's study restates the original cost of PECO's electric and common plant at March 31, 1980 in terms of materials, labor and equipment price levels in effect at December 31, 1978 and at average prices during the 3-year and 5-year period ending December 31, 1979 (PECO Statement 8, p.7).

In his study, Mr. Waddington first separated the plant balances into trendable property groups. He then developed the appropriate index number series for application to these groups after which the calculations of trended original cost at the various price levels were made (PECO Statement 8, pp. 7-14; PECO Exhibit DPS-1A, pp. C-1 to C-3; PECO Exhibits HTW-1 & HTW-4). Mr. Waddington stated that actual Company experienced costs were used where possible to compile the index numbers. Where such data was not available, recognized published indexes were employed. This latter data includes equipment suppliers' prices and

price indices, and publications of the Bureau of Labor Statistics. Labor costs have been trended employing both company data and union wage rates in the Philadelphia area. Nuclear production plant at Salem Unit No. 1 was included in the trended measures of value at original cost (PECO Statement 8, p.15).

CEPA criticizes Mr. Waddington's study for failing to trend separately AFUDC (Allowance for Funds Used During Construction) (CEPA Brief, pp. 28-30). PECO points to this as an example of the conservative nature of Mr. Waddington's study since, had he done so, the results would have been higher due to the fact that current AFUDC rates, which are based on recent capital costs to the company exceed those experienced by the company in prior years (PECO Reply Brief, p. 22).

Mr. Waddington's basic trending methodology is reasonable and should be used for determining trended original cost value in this proceeding.

VI. FAIR VALUE

Four parties, the company, Trial Staff, OCA and CEPA make recommendations concerning the appropriate fair value of PECO's investment. The OCA's recommendation is that the Commission find the original cost rate base as the fair value of PECO's plant in service (OCA Brief, pp. 1-8). In the alternative, it recommends that the Commission weight the company's 5-year trended original cost by the percent of equity in the capital structure (OCA Brief, p. 8).

CEPA recommends a finding of \$2.6 billion on the basis of the ratio of fair value to original cost set by the Commission in PECO's last electric rate case (CEPA Reply Brief, p.6).

The company argues that the proper fair value of its plant is \$3.3 billion. This is based on PECO's claimed original cost measure of value of \$2.5 billion and PECO's trended original cost at December 31, 1978 price levels (\$4.3 billion) and the three-year average trended cost of \$4.1 billion. The \$3.3 billion fair value gives approximate equal weight to original cost (\$2.5 billion) and present value (\$4.1 - \$4.3 billion) and in the company's view, represents an equal sharing of the burdens of inflation between investors and consumers (PECO Statement 8, p. 24).

Trial Staff set forth a number of methods for determining fair value (Trial Staff Exhibit DLB-1A, Schedule 4). The first method uses data from five electric companies and develops an equation for determining

fair value based on the age of a company's plant (Trial Staff Statement No. DLB-1, pp. 2-4). The second method extrapolates the fair value to original cost ratio from the Commission's finding in R.I.D. 438, trended on the basis of company derived ratios based on company claims adjusted as in the first method (Ibid., pp. 4-5). The third method proposed by Trial Staff trends that part of rate base financed by common equity to the five-year trended original cost figure, leaving debt and preferred capital at original cost. Trial Staff's fourth method trends that part of rate base financed by equity capital to spot trended original cost. The fifth method trends the original cost at the time of R.I.D. 438, using the ratio developed in Method 2 and adds new plant since R.I.D. 438 at original cost. Trial Staff recommends use of Method 2. ^{17/}

On February 1, 1980, after all briefs had been filed in this proceeding, the Supreme Court of this Commonwealth issued its long-awaited decision in Pa. P.U.C. v. Pennsylvania Gas and Water Company, _____ Pa. _____, (No.35 May Term, 1978). In this decision, Mr. Justice Nix, writing for a unanimous court, exhaustively reviewed the subject of fair value and the weight to be given trended/reproduction costs these terms will be used interchangeably in ascertaining the fair value of a utility's property. The Court first stated that this Commission's primary duty here is to set just and reasonable rates. Thus, our

^{17/} All five methods are shown in Appendix E to this recommended decision (Trial Staff Brief, p.4).

determination of fair value must be viewed in the context of just and reasonable rates. Determining fair value is not an end in itself, it is simply one step in the process of fixing just and reasonable rates (mimeo, p. 8). The Court further stated that this Commission must be permitted flexibility in the exercise of its decision making process. "The term just and reasonable was not intended to confine the ambit of regulatory discretion to an absolute or mathematical formulation but rather to confer upon the regulatory body the power to make and apply policy concerning the appropriate balance between prices charged to utility customers and returns on capital to utility investors consonant with constitutional protections applicable to both" (mimeo, p. 9). The Court specifically rejected the concept previously enumerated by the lower courts that the term "fair value" was intended to have a fixed meaning incorporating by reference the rule in Smyth v. Ames (169 U.S. 466)(1898) and Bluefield Water Works v. Public Service Commission (262 U.S. 679)(1923).

Turning to the legislative history of the Public Utility Law and its predecessor Public Service Law, the Court noted that the 1913 Public Service Company Law expressly set forth the meaning of "fair value" by incorporating each factor enumerated in Smyth v. Ames. The 1937 Statute, which superseded the 1913 law omitted any definition or specification of the meaning of "fair value." While another court had

earlier found that its omission was consistent with a legislative intent to define "fair value" as synonymous with that concept as expressly defined by the prior statute (Solar Electric Co. v. P.U.C., 137 Pa. Super 325 (1939)), the Court here stated that the omission could also be viewed as evidence of a legislative intent "to free itself from" the shackles of express adherence to an understanding of the constitutional meaning of "fair value" which was an evolution at the time that the 1937 statute was drafted (mimeo, p.10).

The Court found it unnecessary to decide which interpretation is the more accurate. It found that the rule in Smyth v. Ames simply sets the very broad constitutional boundaries within which the legislature, or the legislature's agency, may act (mimeo, p.11).

The Court cited with approval its earlier decision in the Ben Avon case ^{18/} where it stated:

[T]he ascertainment of the fair value of the property, for ratemaking purposes, is not a matter of formulas, but it is a matter which calls for the exercise of a sound and reasonable judgment upon a proper consideration of all relevant facts. The Commission is not bound to adopt any one method to the exclusion of all others. 260 Pa. at 308-09

18/ Ben Avon Boro v. Ohio Valley Water Co., 260 Pa. 289, 308-09 (1918).

It then stated that there was no constitutionally mandated nexus between the "fair value" standard and cost of reproduction figures (mimeo, p. 12-13). While reproduction cost figures are clearly admissible in rate proceedings, nothing in the "fair value" rule requires that they must be accepted in whole or in part for valuation purposes. In clear terms the Court stated, "We, therefore, repudiate any intimations in these decisions or in prior case law that has the effect of suggesting a constitutional mandate requiring the inclusion of reproduction cost figures in arriving at the appropriate rate structure in public utility valuation cases" (mimeo, p. 13). The Court further stated that it is unsound to attempt to apply a constitutional taking analysis to valuations of property by the Commission which do not go beyond original cost. Ibid.

Applying the teachings of the Court to the instant proceeding, I recommend that the Commission find that the fair value of the utility's plant is the original cost of such plant less accrued depreciation. While I find the evidence submitted here of the reproduction cost of this property to be probative of the reproduction cost of PECO's plant, the use of estimated reproduction costs is, of necessity, speculative. Further, as the Commission has noted many times in the past ^{19/} the use

^{19/} E.g. Bell Telephone Co. of Pa., 51 Pa. P.U.C. 570, 582 (1977).

of reproduction costs may fail to reflect technological changes and improvements that have occurred through time and changes in labor productivity. In addition, no utility, especially an electric utility would actually undertake to replace all of its present assets; nor would the actual replacement take place in the exact form and manner assumed by the trended original cost estimates. These infirmities in the use of reproduction costs have been recognized in the past, yet the Commission has continued to rely on such costs in establishing fair value because it felt constrained by prior case law which seemed to hold that use of such estimates was Constitutionality required. The Supreme Court in PG&W has dispelled such beliefs. Under these circumstances, it appears that fairness to all parties, to the ratepayers, and to the shareholders of PECO requires that the rates set here not be based on the use of reproduction cost figures, but on original cost figures. Amounts which can be ascertained with relative precision and which do not rely on the exercise of the discretionary 20/ powers of the Commission. In making this recommendation I agree with the position of the OCA that the effects of inflation on the investment of PECO's shareholders be considered in determining the company's rate of return since inflation will no longer be considered in establishing the fair value of PECO's investment in plant.

I, therefore, recommend to the Commission a fair value finding of \$2,452,909,000 (Table II).

20/ Some might say arbitrary.

VII. LIMERICK NUCLEAR GENERATING STATION

In the late 1960's PECO began planning the construction of the Limerick Nuclear Generating Station (Units 1 and 2), a 2110 MW facility located near Pottstown, Pennsylvania. At that time it was anticipated that the units would be in service in 1975 and 1977 (Tr. 3801). In mid-1974, PECO received its permit enabling it to begin construction of the plant. As a result of the delay in obtaining the construction permit, the estimated service dates of Units 1 and 2 were pushed back to 1981 and 1982 respectively. In 1975 the company pushed back the in-service date of Unit 2 until 1983. In 1976, the in-service dates of both units were slipped until 1983 and 1985. In 1978, a further delay, until 1985 and 1987 was announced.

In its Order of August 9, 1979 the Commission directed that the question of whether PECO has been imprudent in its actions in constructing new generating plants be explored. Since the only major generating plant under construction is Limerick, ^{21/} the question resolves itself into whether the delays associated with Limerick have been prudent.

First, and foremost, for purposes of this proceeding, it should be noted that Limerick has no impact on the rates to be set here except as far as the need to raise money in the capital markets affects

21/ Salem No. 2 is expected to go on line in the fall of 1980.

PECO's overall capital costs. ^{22/} Second, the controversy over Limerick has been divided into three aspects: (1) have the delays associated with the construction of Limerick been the result of improvident management decisions; (2) should the Limerick plants be completed; and (3) if they are to be completed should the construction be accelerated so as to put these plants in service by 1983 and 1985.

PECO witness Paquette testified that the first delays in the construction schedule were due to delays in receiving the necessary construction permits. ^{23/} This set back the time of completion from 1976-1977 to 1979-1980 (PECO Statement 1-B, p.1). Beginning in 1974 and through 1978, changes in this time schedule were made due to the combination of financial constraints and reduced load forecasts. The financial constraints were generally related to PECO's claimed inadequate earnings and interest coverage ratios and the reduced load forecasts were caused generally by increased energy prices. PECO states that its decision of May 1978 to extend the construction schedule by 2 years was made primarily because it was management's judgment that the near-term reduction in the required rate increases for present customers justified the higher costs which would result from the delay. Data at that time, according to

22/ No party has been able to quantify this impact, if any (Tr.3406).

23/ The dates of and reasons for the various delays are shown in Appendix F to this decision.

Mr. Paquette, indicated that a postponement of one year would save customers about \$189 million in the first year and would increase rates \$40-\$50 million per year for the next six years and by a lesser amount thereafter. It would take, therefore, between 4-5 years to affect the first year's saving. He noted that earlier decision to delay the estimated service dates of the plant were also based on comparable data which indicated that the short run economics benefitted the customer (PECO Statement 1-B, p.2).

The decision to delay Limerick by two years reduced PECO's construction spending by \$270 million over the period 1979-1981, which kept the level of new financings down. PECO notes that if it had kept to the 1974 schedule, this rate case would include Limerick No. 1 in rate base and PECO would be asking now for \$300-\$325 million instead of \$123 million. Another increase would have to be sought in 1980 to reflect Unit No. 2, amounting to \$200 million (PECO Statement 1-B, p.3).

Trial Staff presented Dr. Birx who reviewed the history of Limerick and concluded that it was not prudent to delay operations at Limerick (Trial Staff Statement No. DLB-2, p.4). He disputed the company's contention of savings to present ratepayers, relying on a study prepared by the Pennsylvania Power & Light Company (PP&L) in March 1978 based on 1977 data. The report was eventually included as an addendum to PP&L's Susquehanna Environmental Report filed with the NRS (tr. 3404). This report shows that for the PP&L Susquehanna plant, the short term saving

over the first years is far exceeded by the additional costs over the life of the plant. Dr. Birx noted that without the delays ordered by management, Limerick Unit No. 1 would have been projected to come on line in 1981 at a total cost for both units ranging from \$1.29 billion to \$1.74 billion. The plant is now scheduled to cost \$3.118 billion (Trial Staff Statement DLB-2, p.6). Dr. Birx states that management is responsible for the delay and resultant cost increases and, therefore, the costs created thereby should be borne by the stockholders. He recommended that the AFDC charges associated with these delays, amounting to \$554 million (Trial Staff Statement No. REN-2, Schedule 5), be eliminated from the rate base at the time Limerick becomes part of the plant in service. He also recommended that the increased energy cost caused by the delays be eliminated as part of the allowed revenue requirement and/or energy clause and that the effects of the extended investment period on the cost of capital be quantified and also eliminated as part of the allowed revenue requirement (Trial Staff Statement No. DLB-2, p.7).

PECO criticizes Dr. Birx' recommendation as based on a misunderstanding of the basis of the company's 1976 and 1978 decisions. The decision was based, the company states, on both a lower projected load growth, as Dr. Birx notes, and because of the company's weak financial position (PECO Brief, p. 25-26). It also criticizes Birx' reliance on the PP&L study to support his contention that there can never be

benefits to ratepayers as the result of delay in the construction of a generating unit. PECO points out that the situation apparently existing at the time of PP&L's report, that the fuel cost savings as a result of maintaining Susquehanna's then scheduled in-service dates would offset the additional capital costs required when the plant went into commercial operation, is the same situation as exists now in 1980 with respect to Limerick. But, PECO states (PECO Brief, pp. 26-27), that was not the situation in May 1978 when the plant's present construction schedule was established. At that time, according to the company, the first year carrying charges on Limerick exceeded estimated fuel cost savings by some \$189 million. The PP&L study is not probative, the company states, as to the reasonableness of PECO's decision in light of the differences between the two companies with respect to Interconnection sales. PP&L is a substantial seller on the interchange; PECO is not. ^{24/}

Upon reviewing the record in this proceeding I recommend that the Commission defer any decision on whether PECO's decisions to push back completion of Limerick, taken during the period 1975-1978, were

^{24/} The PP&L study states that the delay would result in more generation from higher cost generating units, increased purchases and a reduction in interchange sales. In the delay case, the nuclear capacity provided by the Susquehanna units would not be available to augment PP&L's base load. PP&L would have less other generation available which, even though more expensive than nuclear for PP&L, would still have an economic advantage in the power for interchange sales (Trial Staff Statement No. DLB-2, Schedule 3).

prudent until such time as the plants are ready to assume commercial operation. This recommendation is based on two primary grounds. First, the benefits and the detriments of accelerated versus delayed construction would require substantial economic cost studies. Such studies have not been done here due, no doubt, to the time constraints imposed by the seven month statutory period (Tr. 3395-97, 3405). In addition, the adjustments proposed by Trial Staff cannot be quantified with the precision necessary to warrant adoption. For example, the proposed elimination of \$554 million from rate base when the plant goes into service in 1987 relies on estimates of inflation rates for the period 1981-87 (Trial Staff Statement No. REN-2, Tr. 3399) and, therefore, is speculative. The second recommendation, elimination of any increased energy cost due to the delays, cannot be calculated at this time (Tr. 3398-99). Similarly, the proposed adjustment reflecting the effects of the extended investment period on the cost of capital has not been quantified (Tr. 3406-07).

Finally, these adjustments, as previously noted, are all prospective and would not affect the rates set here. At the most any Commission decision would simply be advisory and not binding on any future Commission. That future Commission would accept or reject these advisements in light of conditions existing then. Any decision now would serve no useful purpose, but rather might be perceived as a cause for instability in the capital markets. This would only result in higher costs to PECO's present ratepayers without necessarily benefitting future ones.

The second issue concerning Limerick is whether work on the plant should continue. It should be noted again that this Commission lacks jurisdiction over the planning and siting of electric generating stations. As a result a utility may plan and construct a generating station such as Limerick without the need for the express approval of this Commission. The first time that the utility must seek this Commission's approval of the used and useful nature of a facility is in the rate proceeding subsequent to its being placed in service. While this Commission also has no specific jurisdiction also over the selection of the type of fuel used to generate the electricity, four witnesses testified that Limerick should not be completed as a nuclear plant.

The first witness, Alan J. Nogee is an employee of and a witness for the Keystone Alliance (Keystone Alliance Statement No. 1).^{25/} Mr. Nogee's formal educational training was in the field of psychology. After leaving graduate school in 1973, he edited a magazine until 1977. At that time he became interested in the energy field (Ibid., p.2). The purpose of his testimony is to question whether PECO's decision to construct and to continue to construct the Limerick nuclear station was prudent. Mr. Nogee concludes that the project should be cancelled. Mr. Nogee calls for independent studies to investigate what combination

^{25/} The Keystone Alliance is an organization of citizens opposed to nuclear power.

of conservation, wind, solar and coal generation would be most feasible for the PECO service area (Ibid., p. 5). As the basis for his conclusion Mr. Nogee uses data from a 1978 PECO publication ^{26/} which shows an estimated capital cost for nuclear power of \$1340 per kw in 1988. This would indicate a capital cost of Limerick of \$3.2 billion (Tr. 3487). Mr. Nogee, however, notes that in his opinion the cost is likely to approach \$3.5 billion. He also points out that safety changes required as a result of the nuclear accident at Three Mile Island may result in even higher costs (Keystone Statement No. 1, supra, p.7). The witness also attacked PECO's estimate of fuel costs in 1988 and its assumption that a nuclear unit will attain and operate at a 70% capacity factor (Ibid, p. 9-11). As a result of his criticisms of PECO's estimated 1988 cost of nuclear generation, Mr. Nogee, using a variety of assumptions more congenial to his point of view, calculates the cost of nuclear generation to be between 8.0 cents per kwh to 10.7 cents per kwh. This, he compares to the company's estimate of wind generated electricity at 8.0 cents per kwh (Ibid., p. 12). ^{27/} He believes, however, that PECO's estimate of wind generation costs may be too high since it does not

^{26/} This document is entitled "Electric Power Generation Economics" by V. S. Boyer.

^{27/} Mr. Nogee believes that even his revised estimate of the cost of nuclear generation may be too high since it does not include government subsidies to the nuclear industry and health costs (Ibid, p.13).

consider technological advances. In addition, Mr. Nogee suggests that, alternatively, Limerick be cancelled and the remainder of the funds which would have been spent on the project be used for conservation and solar investment (Ibid., p. 16). He admitted, however, that he has not developed such a plan or calculated its economic ramifications (Ibid., p. 17). Finally he suggested a referendum in the PECO service territory on whether work on Limerick should be continued.

Mr. Nogee's testimony would be of primary interest if this Commission were determining how Limerick should be built. ^{28/} But we are not. In addition Mr. Nogee's figures fail to reflect certain basic elements necessary to make a proper comparison. For example, the costs of a storage system for the generation powered by wind have not been included (Tr. 3495). Finally, Mr. Nogee did not know the average wind flow in the Philadelphia area (Tr. 3498). Mr. Nogee's testimony, while interesting, lacks the probative value needed to make an adjustment of the magnitude proposed. But this assumes, however, the authority to direct PECO to halt work on Limerick, an assumption which is not based on any cited provisions of the Public Utility Law. ^{29/} Mr. Nogee's testimony does not show that the company's initial decision to go nuclear, made approximately a decade ago, was in error, much less an abuse of management discretion.

28/ As noted above, however, the Commission lacks such jurisdiction.

29/ Trial Staff apparently questioned whether we have authority to direct PECO to accelerate construction (Tr.3407).

Marc Breslow, a teacher at the Community College of Philadelphia, also testified for the Keystone Alliance (Keystone Alliance Statements No. 2 and No. 2-A). He also called for the halt of construction at Limerick, attacking the plant on safety and cost grounds (Keystone Statement No. 2-A, p.2). Instead, he argued that the funds be spent for conservation.

Louise Dufour, Executive Coordinator of Limerick Ecology Action, testified for that group (Limerick Ecology Action Statement No. 1). Limerick Ecology Action is an organization opposed to PECO's decision to build the nuclear facility at Limerick. Its objectives include seeing that Limerick never operates as a nuclear plant and phasing out all nuclear plants. Much of Ms. Dufour's testimony is a general attack on nuclear energy. Ms. Dufour stated that she has no direct involvement either in capacity planning for an electric utility or with respect to the operations of a nuclear plant. Her statement is based on knowledge acquired from reading periodicals, journals and reports (Tr. 4072-4073). Ms. Dufour states that PECO has excess capacity, that due to delays Limerick is becoming more expensive to construct and that it is poorly sited (Limerick Statement, supra, pp. 16-20).

Finally, OCA witness Shakow testified that the Limerick project was not cost effective and should be cancelled. The OCA apparently does not believe that the action recommended by its witness is fully warranted

on this record since, on brief, it requests not the suspension of the project but rather a further investigation into the whole area of generation planning, especially as it relates to Limerick, to see whether PECO's construction program is appropriate (OCA Brief, pp. 44-46).

Before discussing the positions of these parties, one fact should be made clear in our minds - at this point over \$1.2 billion has been invested in the facility. Limerick is there; it cannot be ignored.

Dr. Shakow's position is that PECO has an excessive proportion of baseload relative to cycling and peaking facilities and, within the baseload category, a preponderant emphasis on nuclear plants. He also claims that PECO has excessive levels of reserve capacity (OCA Brief p. XV; OCA Statement No. 4, p.3). He estimated that by 1992 three 300 MW coal-fired units and a 600 MW coal-fuel plant would be necessary in place of Limerick (OCA Statement No. 4, p. 4). ^{30/} This assumption was based also on a reserve capacity level of between 14 and 22 percent (OCA Statement No. 4, p.4). ^{31/}

Dr. Shakow detailed in tabular form eight possible cases making various assumptions as to load growth, plant cost and capital costs. The purpose of each of these cases as can be seen below is to

^{30/} PECO notes that Dr. Shakow's conclusion that PECO's plan is based in favor of base load generation is "curious" in that he recommends the addition of 1500 MW of base load coal plant (Tr.1982, PECO Brief, p.47, fn.14).

^{31/} The appropriate reserve capacity will be discussed below.

include various assumptions and determine what the optimal new capacity would be under those assumptions (Tr. 2935). This table is shown on page 69. As Dr. Shakow testified the load growth assumptions here do not affect the selection of the appropriate plant (OCA Statement No. 4, p.19; Tr. 2909, 2936). Under the incremental capital costing analysis, decisions would be made on the basis that certain investments have been made and cannot be reversed. As PECO notes, this requires recognition that it has already invested \$1.2 billion in Limerick (PECO Brief, p.50; Tr. 2936). Under this methodology, we would consider whether to go ahead with Limerick on the basis of which would be cheaper given the fact that Limerick now is half-completed.

Under the full costing method, supported by Dr. Shakow, these already incurred or sunk costs would be ignored and the unit would be judged on the basis of its total cost i.e. as if we were starting from the beginning. This, he argues, more accurately reflects the position of ratepayers who are not supporting the Limerick investment at this time. This assumes that the company will recover its sunk investment in the Limerick unit if it is cancelled (Tr. 2943). Although supporting the full cost methodology, Dr. Shakow has made no study of the potential for selling the Limerick units or for the possibility of a tax write-off (Tr. 2943; 2945-47). Dr. Shakow did state that if the Commission should allow the company to recover its existing investment, there would be justification for using incremental costing instead of full costing (Tr. 2945-46).

OPTIMAL 1992 BASELOAD PLANT CONFIGURATION UNDER ALTERNATIVE ASSUMPTIONS

Case #	Load Growth	Plant Cost	Capital Cost	Optimal New Capacity	Optimal Reserve Margin (Approximate Range)
1	PECO	PECO	Full	2400 Mw, Coal*	14 - 22%
2+	PECO	PECO	Incremental	Limerick #1 Limerick #2 600 Mw, Coal	30%
3	PECO	ESRG-HIGH	Full	1500 Mw, Coal	14 - 22%
4	ESRG	ESRG-LOW	Full	600 Mw, Coal	14 - 22%
5	PECO	ESRG-LOW	Full	1500 Mw, Coal	14 - 22%
6	PECO	ESRG-LOW	Incremental	1500 Mw, Coal	14 - 22%
7++	ESRG	ESRG-LOW	Incremental	600 Mw, Coal	14 - 22%
8	ESRG	PECO	Incremental	Limerick #1 Limerick #2	30%

Source: ESG Model

* All coal units listed in this column are 300 Mw units.

+ PECO Planning Case

++ Base Case

With respect to the cost estimate of the plant, PECO claims that the completed Limerick station will cost \$3.1 billion on a 1985/1987 schedule. OCA's estimates appear to be in the range of \$4.2 billion to \$4.9 billion (Tr. 2959). ^{32/} On surrebuttal, Dr. Shakow gave a new cost estimate for Limerick of \$7 billion. The company notes that this figure lacks credibility since the Limerick plant is already 50% complete at approximately 17% of Dr. Shakow's estimated cost (PECO Brief, p.52).

One last element must be considered and that is the effect on PECO if the Commission adopted the recommendation that construction at Limerick be halted. PECO witness Paquette testified that if the plant were terminated and PECO's investment could not be recovered by its sale, an assumption which seems reasonable on this record, ^{33/} PECO's capital loss after taxes would amount to \$700 million. ^{34/} At the present time PECO has a net work or book equity investment of about \$1.6 billion; a \$700 million write-off would reduce the value of the company's shares by 44%. This would, in effect, preclude PECO from access to the capital markets (Tr. 3814-15).

^{32/} PECO also notes that this includes a \$1 billion overstatement due to AFUDC calculation errors (OCA Statement 4, Exhibit DS-E, Sheet 5, PECO Statement 15, pp. 20-22).

^{33/} Tr. 2943; 3784-85.

^{34/} This assumes that PECO could get a tax write-off. At the present time PECO has no taxable income to offset such a loss (Tr. 3815).

After weighing all the evidence, I recommend that the Commission reject the claims of certain parties that construction at Limerick be terminated, even assuming that such authority resided in the Commission.

I find Dr. Shakow's presentation interesting and worthy of future study by the Commission in any subsequent proceeding on Limerick. His conclusion that construction at Limerick should cease is based, however, on assumptions which are not supported on this record. He assumes a reserve capacity of 14-22 percent which has not been demonstrated here. He assumes that PECO can recover most of its investment, an assumption that cannot be supported here. His original cost estimate contains a substantial miscalculation as PECO points out. His subsequent cost estimate is so much greater that it must be treated with considerable caution (Tr. 2959-71). The company's arguments cast sufficient doubt on the validity of the assumptions made by Dr. Shakow in his study to warrant rejection of his recommendations in this proceeding, especially in light of the grave consequences which would result from its adoption.

Having reached the conclusion that work on Limerick should not be halted by Commission fiat, the next issue is whether the construction schedule should be accelerated.

PECO Witness Paquette testified that the recent developments in the world oil markets now make it in the public interest to complete Limerick on an optimum schedule to reduce the plant's cost and to achieve,

at the earliest possible date, the reductions in fuel costs and oil consumption which PECO anticipates will result when the unit goes into service (PECO Statement 1A, p.7). It is anticipated that acceleration of Limerick to a 1983/1985 completion date would reduce total plant cost from \$3.1 billion to \$2.6 billion (PECO Brief, p.22).

PECO states, however, that it will take approximately \$200 million of additional construction expenditures in the period 1980 to 1983 to accelerate that schedule (PECO Statement 1-A, p.7). The company also notes that when Limerick goes into commercial operation, it will necessitate a base rate increase of approximately \$300 million per unit. The company notes that customers will receive fuel savings of approximately the same amount so that the net effect on the ratepayers' total bill will be minimal. The company expresses fears, however, that the Commission will not move promptly to grant the base rate increase required to support the carrying charges on the plant when AFUDC is terminated. In addition, it fears that advancement of Limerick will lead to accusations of "excess capacity" during this 1983-85 period in future rate cases (PECO Statement 1-A, pp. 8-9).

The company seeks to begin discussions with the Commission and its staff "to work together to agree on the best plan for completion of the Limerick plant." (PECO Statement 1-A, p.10).

Trial Staff takes a rather ambivalent position. Its witness Birx testified that the plant should be completed as soon as possible (Tr.3388) but Trial Staff recommends a level of rate relief so low as to preclude this acceleration. The OCA requests an in-depth investigation into the company's generation planning and the necessity of Limerick.

It is hornbook law that this Commission is not a super-board of directors managing the affairs of a utility. This Commission was not established for the purpose of telling a utility when to place a generating plant on line, nor is it proper for a quasi-judicial body to work out the ratemaking treating of a plant, such as Limerick, outside the context of a rate proceeding. It could well appear to the public that the company now is somehow seeking the Commission's imprimatur on its past, present and future construction plans. The company has for the last ten years made decisions concerning Limerick, it should continue to do so and let the Commission pass on the propriety of those decisions.

For the foregoing reasons I recommend that the Commission make no decision now on Trial Staff's prospective rate base adjustments for Limerick; that the Commission not direct PECO to halt construction on the project; that the Commission not order a special investigation into the need for Limerick, the time has long passed for such a proceeding to result in any useful purpose; ^{35/} and that the Commission not interfere

35/ The OCA might direct its attention to seeking legislative approval of a siting bill giving this Commission such jurisdiction.

in the management of the company by expressing approval or disapproval of acceleration of this project. The company should be directed to notify the Commission approximately six months prior to Limerick's commercial operation and at that time, the Commission should institute an investigation as to the construction practices of the company and as to whether Trial Staff's recommendations are warranted. Since the company will of necessity be seeking rate relief to cover the costs of the plant at approximately the same time, these two investigations should be coordinated.

VIII. EXCESS CAPACITY

A central, if not the central issue, in this proceeding has been the claims of many parties that PECO has such excessive generating capacity that an adjustment to base is necessary. By way of explanation, I will refer throughout this discussion to "excess capacity." This is simply a phrase of convenience which I will use to refer to PECO's reserve capacity over and above the level need to comply with its contractual agreements with the PJM Interconnection and MAAC Agreements. It should not be taken in a pejorative sense. In addition the Commission in its August 9th Order sought exploration of the question of whether the utility uses an optimum mix of existing capacity. As detailed below I do not find on this record that PECO's reserve capacity is so excessive as to warrant an adjustment to its revenue requirement. I also find on this record that the company's mix of generating plant is reasonable.

PECO's Capacity

PECO witness Boyer presented the company's position on the problem of excess capacity. This position, basically the same as presented in R.I.D. 438, is that the nature and amount of generating capacity which must be added is based on the annual peak load review. Annual sales and peak demands are estimated for a minimum of 15 years into the future. Generation reserves necessary to supply these forecasted annual peak demand plus reserve is compared to the installed generation minus scheduled retirements plus committed new generating capacity. When the total forecasted generation exceeds the forecasted supply, additional generating capacity is planned (PECO Exhibit VSB-2, p. 1).

In addition to generation sufficient to meet forecasted annual peak demands, some additional generating capacity is necessary to insure that there is a margin to allow for day-to-day variations in the operating condition of installed generation and for deviations of the annual peak demand from its estimate.

The amount of generation reserves required depends on the amount of reliability desired. The reliability criterion used by the PJM Interconnection is that customers will not experience a curtailment in electric service more than one day every ten years because of an inadequate supply of generation (PECO Exhibit VSB-2, p.4). Approximately 20 percent of the estimated annual peak demand has been the reserve generating capacity required to meet that reliability criterion.

The following table shows the historical annual peak loads and installed generating capacity.

Historical Annual Peak Loads and Installed Generating Capacity

	Actual Annual Peak MW	Change (2) in Peak MW	Installed Generating Capacity MW	Change (2) in Gen. Capacity MW	Percent Generation Reserve Capacity	Weather Corrected (1)	
						Peak MW	Percent Reserve Capacity
1966	3,673		3,572		(2.7)	3,680	(2.9)
1967	3,727	54	4,111	539	10.3	3,970	3.6
1968	4,375	648	4,800	689	9.7	4,460	7.6
1969	4,592	217	5,066	266	10.3	4,820	5.1
1970	4,712	120	5,357	291	13.7	4,910	9.1
1971	4,922	210	5,928	571	20.4	5,040	17.6
1972	5,313	391	6,136	208	15.5	5,340	14.9
1973	5,760	447	6,377	241	10.7	5,630	13.3
1974	5,431	(329) (3)	6,968	591	28.3	5,620	24.0
1975	5,530	99	7,214	246	30.5	5,530	30.5
1976	5,346	(184) (3)	7,167	(47) (3)	34.1	5,650	29.6
1977	5,888	542	8,202	1035	39.3	5,580	47.0
1978	5,667	(221) (3)	7,727	(475) (3)	36.4	5,630	37.2

Notes: (1) Corrected to the most severe temperature conditions which have a 50% probability of occurrence.

(2) Change from previous year.

(3) Decrease

PECO's estimates for the next ten years show that the reserve levels will decline until 1985 when Limerick Unit No. 1 is scheduled to come on line (See Appendix H).

These unusually high levels of reserve capacity have been the source of concern to the Commission in PECO's last two rate cases (R.I.D. 295 and R.I.D. 438).

PECO states that the reasons for this excess capacity are many including the fact that the recent nuclear generating unit additions were planned many years ago to supply estimated annual peak loads which were higher than those recently experienced. Also additional short lead time units had to be installed because of delays in construction of the large nuclear generating units. ^{36/} The reduction in annual peak loads has been the result of the conservation of electrical energy usage caused by a public appeal to reduce energy usage; the curtailment of electric energy usage caused by the higher oil prices and the resulting higher prices for electricity; the 1973-1975 business recession; and the emigration of people from the Philadelphia region. None of these circumstances, it is claimed, were or could have been foreseen by PE peak load forecasters.

^{36/} It should be remembered that the Peach Bottom, Salem and Limerick units were planned in the late 1960's (PECO Exhibit VSB-2, p.9). During this same period and up through the early 1970's, the Commission was encouraging the utility to plan for greater growth than even it had forecasted and was directing the utilities to construct combustion turbine capacity until these base load plants came on line (PECO Exhibit VSB-2, App. C and D).

In summary, the present operating reserves of PECO are in excess of the requirements of the PJM Interconnection and the Middle Atlantic Area Council (MAAC). These reserves represent plant which PECO has constructed and for which its ratepayers pay a return. Trial Staff, OCA, CEPA and Philadelphia all propose that an adjustment be made to PECO's rate base or revenues so that the ratepayers are not called upon to support this plant. Three specific adjustments were proposed and will be discussed individually.

Birx Adjustment

An adjustment for "excess capacity" was proposed by Trial Staff Witness Dr. Donald Birx (Trial Staff Statement No. DLB-1, pp. 13-20). Dr. Birx recognized that reserve capacity is necessary to provide for reliability of service when units are down for either scheduled or forced outage. He stated that the primary factors influencing the loss of load probability are the size of the installed units, the forced outage experience, and the peak load probabilities. Dr. Birx felt that these factors could be controlled through a variety of load management techniques, better maintenance procedures and through installing smaller plants. Dr. Birx stated that the present reserves for PECO amount to 36%. The difference between this and the PJM requirement of 22% amount to 773 megawatts which, he states represents excess capacity. Dr. Birx, referring to PECO Exhibit No. VSB-2, Table 1, p.8, noted that the company

has a number of retirements and deratings amounting to 185 MW planned for the near future; this brings the excess down to 588 MW. Rounding this off, he suggested removal of 500 MW of plant in service. Dr. Birx derived a value for rate base in \$/MW for PECO's peaking capacity since in his view it is peaking capacity that is excess on PECO's system. Using the Eddystone 3 and 4, Muddy Run and Croydon plants as typical of PECO's peaking capacity, he determined the net original cost amount in rate base for these plants to be \$344,497,000 which amounts to \$169,487 per megawatt of installed capacity. He, therefore, recommended removal of 500 MW of excess at this dollar value of \$85,000,000.

Dr. Birx testified that his adjustment would not have a serious effect on the projected future reserve capacity of PECO. It would be the company's decision as to whether or not to retire plants because of excess capacity, his suggestion would simply remove the excess from rate base until such time as it could be justified as being used and useful. Depreciation expense would continue and a return sufficient to cover the fixed capital obligations of the company would be allowed. If the physical retirement of 500 MW actually occurred, under PECO's forecast, the reserves would be 9 percent in 1984. Dr. Birx suggests two alternatives for achieving an adequate reserve load in 1984. The first is to shave 9 percent of the projected peak load for 1984. The second is to bring Limerick on line in the 1984-1985 period rather than in 1985-1987. This would raise the 1984 reserve to 25 percent.

Boonin-Barrett Alternative

An alternative adjustment for the company excess capacity was proposed by Trial Staff Witnesses David M. Boonin and Eileen Barrett of the Commission's Bureau of Conservation, Economics and Energy Planning (Trial Staff Statement No. DMB/EMB-1). These witnesses determined that PECO had excess capacity by examining the company's projections of installed generating capacity and estimated peak load contained in PECO Exhibit VSB-2, p.8. For the three-year period 1979-1981 they calculated the average installed generating capacity at 7701 MW and the average peak load at 5850 MW. They then reduced the average peak load for the period by 2.4% to reflect the benefit from the diversity of PMJ peak loads that PECO will receive in the planning period 1981-82 ^{37/} by virtue of its membership in the PJM pool. The adjusted number, 5709 MW, is the diversified planning peak. The difference between the average total installed capacity and the average diversified peak is 1992 MW, or a reserve margin of 35%. The witnesses determined that a reserve margin of 20% above peak is adequate for the company's system; therefore, only 6851 MW are needed to serve its customers. The so-called excess generating capacity was calculated therefore at 850 MW (Trial Staff Exhibit DMB/EMB-1-A, Schedule 3).

^{37/} This is the most recent estimate of future peak load (Trial Staff Statement DMB/EMB-1, p.4).

The witnesses selected 20% as an adequate reserve margin. In reaching this conclusion, they point to a 1966 joint meeting of regulatory commissions representing the PJM area, where a decision was reached to inform the member companies of the PJM that immediate preparations should be made to increase installed generating capacity under a reserve margin of 20% above forecasted loads was reached. The selection of this margin, they state, was related not to a loss of load probability of one day in ten years but to the spatial distribution of the 1966 PJM generating system, since 20% of the generating capacity of the PJM system was installed or under construction in western Pennsylvania and tied to the eastern portion of the PJM territory by a single transmission line (Ibid., p.7).^{38/} In 1975 the New York Public Service Commission concluded that for the New York Power Pool, a 20% reserve margin was equal to a loss of load probability of one day in ten years. They point out that PECO now states that a reserve margin of 25%-29% is necessary for reliability of service, while 22% is required by PJM.

The witnesses cite in addition two recent studies by the staffs of the North Carolina Utilities Commission and the Library of Congress which conclude that a standard percent reserve margin of 15%-20% would be adequate; the discrepancy between these two claims is

^{38/} This statement, however, is solely the witness's opinion and not the result of any analysis of any Commission document or minute of the meeting (Tr. 3174).

explained in part by the definition of the one day in ten years reliability criterion and the way in which reserve margins are calculated. They point out that Loss of Load Probability is defined as the probability of any occurrence of any duration which results from the failure of the operating generating capacity to deliver power. This may result in voltage reductions, brownouts, load shedding as well as a complete blackout. The failure to recognize that not all losses of load have the same impact on consumers leads to the erroneous conclusion, that any outage must be more expensive than the cost of an additional generating station. Another drawback of the loss of load criterion, according to the witness, is that it calculates reliability exclusively for the generating system while ignoring the quality of the transmission and distribution systems.

The loss of load probability criterion of one day in ten years is used to generate a system-wide reserve margin for the PJM system for planning and contractual purposes. Once the contractual reserve margin is established, the forecast obligation for each member company is determined (PECO Exhibit VSB-2, App. E). This obligation is affected by the forced outage rate of each company and PECO's forced outage rate has been consistently above the PJM average, according to these witnesses (Trial Staff Statement No. DMB/EMB-1, p.11). This is caused by equipment problems and a tendency not to repair generating units as fast as possible

since an adequate reserve margin exists to permit generating stations to be repaired during normal working hours (Ibid. p.12). In conclusion, the witnesses reject the claim that an adequate reserve margin must exceed the 20 percent level.

The witnesses determined a value (\$25.55 per KW) to be assigned to the excess capacity from the PJM Agreement (Trial Staff Exhibit DMB/EMB-1-A, Schedule 4). This represents the net annual cost of the least expensive type of generating capacity in the PJM System and is, in their opinion, the lowest reasonable cost per KW of excess capacity.

The witnesses recommend an upward adjustment to the total revenues of the company to recognize that if there is a value to the alleged excess capacity, it is to other utilities. They further state that while generating capacity is constructed in discrete units of multiple megawatts, rather than by individual megawatts, any unnecessary capacity can be leased or sold. In their opinion, 850 MW of PECO's installed capacity is not necessary for PECO's ratepayers. They have assigned a revenue level to this capacity, creating in their opinion an inducement for PECO to remove this capacity. In conclusion, the witnesses recommend an upward adjustment to total revenues of \$21,717,500 (850 MWX \$25.55 per KW).

Weiss Adjustment

A third adjustment for excess capacity was proposed by Consumer Advocate Witness Thomas H. Weiss (Consumer Advocate Statement No. 5, pp. 6-19). Mr. Weiss noted that in 1978 the company had an installed reserve capacity of 49% of system peak demand ^{39/} and a net reserve generation capability of 35.7%. He testified that maintaining such a large reserve generating capacity can be detrimental to the company. Mr. Weiss stated that there is no generally accepted industry-wide standard for reserve margins although most utilities generally plan for an installed reserve margin of between 15%-25% of peak demand. Mr. Weiss noted that reserve margins are the function of a number of items including system economic dispatch criteria, the type and availability of the fuel used by the system, the degree of separation between the two major peaks which a system will experience during the measured period and the adequacy of the transmission and switching system to which the generation units are attached. The different factors and the weight assigned to these factors will cause reserve margin estimates to vary. For example, PECO has determined that a reserve margin of 25% would be required for the test period ending March 31, 1980. The Mid-Atlantic Area Council (MAAC) estimates that a 22% margin is sufficient while the Energy Systems Research Group, the Consumer Advocates load forecasting experts, believe that PECO needs a margin in the range of 14 to 22 percent.

^{39/} PECO claims that this calculation is incorrect and should be 36 percent (PECO Statement 15-A, p.11).

Mr. Weiss stated that the company's current excess capacity stems from decision made in the mid-sixties when it was planning the Eddystone 3 and 4 units. During this time oil-fired generation appeared to be a reasonable long-term base load generation alternative. By the late 1960's PECO was planning to build nuclear plants at Peach Bottom and Salem. By the mid-1970's when these plants were still under construction, PECO should have seen, the witness stated that the costs required to effect completion of nuclear plants were being inflated due to safety requirements and that fuel oil was becoming so expensive as to nearly preclude electric utilities from any further consideration of constructing oil-fired capacity. At the same time there was a decline in previously predicted growth rates. In spite of this, Mr. Weiss stated, PECO continued with its construction plans and even planned construction at Limerick. Only now, he stated, is the company making an effort to adjust its excess capacity by retiring the previously mothballed units at Richmond 12 and Barbadoes 3 and 4.

Mr. Weiss stated that there were several ways to adjust rate base to recognize the existence of excess capacity. One way is to exclude the investment in designated units based on an analysis of the current use of production plant, the efficiencies of the various plants and the company's own retirement plans. Another method would be to reduce the investment in all production plant by a factor representing

the unneeded capacity as a percentage of total capacity. This method, he stated, fails to assess adequately the operating efficiencies of individual units. A third method is to designate older facilities as those which are representative of the unneeded capacity and remove the investment from the determination of the company's revenue requirement. This, however, does not guarantee that the most inefficient units would be removed. A final method would remove from rate base investment representing the excess capacity and would capitalize a modified allowance for funds used during construction (AFUDC) on the removed plant until such time as the plant is needed. The AFUDC rate would include an equity return at a zero cost level, thereby representing only the embedded cost of debt and annual depreciation expense would cease. This method, however, would in the witness' opinion shift the costs of the excess capacity onto future ratepayers. Mr. Weiss stated his preference for the first-mentioned methodology. He determined the level of PECO's alleged excess capacity to be 775 megawatts during the 1981 summer peak, on the basis of the 7,689 megawatt installed generating capacity shown by PECO for the summer of 1981. From this installed capacity, he subtracted 6,914 megawatts which represents the capacity necessary to service the 1981 peak demand with an installed generating reserve margin set at the midpoint of the 14%-22% range used by Dr. Shakow of the Energy Systems Research Group based on the ESGEM model.

In order to decide which units should be eliminated for rate-making purposes to reflect the removal of excess capacity from rate base, he reviewed statistics describing the utilization of the company's generating units in 1978 as obtained from its filings with the Federal Energy Regulatory Commission (Forms 1 and 12) and the company's retirement plans. On the basis of his review, he excluded the costs associated with the following units:

Chester 5 and 6	124 megawatts
Richmond No. 9	166 megawatts
Barbadoes Nos. 6 and 7	38 megawatts
Southwark Units 1-6	<u>420</u> megawatts
Total	<u>748</u> megawatts

He determined the depreciated original cost of these units to be \$25,043,000 and recommended that this amount be eliminated from rate base.

PECO's Position

PECO maintains that no excess capacity adjustment is warranted. As noted earlier PECO witness Boyer stated that the decisions regarding generating capacity, made many years before due to the long lead time required to install major generating stations, were reasonable based on the facts which existed at the time. Indeed, if the 1973 oil embargo and resulting recession had not occurred, the company maintains that the

generating reserves available now and for the next few years would have been barely adequate (PECO Exhibit VSB-2, Table I). He explained that the current reserve capacity requirement for planning purposes is a reliability criterion of loss of load probability of one in ten years. The current reserve capacity requirement, being used to determine PECO's capacity obligation to the PJM Interconnection, is 22 percent. The PJM Management Committee agreed to use 22 percent as a basis for calculating member companies' capacity obligation for 1981. Mr. Boyer noted that while reserve requirements beyond 1981 have not been estimated, it is expected that they will approach 25 percent.

Mr. Boyer further noted that the reliability standard of loss of load no more than one day in ten years has been followed by much of the electric industry and has been employed by PJM for over fifteen years. Under the PJM Agreement, PECO must employ this reliability criterion in its generating plant planning program (PECO Statement 9-A, p.1). While it is not the only the standard which could be employed in generating plant planning, he stated, it is the most appropriate one for use at this time and is the standard that has been employed, with the Commission's knowledge, in planning its present generating plant facilities. He also noted that in future years, generating plant reserve margins in the area of 25 percent to 29 percent will be required to meet this standard (PECO Exhibit VSB-2, App A.).

The company also presented Mr. Emil Kasum, Chief System Planning Engineer. First, he addressed Consumer Advocate Witness Shakow's calculation of system reliability levels (PECO Statement No. 15, p. 6-13). Mr. Kassum criticized Dr. Shakow's ESGEM model for using a simplistic method to evaluate system reliability. He described it as a Monte Carol simulation technique in which the accuracy of its results depends on the number of random samples taken. He described the Loss of Load Probability method used by PECO as an exact analytical technique which has no inherent sampling error. ^{40/} He states that the ESGEM Model's reliability evaluation is also based on the erroneous assumption that PECO's reliability can be evaluated through a single area analysis, without detailed modeling of the PJM system. Mr. Kassum also testified that the ESGEM model incorrectly assumes that PECO's benefits from interconnections should remain constant at an average available capacity of 1072 megawatts regardless of PECO's level of installed reserves. It is incorrect, he stated, to presume that as PECO drops its installed reserve to a 14% level, that the remaining interconnection members would provide the same support as they do at the existing 35% interconnection reserve margin.

He also testified that Dr. Shakow's calculated reliability indices are not equivalent to the industrial standard. Dr. Shakow calculates the hours that load curtailment occur and translates them

^{40/} An example of this potential for error was cited by Mr. Kassum. He points to Sheets 16 and 18 of Consumer Advocate Exhibit DS-C which show that (given the ESRG construction program, ESRG demand forecast and ESRG low cost and full plant estimates) when the 1987 reserve margin is increased from 22% to 30% the incidence of voltage reductions increases from 0.2 to 2.3 hours per year. This tenfold change is, he states, obviously in the wrong direction (system reliability should not decrease as reserves increase) and, he states, can only be due to an inadequate number of samples.

into a loss-of-load probability (LOLP) index by assuming that 24 hours of curtailment equate to one day of curtailment. The definition of LOLP refers to days per year in which curtailment has occurred without regard to the length of time within those days that the curtailment occurred. The model also assumes that when a capacity deficiency occurs, load will be only curtailed to reduce the load to exactly equal the currently available capacity. This, he argued, leaves no spinning reserve and would make the system vulnerable, in the event of the sudden outage of a major generating unit or transmission facility, to cascading system-wide interruptions.

Mr. Kassum also notes that the major focus in the ESGEM model is on economics rather than technical reliability and that PECO is at present bound by the PJM contract to have reserves to meet a reserve requirement based on the one day in ten year LOLP or pay substantial penalties; it cannot unilaterally plan its capacity on an alternative basis.

Mr. Kassum further stated that when demand growth rates moderated beginning in the early 1970's, PECO moved to reflect this change in its capacity planning. No additional generating plant was planned for construction after the Croyden units in 1972. Planning for the proposed Fulton nuclear facility was abandoned and, in recent years,

PECO has retired older generating units where economic to do so. ^{41/} The company has also sold the generation of Salem No. 2 to Jersey Central. Mr. Kassum also explained that certain economic penalties can result for the retirement of generating plant, even though such plant may not be needed for capacity reasons. Even though the generating unit may not actually be producing, it may be reducing energy costs through the PJM contractual split saving pricing mechanism to price purchased energy. With the unit retired, a more expensive unit must be employed in this pricing analysis, resulting in greater costs to be borne by ratepayers. Mr. Kassum also noted that additional transmission facilities to a local area are sometimes required upon the retirement of generating plant in a given location in order to avoid possible interruptions of service due to transmission limitations and/or outages. Mr. Kassum illustrated this point by reference to the Richmond 9 and Southward Units 1 and 2 which Mr. Weiss recommended be eliminated from rate base. The retirement of these units would require, according to the company, additional transmission reinforcements to assure local area reliability in an amount greater than \$16 million. Southward Units 1 and 2 generated 394,325 MWH in 1978 and 344,068 in the first ten months of 1979. Mr. Kassum stated that

^{41/} These have included Barbadoes 3 and 4, Richmond 12 and Chester 5 and 6 (PECO Statement No. 15-A, p.2).

this energy would need to be generated from higher cost sources should the units be retired; costs which would be passed on to ratepayers through PECO's energy clause. Furthermore in the first ten months of 1979; Southward 1 and 2 generation costs were used in computing split savings energy purchases for a total of 608,595 MWH. If these units had not been available, combustion turbines would have probably been used to compute PECO's avoided costs; this would have increased the cost of purchased energy by some \$6.7 million for that period (PECO Statement No. 15-A, p.4).

Mr. Kassum noted that, under the PJM Agreement, PECO's generating capacity obligation is determined three years into the future based upon the company's forecast peak load, historic forced outage rates and other data. PECO's capacity obligation for the next two planning periods is shown below (Ibid., p.6):

<u>Planning Year</u>	<u>Installed Capacity (MW)</u>	<u>Capacity Obligation</u>	<u>Capacity In Excess of Obligation</u>
1980-81	7689	7483	206
1981-82	7689	7476	213

Mr. Kassum states that if PECO were to reduce its installed generating capacity by more than 206 MW in 1980-81 or 213 MW in 1981-82, then PECO would have to buy additional generating capacity from the PJM companies at the contract rate of \$25.55 per KW. Furthermore, if PECO

were to retire any units, it would be combustion turbines with poor operating records and which are not needed for local reliability, such as Barbadoes 6 and 7. If these units were retired, annual capital costs would be reduced by about \$5.00 per KW (Ibid., p.6).

Mr. Kassum also testified that contrary to Trial Staff's contention, PECO's claimed future reserve margins are not inflated by high forced outage rates. He pointed out that the outage rates employed by PJM to calculate the required reserve margin have been adjusted to eliminate the effects of maintenance periods which have been extended for economic reasons (Ibid., p.8). A 20 percent across the board reduction in the forced outage rates of marginal and peaking units was used in the reliability calculations resulting in an additional 1 percent reduction in reserve requirement.

The Commission in R.I.D. 438 considered virtually the same arguments and concluded that no adjustment should be made (mimeo, pp. 10-15). Since that time the Commission has had an opportunity to review the issue of excess capacity in West Penn Power Company (R.I.D. 183, Order entered June 29, 1979). There the Commission affirmed an earlier order which reversed a still earlier order making an adjustment for alleged excess capacity. The Commission specifically referred to the standard necessary to warrant an adjustment for excess capacity, stating:

Having recognized the need for some reserve capacity, we must consider whether the reserve capacity here is so excessive as to demonstrate serious miscalculations of the system's requirements resulting from management imprudence. As noted above we interpret the Court's remand here as an admonition to us to review thoroughly the record here to determine whether our original position that there was imprudence can be clearly and convincingly demonstrated. After such a review we find that while there is evidence for our original position, it does not meet the high standards of proof necessary to support such a finding of imprudence. Under these circumstances we are compelled to conclude that our original finding must be modified. (mimeo, p. 5)

Applying this standard to the record here, I cannot find that the reserve capacity here during the time these rates are in effective will be so excessive as to demonstrate serious miscalculations of the system's requirements resulting from management imprudence.

Before discussing the reasons for this conclusion, two other areas should be considered load forecasting and reliability standards.

Load Forecasting

Two load forecasting studies were presented - one by PECO (PECO Exhibit WCH-1), the other by the OCA witness Stutz (OCA Exhibit JS-5). Although much has been stated concerning these forecasts, several things should be borne in mind. First, forecasts are just that - estimates of future conditions made without knowledge of future events. Their use for ratemaking purposes is therefore limited. Second, these two studies have limited bearing on this proceeding. For example, according to OCA witness Shakow it is not at all significant whether one chooses PECO's load forecast or Dr. Stutz' load forecast for deciding what to do with Limerick (Tr. 2909-10). During the period these rates will be in effect, the difference between the two forecasts is relatively small and do not materially affect the different peak loads used for any "excess" capacity adjustment. For example, the company forecasts a period of load of 6000 MW in 1981, (PECO Exhibit VSB-2, p.8) while Dr. Stutz forecasts a peak of 5860 MW (OCA Exhibit JS-4, p.5), or a difference of 2.4 percent. For 1982 the difference between the two estimates is slightly over 3 percent. It might be interesting to examine in excruciating detail the difference between these two estimates - but for purposes of determining PECO's revenue requirements over the next few years the game is not worth the candle. I can imagine fewer areas of investigation with a lower payback ratio than a thorough investigation of the various forecasts governing

the saturation growth in home freezers in 1987. ^{42/} If history is any guide the only sure conclusion is that every estimate of load for 1987 will be wrong. This is not to say that load forecasting should not be done and thoroughly explored by the Commission. I simply point out its limits in the context of a rate case. Finally, I note that the OCA's base forecast growth rate approximates that projected for the PECO low range forecast (PECO Statement 10-A; OCA Statement No. 3-A, p.6).

Reliability Standards

As noted elsewhere, PECO plans its generating plant capacity to meet a reliability standard of loss of load no more than one day in ten years. Under the PJM Agreement, this is the criterion to be used as the design objective (PECO Exhibit VSB-2, App.A; PECO Statement 9-A, p.1).

The three adjustments proposed by the witnesses here to treat excess capacity each use a different reliability standard. Dr. Birx uses a 22 percent reserve margin which is the present contractual reserve requirement for PJM. But this is not the same as an individual company's planning requirement which may vary depending on load shape, seasonality of peak, generating unit size and generating unit outages (PECO Exhibit VSB, App.A).

^{42/} If we were considering whether or not PECO should start construction of additional plant, this, of course, would be of primary importance. But we are not and PECO is not.

Witnesses Boonin/Barrett proposes a 20 percent fixed reserve capacity criteria and criticizes use of the one-day in ten-year reliability criterion.

Mr. Weiss uses a 14-22 percent reserve capacity range based on the computer model (ESGEM Model) designed by OCA witness Shakow. This uses a different reliability standard than the one-day in ten years loss of load now used by PECO, the PJM Interconnection and MAAC.

After reviewing the record here, certain conclusions seem evidence. First, for all its claimed faults, the one day in ten years planning criterion has been used by the company, by the PJM Interconnection, by MAAC and by this Commission over the last decade. It should be used in this proceeding to determine PECO's reserve capacity levels. It is a reasonable standard, one in general use by the industry and the one upon which PECO has based its capacity planning.

But one cannot help but question in light of the testimony here whether this is the best standard. Certainly the issues brought forth by Ms. Barrett and by the Shakow study deserve serious consideration. These questions transcend any rate case and would impact all jurisdictional utilities. At the same time they raise serious issues of public policy - would the citizens of the Commonwealth be willing to trade off the reliability assurances that this standard provides for the greater possibility of brownouts, blackouts and voltage reductions and

their attendant social costs, if it would result in lower electric rates in the future. These are just some of the questions which must be explored before any decision can be made. It is my recommendation that the Commission institute an investigation on its own motion of the proper reliability standard for the next decade. At the same time the Commission could consider the load growth forecasts and long-range planning of the utilities of this Commonwealth.

Conclusion

As stated earlier, I do not find that the record shows such management imprudence as to warrant an adjustment. Furthermore, the adjustments proposed are severely flawed.

Dr. Birx proposed an adjustment eliminating 500 MW of capacity from PECO's system based on a 22 percent reserve capacity level. He prices out this adjustment using PECO's most recent non-based load generating plant facilities. These units, as the company points out, are highly valuable to PECO's customers which would not be retired by the company. Dr. Birx used these plants because he felt that it would be unfair to the company to take the entire plant of PECO and use the average cost per kilowatt. He rejected use of the most fully depreciated plant because he felt it would be unfair to the customer "because if you take Eddystone-3 and 4, for instance, at the time of the Arab oil embargo

Philadelphia Electric had about \$40 million invested in that, the signal flags were all flying and yet they went ahead and completed the plant at a cost of \$50 million or somewhere around there." (Tr. 2768). The record indicates however, that at December 31, 1973 expenditures plus commitments at the Eddystone 3 and 4 facilities totalled \$166 million out of a total plant cost at completion of \$252 million, ^{43/} (PECO Statement 15 App. 12).

The Boonin/Barrett adjustment relies on a 20 percent reserve criterion. In addition, it imputes a revenue of \$25.55 per kilowatt to the 850 MW of capacity which it claims is excess on the basis that PECO could sell this capacity to some other utility. Nothing in the record indicates that there is the slightest possibility of such a sale. In fact, the record clearly shows that utilities in the Eastern United States and Canada are in a position similar to that of PECO since they too were subject to the same economic factors in the last 5 years as PECO (PECO Statement 15-A, pp. 4-5). Where such adjustments have been made in the past there has always been some historical basis or record evidence to support the basic premise that some sales would be made; the issues was the level of such sales. E.g. Orange and Rockland Utilities, Inc., 14 N.Y.P.S.C. 777 (1974). Without such a basis, such an imputation of revenue would be arbitrary and capricious.

^{43/} Installation of oil burning facilities such as Eddystone in the early 1970's was necessitated for environmental reasons.

OCA witness Weiss' adjustment proposes the elimination of the Richmond 9 and Southwark Units 1 and 2. PECO witness Kasum points out (PECO Statement 15A, pp.3-4) that retirement of these units would require additional transmission reinforcements to assure local area reliability in an amount greater than \$16,000,000. Southwark Units 1 & 2 oil-fired steam units generated 394,325 mwh in 1978 and 344,068 mwh in the first ten months of 1979. This energy would need to be generated from higher cost sources should the units be retired. These additional costs would be passed on to ratepayers through PECO's energy clause. Assuming the cost increment would be as little as \$5/mwh, this additional energy cost for 1979 (10 months) would equal approximately \$1.7 million. In addition, during the first ten months of 1979, Southwark 1 & 2 generation costs were used in computing split savings energy purchases for a total of 608,595 mwh. If Southwark has not been available, combustion turbines would have probably been used to compute PECO's avoided cost. Southwark's generation cost is about \$50/mwh compared to about \$72/mwh. Therefore, the cost of purchased energy could increase \$11/mwh if the Southwark units were not available. PECO's cost of purchased energy would have increased by \$6.7 million in the first ten months of 1979. This increase would have been passed on to ratepayers through PECO's Energy Clause. These costs exceed the cost savings which could be obtained as a result of the units' retirement.

If the Commission finds that an excess capacity is warranted, I recommend that the Commission an adjustment that is reflective of the real world.

Under the PJM Agreement, PECO's generating capacity obligation is determined three years into the future based upon the company's forecast peak load, historic forced outage rates and other data. As a consequence, PECO's capacity obligation has been determined for the next two planning periods and is shown in the following table:

<u>Planning Year</u>	<u>Installed Capacity</u> (MW)	<u>Capacity Obligation</u> (MW)	<u>Capacity In Excess Of Obligation</u> (MW)
1980-81	7689	7483	206
1981-82	7689	7476	213

If the company were to reduce its installed generating capacity by more than 206 mw in 1980-81 or 213 mw in 1981-82, then PECO would have to buy additional generating capacity from the PJM companies at the contract rate of \$25.55 per kw to meet its forecast obligation (PECO Statement 15-A, pp. 56).

If the Commission finds that PECO's management was imprudent in its planning and construction, the amount of excess capacity is in the area of 200 MW.

If the Commission in effect tells PECO that there is too much plant in its rate base, the resultant rate base adjustment should be calculated using the generating units which would be retired - the oldest combustion turbines (PECO Statement 15-A, p.6).

The record does not, however, support such a finding. ^{44/}

Finally, with respect to PECO's generating mix, OCA witness Shakow testified that PECO's construction program was based on methodologies which are biased toward nuclear baseload plants (OCA Statement 4, p. 3). It is interesting to note that Trial Staff's witness Dr. Birx believes that PECO has an excess of peaking capacity, not base load plant (Trial Staff Statement DLB-1, p. 18) and that Dr. Shakow recommends the addition of 1500 MW of coal plants by 1992 (OCA Statement 4, p. 4) in place of Limerick. Nothing in the record indicates that PECO's present mix of generating units is inappropriate. While the combustion turbines installed in the early 1970's are highly expensive, they were needed at the time and installed at the direction of the Commission. PECO is now locked into leases for this equipment (Trial Staff Statement DLB-1, p. 19). The Shakow testimony dealing with potential bias toward nuclear base load plant lacks specific factual support for its conclusions. Finally, it should be noted that the question of PECO's generating mix would have more relevance if, we were not now, at the end of PECO's construction cycle.

^{44/} In order to avoid extending this already lengthy discussion, I attach as an appendix (Appendix I) the separate statement of former Chairman Louis J. Carter on the subject of PECO's excess capacity issued in connection with the demand of certain petitions for reconsideration in R.I.D. 438.

IX. RATE OF RETURN

After determining the fair value of PECO's investment used and useful in providing electric service to its ratepayers, the next issue is the appropriate return to be permitted on this amount. In actuality, of course, the Commission does not guarantee that this return will be achieved; it should, however, provide the company with a reasonable opportunity to earn it.

The general guidelines to be followed in setting the appropriate rate of return have been set forth by the courts. In Pittsburgh v. Pa. P.U.C., 182 Pa. Super. 376 (1956), the Superior Court recognized that such rate necessarily varies with the particular circumstances of each case and must be determined according to the facts presented. "There can be no set formula." Id. at 385. The Court then went on to list a number of factors which, if shown by the evidence, may be considered in determining a fair rate of return. These include: (1) The amount necessary to assure confidence in the financial structure of the company and to maintain its credit standing (Bluefield Water Works & Improvement Company v. Public Service Commission, 262 U.S. 679, 692 (1923)); (2) the payment of dividends and interest (Pennsylvania Power & Light Company v. Public Service Commission, 128 Pa. Super. Ct. 195, 211, 212, 213 (1937)); (3) amount of the investment, the size and nature of the utility, its risks, and the circumstances attending its origin, development, and operation (Solar Electric Company v. Pennsylvania Public Utility Commission, 137 Pa. Super. Ct. 325, 387, 388 (1939));

(Wall v. Pennsylvania Public Utility Commission, 182 Pa. Superior Ct. 35, 46, 47 (1956)). There may be other factors which may enter into the determination of rate of return. Many items such as the financial structure, the credit standing, dividends, interest, the attendant risks, regulatory lag, and wasting assets are naturally considered in determining the cost of capital. In weighing these factors, the Commission exercises its judgment as to cost of capital. However, this judgment must be exercised upon the facts as they have been presented.

As is usual in these proceedings, the issues in controversy here include, the appropriate cost of long-term debt, preferred stock and common equity. No controversy exists, however, over the capital structure to be used.

PECO rate of return witness, Joseph F. Brennan, employed a projected March 31, 1980 capital structure of 52.2 percent debt, 12.8 percent preferred stock, and 35 percent common equity. Witness Brennan believed that rate making is prospective and that, as such, the estimated March 31, 1980 ratios are the best indicator of how the rate base may be financed in the future (PECO Statement 14, pp. 4, 22-23; PECO Exhibit JFB-1 Sch. 9, Sch.18 p.2, Sch.19; Tr.272).

Dr. Matityahu Marcus, the Consumer Advocate rate of return witness, accepted the company's projected March 31, 1980 capital structure and employed it in his recommendation (OCA Statement 1, p. V-2).

Donald Muth, the Commission Trial Staff rate of return witness, also accepted the company's projected March 31, 1980 capital structure and employed it in his recommendation (Trial Staff Statement DHM-1, p.3; Trial Staff Exhibit DHM-1A Sch.2, Sch.3). This capital structure should be adopted by the Commission.

These witnesses' positions on the appropriate cost of capital, along with those of CEPA, the City and GSA are shown below:

Philadelphia Electric's Position ^{45/}

<u>Type of Capital</u>	<u>Ratio</u> %	<u>Cost</u> <u>Rate</u> %	<u>Weighted</u> <u>Cost</u> %
Long-term Debt	52.2	8.65	4.52
Preferred Stock	12.8	7.84	1.00
Common Equity	<u>35.0</u>	<u>13.00</u>	<u>4.55</u>
	<u>100.0</u>		<u>10.07</u>

Applicable to a Fair
Value Rate Base

45/ Source: PECO Brief, p. 103.

46/

Consumer Advocate's Position

<u>Type of Capital</u>	<u>Ratio</u> %	<u>Cost Rate</u> %	<u>Weighted Cost</u> %
Long-term Debt	52.2	8.41	4.39
Preferred Stock	12.8	7.80	1.00
Common Equity	<u>35.0</u>	<u>13.35</u>	<u>4.67</u>
	<u>100.0</u>		<u>10.06</u>

Applicable to an
Original Cost Rate Base

Commission Trial Staff's Position

<u>Type of Capital</u>	<u>Ratio</u> %	<u>Cost Rate</u> %	<u>Weighted Cost</u> %
Long-Term Debt	52.2	8.40	4.38
Preferred Stock	12.8	7.78	1.00
Common Equity	<u>35.0</u>	<u>13.63</u>	<u>4.77</u>
	<u>100.0</u>		<u>10.15</u>

Applicable to Original
Cost Rate Base

46/ Source: OCA Brief pp. 59-60; OCA Reply Brief, p.25; Oral Argument Tr.63)

47/

Consumer Education and Protective Association

<u>Type of Capital</u>	<u>Ratio</u> %	<u>Cost</u> <u>Rate</u> %	<u>Weighted</u> <u>Cost</u> %
Long-term Debt	52.2	8.65	4.52
Preferred Stock	12.8	7.78	1.00
Common Equity	<u>35.0</u>	<u>13.35</u>	<u>4.67</u>
	<u>100.0</u>		<u>10.19</u>

Applicable to Original
Cost Rate Base

48/

City of Philadelphia

<u>Type of Capital</u>	<u>Ratio</u> %	<u>Cost</u> <u>Ratio</u> %	<u>Weighted</u> <u>Cost</u> %
Long-term Debt	52.2	8.40	4.38
Preferred Stock	12.8	7.80	1.00
Common Equity	<u>35.0</u>	<u>12.90</u>	<u>4.515</u>
	<u>100.0</u>		<u>9.895</u>

Applicable to Original
Cost Rate Base

47/ Source: GEPA Reply Brief, Schedule 3.

48/ Source: City Brief, p.59.

49/

General Services Administration

<u>Type of Capital</u>	<u>Ratio</u> %	<u>Cost</u> <u>Ratio</u> %	<u>Weighted</u> <u>Cost</u> %
Long-term Debt	52.2	8.31	4.35
Preferred Stock	12.8	7.80	1.00
Common Equity	<u>35.0</u>	<u>13.35</u>	<u>4.67</u>
	<u>100.0</u>		<u>10.01</u>

Applicable to Original
Cost Rate Base

Cost of Debt

PECO's original estimate of its embedded debt cost at March 31, 1980, as submitted with its tariff filing in July 1979, was 8.31 percent (PECO Exhibit DPS-2, p. B-19). The originally projected March 31, 1980 embedded debt cost was based on the assumption that the Company's mortgage bond issue sold in October 1979 would be issued at a cost of 10.25 percent and that the average prime rate during the period that the rates here requested will be in effect would be in the area of 10 percent. The October mortgage bond issue, however, was sold at a cost of 12.5 percent. ^{50/} Adjusting for this cost level and the net proceeds actually received from the sale would indicate an embedded debt cost of 8.41 percent (PECO Exhibit MWR-1). ^{51/}

^{49/} Source: GSA Brief, p.4

^{50/} The effective cost rate was 12.62 percent (Trial Staff Statement DHM-1, p.4; Tr. 1365).

^{51/} This is also the Consumer Advocate's position (OCA Reply Brief, p.25; Oral Argument Tr., p.63).

PECO witness Rimerman testified, however, that use of a 10 percent prime interest rate, assumed in the company's original estimate, is no longer realistic. Rather, he stated that the average prime rate which is expected to apply to the company's long-term bank notes during the period the proposed rates are in effect will be 12.5 percent (PECO Exhibit MWR-1). This projection, the company maintains, is conservative in light of the record evidence of a current inflation rate of 12 percent and a current prime rate of 15 percent. Projected inflation and mortgage bond interest cost rates are shown on the record to be 9 percent and 10.5 to 11.5 percent, respectively. The present prime rate exceeds current inflation and long-term bond rates by approximately 2 to 3 percent (PECO Statement 14A, p.24; Trial Staff Statement DHM-1, p.8; Trial Staff Exhibit DHM-1A, Sch. 7; Tr. 2008-09).

Moreover, PECO states that it will issue at least two additional mortgage bond issues during 1980. Its embedded debt cost rate, therefore, will have risen still further. Accordingly, it states the claimed embedded debt cost at March 31, 1980 of 8.65% is conservative and fully complies with the Commission's recent directive that embedded cost rates employed in ratemaking be those "which will be experienced during the period the proposed rates will be in effect." Pa. P.U.C. v. Philadelphia Electric Company, R-79030781 (mimeo, p.31) (PECO Exhibit DPS-2, p. B-19).

Trial Staff witness Muth used PECO's original calculation of 8.31 percent (PECO Exhibit 1, Attachment II-A-6a, p.2) and updated it with the 12.62 percent effective cost rate of the October 1979 debt issue. He then reduced its cost rate by an adjustment for PECO's gain on reacquired debt (Trial Staff Statement DHM-1, pp. 3-4, Trial Staff Exhibit DHM-1A, Schedule 4) to arrive at his 8.40 percent cost rate (Tr. 2046). I recommend use of an 8.61 percent cost of debt. This cost rate is based on PECO's March 31, 1980 debt cost as shown in PECO's Exhibit 1, Attachment II-A-6a, p.2, adjusted to reflect the effective cost rate (12.62 percent) of the company's October issuance. This recommended cost rate also reflects an increase in the prime lending rate which, in turn, affects the cost of \$225 million of Term Bank loans. It should be noted that its witness Brennan used a cost rate of 8.33 percent, not 8.31 percent as shown in PECO Exhibit 1. This slight difference is due to his use of the yield to maturity basis of calculating long-term debt costs.

In addition PECO's claim does not consider the gain from reacquired debt. The Commission has in the past regularly made an adjustment to reflect gains on reacquired debt either in the cost of capital (Peoples Natural Gas Co., 51 Pa. P.U.C. 385 (1977) (Compare PECO Exhibit 1 with PECO Exhibit JFB-1, Schedule 10, pp. 3-6.); Equitable Gas Company, 51 Pa. P.U.C. 78 (1977) or through a rate base deduction as in

PECO's last electric rate case (R.I.D. 438, mimeo p.38) and gas rate case (R-79030781, mimeo, p.4). No one way has been shown to be superior; in either event, however, an adjustment should be made since PECO has received a gain which has been added to retained earnings through purchasing debt securities for less than the original purchases paid. (PECO Exhibit 1, Attachment II-A-6c, p.1, Tr. 1374-75). Trial Staff's proposed adjustment to the cost of debt should be adopted.

Neither Mr. Muth nor Mr. Marcus considered the effect on the company's term bank loss of the increased prime rate. This is in error since the prime rate influences the cost rates of these issues. I have used a 12.5 percent prime rate as the projected cost of these loans without adjustment for any premium above prime which may be required by the various lending institutions (PECO Exhibit JFB-1, Schedule 10, p.4).^{52/} It is unrealistic to use the 10 percent rate originally projected by the company and adopted by Trial Staff and OCA. This ignores completely the dramatic rise in interest rates which has occurred since the fall and which shows no sign of significant abatement. At the same time, slight downward variations are possible and use of a flat 12.5 percent cost rate recognizes the potential for a downward movement in these rates from their existing record levels.

^{52/} This explains in part the difference between my recommended 8.61 percent and PECO's 8.65 percent.

Preferred Stock

PECO claims 7.84 percent as its embedded cost of preferred stock at March 31, 1980 (PECO Exhibit JFB-1, Schedule 11, p.2). The company claims that this estimate is conservative in light of the anticipated issuance during 1980 of an additional preferred stock issue.

OCA witness Marcus relied on PECO Exhibit No. 1 ^{53/} for his estimate of 7.80 percent as the cost of preferred stock. Mr. Muth relied on this exhibit also and did not use Mr. Brennan's estimate, which calculates the cost rate using the average principal outstanding over the life of each issue ^{54/} and reflects sinking fund requirements (PECO Statement 14, p.22; Tr. 271). In addition Mr. Muth adjusted this cost rate to reflect gains from preferred stock redemptions (Trial Staff Statement DHM-1, p.4) using the same method as his adjustment to the debt cost rate (Trial Staff Exhibit DHM-1A, Schedule 5, p.2). Trial Staff's recommendation of 7.78 percent should be adopted. It is based on the company's own estimate of the cost of preferred and, as with debt, the ratepayers should receive any benefit of PECO's acquisition of preferred. It should also be noted that the weighted cost of all three estimates is the same.

53/ PECO Exhibit 1, Attachment II - A-66.

54/ PECO Exhibit JFB-1, Schedule 11.

Common Equity

As usual most of the controversy concerning rate of return centered on the appropriate cost of equity.

Mr. Brennan recommended a prospective equity cost rate of 13 percent applicable to a fair value rate base relative to a 35 percent common equity capital structure ratio (PECO Statement 14, p.48).

The witness' market-derived cost of equity is based upon an array of market-related ratios for PECO, Moody's 24 Public Utilities and a six electric company barometer group (PECO Statement 14, p.19, 23, 26, 30-31). Primary weight was given to PECO market-related ratios since the witness employed PECO as a proxy for the Electric Division (PECO Statement 14, p.4).

From the array of market-related ratios witness Brennan choose earnings/price ratios as the starting point of his market-derived cost of equity judgment (PECO Statement 14, p.43). These are shown below:

	<u>Earnings/Price Ratios*</u>		
	<u>5 year Average</u> <u>1974-1978</u> %	<u>1978</u> %	<u>June 26,</u> <u>1979</u> %
PECO	12.3	11.4	12.8

*A study performed upon the Company's latest five issues indicates a market pressure, selling and issuance expense adjustment of 5 percent (PECO Statement 14, Appendix B).

Source: PECO Statement 14, Appendix B; PECO Exhibit JFB-1, Schedules 8 and 14.

The company contends that 1979 earnings/price ratios understate required cost rates because of investor growth expectations (Stat. 14, p.43). Brennan contends that 1979 stock market was relatively normal and the price of stock used in his earnings/price ratio calculation reflects, not the earnings of the moment, but expected higher future earnings (Stat. 14, p.43). Thus, the witness believes greater weight should be given to the most current data since it may be more indicative of the future (PECO Statement 14, p.44).

Secondly, the witness considered earnings/net proceed ratios for the last five issues (PECO Statement 14, p.44). Average earnings/net proceeds ratios for the last five issues (spanning 1975-1979) were 12.6 percent (PECO Exhibit JFB-1, Sch.8). As in the case of earnings/price ratios, earnings/net proceeds ratios may understate the actual equity cost rate (PECO Statement 14, p.44) since investors, in his view, expect higher future earnings.

Mr. Brennan next considered Discounted Cash Flow Method (DCF). This indicated an equity cost rate of 10.5 to over 25 percent (PECO Statement 14, p. 44-46); the comparable earnings approach indicated a cost rate of 14.1 percent (PECO Statement 14, p.46); and the bare rent rate approach indicated a range of 14 to 16 percent (PECO Statement 14, p.46). The company witness considered these methodologies to be secondary and/or testing tools.

Witness Brennan concluded from his market analysis that his 13 percent recommendation is a minimum supported by the evidence (PECO Statement 14, p. 49). Furthermore, in his opinion, an analysis of the barometer group earnings/price ratios indicates a higher cost of equity rate (PECO Statement 14, p.49).

An original cost common equity return of 15 percent is considered by witness Brennan to be the minimum required by investors, although the dollar amount requested by the company only generates an original cost common equity return of 14.5 percent (PECO Statement 14, p.52; PECO Exhibit JFB-1, Schedule 19). A 15 percent return equates to a 10.60 percent overall return. In addition, the 10.60 overall rate of return on original cost should strengthen the company's bond rating of "A", although the witness believes that an "Aa bond rating is necessary (PECO Statement 14, p.53).

The Consumer Advocate witness Marcus recommends a prospective equity cost rate of 13.35 percent relative to a 35 percent common equity capital structure ratio (OCA Statement No. 1, Sch. MM-14). Marcus' cost of equity recommendation is applicable to an original cost rate base (OCA Statement No. 1, p. V-2). From an array of equity cost rate determinants, the witness employed the Discounted Cash Flow method, the equity-bond yield spread, and a comparable earnings method (OCA Statement No. 1, p. III-3).

In employing the comparable earnings approach the witness reviewed Standard and Poor's 400 industrial group a non-regulated group and a group of regulated companies consisting of Moody's 24 electric utility group, the 32 largest electric companies and all Class A & B electric utilities (OCA Statement 1, p. III-4,-8). Based upon a study of beta coefficients, Marcus believed that electric utilities represent a somewhat lower investment risk than the S&P 400 industrials (OCA Statement 1, p. III-6,-7). Since the returns for these industrials over the period 1972-77 averaged 13.81 percent his approach would indicate a cost of equity rate of less than that for electric utilities (OCA Statement 1, p. III 7-8). Moody's 24's achieved 1978 return on equity was 10.82 percent; the 32 largest electric utilities and all class A&B's averaged returns in the range of 10.7 to 11.84 percent and the S&P 400 experienced an equity return of 12.0 percent during that period (OCA Statement 1, p. III-8).

The Discounted Cash Flow (DCF) method applied by Dr. Marcus to PECO produced a 12.75 percent return (OCA Statement 1, p. III-21). The dividend yield employed by the witness of 10.75 percent is the average yield over the last 18 to 24 months (OCA Statement 1, p. III-15). While the growth rate employed by Dr. Marcus of 2 percent is below that employed by him in the PECO gas case a year ago, it is based upon historical growth experience and judgment factor (OCA Statement 1, p. III-18). He noted that relative to the electric utility industry, PECO's growth rate

is distinctly low and, in his opinion, investor's view PECO's stock as a current income stock (OCA Statement 1, p. III-20). This DCF finding of 12.75 percent is before any consideration of an allowance for selling costs. Witness Marcus, employed as a broad testing tool the DCF results of the 32 largest electric utilities group (OCA Statement 1, p. III-9, -24). The 32 largest electric utilities group experienced an average dividend yield of 9.56 percent and a growth rate of 2.57-3.37 percent or a DCF finding of 12.13 to 12.93 percent before consideration for selling costs (OCA Statement 1, p. III-24).

The spread method as employed by the witness indicates in his view a cost of equity range of 12.51 to 12.93 percent for a market price/book value range of 1 to 1.1, respectively (OCA Statement 1, p. III-26 and Sch. MM 11). Dr. Marcus noted that the validity of a given spread must be considered in association with the specific market/book value ratio. A high market/book value ratio might indicate that the spreads were excessive while low market/book ratio might indicate that the spreads were inadequate, (OCA Statement 1, p. III-25).

Witness Marcus considers an adjustment for selling costs of 5 percent to be adequate (OCA Statement 1, p. IV-4). Adjusting his DCF recommendation Marcus arrives at a return on equity of 13.32 percent (dividend yield 10.75% + .95% adjustment = 11.32% + 2% growth rate = 13.32%) (OCA Statement 1, p. IV-5). He rounded his DCF finding of 13.32 percent to the 13.35 percent return recommendation (OCA Statement 1, Sch. MM-10).

Mr. Muth's cost of equity recommendation of 13.63 percent is prospective and is to be applied to a 35 percent common equity capital structure ratio and an original cost rate base (Statement DHM-1, p. 5).

From an array of cost of equity determinants, witness Muth employed the earnings/price ratio, and Discounted Cash Flow method supplemented by a comparative risk analysis considered in light of economic business cycle theory (Trial Staff Statement DHM-1, p. 5). Muth applied the earnings/price and DCF methods to PECO and eight electric company barometer group (Trial Staff Statement DHM-1, p.5). Muth's return on equity is premised upon PECO's data and tested by the results of the eight electric company barometer group (Trial Staff DHM-1, p.6). In addition, Muth reviewed Moody's 24 electrics and the 100 largest electric utilities and concluded that, on average, PECO as well as his eight electric company barometer group are higher investment risks (Trial Staff Statement DHM-1, p. 7).

As a cost of equity determinant, it is the witness's opinion that earnings/price ratios are valid only when averages for a group of similar companies over various time frames are considered (Trial Staff Statement DHM-1, p. 17). Muth contends that PECO's earnings/price ratios understates its actual cost of equity because of PECO experienced low earnings/book ratios during the current five year period (Trial Staff Statement DHM-1, p. 17). A summary of the witness' earnings/price

ratio cost of equity ranges, using barometer group averages is as follows:

	<u>Earnings/Price Range</u>	
	<u>%</u>	<u>%</u>
Barometer Group (Sch. 9)	12.15	- 13.48
Barometer Group (Sch. 19)	<u>12.06</u>	- <u>15.25</u>
	<u>12.11</u>	<u>14.36</u>

Source: Trial Staff Statement DHM-1, p. 18.

In employing the DCF method the witness analyzed DCF findings for the company and his eight electric company barometer group and the effect of economic and financial conditions upon a DCF finding (Statement DHM-1, p. 18-19).

Witness Muth analyzed the interaction of economic and company financial conditions upon the two components of the DCF method (Trial Staff Statement DHM-1, p. 19). In order to generate reasonable future equity cost rates, the witness indicated it is necessary to review historic investor-required return rates (Trial Staff Statement DHM-1, p. 20). A historical review of dividend yields and dividend growth rates on a yearly basis produces a low-high DCF equity cost rate range of 12.34-13.91 percent for the eight electric company barometer group and 12.63 -14.67 percent for PECO (Trial Staff Statement DHM-1, p. 21-22). Witness Muth contends that electric utilities historically have increased dividends constantly and that dividend growth rates are the best indicator of investor growth expectations (Trial Staff Statement DHM-1, p. 21-22). From the heretofore mentioned DCF equity cost ranges, the

witness concluded that a DCF equity cost range of 12.34 - 14.67 percent is reasonable (Trial Staff Statement DHM-1, p.23).

From his earnings/price ratio and DCF method analysis, Muth concludes that PECO's equity cost rate is 13.49 percent before consideration of issuance and selling expenses (Trial Staff Statement DHM-1, p.23).

<u>Cost of Equity Method</u>	<u>Equity Range</u>	<u>Cost of Equity</u>
	<u>%</u> <u>%</u>	<u>%</u>
Earnings/Price Ratio	12.11 - 14.36	13.35
Discounted Cash Flow	12.34 - 14.67	<u>13.62</u>
Cost of Equity		<u>13.49</u>

Witness Muth believes that rate of return finding should be prospective (Trial Staff Statement DHM-1, p.18). Therefore, the witness claims that his recommendation is premised upon an improving economy during the period the rates will be in effect (Trial Staff Statement DHM-1, p.8-9).

In employing his comparative risk analysis, witness Muth assumes that the utility industry is capital intensive with the result that the industry is sensitive to economic conditions (Trial Staff Statement DHM-1, p.8-9). In order to study the industry's sensitivity to economic conditions, witness Muth devised a study consisting of fifteen financial indices and ratios which he considers important to investors (Trial Staff Statement DHM-1, p.9-10). From an analysis of

these fifteen financial indices and ratios, the witness determined a cost of equity range into which PECO's cost of equity should fall (Trial Staff Statement DHM-1, p.5). From this method witness Muth concludes that PECO's investment risk is somewhat higher than that of the average of the eight electric company barometer group (Trial Staff Statement DHM-1, p.24).

Witness Muth, to arrive at his equity return rate recommendation, would adjust his 13.49 percent recommendation by fourteen basis points to reflect PECO's issuing expenses or a final recommendation of 13.63 percent (Trial Staff Statement DHM-1, p.25). However, he stressed that economic conditions and projections at the time of decision should be considered and his recommendation, therefore, adjusted accordingly.

Although PECO's electric operations represent 84 percent of PECO's revenues, that division, of course, does not issue common stock on its own. Therefore, while primary weight should be given to PECO in developing the electric division's common equity cost rate, the 16 percent of revenues represented by the gas and steam operations are necessarily reflected in PECO's market-related equity cost rates. Furthermore, although PECO's market-related ratios are the best indicator of the electric division's common equity cost rates, a barometer group or groups of similar risk companies should be considered since PECO competes for the investor's dollar in the capital markets.

The Commonwealth Court, in Pa. P.U.C. v. Pa. Gas and Water Co.,
 19 Pa. Commonwealth 214, (1975) stated:

This element (cost of common equity) of the
 formula is the most speculative, for it is intended
 to be the best estimate of what investors would pay
 for a current issue of stocks of the public utility
 involves ... and current earnings/price ratios are
 representative of such costs. Id. at 231.

Primary weight in my cost of equity finding will be given to
 earnings/price ratios and to the Commission's recent pronouncements in
 the PECO gas case which may indicate a shift in policy toward use of the
 Discounted Cash Flow methodology. Earnings/price ratios may overstate
 or understate the equity cost rate as investor attitudes change. The
 following table summarized experienced earnings/price ratios for PECO,
 Moody's 24 Public Utilities, the six company barometer group, and the
 eight company barometer group used by the various witnesses here.

	<u>Earnings/Price Ratios*</u>						June 1979	Jan.-Oct. 1979
	1974	1975	1976	1977	1978			
	%	%	%	%	%	%	%	
PECO	13.2	14.7	12.2	10.2	11.4	12.8	12.7	
Moody's 24	14.2	15.5	13.3	12.4	13.5	14.3	14.8	
6 Co. Bar.	13.7	16.7	12.4	12.5	13.5	14.0	14.8	
8 Co. Bar.	14.0	16.1	13.0	12.7	12.9	14.2	-	

*Earnings/price ratios were not adjusted by 5 percent to
 reflect issuance expenses.

Source: PECO Exh. JFB-1 Sch. 8, 12, 13 and 14,
 Rebuttal Exh. Sch 4; Trial Staff Exh. DHM-1A,
 Sch. 19 and 9.

PECO's earnings/price ratios for the period January 1976 - October 1979, remained relatively stable. Spot data as of November 14, 1979 indicates a jump in experienced earnings/price ratios to 14.4 percent, 15.9 percent, and 16.1 percent for PECO, Moody's 24, and the six company barometer group, respectively. I believe that most recent data provides the best indication of prospective common equity cost rates. However, spot data should not be used to develop a common equity cost rate unless such data is a continuation of a long-term trend. While there is no indication that the current high interest rates will continue indefinitely, ^{55/} neither is there much sign of their imminent decline.

It should be noted that Witness Marcus did not employ the earnings/price ratio in developing his recommendation. Witness Brennan employed the earnings/price ratios in a manner consistent with my usage. Witness Muth contends that PECO's earnings/price ratios understates PECO's actual cost of equity and I agree. However, his use of earnings/price ratios based upon a barometer group in this proceeding and his use of averaging these ratios is questionable.

^{55/} At this writing Bell debt is carrying a cost rate of over 12 percent and long-term treasury bonds were yielding 11.92 percent (N.Y. Times, February 7, 1980, p. D10).

A review of the three positions concerning an adjustment for common stock selling costs indicates that Muth's adjustment is too small, based on spot data and not applied to the total equity of PECO; Marcus' five percent is reasonable and acceptable but should be applied to the total equity and not only to part of it and; Brennan's five percent also appears reasonable and is applied in a reasonable manner.

PECO's experienced earnings/net proceeds for the 1976-1979 period ranged between 10.6-11.9 percent and averaged 11.1 percent. Witness Brennan, although employing a barometer group of similar risk companies as a check of reasonableness, choose not to supply the experienced earnings/net proceeds ratio of his barometer group. Furthermore, earnings/net proceeds ratios reflect issue expenses and market pressure and as such do not require adjustment for issuance expenses as done by witness Brennan. However, PECO's experienced earnings/net proceeds ratios are similar to PECO's unadjusted experienced earnings/price ratios. I used earnings/net proceeds adjusted to reflect a market/book ratio of 1 to 1 as a testing tool.

During relatively normal market periods, the principle that a common stock should sell at least at a market/book value ratio of approximately 1 to 1 is not debatable. For the 1974-Jan.-Oct. 1979 period electric utility common stock securities experienced market/book ratios of less than 1 to 1.

Market Price/Book Value Ratios
Earnings/Book Value Ratios

	1974		1975		1976		1977		1978		June 1979		Nov. 1979	
	MP/BV-E/BV		MP/BV-E/BV		MP/BV-E/BV		MP/BV-E/BV		MP/BV-E/BV		MP/BV-E/BV		MP/BV-E/BV	
	%	%	%	%	%	%	%	%	%	%	%	%	%	%
PECO	71.4	- 8.9	67.8	- 9.4	86.1	- 9.9	99.9	- 9.6	90.2	- 9.7	79.7	- 9.7	82.3	- 10.0
Moody's 24	79.9	-10.4	77.0	-10.8	91.9	-11.3	98.0	-11.4	88.6	-11.2	84.4	-11.3	81.6	- 11.5
6 Co. Bar.	78.3	- 9.9	75.2	-11.8	94.6	-11.1	98.8	-11.5	89.8	-11.2	84.9	-11.2	82.3	- 11.5
8 Co. Bar.*	76.2	-10.0	73.5	-11.1	91.8	-11.4	97.3	-11.6	89.3	-10.8	-	-	-	-

*Calculated by witness Muth in a manner similar to that used in determining the other ratios in the table. They are not significantly different in result because of witness Muth's method.

Source: PECO Exh. JFB-1 Sch. 8, 12, 13 and 14; Rebuttal Exh. Sch. 4; Trial Staff Exh. DHM-1A, Sch. 14 and 18.

Historically, the DCF method has not been used as a cost of equity determinant (Pa. P.U.C. v. Peoples Natural Gas Company, 44 Pa. P.U.C. 102, 128 (1969)). This may be changing as we have seen in the latest PECO gas case (R-79030781, p.36); I believe that the method deserves consideration since it attempts to give explicit recognition to investor anticipations of growth. The difficulty comes in the choice of dividend yield and growth rates. Using the same basic approach as the Commission in R-79030781, I employed a dividend yield of 10.99 percent which is the average current yield for the 12 months ended June 30, 1979 (Trial Staff Exhibit DHM-1A, Schedule 10, p. 1; Tr.2064). I believe this reflects the trend toward higher dividend yields trend without reliance on spot data. 56/

56/ The same figure for the 12 months ended September 30, 1979 is 12.20 percent (Tr. 2065). In R-79030781 the Commission used the yield for the 12 months ended April 1979. I believe use of the June 1979 figure is a reasonable modification of the Commission's method, reflecting the later record here.

The Commission in the gas case used a growth rate of 2.5 percent, the midpoint between Dr. Marcus' recommendation of 2 percent in that case and his indicated growth expectation for the electric industry. The same figures were presented on this record (OCA Statement 1, pp. III-18-24; OCA Brief, pp. 64-65). A 2.5 percent growth estimate is reasonable and borne out by PECO witness Jeffries' testimony (Tr. 95-97) which indicates that current earnings per share are \$1.90 and that for 1980 an increase to \$1.95 may be expected, or 2.6 percent. The Commission also used Dr. Marcus' 5% selling cost adjustment. A similar adjustment was proposed here (OCA Statement NO. 1, IV-4). Under the DCF approach, therefore, as used by the Commission in R-79030781, the fair return on equity would be approximately 14.15 percent.

Another indication of the cost of equity capital is the so-called bare rent theory which attempts to determine this cost on the basis of (1) the amount of return investors demand for the use of their money; (2) the rate above this amount which investors demand in recognition that prospective inflation reduces the purchasing power of the dollar and (3) the amount above this total that investors demand to reflect the degree of risk inherent in equity, as opposed to debt, capital. As the Commission noted in R-79030781, under this theory, a bare rent and inflation premium should theoretically equal the cost of first mortgage bonds (mimeo, p.38). Using a 10 percent cost, which seems highly conservative,

based on the recent cost of A-rated utility bonds (Trial Staff Exhibit DHM-1A Schedule 6; PECO Statement 14, p.36) and the last cost rates for PECO bonds and the lower end of the equity risk premium rate set forth by the Commission in R-79030781, (mimeo, p. 38) results in a bare bones cost of equity capital of 14 percent.

There is no set formula for determining the appropriate equity cost rate, rather it is a matter for the informed judgment of the Commission. That judgment, of course, must be grounded on the record evidence in this proceeding. Pittsburgh v. Pa. P.U.C., 208 Pa. Super 260, 278 (1966). Factors which must be considered are not only PECO's capital attraction costs but also those of the various barometer groups. The Commission must also consider that PECO's experienced market to book ratio has been less than 1; a condition which has existed during the last 5 years. Mr. Brennan stated the obvious truth that the cost of capital is what investors think it is, not what theorists or regulators believe it ought to be (PECO Statement No. 14, p.7). We can use the tools provided us by these experts to estimate what investors demand; but our determination will be immediately tested in the market place.

My recommendation to the Commission is that the cost of equity capital to PECO is 14.0 percent. In my opinion, no lower finding can be supported on this record.

I recognize that the Commission only recently found that a 13.75 percent return was appropriate for PECO's gas operations. As can be seen a slight updating of the record, to reflect changes in the

economy since the record in that case closed, supports a higher return here. The Commission should also consider whether in this time of plentiful gas supplies, gas operations really are riskier than electric. ^{57/}

This equity return will result in an overall return of 10.39 percent, ^{58/} as shown below, and should, if achieved, result in an after-tax interest coverage of 2.3 times.

<u>Type of Capital</u>	<u>Ratio</u> %	<u>Cost</u> <u>Ratio</u> %	<u>Weighted</u> <u>Cost</u> %
Long-term Debt	52.2	8.61	4.49
Preferred Stock	12.8	7.78	1.00
Common Equity	<u>35.0</u>	<u>14.00</u>	<u>4.90</u>
	<u>100.0</u>		<u>10.39</u>

On the basis of the available evidence, I find PECO's electric division's fair rate of return of 10.39 percent applicable to an original cost fair value rate base of \$2,452,909,000 generates an income available for return of \$254,858,000 (Table IV).

^{57/} The Commission's dockets are replete with instances of the removal of restrictions from attaching new customers on the basis of adequate gas supplies available to the utilities. This was mentioned prominently in the PECO gas rate order (mimeo, p.44). It is of historical interest that gas operations have not always been considered as riskier than electric or water. See Columbus Gas & Fuel Co., PUR 1933A 337, 361 (Ohio P.U.C.).

^{58/} As noted earlier, I have recommended that the Commission find the company's original cost to be the fair value of its investment. In the event the Commission believes that some greater weight should be given to reproduction costs, I recommend that it weight the original cost by the debt and preferred ratios of PECO's capital structure and the 5-year trended original cost by the equity ratio. This will give a fair value of \$2,966,755,000. The return on equity would then be 8.86 percent.

X. OPERATING REVENUES, EXPENSES & INCOME

In this proceeding, PECO submitted financial and accounting data depicting the results of its operations both during the historic test year ended March 31, 1979 (PECO Exhibit DPS-1) and as projected for the future test year ended March 31, 1980 (PECO Exhibits DPS-2 & DPS-5). The future test year has been developed upon the basis of PECO's official 1979 budget (i.e. April to December 1979) and from the company's 1980 forecast (i.e. January to March 1980). Since the latter is prepared on an annual, rather than monthly basis, 1980 forecast data was multiplied by 25% to develop quarterly figures. Revenue and power production expense levels for the first three months of 1980 were further refined to reflect the seasonality of sales and the anticipated availability of generating units.

Revenues

The company's total revenue claim under proposed rates was \$1,287,148,000 as shown below:

		<u>Thousand Dollars</u>
Operating Revenue, Actual		\$1,253,200
Adjustments -		
STAC Revenue	(\$45,911)	
Load Growth	7,030	
Energy Clause Revenue	<u>(49,902)</u>	<u>(88,783)</u>
Adjusted Revenues -		
Present Rates		1,164,417
Rate Increase		<u>122,731</u>
Adjusted Revenues Under Proposed Rates		<u>\$1,287,148</u>

Source: PECO Exhibit DPS-5

PECO started with the statement of revenues taken from its 1979 budget and 1980 forecast. These figures were adjusted to eliminate revenues and associated tax expenses recovered under the State Tax Adjustment Surcharge (STAS) as well as revenues and associated energy costs recovered under PECO's energy clause. (PECO Statement No. 2, p.7; PECO Exhibit DPS-2, pp. D-1, D-4).

The company states that revenue and expense levels were adjusted for customer load growth to reflect sales levels at March 31, 1980. This increase in operating revenues is, according to the company, \$7,030,000.

Deduction of the associated energy costs (\$2,640,000) and gross receipts tax (\$141,000) would yield additional after tax income for return of \$2,134,000 (PECO Exhibit DPS-5, p. D-3).

PECO's witness Williams stated that the revenue increase attributable to growth in usage of existing customers was computed employing the average annual growth rate in kilowatt hour usage for each customer class during the past three years (PECO Statement 2, pp. 6-7). One-half of this annual growth was multiplied by the number of customers in each rate class at the beginning of the test year period, with the result multiplied by the average revenue in cents per kilowatt hour received during the test year from each class. Use of one-half of the annual growth rate in this computation was based on the assumption that the growth was uniform during the test year so that annualization was required for the remaining one half of the annual growth within the test year.

The revenue effect of new customer usage was similarly calculated by multiplying one half of the customers added during the test year by the average annual test year use per customer, with the result being multiplied by average cents of revenue per kilowatt hour for the several rate classes. (PECO Statement 2, pp. 6-7; Ex. DPS-5, p. D-3). The associated expense increase was determined by applying the average base cost of energy (as stated in PECO's energy clause) to the additional fuel and interchange required to provide the additional kilowatt hours comprising the load growth. The company did not claim any incremental operating and maintenance expense which might be generated by these additional sales (PECO Exhibit DPS-5, p. D-3).

Finally, the company adjusted historic test year revenues by \$26,615,000 to give a full year's effect to the increased rate levels approved by the Commission at R.I.D. 438 (PECO Exhibit DPS-1, p. D-2). A similar adjustment of \$1,577,000 was made to reflect increased rates filed with the Federal Energy Regulatory Commission for wholesale electric service to the Borough of Lansdale and Conowingo Power Company (PECO Exhibit DPS-1, p. D-10). These two rate requests became effective, subject to refund, on September 1, 1978. Both of these adjustments were fully reflected in the Company's budget and forecast figures and, the company states, no further revision of future test year revenues is required (PECO Brief, p. 150).

59/

Trial Staff proposed 3 adjustments to PECO's revenue estimate and the OCA one.^{60/} Trial Staff's first adjustment would increase test year revenues by \$597,000 (based on its recommended rate of return and rate base) to reflect revenues which it claims should be imputed from sales to other utilities.

Trial Staff notes that PECO supports its filing on a total company basis, rather than allocating revenues, expenses, rate base and return on the basis of jurisdictional and non-jurisdictional operations. The company subtracted actual non-jurisdictional revenues from total revenue requirements in determining its jurisdictional revenue requirements. Trial Staff claims that the company should have imputed a return and revenue requirement for these sales consistent with the return proposed for jurisdictional sales.

For example, if PECO is seeking an overall return of 10.42 percent on a system-wide basis, the return on "Other Utilities Revenues" of 8.74 percent increases the return requirement from jurisdictional customers to 10.44 percent. This difference in return requirement translates into a revenue requirement of \$1,053,000. According to Trial Staff, proper imputation of the overall return requirement to the "Other Utilities" category (Exhibit RCW-1A), therefore, results in a reduction

59/ CEPA joins in Trial Staff's proposal.

60/ Philadelphia joined in the OCA proposal.

in jurisdictional revenue requirement of \$1,053,000. Based upon the Trial Staff's recommended rate of return and rate base the additional revenues applicable to non-jurisdictional sales is \$597,000, in lieu of \$1,053,000 (Trial Staff Brief pp. 140-41).

The Commission recently considered a similar proposal in West Penn Power Co., R-78100685 (Order entered August 30, 1979). There the Commission stated that to allow such an imputation of revenues would be to determine the reasonableness of wholesale rates, a matter over which this Commission has no jurisdiction.

The Commission stated further:

"Even if we were to accept the argument that such imputation of interstate wholesale rates is permissible merely as a ratemaking vehicle in this proceeding, then we must conclude that the rate of return allowed would be unreasonable, and the action of the Commission would be arbitrary and capricious, since the return would be based on fictitious revenues." (mimeo, p. 40).

For these reasons, the adjustment should be denied here also.

Trial Staff also proposes an adjustment to reflect additional revenues from customer load growth. Trial Staff witness Joseph Kleha argues that this method understates annualized KWH sales and operating revenues since it attributes average annual sales to all customers regardless of the time each customer comes on line (Trial Staff Statement JMK-1). Mr. Kleha's method seeks to recognize when new customers actually came on line during the test year and would increase revenues by \$476,000, ^{61/} or 7 percent, and expenses by \$64,000.

61/ Compare Trial Staff Exhibit JMK-1A with PECO Exhibit DPS-5, p. D-3.

OCA Witness Weiss proposed a similar adjustment. It is his position that the company's proposal does not accurately reflect a linear growth pattern and thus uniform growth throughout the period (OCA Statement No. 6, pp. 3-4). OCA states that to reflect linear growth, it is necessary to average the beginning and ending balance of customers (Tr. 3054). Using this methodology would result in increased revenues of some \$69,000 (or 1 percent) and additional expenses of \$15,000.^{62/}

There are many ways to estimate growth in future revenues. As the Commission noted in the PECO gas case (R-79030781), in the final determination it is simply a matter of informed judgment (mimeo, p.42). The company's methodology is a reasonable one, having been used in the past. The adjustments proposed by Trial Staff and OCA attempt to further fine tune what is essentially an estimate. I recommend that the Commission find that the company's estimate is reasonable and use it to determine rates in this proceeding.

Finally, PECO's future test year includes the first three months of 1980. For a number of revenue accounts, PECO has not chosen to analyze expected revenues for each of the first three months of 1980, but rather has chosen to include twenty-five percent of anticipated 1980 revenue in the future test year. This methodology assumes uniform collection of revenue throughout the year.

^{62/} Compare OCA Exhibit THW-4, p. 1 with PECO Exhibit DPS-5, p. D-3; OCA Reply Brief, Exhibit THW-3 (revised 1/24/80).

An analysis of revenue accounts, which have been handled in this manner, was undertaken by Trial Staff Witness John T. Crawford. After an analysis of earlier years, Mr. Crawford found that certain of these accounts do not behave as respondent has treated them. He focused on 3 particular accounts in his testimony (Trial Staff Statement No. JTC-1) which, based upon past experience, do not generate revenue on a uniform basis throughout a twelve month period. Trial Staff states that for these three accounts an adjustment to respondent's use of twenty-five percent of anticipated 1980 revenue is warranted to obtain an accurate picture of 12-month revenues.

The specific accounts addressed in Mr. Crawford's testimony and the adjustment required are as follows: Account No. 454-Rents from Electric Property-is overstated by \$8,000, Account No. 455 - Interdepartmental Rents -is understated by \$406,000, and Account No. 456 - Other Electric Revenues - is overstated by \$128,000. The total of three accounts represents an understatement of future test year revenues in the amount of \$270,000. Here, unlike the other revenue adjustments, there is an identifiable historical basis for modifying the company's estimate. Mr. Crawford's adjustment should be adopted by the Commission.

Operating and Maintenance Expense

As noted earlier, PECO submitted data for both a historical and a future test year. Future test year data was developed from PECO's official 1979 budget (April to December 1979) and from PECO's 1980 forecast (January to March 1980). Because PECO's forecast is prepared on an annual rather than monthly adjustment, 1980 data was multiplied by 25 percent to develop greater figures. Power production expense levels were further adjusted to reflect seasonality of sales and availability of generating units.

As explained by PECO witness Carroll (Tr. 1684-92) PECO's budgeting process for operating and maintenance expenses starts in the Electric Production Department which reviews major outage maintenance requirements and prepares a maintenance schedule. This schedule, together with estimates of anticipated generating needs, is then submitted to the ten individual Generation Station Superintendents. Based upon their review of historical cost data, these Superintendents determine the level of expenditures which they would expect to be associated with both routine and specific maintenance projects during the budget and forecast period.

These cost estimates are then reviewed by the Superintendent of the Generating Division, the Superintendent of Services and by Mr. Carroll. In the course of this process, any variations between projected expense

levels and recent expense experience are analyzed and, where necessary, additional information obtained from the plant. After a final budget has been prepared, it is presented to corporate management for its review and approval.

PECO states that forecast year figures are estimated on an annual, rather than monthly, basis. Therefore, to determine first quarter 1980 expense levels, annual expenditures were first classified into two categories - unique outage maintenance and routine maintenance. Outage maintenance expense anticipated to be incurred in the first three months of 1980 was then separately identified in accordance with the company's current maintenance schedule. One quarter, or 25%, of all routine maintenance was considered to be expended during this period and accordingly added. The result was then combined with the 1979 budgeted maintenance expense figures to derive PECO's future test year claim.

As noted by the company, all operating and maintenance expenses associated with the retired Barbadoes Stations 3 and 4 have been eliminated from historic and future test year figures (PECO Exhibit DPS-1, p. D-11, PECO Exhibit DPS-2, p. D-11). Since operating and maintenance functions associated with the retired Richmond No. 12 unit ceased before April 1, 1978, no expenses are reflected in either test year (PECO Statement 5, p. 7).

All operating costs and associated investment tax credit related to Salem Unit No. 2 have also been eliminated (PECO Exhibit DPS-2, p. D-B; PECO Statement S, p.8; PECO Statement 4, pp. 4-5).^{63/}

^{63/} This, however, is not strictly the case. As Trial Staff witness Crawford points out some \$158,000 relating to insurance premiums for Salem II have been included (Trial Staff Statement JTC-1). They will be eliminated from the recommended allowance.

Trial Staff here argues that PECO's claim is overstated by some \$32.4 million (Trial Staff Brief, p. 98). As PECO notes, under this recommendation, 10 percent of the company's non-fuel expense claim would be eliminated. PECO's expense allowance would be reduced to \$287 million, or 6 percent below the level actually experienced during the historic test year (PECO Exhibit DPS-1, pp. B-9 to B-13). PECO also notes that actual future test year expenses experienced to date exceed those which would be anticipated under Trial Staff's recommendation. According to the company, non-fuel operating and maintenance expense during the first 6 months of the future test year (April -September 1979) approximated \$157 million compared to the budgeted level of \$153 million (PECO Reply Brief, pp. 31-32).

Instead of separately analyzing PECO's accounts, Trial Staff witnesses Dr. Nellis and Mr. Wagner employed a regression analysis known as the least squares method to determine PECO's expenses during the test year (Trial Staff's Statement No. EKW/REV-1, pp. 4-5). In brief, Trial Staff took PECO's expenses over a 15-year period and adjusted them for inflation. The resultant constant dollar expenses were then regressed against measures of output, using least squares procedures, to estimate PECO's total cost curve. A total cost curve was defined as a two-dimensional graph with dollar costs measured on the vertical axis and units of output on the horizontal axis. Plotted on this graph were

various levels of output and the dollar costs associated with each level. As Trial Staff explains (Trial Staff Statement No. EKW/REN-1, p.6) total cost curves generally fall into three basic patterns: the Type I curve illustrates the case where equal increases in output are accompanied by equal increases in costs; the Type II curve illustrates the case where equal increases in output are associated with lessening increases in costs; and the Type III curve illustrates the condition where equal increases in output are accompanied by increasingly larger increases in costs. To arrive at its recommended adjustment, Trial Staff attempted to determine which measure, or combination of measures, of output, and which type of cost curve best describes each of the five function groups of accounts: power production (less fuel and purchased power), transmission, distribution, customer accounts, and administrative and general. Trial Staff in its attempt used simple and multiple regression. The data came from PECO's annual reports to the Commission for the 15 year period 1964 through 1978. All of the expense data were adjusted for inflation by the Gross National Product Implicit Price Deflator. An inflation factor of 8.9 percent was then applied to the results obtained to arrive at estimated expense levels for the future year. PECO criticizes this study on several grounds. The Trial Staff recommendations are contained in the following table.

At the outset, the company states, it should be recognized that the Trial Staff 4odel is based solely on historical expense levels and, consequently, completely ignores present and projected conditions (PECO Statement 6-A, pp. 2-3; PECO Statement 5A, p. 3). Consequently, any expenses which are not contained in the historic data, such as new environmental costs and the addition of generating plant (with associated expenses such as the refueling outage for Salem Unit No. 1), are either omitted or not fully reflected in the "normalized" expense levels developed. The company argues that simple statistical analysis, not refined by the application of informed judgment based on a knowledge of the operating activities giving rise to the expenses involved, is of little value either from an operating or ratemaking point of view (PECO Statement 5A, p. 1; Tr. 4065-66).

An example which PECO gives concerns production plant maintenance expenditures. Trial Staff regressed these expenditures on the basis of capacity. During the 1972-1977 period, PECO had substantial capacity additions. During the 1977 to 1983 period, when no such additions are planned, these maintenance expenditures, according to PECO will continue to rise because of inflation and increased plant age. The theory underlying the Trial Staff's analysis indicates that this should not occur. Another example, according to PECO was the decision of management to reduce significantly budgeted power production maintenance expense levels due

to the unavailability of needed funds in 1974 and 1975. This reduction is reflected in Trial Staff's statistical data and reduces the level of its recommended "normalized" expenses but is of no relevance to the future, as the policy is no longer in effect (PECO Reply Brief p.34).

PECO witness Hill also described various statistical errors, which he alleges are found in the Wagner/Nellis analysis. As he noted, the witnesses' "Durbin-Watson" statistics fail to comply with the standards which they themselves enunciated for determining the validity of their statistical models. The witnesses also, because of limitations in the capability of the computer program available to them, failed to calculate the best fitting model for use in determining "normal" administration and general expenses. Mr. Hill computed this model, pointing out that under the witnesses' own standards it is the proper model to be employed with this expense category, and found that it indicates an increase of \$10.1 million in "normal" administrative and general expenses (PECO Statement 6-A, pp. 3-6).

Moreover, as pointed out by Mr. Hill, the product of a regression analysis is merely a trend line which most closely fits a set of data points. In fact, any data point (i.e. in this case an annual expense level) which fits within a 95% confidence interval in the case of the Wagner/Nellis regression line may be viewed as "normal" relative to the data employed in the line's development. Accordingly, the regression

analysis provides no basis for adjusting such an expense level. As noted by Mr. Hill, even accepting that the Nellis and Wagner models are meaningful, the company's claims fit within the 95% confidence envelope in all five cases (PECO Statement 6-A, p. 7). Accordingly, the company argues, the witnesses' analysis, flawed as it is, fully supports the company's claimed cost levels.

An additional error is the application of an 8.9% inflation factor to average 1978 expense figures. The effect of this adjustment is to increase expenses to July 1, 1979 price levels, or some nine months short of the future test year end basis employed by the company in its filing. ^{64/} This alleged oversight alone accounts for over \$18 million of Trial Staff's recommended adjustment (PECO Statement 6-A, p. 8).

Finally, PECO states the choice of variables used in the different analyses is clearly arbitrary and without logical support (PECO Statement 6A, pp. 2-3). This is perhaps the most critical flaw in the witnesses' analysis and, indeed, in the use of any simple statistical technique. Expenses, PECO states, do not in fact vary on the basis of

^{64/} The company notes that Trial Staff computes revenues by including full customer sales growth up to and including March 31, 1980 (Staff Statement JMK-1).

the output factors chosen by the witnesses, but rather based on multiple factors and occurrences (PECO Statement 6A, pp. 2-3).^{65/} For example, Messrs. Nellis and Wagner regressed power production expense against total installed capacity and thereby gave no consideration to the operational distinctions between different types of capacity, i.e., steam, nuclear, etc. To illustrate the significance of this claimed error, Mr. Carroll employed the same data included in the Nellis and Wagner presentation but performed a separate regression analysis for each type of capacity. When further corrected to eliminate atypical data and using the witnesses' 8.9% inflation adjustment, a "normal" expense level of \$126 million is indicated (PECO Statement 5A, p. 1-5), compared with Trial Staff's recommended \$101 million.

The use of regression analyses to estimate expense levels has been considered many times by the Commission. In the Commission's order of January 11, 1979, in Pa. P.U.C. et al v. Pennsylvania Electric Company, R-78040599, the Commission stated:

"Power Production and Other Expenses

"Commission Staff combined the budgeted expense of Penelec in a number of accounts, and the total amounted to \$96,242,000. These accounts were steam power generation and other power generation (less fuel expense accounts), hydraulic power generation, transmission expenses, distribution expenses, customer accounts, and administrative and general.

^{65/} For this reason, PECO states, the witnesses' characterization of PECO's expenses as "Type I, Type II or Type III" has no meaning. Expenses don't vary directly by the output factor, therefore whether they are increasing or decreasing relative to that factor is of no moment. For example, transmission expenses are likely to have increased at the average annual inflation rate of approximately 8% in recent years while sales have increased but approximately 2%. Obviously, when this has been the case, a Type III expense comparison will result when sales is the chosen output factor (Staff Statement EKW/REN-1, p.9).

"The Staff position was that the expenses in these accounts are too high. They used a least squares statistical technique on the historical data for the years 1968-1977 to arrive at an estimated expense level for the test year. By this technique the Staff determined the appropriate expense level to be \$83,695,000. Consequently, they recommended a disallowance of \$12,547,000 of respondent's budgeted expenses in these accounts. The Administrative Law Judge dismissed this approach and refused the recommendation. Staff take exception.

"Staff contended its method is proper in that it has smoothed out ups and downs and established a reasonable level. We agree with Judge Mindlin. The historical data used in this method fails to sufficiently account for the higher rates of inflation experienced by respondent in recent years and the addition to these expenses associated with the end of period addition of Home City No.2." mimeo, p.27.

The same conclusion was reached in Pa. P.U.C. et al. v. Metropolitan Edison Company, R.I.D. No. 626, at pages 46-48:

"Nonnuclear Operation and Maintenance Expenses

"Staff proposes a downward adjustment in the amount of \$5,427,000. The basis of Staff's proposed adjustment is the utilization of the least squares technique of regression analysis upon respondent's actual expenses for the period January 1, 1968 to March 31, 1978.

"Respondent criticizes Staff's methodology, alleging: (1) It did not consider anything other than raw FPC reported totals for various operating accounts during the period under consideration; (2) It ignores recent additional expenses associated with operating and maintaining devices to comply with environmental regulations; (3) It implicitly assumes that the inflation rate for 1979 will be identical to the average for the years

1968 to 1977; (4) It fails to recognize increases expenses caused by such factors as the aging and need for costly maintenance at Titus and Portland stations and for respondent's combustion turbines; (5) Respondent's actual operation and maintenance expenses for the eight month period ending November 1978, totaled \$49,588,000 as compared to the budgeted amount of \$49,639,000 (exclusive of TMI-2) for the same period of time.

"Actual expenditures for the period, therefore, were 99.9 percent of the amount budgeted therefor (Respondent Exhibit B-16-6, p. 2).

"The fact that respondent's actual experience operation and maintenance expenses, exclusive of TMI-2, for the eight month period ending November 1978, deviates less than one tenth of one percent of its budget for that same time period is substantial evidence of the accuracy of its budgeting process. In saying this, we do not wish to imply that the least squares method of regression analysis is inapplicable to predicting a level of expense or revenues, but merely wish to indicate that the results of any particular statistical methodology, otherwise recognized as a standard statistical procedure, are only as valid as the data base and the assumptions utilized in the application of that particular methodology."

In the recent West Penn Power case, (R-78100685) the Commission

stated:

The results of any particular statistical technique, otherwise recognized as a standard procedure, are only as valid as the data base and assumptions utilized in the application of that particular methodology. While the use of the least squares method employed by Staff may be appropriate when properly applied, it cannot, of itself, make corrections in its results for inadequate or improper input data. Moreover, where the data and assumptions either fail to recognize, or improperly or inadequately treat matters of great import affected by changes in plant capacity, in

plant type and complexity, in rate of inflation, in environmental level of maintenance requirements, over the years utilized, we cannot place reliance upon the results flowing from such statistical exercise." (mimeo p.53.)

I recommend that the Commission continue its policy of not relying on these statistical studies. I do not accept the premise that current and future expenditures can be estimated solely on historical levels without consideration of changes in expense levels due to changes in plant type and complexity during and after the historic period. In addition, the impact of recent types of expenses can be diluted or ignored by this approach. I also question whether this approach gives adequate consideration to the validity of specific items in a utility's expense claim. Such analysis need not audit every account or work order; nor does it require a CPA's certification of a claim. Here, however, the Trial Staff is proposing a normalization adjustment of great magnitude without, in my view, adequate consideration of the costs which the company will incur during the period these rates are in effect.

Trial Staff presented an alternative approach with regard to power production and administrative and general expense. These approaches used three-year and five-year average expenses, adjusted for known abnormal or inappropriate expenses. As Trial Staff notes, these alternative approaches generally support equivalent, or lower, levels of expenses than those recommended by use of its statistical analyses (Trial Staff Brief, pp. 102, 104, 105). Trial Staff urges that if its regression

analysis is not used in determining appropriate expense levels, then PECO's expense claims be reduced on the basis of (1) its three-year average production expense adjusted for inflation \$13.2 million); (2) its three-year average Administrative & General expense adjusted for inflation (\$9.2 million); (3) elimination of Liquid Metal Fast Breeder Reactor expense (\$522,000); and (4) corporate computer expense (\$1,265,000) (Trial Staff Reply Brief, p.33).

PECO notes that in developing these average figures, Trial Staff disregarded changes in output variables - capacity for production expenses; customers squared for administrative and general expenses. In addition PECO witness Hill argues that Trial Staff's use of an 8.9 percent inflation factor raises average 1978 expenses only to a July 1, 1979 level; nine months short of the future test year end. He recommends use of a 15.6 percent factor. ^{66/} Adoption of these two adjustments would bring PECO's 3-year average production expenses to \$119,161,000 compared to its claimed \$119,337,000 (PECO Statement 6A, pp. 1, 10) and its claimed administrative and general expenses to \$63,371,000 compared to its claimed \$67,271,000. (Ibid.)

^{66/} Accepting 8.9 percent as the appropriate inflation factor for 12 months (July 1, 1978 - June 30, 1979), the proper factor for the 21 month period from July 1, 1978 to March 31, 1980 would be 15.6 percent (PECO Statement 6-A, p. 10).

It should also be noted that Trial Staff and CEPA claim PECO's level of production expense during this three year period is overstated due to the company's attempt to "catch up" during this time with its lack of maintenance in the early 1970's (Trial Staff Statement No. EKW/REN-1, pp. 15-16); CEPA Brief, pp. 80-83. PECO denies this (PECO Statement 5-A, pp. 2-3)^{67/} and has presented an analysis by its witness Mr. Carroll, which indicates that the average 1977 and 1978 expense levels were not atypically high (PECO Statement 5A, p. 3).

It has been stated many times that the Commission should not rely on a reckoning when actual experience is available and establishes that the predictions have been substantially incorrect. E.g. West Ohio Gas Co. v. Public Utilities Commission, 294 U.S. 63 (1935); New York Telephone Co. v. NYPSC, 29 N.Y.2d 164 (1971). Here, a comparison of PECO's budget figures with actual results shows that these estimates are substantially correct (Compare PECO Exhibits DPS-1, DPS-3, DPS-4 with DPS-2). The United States Supreme Court, although speaking in a slightly different context, aptly stated "Elaborate calculations which are at war with realities are of no avail." Lindheimer v. Illinois Bell Tel. Co., 292 U.S. 151 (1934). The Trial Staff's adjustment, although rationalized by means of elaborate calculations, is at odds with what is actually happening to the company. When the penalty for being wrong is so great,

^{67/} If Trial Staff is correct, even its adjustment which relies on allegedly atypical data overstates the proper level of production expenses.

the need to be right demands a far greater degree of certainty than is present in the proposals of the Trial Staff.

The record here convinces me that PECO has borne its burden of proof that its expense estimates for the 12-month period ending March 31, 1980 are reasonable and, except for certain adjustments made below, should be adopted by the Commission.

Liquid Metal Fast Breeder Reactor

PECO is claiming approximately \$600,000 in its estimated production expense for its contribution to the liquid metal fast breeder reactor project. Trial Staff notes that PECO has not actually paid this expense since 1977. The Commission has not allowed this expense in the past and the Federal government has not yet decided to support the project (Trial Staff Statement No. EKW/REN-1, p.17). This amount should be disallowed here also.

Corporate Computer

Trial Staff notes that PECO estimates that it will spend \$1,660,000 in the future test year, of a total \$5,630,000 for installation of a new computer. They propose that this amount be amortized over a twenty-year period. The question of PECO's corporate computer was considered in the recent gas case (R-79030781). There, the Commission decided that a five-year amortization was proper. It is recommended that the same period be used here. This reduces PECO's claim by \$1,328,000.

Budget Method Adjustment

As noted above in discussing revenues, Trial Staff witness Crawford's investigation disclosed that certain expenses were not expected to be level through the year and that the portion of the 1980 forecast included in the test year should be less than the 25 percent used (Trial Staff Statement JTC-1, p.3). As a result he proposed a downward adjustment to expenses of \$1,169,000 (Trial Staff Exhibit No. JTC-1, Schedule 2). For the reasons stated above with respect to Mr. Crawford's revenue adjustment, this adjustment should also be made to expenses.

Credit and Collections

Trial Staff presented three witnesses (Daniel W. Giffiths, Consumer Research Analyst; Debra Holzman, Consumer Research Analyst; and Susan C. Bertram, Supervisor of the Service Termination Mediation Unit) from the Commission's Bureau of Consumer Services. These witnesses testified regarding the company's credit and collection activities and recommended a downward adjustment of \$533,496 in the company's claim for uncollectibles.

These witnesses testified that, in their opinion, the company's collection activity has not been effective in collecting overdue bills and in controlling the size of arrearage. They note that the company's uncollectible accounts as a percentage of revenues have been higher than those of other electric utilities (Trial Staff Exhibit DWG/DH-1-C-Schedule 1). The witnesses criticize the company for allowing these arrearages to reach substantial levels before moving to terminate service (Trial Staff Exhibits DWG/DH-1-A; DWG/DH-1-C-Schedule 2).

The specific collection practices, which had led to those arrearages, criticized by the Trial Staff include sending out large numbers of termination notices without the staff to follow-up on these notices (Trial Staff Statement No. DWG/DH-1, p.5; Trial Staff Exhibit DWG/DH-1-C-Schedule 4). Commission regulations (52 Pa. Code §56.93) require that each customer that PECO intends to terminate must be contacted at least three days prior to termination either by telephone or in

person. The company, according to Trial Staff, attempts to carry out this contact by phone but staff limitations frequently preclude phone contacts and personal contact is attempted at considerable expense. From April through October 1979, PECO was unable to make either personal contact or termination visits on 44 percent of the account designed for action (Trial Staff Statement No. DWG/DN-1, p.6).

Trial Staff criticized the company for allowing arrearages to grow large. Trial Staff Exhibit DWB/DH-1-C-Schedule 5 purports to show that over \$.63 on the dollar are recovered from every overdue account which is terminated for an arrearage of \$100 or less, while only \$.25 is recovered from each dollar associated with terminated accounts of over \$1,000. Trial Staff argued that PECO's management of the collections system contributes to the growth of arrearages - especially arrearages of over \$1,000 and proposed to disallow all unrecovered arrearages of over \$1,000. It has recommended a downward adjustment of \$533,496 to the company claim for uncollectible expense (Trial Staff Exhibit DWG/DH-1-E-Schedule 1).

Trial Staff also criticized the company's implementation of the Commission's Cold Weather Interim Procedures (CWIP) which were in effect from December 10, 1978 to April 9, 1979. As described by the Trial Staff, the CWIP program was designed to insure that all possibilities for settlement were exhausted by utilities during the winter prior to the termination of service for non-payment. Trial Staff's criticisms

are centered in two areas; first, PECO did not focus its efforts on those accounts with large arrearages where it could have demonstrated the need for termination. In addition, the company allegedly submitted over a thousand improperly completed forms (Trial Staff Statement DWG/DH No. 1, pp. 12-13).

Several other practices were criticized including a failure to collect undisputed portions of disputed bills and a failure to handle disputes focusing on how to pay a bill. Finally, the company is criticized for failure to use the termination procedure to obtain an actual meter read.

In addition to the expense adjustment detailed above, Trial Staff requests that the Commission order that the company report to the Bureau of Consumer Services within two months regarding:

- (1) Why it should not design and implement a clear and complete set of written standards for the development of payment agreements for overdue accounts.
- (2) Why it should not revise its collections policies and procedures to prevent the issuing of termination notices which cannot be acted on by its field collections staff.
- (3) Why it should not act to prevent the issuing of duplicate termination notices on overdue accounts.

- (4) Why it should not undertake to eliminate residential arrearages of over \$1,000 and to otherwise reduce the average size of arrearages.
- (5) Why it should not reach compliance with 52 Pa. Code Chapter 56. In specific, those sections regarding using termination as a collection device, estimation of bills, payment of undisputed portion of bills, and the consideration of ability to pay in mediation disputes.

The company responded to Trial Staff's allegations through Mr. Frank J. Dougherty, an employee in its Credit and Collections Department (PECO Statement No. 16). Mr. Dougherty contended that it was inappropriate to compare PECO's uncollectible accounts with those of other utilities without also considering the various factors which made PECO and its service territory unique. He pointed out that PECO provides gas and electric service which can cause arrearages to accumulate at a much more rapid rate. In addition, the unemployment rate in PECO's service territory is considerably greater than the state-wide level and, based on 1977

of all Pennsylvania residents receiving public assistance resided in PECO's service territory. Mr. Dougherty also pointed out that PECO's service territory includes a large number of multi-unit dwellings. In order to terminate service to a specific tenant, the company must gain access to the inside of the building. In many cases this is difficult, if not impossible. The company must in

those instances go to court. Mr. Dougherty analyzed all accounts with outstanding arrearages in excess of \$1,000 as of December 1, 1979 and testified that 45% of those accounts represent either access problems or multi-unit dwellings (PECO Statement No. 16, p.4).

Mr. Dougherty also testified that the company has recently undertaken a number of changes in its policy including: (1) expansion of the application for service requirements, (2) expansion of the outside collection field force, (3) reinstatement of the residential customer deposit policy, (4) aggressive pursuit of delinquent accounts where the debtor no longer resides in the company's service territory and (5) separation of disputed and undisputed billing periods on a customer's record file. The company has also undertaken several short-term remedies including: (1) splitting collection teams in non-hazardous areas to enable credit representatives to make additional field visits, (2) extending the work day of credit representatives by an additional two hours, (3) expanding clerical staff during early evening hours to increase the number of telephone calls made to customers during non-business hours and (4) increasing the field supervision of collections personnel.

Mr. Dougherty also disputed allegations made by the Trial Staff that the company seriously mishandled the Cold Weather Interim Procedures.

Trial Staff's adjustment should be allowed. It is clear from the record that PECO's collection procedures are amiss. While the company attempts to assert that the reason for its high percentage of

uncollectible accounts to revenues lies in its service territory and customer population, the record does not bear out this assertion. PECO's witness could not state that the fact that the company provides gas service would result in a greater arrearages in electric bills (Tr. 4137-39). He could not state that there was any correlation between delinquencies and the number of customers on public assistance or unemployment insurance (Tr. 4139-41). The fact remains that PECO's management in this area has been less than successful; a point which the company itself realizes since it has outlined a series of improvements in its collection procedures.

It may be assumed that these revised procedures will result in an improvement in revenue collections so that the level of uncollectibles anticipated by the company for the future test year will be reduced. Trial Staff's adjustment, which disallows all unrecovered arrearages of over \$1,000, produces a reasonable estimate of this improvement. As a result of these new policies, it is unlikely that arrearages of over \$1,000 will accumulate.

Trial Staff's other proposal, requiring a report on the five issues mentioned above should not be adopted. If the company is violating the Commission's rules and regulations the proper procedure is to institute a complaint proceeding. Rate cases should not be cluttered with extraneous, albeit important, issues which necessarily do not receive the attention they deserve due to the press of other business.

Spent Fuel Disposal

Included in the company's claim for expenses here is \$8,238,000 to cover its costs of spent fuel disposal from PECO's three nuclear generating units.

PECO witness Dr. N. Barrie McLeod presented the company's claim (PECO Statement 12). Dr. McLeod reviewed the history of nuclear spent fuel disposal. Throughout the 1960's and early 1970's, he stated, the Federal Government actively promoted the reprocessing of spent nuclear fuel and, a thriving domestic spent fuel reprocessing industry soon emerged. Since recovered fuel values then exceeded the costs of recovery and disposal, prompt reprocessing was justified and, accordingly, spent fuel storage facilities at new plants were sized on the assumption that fuel would be shipped within approximately one year of discharge (PECO Statement 12, p.3).

In the mid-1970's, however, federal policy changed abruptly and, in April 1977, President Carter proposed the indefinite deferral of reprocessing. When this decision was announced, no clearly acceptable method of disposing of permanent waste had yet been demonstrated. At the same time, it was readily apparent that at-reactor storage facilities would not accommodate discharges much beyond the mid-1980's.

In response to its announced policy against reprocessing, the Administration developed a program of spent fuel disposal and is currently seeking legislative authority to implement it. This program was

outlined by Dr. McLeod and consists primarily of three elements:

- (1) storage of spent fuel by the utility for a period of at least five years following discharge from the reactor;
- (2) shipment of the fuel at utility expense to a federally-operated Interim Spent Fuel Storage facility (ISFS) targeted for 1984 availability) and, upon delivery, a payment of \$202/kg of Heavy Metal (HM) (plus escalation from 1978) to the Department of Energy to cover all costs of interim storage; and
- (3) shipment at utility expense to a federally-operated permanent Waste Repository (WR) (not anticipated to be available until the early 1990's) with payment to DOE of \$114/kg HM (plus escalation from 1978) for permanent storage (PECO St. 12, pp. 6-7).

Based on these charges and 1978 shipping costs, Dr. McLeod developed total expense figures for permanent spent fuel disposal. He then reviewed the company's planned spent fuel discharge and shipment schedules which currently indicate initial shipment to the ISFS facility in 1985 and shipment to the permanent repository in 1992. He concluded that these estimates were reasonable in view of the targeted availability

of those two facilities and the anticipated exhaustion by 1985 of PECO's on-site storage capacity. Restating disposal costs in 1980 dollars, Dr. McLeod then calculated the Company's total anticipated spent fuel expenditure requirement, at approximately \$230 million. The company's claim in this proceeding is based on amortization of this figure, less accrued deferred tax credits associated with these costs (PECO Exhibit DPS-2, p. D-17).

Both Trial Staff witness Birx and Consumer Advocate witness Weiss have recommended that PECO's claim for spent fuel disposal be disallowed (Trial Staff Statement DLB/RLP-1, p. 9; OCA Statement 5A, p. 10). These witnesses argue that the claimed expense is speculative in view of the possibility that the Federal government may reverse its policy and permit reprocessing and that this expense would not be incurred until 1985, if at all. CEPA and the City also oppose this request (CEPA Brief pp. 130-33; City Brief, pp. 33-34). Although the parties have expended considerable time in arguing whether this expense should be permitted, the resolution is fairly simple. This expense is too speculative to be assessed against ratepayers at this time. As the City points out in its brief, this issue was recently considered by the Virginia State Corporation Commission in its Virginia Electric and Power Company decision (29 P.U.R. 4th 65 (1979)). There that Commission rejected a claim similar to the one put forth here by PECO on the basis

that the unpredictability associated with nuclear fuel applicators and the national controversy on the appropriate handling of spent fuel, makes any provision for this expense in present rates premature. The Virginia Commission specifically states (Id. at 73-74):

Obviously, the technology, economics, and public interest considerations of nuclear fuel cycles, including the problem of permanent disposal of spent fuel, are controversial subjects. The President's position, favoring the permanent storage of spent nuclear fuel and the indefinite postponement of completion of reprocessing facilities, has heightened the controversy. Further, the limited utility industry experience in permanent disposal -- because of the relatively brief existence of nuclear fuel generation, and the past practice of recycling fuel -- adds to the uncertainties surrounding the disposition of spent nuclear fuel. Because the disposal of spent fuel is a national controversy, there exists the potential for change in public policy even to allow reprocessing of the fuel now permanently stored. But even if this were not the case, experience has taught us that nuclear technology, public policy consideration of technological development, and their applications and costs stemming from technological and public policy decisions, have fluctuated widely from costs which have been forecast or assumed.

The entire spectrum of nuclear design, construction, operations, raw materials, and regulation has been marked by unforeseen changes and controversy since the inception of nuclear fuel development. It is our position that the historic unpredictability in nuclear fuel applications continues, and any attempt by us to forecast the technology and costs of permanent waste, and to account for those costs in

present rates, is futile. ^{15/} Based upon the unpredictability associated with nuclear fuel applications and the national controversy on the appropriate handling of spent fuel, we find that it is premature in present rates to provide for the estimated cost of permanent storage of nuclear fuel. Accordingly, company's proposal is not accepted.

^{15/} There are special circumstances that pertain to permanent disposal of nuclear fuel. Our finding is based upon those "special circumstances" and not upon any notion that because permanent disposal expenses are estimated they are unreliable. As VEPCO correctly points out in its brief, many accounting figures are estimates. For example, depreciation rates are based on estimated service lives and salvage values. Also, the current cost of nuclear fuel per kwh is estimated based upon the predicted amount of generation from the fuel.

For these reasons, PECO's adjustment here should be rejected.

Decommissioning Expenses

PECO witness Kenneth W. Sieving testified in support of its claim for decommissioning expense (PECO Statement 12-A).

PECO proposed that the expense which will be incurred upon the retirement of Peach Bottom Nos. 2 & 3 and Salem No. 1 be amortized over the remaining lives of those facilities. As the Commission has noted elsewhere (e.g. Pennsylvania Electric Co., 51 Pa. P.U.C. 649, 668 (1978)), deferring the recovery of these costs until the units are actually retired, would be unfair to future ratepayers who will derive no benefits from their operation.

In developing PECO's claim in this proceeding, Mr. Sieving first reviewed the three retirement options described in Regulatory Guide 1.86 issued by the Nuclear Regulatory Commission - (1) mothballing, or minimum decommissioning, (2) entombment and (3) removal (PECO Statement 12 A, pp. 2-3). Mr. Sieving stated that the first two alternatives would involve significant on-going expenses including the costs of site security, maintenance, surveillance, property insurance, nuclear indemnification and, in the latter case, installation and removal of entombment facilities (PECO Statement 12-A, p. 4). Based on this analysis, Mr. Sieving determined that the prompt removal alternative was preferable.

Mr. Sieving then stated that he reviewed the plant designs and engineering plans of the company's three units and discussed each with company personnel and inspected each site and its major structures, assessing physical differences between those plants and others for which he had made detailed decommissioning cost studies. He then analyzed and confirmed that PECO construction, site supervisory and home office personnel labor costs approximated those employed in the development of these other studies (PECO Statement 12-A, p. 8).

Based on this data, as well as his prior knowledge of decommissioning expense, Mr. Sieving developed an estimated total decommissioning cost in 1980 dollars, of Peach Bottom Nos. 2 and 3 and Salem No. 1 of approximately \$237 million (PECO Statement 12-A, p. 9). This

estimate employs the prompt removal decommissioning procedure and is based upon a recent detailed decommissioning cost analysis made by Mr. Sieving of a comparable nuclear facility (Tr. 1674-76; PECO Exhibits KWS 1 & 2).

On the basis of the total estimates developed by Mr. Sieving, the company calculated its share of the cost of decommissioning the three units at \$100,765,000 (PECO Exhibit DPS-2, p. D-16). This figure was then amortized over the remaining life of the facilities, and adjusted for deferred income taxes associated with the tax deduction which the Company will obtain when the cost is incurred. PECO claim here is \$3,599,000.

The company's claim is opposed by Trial Staff, OCA, CEPA and the City.

Trial Staff witness Dr. Birx testified that in his opinion it may be necessary in forty years to "replace major portions of the operating equipment, including, perhaps, the reactor. Once this rejuvenation is accomplished, however, generation at existing sites should continue." (Trial Staff Statement DLB/RLP-1, p. 4). Dr. Birx developed estimates from dismantling studies summarized on Schedules 1, 2 and 3 of Trial Staff Statement DLB/RLP-1 and concluded that the disposal of the radioactive material is only approximately 25 percent of the total cost. Dr. Birx applied the 25 percent figure to Mr. Sieving's estimates of the cost of total dismantling, removing and restoring PECO's nuclear plants.

Dr. Birx's estimate of 25 percent covers the cost necessary before reconstruction could take place (Trial Staff Statement DLB/RLP-1, pages 4-5).

OCA witness Weiss opposed any consideration of decommissioning expense in this proceeding. In his view, the lack of a specific study of the sites of PECO's nuclear plants provided an insufficient basis for an adjustment (OCA Statement 6, p. 14).

The Commission's policy on decommissioning expenses is to reflect only expenditures for the containment of the nuclear components of a station (Pennsylvania Electric Co. 51 Pa. P.U.C. at 669); PECO's claim therefore, is overstated. At the same time it appears that Dr. Birx' use of a 25 percent factor may be understated. The witness testified that there could be wide variations in the percentage of the total cost related to the disposal of radioactive material (Tr. 3433-34). On the basis of this record, I recommend use of a 46 percent factor. According to the study done by NUS Corporation for Pacific Gas & Electric Company with respect to the Diablo Canyon Units 1 and 2, this is the nuclear-related portion of decommissioning costs if only those costs related to actual decontamination are considered (PECO Exhibit KWS-1, pp. 3-4).

OCA's position is unrealistic. It recognizes the need for some allowance but would reject any claim that cannot be definitely proved. The Commission previously rejected such a stringent standard of

proof in Pennsylvania Electric Company, stating (51 Pa. P.U.C. at 669):

It is true that the total costs of decommissioning a nuclear power plant cannot now be determined with precision and may be termed speculative by some.

Although the total amount determined to be needed may not be accurate, the rejection of the claim would ignore the vital issues of health and safety which are reasonably foreseeable. Changes in the estimates of decommissioning costs may be dealt with through periodic review and adjustment of the total estimate (and its annual provision) within each rate case, or at any time upon the initiative of the commission when it feels that such review is necessary.

CEPA proposes a reduction of \$2,819,000 from the PECO request. This is based in part on an assumed useful life of 40 years, rejected elsewhere, and an averaging of PECO witness hearings estimate and an estimate derived from a generic study done by the Atomic Industrial Forum. The latter study is based on a 104 year mothballing period for the nuclear plant, an assumption which is unrealistic for PECO's plants.

Using 46 percent as a reasonable estimate of nuclear related costs, I recommend that the Commission permit the company to include in test year expenses the amount of \$1,655,000 for decommissioning resulting in a reduction to PECO's claim of \$1,944,000.

Consistent with earlier Commission decisions, this amount should be kept in escrow and invested in tax-free Pennsylvania bonds.

Nuclear Operation and Maintenance Expenses

During the course of these hearings, PECO requested an additional \$5.3 million to reflect increased nuclear operation and maintenance expenses due in large part to increased safety requirements

(PECO Exhibit JJC-1). This \$5.3 million is broken down into the following parts:

Peach Bottom outage	\$ 425,000
Escalation	\$ 796,000
NRC Bulletin	\$3,063,000
Post TMI Studies	\$ 185,000
Miscellaneous	\$ 831,000
Total	<u>\$5,300,000</u>

The OCA opposes this request primarily for the reason that these expenses are non-recurring (OCA Brief pp. 113-15).

PECO does not contend that each specific expense item will necessarily be incurred in the future. It claims that, rather, these costs represent an on-going level of increased nuclear expense which it will experience due to greater enforcement activity by the Nuclear Regulatory Commission (PECO Reply Brief, p. 36).

The fact that an expense is nonrecurring does not mean that it should be disallowed, see U.G.I. Corp. v. Pa. P.U.C., Pa. Cmwlth. Ct., No. 2242 C.D. 1978 (mimeo, pp. 17-18); neither should it be recovered in one year. Although it may be assumed that enforcement activity by the federal authorities will increase in the foreseeable future, it would be speculative to state that these costs sought to be recovered here represent the on-going level of increased nuclear expense that the company will experience.

These costs should be amortized over a reasonable period of time--five years. As a result, I recommend that the Commission disallow \$4,240,000 of this claim.

Depreciation Expenses

PECO's claim includes some \$2,349,000 reflecting the amortized amount necessary to permit recovery of the unrecovered capital costs of its Barbadoes Nos. 3 and 4 and Richmond No. 12 generating units. PECO notes (PECO Brief, p. 180), that in R.I.D. 438 it proposed to put these plants in cold storage. It was subsequently decided that these plants would not be required in the future and should be retired. Total unrecovered costs of these facilities, according to the company are \$11,744,000. The company seeks to amortize this amount over five years (PECO Statement 8, pp. 20-22; PECO Exhibit DPS-2, p. C-18a; PECO Exhibit HTW-5).

Trial Staff witness Mr. Harry Hagan recommended that this claim be disallowed. The OCA (OCA Brief, pp. 99-102) and Philadelphia (Philadelphia Brief, pp. 37-38) support this claim. Mr. Hagan bases his position on his view that PECO has not proved the actual unrecovered original cost and because PECO is seeking to recover more than it would have recovered had the plants been depreciated normally.

Trial Staff and OCA point out that PECO's depreciation witness Mr. Waddington admitted that he could not say whether PECO would recover more than its actual unrecovered claim. He stated that it was not determinable how much has actually been recovered for Barbadoes and Richmond 12 (Tr. 153-55).

Trial Staff also claims that PECO is attempting to relitigate an issue settled in R.I.D. 438 where the Commission rejected all depreciation expense for the plants (Tr. 161-62). Trial Staff notes that here, PECO

is attempting to recover Mr. Waddington's estimated original cost for both the Richmond and Barbadoes plants by mid-1985 (Tr. 162), while the company would normally have depreciated the plants to their retirement dates of 1987 (Richmond) and 1989 (Barbadoes) (Tr. 161):

Trial Staff's position should be adopted. The company has failed to carry its burden of proof here of showing the actual remaining original cost.

XI. TAXES

Several areas of controversy have arisen concerning PECO's claimed provision for taxes. These will be discussed individually.

Normalization of State Income Taxes

PECO in this proceeding has normalized Pennsylvania state income tax benefits resulting from the use of accelerated depreciation for tax purposes. Trial Staff, OCA, CEPA and the City argue that the state income tax benefits, accruing as a result of the use of accelerated depreciation, should be flowed through to ratepayers.

As the company notes (PECO Brief, p. 188) normalization is an accounting process whereby the effect of a particular expenditure is reflected in utility rates at the time the expenditure is incurred and recognized for book-accounting purposes. Flow through is an accounting

procedure whereby utility rates are set on the basis of the test year tax deduction even though the actual expenses associated with those deductions will not be experienced until some time in the future.

Extended discussion on this point is not warranted. The Commission directed the use of flow through in PECO's last rate case (R.I.D. 438) where it stated:

"Two questions are presented: First, can the Commission legally adopt such proposed adjustment; and second, should the Commission adopt such adjustment under all of the circumstances? As concerns the first question, it is our opinion that the Commission clearly has the right and power to limit state income tax expenses charged to customers to the amount of state taxes actually paid. Federal law does not prohibit flow-through ratemaking. It states that if flow-through ratemaking is mandated then the Internal Revenue Service will deny the Company the right to use accelerated depreciation for tax purposes. This Commission is free to take this step if it sees fit. Obviously, since federal law does not prohibit flow-through ratemaking vis-a-vis federal taxes, state law cannot be said, by analogy, to prohibit flow-through ratemaking vis-a-vis state income taxes.

Because the Commission understood that the benefits of accelerated depreciation would be denied the ratepayer were it to require flow-through, it approved the normalization method in its June 24, 1979 Statement of Policy. See Pa. PUC v. Metropolitan Edison Co., 46 Pa. PUC 239, 274 (1972). In our opinion, the flow-through of the effect of accelerated depreciation of state income taxes will not jeopardize the Company's ability to continue accelerated depreciation for state or federal income tax purposes. Thus, the underlying rationale for the Statement of Policy has no force as it concerns state income taxes." (mimeo, p.78).

This position was recently affirmed in PECO's gas rate proceeding (R-79030781, mimeo pp. 60-62). There is no basis on this record for disturbing this announced policy.

Repair Allowance

As explained by the Trial Staff in its brief (Trial Staff Brief, pp. 81-82), the repair allowance is an option under the Internal Revenue Code permitting the corporate taxpayer to claim a certain amount of expenditures as current deductions rather than capital expenditures, provided that the company has actually expended the amount in question (Trial Staff Statement WFD-1, pp. 3-5).

Generally speaking, for tax purposes, a company must capitalize expenditures that either increase the productive capacity of the plant investment or significantly extend its useful life. Other expenditures are deductible currently as maintenance expense or repairs. The repair allowance is determined for a class of plant by applying a guideline repair allowance percentage to the plant investment. Separate plant classes have been created for hydroelectric production and combustion turbine production plant. Electric transmission and distribution plant constitute a single class. The regulations permit a utility to be very selective in deciding whether or not to use the repair allowance. The utility may use the repair allowance for one class of plant and use actual maintenance expenses for another class in the same year. In addition, the election is made annually so that a decision to use the

repair allowance for one class of plant in one year, does not require that the repair allowance for the same class of plant be used in a subsequent year when it may be beneficial not to do so.

PECO took advantage of this allowance and estimated that it has saved \$2,463,000 in tax expense as a result. PECO proposes to normalize these tax benefits. Trial Staff, OCA, CEPA and the City propose that they be flowed through to ratepayers.

PECO's arguments in favor of retaining these tax benefits now and flowing them back gradually over a 30-year period relate primarily to the benefits which accrue to a utility's financial position from normalization (PECO Statement 4, p.12; Tr. 575-76). It is also true that ratemaking principles would seem to dictate that customers who bear an expense should also receive the benefit of the tax deduction associated with that expense (Tr. 3354).

Whatever the merits of the company's position during normal times, during the present period of double-digit inflation, I can find no virtue in burdening ratepayers with higher rates to reimburse PECO for a level of taxes which it will not pay during the period these rates are in affect. For this reason, PECO's state tax allowance should be reduced by \$2,463,000.

Tax Benefits Associated With Barbadoes and Richmond

As noted elsewhere, PECO is seeking to recover its estimated undepreciated original cost on Barbadoes 3 and 4 and Richmond 12 for a 5-year period. At the same time though it is seeking to amortize the tax benefits associated with these mothballed plants ^{68/} over the originally estimated useful lives of the plants (Tr. 540-43). Trial Staff claims that no matter what position the Commission takes with respect to the undepreciated original cost of this plant, these tax benefits should be passed on over a five-year period. The basis for this position is that once the plants are no longer used and useful, all tax benefits should be passed through to ratepayers as soon as possible.

PECO has attempted to argue that this adjustment violates Internal Revenue Code §46(f)(z) and Regulations §1.167(l)-1(h)(z) with respect to the investment tax credit and liberalized depreciation. But, as Trial Staff points out (Trial Staff Brief, pp. 84-85) these provisions deal only with public utility property and not retired property. Since PECO is seeking to retire the units in question, these provisions are not applicable. Trial Staff's adjustment should be allowed and the company's tax allowance be reduced by \$154,525.

^{68/} These benefits include depreciation expense, unamortized investment tax credit and unamortized deferred taxes due to accelerated depreciation.

Deferred Federal Income Tax

When PECO normalized the benefits associated with the Investment Tax Credit and accelerated depreciation, it collected these deferred taxes from ratepayers at the existing 48 percent rate. As a result of recent legislation, the statutory tax rate is now 46 percent. PECO originally sought to return the benefits of the deferred taxes to ratepayers using the present 46 percent rate (PECO Statement 4, p. 5; Trial Staff Statement WFD-1, pp. 10-11). Trial Staff, OCA, CEPA, and the City oppose this. OCA, the City and CEPA propose that the excess 2 percent be amortized over a five-year period. Trial Staff proposes that the excess 2 percent be amortized over the remaining tax life of the property, while maintaining the full amount of the deferred tax reserve as a deduction from rate base.

The appropriate treatment of excess amounts which might exist in the accumulated deferred tax accounts caused by the reduction in the corporate Federal income tax rate from 48 percent to 46 percent has been the subject of much consideration both in this jurisdiction (see PECO's gas rate proceeding R-79030781, mimeo, pp. 18-19) and elsewhere (see, e.g., Generic Proceeding Concerning the Impact of the Reduced Corporate Income Tax Rate on the Deferred Tax Account, Case 27513 (New York Public Service Commission), Policy Statement, issued December 28, 1979).

On the record here, there appears to be no dispute that these amounts should be returned. PECO prefers that they be refunded at the end of the associated property's useful life (PECO Reply Brief, p.47); Trial Staff proposes that the refunding occur over the life of the associated property; OCA joined by CEPA and the City want these amounts amortized over a five-year period.

As a result of the change in tax rates, PECO's accumulated deferred income tax balance is overstated in the sense that more deferred taxes have accrued in the past than will be amortized in the future. "It is appropriate, therefore, that the customers receive the benefit of this overaccrual since they have provided for these deferred taxes in the past through their rates." (Philadelphia Electric Co., R-79030781, mimeo p. 19). PECO's methodology for returning this amount is clearly unsatisfactory since ratepayers would not receive any benefits until well into the future. It seems clear that the preferable method would be one that returns the surplus to ratepayers as soon as possible over a set period of years. Contrary to the allegations of the company, nothing cited indicates that this method is contrary to the Internal Revenue Code.

OCA witness Towers proposed that the amount be amortized over five years is reasonable. As he notes (OCA Statement 7, p. 37) it is important to adopt a relatively short amortization period to maximize the opportunity for those customers who were charged the 48 percent rate

for PECO's income taxes in the past to receive the benefit of the tax rate reduction. In addition a large part of the tax reserves were accumulated over the past five years. This accords with the Commission's treatment of this issue in R-79030781. PECO's tax expense should be reduced by \$1,096,000 (OCA Exhibit RGT-3).

Interperiod Allocation of Normalized Taxes

OCA witness Towers proposed an adjustment to PECO's federal income tax expense which would eliminate the income tax effects of the tax/book timing differences resulting from PECO's normalization of certain tax benefits and which would also eliminate the interperiod effects that the deferred income tax expense has upon PECO's liability for taxes currently payable.

Specifically, OCA witness Towers proposed that an additional provision for deferred income taxes be established to defer the recognition of the additional current income taxes incurred by PECO as a result of its tax normalization elections (OCA Statement 7, p. 27). Under the banner of "full normalization", Mr. Towers proposes the elimination of both the income tax effects of the underlying tax/book timing differences and the interperiod effects that the deferred income tax expense has on PECO's liability for taxes currently payable (OCA Statement No. 7, p.27). Mr. Towers argues that the practice of normalization, as applied here, subverts the concept of levelized payments of taxes over the life of an asset by requiring ratepayers to pay double during early years and

one-half in later years. This can be eliminated, he stated, by establishing an additional reserve for deferred income taxes to defer the recognition of the additional current income taxes incurred by PECO as a result of its tax normalization elections. He illustrated this concept in his Exhibit RGT-1. This exhibit and his narrative are attached as Appendix G. This adjustment would affect those items which the Commission permitted to be normalized in R.I.D. 438: the normalization of the tax benefits resulting from accelerated depreciation and the normalization of the debt interest deduction with respect to construction work in progress. Its effect would reduce PECO's income tax expense by some \$29.2 million. That is, money which the company would have collected under the provisions of R.I.D. 438 and set aside in reserve accounts to pay future taxes, would as a result not be collected.

PECO opposes this adjustment; CEPA and the City support it.

This adjustment, albeit intricate and novel, should be rejected by the Commission. Whether termed "full normalization" or "partial flow-through", it is no more nor less than an attempt to avoid and evade the oft-stated Congressional intent that utilities retain the full benefit of these deferred taxes. As such, its adoption by the Commission could jeopardize PECO's ability to take accelerated depreciation under

Section 167(1) of the Internal Revenue Code. ^{69/} It should be noted also that the Rhode Island Public Utilities Commission considered an adjustment similar to that proposed by Mr. Towers and rejected it, believing that the adjustment would conflict with IRS regulations governing the deferred tax reserve which must be maintained by a utility using normalization. This decision was appealed to the Rhode Island Supreme Court in the case of Valley Gas Co. v. Burke, 406 A.2d 366 (1979).

There the court stated:

Here the Attorney General faults the resultant tax burden that current rate payers must shoulder in funding the deferred tax reserve. Because it does not reflect actual taxes paid, the fund is not considered a presently deductible cost-of-service expense. According to the Attorney General, this nondeductible status, combined with the company's 49.56 percent tax rate, forces current users to pay almost twice the amount in pretax revenues to produce the required reserve amount.

^{69/} This point is extensively discussed in Central Maine Power Co. v. Public Utilities Commission, 405 A.2d 153 (Maine Supreme Judicial Court, 1979) and New England Telephone & Telegraph Co. v. Public Utilities Commission, 390 A.2d 8 (Maine Supreme Judicial Court, 1978) and nothing in the record here disputes the conclusion reached there that when accelerated depreciation was used, no tax savings were affected but rather payment of the tax was deferred in part; and Congress intended by this deferral to create a deferred tax reserve which provided interest-free capital to the utility for plant expansion.

The Attorney General argues that this procedure works an injustice against current rate payers by forcing them to provide a fund which will benefit later rate payers. To that end the Attorney General argues that the commission should have adopted the division's proposal to have current rate payers pay only that amount actually needed for the reserve and leave the additional tax consequence to later rate payers.

The commission's principal reason for rejecting this proposal was its opinion that such an adjustment might jeopardize the company's ability to maintain the advantages of accelerated depreciation. Specifically, the commission ruled that the adjustment would conflict with Internal Revenue Service (IRS) regulations governing the deferred tax reserve which must be maintained by a utility using normalization.

The basic issue before us, therefore, is whether the commission was correct in interpreting the IRS regulations as preventing the proposed adjustment. It is reasonable to assume that the IRS regulations do not contemplate a delaying of the tax consequences of creating the reserve fund. The regulations speak of maintaining a separate and distinct fund which is readily identifiable. See Rhode Island Consumers' Council v. Smith, 113 R.I. at 389-90, 322 A.2d at 20. It is conceivable that the IRS may not treat the division's proposed adjustment as cutting not only the tax consequences of creating the fund, but also the fund itself. In light of the possible risk that the company may lose the right to use accelerated depreciation, the commission's actions were entirely reasonable. Id. at 374.

Even if this adjustment could be made without endangering the ability of PECO to take advantage of accelerated depreciation, it should not be adopted.

In PECO's last rate case, the Commission affirmed the use of an accounting procedure known as the income tax allocation under which tax interest deductions associated with debt employed in construction activities are used to reduce the AFUDC applied to such projects, rather than reducing base rate levels. By reducing the AFUDC that is accumulating on a plant under construction by the income tax savings that the interest component of that AFUDC is making possible, future rate payers will have the benefit of the tax deductions related to the construction of these plants. Since these future customers will bear the burden of the interest charges incurred during construction they should receive the tax benefits associated with those interest deductions. At the same time, this procedure aids the company and its ratepayers. As noted elsewhere, PECO has a relatively high proportion of noncash earnings (PECO Statement 1, p.5). Accruing AFUDC net of income taxes on plants under construction provides PECO with added cash flow and better quality earnings, thus having a beneficial effect on the interest rates charges the company. In addition, it must be noted that the interest deductions related to AFUDC occur before plant being constructed is placed in service. Without income tax allocation, these deductions would be flowed through to current customers although no other costs of that plant are included in the cost of service. In summary, this procedure adopted by the Commission provides PECO with financial help during construction of

plants, but as soon as the plants are placed in service these dollars are returned to ratepayers in the form of lower depreciation expenses and capital. Adoption of Mr. Towers' proposal would reverse the use of income tax allocation and would have severe financial repercussions on PECO and its ratepayers.

As the Commission noted in PECO's last rate proceeding, rejecting a complainant's proposal to reverse its approval of income tax allocation:

In this proceeding, we are attempting to meet the major issues with some sense of priority. Even where some adjustment may, under proper circumstances, have merit, we must treat each proposed adjustment in its relation to its overall effect upon the financial stability of the Company. Singularly, an adjustment may pose no problem; in combination with other adjustments, it may tilt the scales into an excessive burden (mimeo, p.80).

For the same reasons, this adjustment should be rejected here.

Capital Stock Refund

Trial Staff witness Doyle testified that PECO has filed petitions for resettlement of its 1972 through 1977 Capital Stock Tax as assessed by the Commonwealth. PECO is seeking to use the manufacturing exemption in the computation of its tax. If successful, its taxes for the years in question would be reduced substantially and the company would receive a refund of up to \$26,455,848 (Trial Staff Statement WFD-1, pp. 13-14). Trial Staff recommends that PECO be directed to notify the Commission if a refund occurs. This recommendation should be adopted by the Commission.

Miscellaneous

Among the active participants throughout these hearings was David C. Thomsen. Mr. Thomsen presented one witness, Mr. Norman G. Kurland who testified on the subject of customer stock ownership plans (Thomsen Statement No. 1). In general terms, such a plan works as follows: the utility would set up a trust in which all customers would have an account. When, for example, the utility needs to borrow \$100 million, the customer trust, instead of the utility itself, would borrow that amount from the capital markets. That loan would necessarily be guaranteed by the general credit of the corporation. The trustees of the customer trust would use the \$100 million to purchase an equivalent amount of newly issued corporate stock. The dividends received would be used by the trust to pay off the loan (Tr. 2423-2426). The ultimate goal of such a plan, according to Mr. Kurland, is to expand the base of corporate ownership.

There are no such customer stock ownership plans in existence now although there are many employee stock ownership plans (Tr. 2434). While the parties have raised many serious questions concerning the mechanics of such a plan, as well as the legalities involved, there is no doubt that such a plan presents a potential avenue for raising capital by the utilities of the Commonwealth. Unfortunately, a rate case, which deals with only one utility and which is constrained by statutory time limitations, is not an appropriate vehicle to explore the potential of this plan. It is recommended that the Commission informally investigate the concept of customer stock ownership plans to see if further consideration in the context of a generic proceeding is warranted.

XII. RATE STRUCTURE

Having determined that Philadelphia Electric Company has shown the need for substantial revenue relief, the issue now is who should bear this responsibility. The setting of rates must be founded in the first instance on costs. Unless the cost to service each class of customers is the bench mark from which we begin, the rates established cannot be said to be fair and equitable. Five witnesses made specific rate proposals, while several others discussed rate structure in general terms.

PECO's Cost of Service Study

The company, through its witness Mr. Raymond C. Williams, presented Exhibit No. RCW-1, a cost of service study based on the twelve-month period ended December 31, 1978. It also presented Exhibit RCW-1A covering the twelve-month period ended March 31, 1980. This study, which used the same methodology adopted by the Commission at R.I.D. 295 and R.I.D. 438, grouped costs by account or functional subdivision within an account. These costs were then allocated to the several rate classes based on the factors which result in cost incurrence. Production and transmission plant and related expenses are allocated on the basis of the contribution of the different rate classes to the system peak since these facilities are required to meet the peak. The system peak used here is the average of the system hourly peaks in each of the four summer months (June-September). The company uses the four peak method of allocating costs because, since 1958 PECO has been a summer peaking company, and, according to the company, the peak can occur in any one of these four months (PECO Statement No. RCW-2, p.9).

Distribution plant costs and related expenses are divided between demand, customer and directly assigned costs. Distribution customer costs are defined by the company as those costs which are incurred to provide a minimum sized distribution system needed to reach all customers regardless of their energy usage or demand. The company allocated these costs on a per customer basis. Distribution demand costs are allocated between customer classes based on non-coincident class demands because, the company states, distribution facilities must be sized to meet the minimum demand of the area served by the facility regardless of the time at which it occurs. Mr. Williams further stated that where possible distribution plant and expenses have been directly assigned to the responsible rate class; fuel and other expenses, whose incurrence depends upon energy sales levels are allocated on the basis of class energy sales; and various general expenses not directly assignable to a functional group, have been assigned on the basis of allocation factors (PECO Statement RCW-2, p. 10).

The results of the cost of service study are summarized below. This shows the rate of return by classes that would have been earned if the increase granted in March 1979 at R.I.D. 438 had been in effect during 1978, as well as the returns that would be earned if the entire rate increase now requested would be granted.^{70/} (PECO Statement No. RCW-2, p. 12; PECO Statement No. RCW-2A, p. 13).

^{70/} Rate POL (Private Outdoor Lighting) is providing a return in excess of twice the system average so that no increase has been proposed for this class.

	<u>System</u>	<u>R</u>	<u>RH</u>	<u>GS</u>	<u>PD</u>	<u>HT</u>	<u>SLP</u>	<u>SLS</u>
Present (1978)	9.0%	7.1%	10.2%	13.2%	10.1%	9.4%	4.6%	7.2%
% of System Return	100%	79%	113%	147%	112%	104%	51%	80%
Proposed (1978)	11.3%	9.4%	12.8%	15.7%	12.3%	11.6%	6.1%	9.2%
% of System Return	100%	83%	113%	139%	109%	103%	54%	81%
Proposed (3/31/80)	10.4%	8.0%	11.9%	15.3%	12.4%	11.0%	4.2%	6.0%
% of System Return	100%	77%	114%	147%	119%	105%	40%	58%

Mr. Williams described the company's rate classifications as follows:

Residential

Rate R - This is the basic residential rate under which approximately 82% of service to residential customers is supplied.

Rate WH - This is a separately-metered water heating rate for residential customers which offers service on a controlled basis. This accounts for approximately 6% of residential usage. The uncontrolled portion of this rate was frozen under the Commission's Order in R.I.D. 438. The company proposed to eliminate it. Existing customers will be encouraged to switch to WH controlled, and if they do not, their water heating load will be served on Rate R.

Rate RH - This class serves residential homes with electric space heating. The rate is identical to Rate R except that usage above 500 KWH in the eight winter months is currently priced approximately 2.6 cents per KWH below the comparable price in Rate R in recognition of the seasonal, off-peak nature of electric heating load. This category accounts for approximately 12% of total residential usage.

Commercial and Industrial - These customers are divided into three groups depending on service voltage.

Rate GS - This is a general service rate for customers supplied at secondary voltage (120 or 240 volts). It is available both with and without demand measurement. In addition, there is Rate GLP, a demand-energy charge rate which has been frozen since 1969.

Rate PD - This is for commercial and industrial customers served at primary voltage (4000 volts). Approximately 3,800 customers are served under this rate with demands ranging from 25 KW to 100 KW.

Rate HT - This is for customers served at high-tension voltage of 13.2 KV and above. Approximately 2,000 customers are served under this rate, accounting for about 50% of PECO's sales.

Street Lighting Rates - Rate SLP serves the City of Philadelphia where lighting fixtures are not supplied by the company. Rate SLS serves the suburban area where PECO does supply the fixtures.

Rate POL - Serves private outdoor lighting.

Miscellaneous Rates

Rate MLP is available only to the City of Philadelphia and Rate FLP is a similar rate available to the Federal government. Both rates would be eliminated under the company's proposed tariff and these customers transferred to Rate GS. Rate TL is for service to traffic lights installed and owned by municipalities. Rate BLI is for service to adjacent utilities where PECO is more accessible to their customers (PECO Statement No. RCW-2, pp. 13-14).

PECO's cost of service study uses a methodology previously accepted by the Commission. It reasonably reflects costs as they occur in PECO's service territory and should be used in this proceeding.

OCA cites 5 alleged errors in PECO's cost of service study (OCA Brief, pp. 156-65). The first is its claim that the costs associated with the minimum distribution grid - that part of the distribution plant needed just to reach a customer - should be allocated on a demand basis instead of on a customer basis. The company's methodology should be used. OCA's allocation does not account for the fact that the vast majority of the costs associated with the minimum distribution grid are related directly to the number of customers served. Distribution costs incurred because the plant exceeds minimum size are allocated on a demand basis. This procedure is consistent with the NARUC Cost Allocation Manual (PECO Statement 2B, p. 2).

OCA also states that PECO's cost of service study is based on allocating energy expense on an average kwh basis and does not reflect energy cost variations over time. This would be a difficult task since to carry out this allocation fully, 8760 hours of customer loads and energy cost loads would have to be developed. It should also be noted that at least one witness (Mr. Brubaker representing certain Industrial Complainants) has testified, based on his experience with other utilities, that large industrial customers typically use an above average proportion of their total energy during off-peak hours. If this is correct, the allocation methodology proposed by OCA would raise the large industrial rate of return relative to what it would be under a

uniform per kwh allocation of energy costs and lower the residential rate of return since that class tends to have a larger than average proportion of total consumption during on peak hours (Tr. 2561-62, 2569). On the basis of the record here, the company's methodology is reasonable.

OCA also states that PECO's study failed to recognize the impact of its reserve margins on energy cost and that certain generating facilities capital cost should be allocated on the basis of energy rather than demand (OCA Statement 2, p. 21). PECO argues that generating plant costs are incurred to meet capacity needs, not energy production needs (PECO Statement 2B, p. 3). Furthermore, it points out, the effect of accepting OCA's assumptions would be a shift in allocation of only \$25 million out of \$2.5 billion of plant.

The OCA's objections to the cost of service study on this basis, if accepted, are clearly de minimis and should not be used as a basis for disregarding PECO's study. Furthermore, Trial Staff Exhibit MPB-SL15 shows that there is no causal relationship between reserve capacity and OCA's submitted energy costs.

OCA also criticizes the company's study because the study assumes that there is no risk differential among the various classes of customers. PECO points out that here, as in R.I.D. 438, OCA has failed to provide any evidence to substantiate that this is a reasonable possibility. The objection has no support in the record and should not be used as a basis to disregard the company's study.

Finally, the OCA claims that PECO's study uses out-of-date load data. PECO notes that this data was less than 4 years old when used in its study and falls within the current PURPA regulation guidelines. OCA's objections do not have record support, but are simply allegations "that there may well have been substantial changes in usage patterns" since the data was collected (OCA Brief, p. 165). This should not be a basis for disregarding the company's study.

Customer Charges

PECO is proposing a customer charge for Rates GS, PD and HT for the purpose of relating the pricing of all of those rates to the cost of providing service. The company states that these customer-related costs are incurred regardless of the level of service used and should be reflected separately from the units of energy or demand usage. No separate customer charge for residential rates was proposed because the company believed such a charge would create an additional burden on these small customers.

PECO's proposal is reasonable, consistent with the Commission's general directions in R.I.D. 438 and should be adopted.

Rate GS

PECO also proposes to introduce a Night Service Rider provision for Rate GS similar to that now available for Rates PD and HT. The company states that this will provide an incentive for GS customers to move load to off-peak periods since under the Rider, the customer's bill

is computed on the basis of his registered demand during the on-peak hours of 8 AM to 10 PM. Any demand registered during the off-peak hours which is in excess of the on-peak demand will be billed at a low price. This proposal is in accordance with the principles of load management and should be adopted. 71/

Rates PD and HT

In accordance with the Commission's recommendation at R.I.D. 438, one block has been eliminated from the demand charge and the 100 hour minimum use provision has been eliminated from Rates PD and HT.

These proposals should be adopted.

Street Lighting Rates

The company has made several pricing changes within the Street Lighting Rates SLP and SLS to more closely relate cost to service. The company also has proposed to freeze the availability of service for incandescent street lighting and Rate SLS in the interest of conservation.

These proposals should be adopted.

Customer Charges for Residential Rates

Trial Staff Witness Bloom also testified that at the present time, PECO has inverted rates for Residential Rates R and RH. He proposed that this be gradually eliminated so that eventually the residential rates should consist of a flat rate; a uniform charge per KWH and a customer charge.

71/ The company claims that this will cause a \$900,000 revenue loss but does not detail what offsets in expenses will result from these off-peak sales.

Dr. Bloom devised a modified set of residential rates which would recover the same revenue requirements as requested by the company and which will take a major step in realizing rates with costs. These are shown below (Trial Staff Exhibit M.P.B.-IR 3):

Rate R

Respondent's Proposed Rates
Supplement No. 6 to Pa. P.U.C. No. 25

6.23 cents per KWH for the 1st 500 KWH
6.82 cents per KWH for additional KWH (summer)
5.65 cents per KWH for additional KWH (winter)

Minimum Charge: \$2.87

Trial Staff Proposal No. 1

Customer Charge: \$2.00

5.83 cents per KWH for the 1st 500 KWH
6.42 cents per KWH for additional KWH (summer)
5.34 cents per KWH for additional KWH (winter)

Trial Staff Proposal No. 2

Customer Charge: \$3.00

5.63 cents per KWH for the 1st 500 KWH
6.22 cents per KWH for additional KWH (summer)
5.17 cents per KWH for additional KWH (winter)

Dr. Bloom noted that the Commission has previously adopted a separately stated customer charge for residential services for most electric utilities in the Commonwealth (Trial Staff Statement No. M.P.B.-1, p.46).

Dr. Bloom's proposal, which expands on PECO's proposal (discussed earlier), has considerable merit and should be adopted.

Rate WH - Off Peak

Under the company controlled water heating rate, the company has a 24 hour time clock device which interrupts service for a daily 6.5 hour period. The rate utilizes a two block design broken to decline above 400 KWH. Trial Staff witness Rosenthal stated that a major problem with the rate design is the collection of customer related costs through the usage charges of the rate. The rate class itself, he explained, is allocated only a minor amount of demand-related cost. The base energy cost for the rate is 1.3478 cents. The declining nature of the KWH charge results from the attempt to collect customer costs through the blocks. Through the collection of fixed costs in the usage charge, the actual KWH charge is higher than it should be, Mr. Rosenthal stated, and the recovery of revenues to support the fixed investment is less efficient than it can be (Trial Staff Exhibit RAR-1, Schedule 1). He recommended the institution of a separate customer charge and a flat energy charge. While the cost of service study submitted by PECO supports a customer charge of \$4.62, Mr. Rosenthal recommended that only a \$2.50 charge be set at this time. If the total company increase were granted, the flat rate would be 2.797 cents per KWH.

Mr. Rosenthal also suggested that PECO expand the opportunity for using this rate by making available a control mechanism which allows weekends to be off-peak and to allow other hard-wired appliances to be served under the rate. These suggestions will benefit customers by lower

bills and the company by a reduction in the growth of peak demand and by better utilization of existing plant. In the long run, he testified each new water heater attached to this rate will save approximately 1.5 KW of diversified demand at time of system peak, requiring \$153 of demand related expenses. Since the company is forecasting an increase of about 100,000 unrestricted water heaters during the ten-year period ending 1988, this would add approximately 150 MW at time of peak, costing \$15.3 million. He also pointed out that, on the average, a restricted water heating customer will consume 2,000 KWH less annually than an unrestricted customer. He did note, however, that a different time clock would be necessary upon the expansion of the provisions of the rate (Trial Staff Statement No. RAR-1, p.5).

Mr. Williams, testifying for PECO, did not object to this proposal, but stated that the controller to provide off-peak service on weekends is more expensive. He estimated that the costs which PECO would incur to convert an existing Rate WH-off peak customer to a controller that would provide off-peak service on weekends would be \$54.10, resulting in an additional carrying charge of \$10.82 or a monthly charge of \$.90. As a result, PECO proposes that if Mr. Rosenthal's proposed customer charge of \$2.50 is adopted, a customer charge of \$3.50 should be established for service including weekends as off-peak period (PECO Statement No. RCW-2B, p.12).

While the Trial Staff does not in principle oppose a higher customer charge for the "expanded hours" subscriber, it does oppose any increase in the total revenue requirement for the water heating class. Trial Staff Exhibit RAR-2 shows that Rate WH is now earning 2.5 times the system average. PECO's proposed rate increase for this class would increase the return to 2.8 times the system average. PECO's proposed higher customer charge would increase this to over 3 times. As Trial Staff points out, this class of service by design benefits the system and its operation. It recommends that if a different customer charge is ordered, the anticipated additional customer charge revenue be used to reduce the uniform charge per kilowatt hour for all Rate WH subscribers.

Mr. Rosenthal's proposal to charge all WH customers a \$2.50 a month customer charge should be adopted. PECO's proposal, that those customers who adopt to take expanded service requiring a different time clock control pay for this extra cost by an extra customer charge, is consistent with the policy of having those customers who place cost burdens on the system bear their share of the cost. Someone will have to pay for these meters - the question is should it be those customers who will benefit from lower rates, or should it be all customers. Trial Staff is correct, however, that in view of the exceedingly high return now being provided by this class, the anticipated additional customer charge revenue should be used to reduce the uniform charge per KWH for all WH customers.

Charge for New or Transferred Service

Mr. Rosenthal also proposed that the company begin to charge for new or transferred service. As he pointed out, when a customer either moves into or within PECO's service territory, the company incurs certain expenses which under present arrangements must be paid for by all customers. PECO handled approximately 225,000 moves or additions during 1978 and the expenses associated with these moves, added approximately \$1.00 onto the annual bill of each customer. Mr. Rosenthal suggested that the customer who requires this service bear the cost. He proposed a customer charge of \$6.00 on all requests for new or transferred service which will partially cover the expenses involved. ^{72/}

This proposal should be adopted for the reason stated above.

Consumer Advocate Witness Rohr

As noted earlier, major criticism of the company's cost of service methodology came from Consumer Advocate Witness Dr. Robert J. Rohr.

Dr. Rohr believes strongly in the use of marginal cost pricing and in the necessity to structure rates by approximating marginal costs. PECO's proposed rates are based instead on a fully allocated embedded cost of service study.

^{72/} Basically, the same expense is incurred for new as for transferred service (Trial Staff Statement No. RAR-1, p.7).

Dr. Rohr believed that the most important data in his analysis of rate structure are the PJM power lambdas and the PECO system loads. He noted that, like other power pools, PJM encourages its member utilities to plan as a group so that the most efficient mix of plants will be available to satisfy the generation requirements of the group as a whole. The pool uses its plants so as to minimize total running cost. The pool dispatching unit considers the running cost of each plant on line and each plant that might be put on line. The dispatching unit then adds load by calling on the unused capacity available at the lowest running cost or sheds load by cutting back capacity that has the highest running cost. The running cost at this add/shed margin, he stated, is the system lambda. He stated that since it represents the incremental cost for any period, it will be above the average energy cost for the same period. Before using these lambdas in designing rate structures, Dr. Rohr adjusted them to a common oil price level.

Dr. Rohr stated that since PECO experiences an immediate change in energy cost when its ratepayers choose to use or not to use an additional KWH, the lower bound for the energy charge of PECO's rates should be set by using the incremental cost information on energy generation contained in the PJM lambdas. In brief, he recommended that rates should be designed so that the energy portion of the rate structures is, on average, never below the incremental cost to PECO of generating an

additional KWH and that the demand portion of the rate structures should be applicable only during those periods when additional KW requirements of PECO's ratepayers will cause PECO to incur additional costs. As a result he found PECO's proposed rates in need of revision since many of the rate structures in his view contain energy charges that are below PECO's incremental cost of providing an additional KWH and that although PECO is a summer-peaking company, its rate proposals call for demand charges throughout the year (Ibid., pp. 34-35).

Dr. Rohr believed that the PJM lambda, as adjusted, is a reasonable estimate of PECO's marginal running cost for the test year ended March 31, 1980. Upon examination he found that this average annual adjusted lambda of \$.0400/KWH, after further adjustment for line losses and PECO's fuel adjustment clause, is greater than PECO's energy charge in all categories except the residential winter tail block (Ibid., p. 36-37).

Dr. Rohr prepared rate structure proposals for the residential class and recommendations on the rate form for the other major classes, based on PECO's requested revenue requirement. These recommendations are summarized in Appendix J. Dr. Rohr recognized that the typical water heating and all electric customers would receive relatively large increases (Ibid., pp. 42-43) but believe these increases were justified on the basis of costs. Dr. Rohr also recommended that PECO begin the

necessary studies to allow it to develop mandatory time-of-day rates for its largest customers for consideration in its next filing (Ibid., p. 45).

Without consideration right now of the validity of Dr. Rohr's basic premise - that PECO's marginal energy costs are very close to the PJM system lambda, it is plain that his rate proposals should be rejected because they would impose extreme changes in the bills for PECO's customers and promote revenue instability. This is clearly contrary to the Commission's past policy of avoiding any disruptive changes in rates. Dr. Rohr's proposal would increase the summer bills for a 500 KW residential customer by 65 percent, while bills in the winter would be decreased. Customers who use electric space heating would receive a 35.7 percent increase in the winter (OCA Exhibit RJR-11).

With respect to the OCA's HT customer, Dr. Bloom points out that a calculation of only the revenue attributable to the energy component of the OCA proposal shows that more than \$74 million in excess revenue relative to the company's revenue requirement from that class would be collected. The customer demand charge, therefore, would have to be negative. According to Dr. Bloom, this would give HT customers an erroneous price signal - that the higher the peak demand, the smaller the overall bill (Trial Staff Statement No. MPB-2, p.10). In addition Dr. Rohr's proposal for demand measurement only in the four summer months would mean the abandonment of the demand charge in non-summer months. This hardly

promotes conservation and is contrary to the Commission's intent in R.I.D. 438 of having metering equipment installed to monitor the power factor of industrial customers over 2,000 KW so as to increase the demand charge when a customer's power factor is not satisfactory.

Dr. Rohr's proposed lambda based system will produce radically varying rates depending upon the month of year employed to obtain the adjusted system lambda data used as a base for the rates' derivation. As shown in PECO Exhibit RCW-7, the lambda based system produces a demand charge of \$4.81 per kilowatt and a kilowatt-hour charge of .0302¢ for Rate HT customers when his adjusted lambdas (i.e. for August fuel costs) are employed. However, when October data is used in the calculation, the demand charge is reduced to \$2.15 per kilowatt with a kilowatt-hour charge of .0322¢ (Tr. 3627-3631).

Finally, Dr. Bloom has cast sufficient doubt on the existence of a clear causal relationship between system lambda and the engineering parameters of the PECO system to make adoption of this proposed rate structure unwise (Trial Staff Statement No. MPB-2, pp. 2-5). I also noted that the Commission has rejected a similar proposal in the most recent Pennsylvania Power Company rate proceeding (R-77110521, Order adopted January 22, 1979, mimio, p.31). For the above reasons these proposals should also be rejected.

Industrial Complainants

The Industrial Complainants presented two witnesses in the area of rate structure. Mr. Jeffrey Pollock testified as to PECO's class cost-of-service study, PECO's proposed revenue allocation and the justification for rate level differentials (Industrial Statement No. 1). Mr. Pollock testified that the primary purpose of a cost-of-service study is to show the relationship between rates of return earned from service rendered to various classes of customers and the average return earned by a utility. This class rate of return is ascertained by allocating revenue, expense and property investment to the customer classes. In allocating costs, one must first group them into various operating functions - production, transmission and distribution. After the costs have been broken down by function, they must be classified into demand, energy or customer components. After the costs have been functionalized and classified, they must be allocated among the various classes of service. Mr. Pollock explained that customer-related costs are generally allocated in proportion to the number of customers in each rate class. Energy-related costs are allocated in proportion to the number of kilowatt hours sold. There are three generally accepted ways of allocating demand-related costs: peak responsibility, non-coincident peak and average and excess. He noted that PECO allocated demand-related production costs using a variation of the peak responsibility method, the four peak

method. This methodology uses the average of the contributions of each of the customer classes to PECO's peak demands occurring in the months June through September. Mr. Pollock noted, however, that during the last ten years the annual system peak has occurred only once in September. While he believed that PECO's generating capacity requirement is determined in large measure by the magnitude of its summer peak demand, and, consequently, significant weight should be given to summer peak demands in allocating demand responsibility, he believed that a four-month average dilutes the demand responsibility of the more weather-sensitive customer classes whose demands tend to be proportionately higher during the more critical peak months.

Mr. Pollock compared production demand allocation factors between the four-peak and contribution to the annual system peak methods (Exhibit JP-1, Schedule 2). This showed that residential customers are assessed a higher demand responsibility under the annual system peak method due to their strong propensity to use air conditioning on those hot days when PECO's annual system peak occurs. The HT (high tension) class is assessed a lower demand responsibility under the annual system peak method due to the more constant nature of its use. As a result the rates of return, according to Mr. Pollock, are well above-average for

the HT class. ^{73/} Mr. Pollock concluded that the cost of service relationships are not significantly affected by the choice of a particular demand allocation method (Industrial Statement No. 1, p.10).

Mr. Pollock also compared fuel cost recovery by rate schedule and found that with respect to Rate R (residential) 26 percent of present revenues recover fuel cost while for Rate HT, fuel cost represents approximately 46 percent of present revenues (Exhibit JP-1, Schedule 5). He concluded that service to Rate HT customers is considerably more energy-intensive and therefore less capital-intensive than service to residential customers.

Mr. Pollock recommended that the allocation of any increase be such as that the deviations from the system average rate of return would be uniformly lower for all classes (Industrial Statement NO. 1, p. 14).

Mr. Pollock also addressed the question of why some customers pay a lower average revenue per kilowatt hour than others. He noted that consideration must also be given to the difference in costs per kilowatt hour. In his opinion, industrial customers are less costly to serve because of differences in load factor, delivery voltage and size

^{73/} The residential class produces a 5.84% under the four-peak method and a 5.26% return under the annual system peak method. The system average rate of return is 8.0% (Exhibit JP-1, Schedule 3). The HT class showed a rate of return of 8.57% under the four-peak method and 9.67% under the annual peak method.

(Industrial Statement No. 1, p.16). For example, the load factor for residential consumers is approximately 51 percent while the load factor of HT customers is approximately 65 percent (Exhibit JP-1, Schedule 11). The system average load factor is about 57.5 percent. Mr. Pollock notes that on the basis of the contribution to the annual system peak, the load factor of the residential class is only 75% as high as the load factor of large industrial customers; therefore, the demand-related costs attributable to the HT customers, if expressed on a per kilowatt hour basis, would be only 75% of the demand-related costs for residential customers, if also expressed on a per kilowatt hour basis.

Mr. Pollock claimed that there is a difference between the type of investment that PECO must make to serve a residential customer and that necessary to serve an industrial customer. Residential and secondary commercial and industrial classes are served entirely at the secondary distribution level. No power is supplied directly from primary distribution lines or high voltage transmission levels. It is, therefore, necessary for PECO to invest in step-down substation and distribution circuits and transformers required to convert service to the 110/220 volts. None of the energy sold to HT customers is delivered at the primary or secondary distribution level. This means, Mr. Pollock stated, that the cost per unit of supplying power to high tension customers is lower than the cost per unit of supplying power to those nonindustrial

customers who are served from the low voltage distribution system. Additionally, because most industrial customers are served on the high tension rate at higher delivery voltages, line losses are less (Exhibit JP-1, Schedule 15). Finally, Mr. Pollock points out that the substantial differences in kilowatt hour sales per customer for the different customer classes ^{74/} give rise to economies of scale in customer-related costs, such as meter reading, billing and customer accounting expense. Mr. Pollock calculated that each kilowatt hour sold to the residential class required the utility to make an investment of 12.89¢ while the investment required for HT customers is 5.98¢. Similarly, the operating expense before income tax per kilowatt hour sold to residential customers is 4.50¢ while to HT customers, the operating expense is 2.53¢ per kilowatt hour (Exhibit JP-1, Schedule 17).

The Industrial Complainants' other witness was Mr. Maurice Brubaker. Mr. Brubaker testified concerning the broader areas of rate structure. The thrust of his presentation was that, although other factors may be considered in rate design, the governing principle should be that of cost-relatedness (Industrial Statement No. 2, p.4). He testified that if rates to one class of customers are set below the cost

^{74/} Schedule 16 of Exhibit JP-1 shows the average residential customer using 6,244 kwh during the test year and high tension customers using 7,000,000 kwh per location.

Mr. Brubaker rejected the contention that there are recognizable risk differentials between customer classes. It was his contention that the risk of serving industrial customers is no greater than the risk of serving other customer classes. Furthermore, if an industrial rate is properly designed, increases or decreases in the level of kilowatt hour sales will produce increases or decreases in revenues that are in line with increases or decreases in variable costs.

Mr. Brubaker noted that Rate HT contains separately-stated demand and energy charges. As proposed the rate contains a customer charge, a two-block demand charge and a three-block "hours' use" energy charge. There is a billing demand ratchet and provision for higher demands during off-peak hours than during on-peak hours. The witness found that the presence of separately-stated demand and energy charges provides incentive for customers to improve their load factor as does the 80 percent summer demand ratchet. Due to Rate HT's nonhomogeneous character, several blocks are required to accommodate customers with wide variations in size, load factor and voltage level.

Mr. Brubaker testified that in his view the company's proposed allocation of any rate increase is insufficient to prevent increases in interclass subsidies. In his opinion the proposed increase to the residential and street lighting classes is less than it should be and the increase to the high tension primary and secondary classes is higher than it should be in terms of the movement of rates of return toward the system average.

of serving that class, and the rates to other classes of customers are established at levels which exceed the cost of service those classes of customers, changes in use will cause changes in revenues that are not in proportion to changes in the costs that result from those changes in use. Mr. Brubaker recognized, however, that cost specification cannot be absolutely precise and does not provide the only guide for designing rates, and that historical relationships between classes must also be recognized to avoid abrupt changes in rates.

Mr. Brubaker testified, in response to Chairman Goode's memo of August 9, 1979 (see Appendix B) that rates of return should be principally based upon cost of service, which includes earning the same rate of return from each customer class. With respect to the question contained in the Goode memo regarding the possible allocation of some portion of the investment in generation and transmission facilities on the basis of energy consumption, Mr. Brubaker stated that such a classification would be inappropriate. All of these investment-related costs should be classified as demand, he stated, and allocated in accordance with the appropriate demand allocation factor (Industrial Statement No. 2, p. 7). Given an existing system, he continued, the capital costs do not vary with the number of kilowatt hours generated, but are fixed and are properly related to system demands, not to kilowatt hours sold.

The Industrial Complainants proposal to modify PECO's demand allocation methodology should also be rejected. As shown by Trial Staff Exhibit MPB-4 PA1, the average monthly peak demands for June, July, August and September are significantly different from the average monthly peak demands for the eight remaining months. Moreover, there is no statistical evidence of differences in the average monthly peak demands for the four summer months.

General Services Administration

The General Services Administration presented one witness, Mr. Carter S. Ward who testified concerning the HT rate (GSA Statement No. CSW-1). Mr. Ward noted that the proposed HT rate calls for a customer charge of \$75 per month, a two-step demand charge with the break point at 50 KW and a three-step energy charge with breakpoints at 150 hours of use and 300 hours of use. He further noted that the energy charge has the appearance of declining block rates which he believed to be justified based on the cost of service study. Mr. Ward, using PECO's Exhibit RCW-1A, computed the monthly figures for the various HT class cost components to be:

Demand Cost per KW per month	\$8.88447
Energy Cost per KWH	\$0.01624
Customer Cost per month	\$152.86

While the energy cost and customer cost can be applied directly to a customer's bill, it is necessary to make an adjustment to the demand

charges because the \$8.88 per KW is the cost for one KW that is 100% coincident with the 4-summer month average peak. The customer's meter shows the maximum demand during the month, not the demand at the time of the peak. Mr. Ward proposed that PECO be directed to revise the blocking in the energy charges of its HT rate so that demand revenues will be closer to demand cost. PECO in its proposed HT tariff would collect part of the demand related cost through demand charges and the balance of the demand charges through the blocking in the energy charges. Mr. Ward calculated the energy cost to PECO at \$0.01624 per KWH, but noted that the rate schedule shows energy charge prices of \$0.0363, \$0.0275 and \$0.0190. Thus, these energy charges contribute to the capacity cost. In Mr. Ward's opinion, the declining block rates in the HT class do not encourage consumption or inhibit conservation. The declining block structure of the energy component is a mechanism to collect the demand cost (GSA Statement (SW-1, p. 6).

Mr. Ward proposed that PECO be directed to revise the blocking in the energy charges so that demand revenues will be closer to demand cost and proposed a revised HT rate schedule which in his view would set forth the various cost components with greater clarity (Tr. 2554). He also stated that generating units or transmission lines should not be allocated on the basis of energy usage since such an allocation method would not reflect load factor. He also opposed setting the rate of

return on industrial service at an amount greater than the system average since this would represent inter-class subsidization.

Mr. Ward's proposal would result in substantial increases to customers with usage over 50,000kwh. These customers would have their rates increased about 17 percent instead of the class average of 9.4 percent under the company's proposal. There is no cost basis for such a large increase to these customers; the GSA's proposal should be denied.

University of Pennsylvania

The University of Pennsylvania presented one witness, Horace I. Bomar, III, Assistant Director of Physical Plant for Engineering Services and Energy Management. He described the University as one of PECO's largest electrical customers and its largest steam customer. The University is in Rate Class HT and has a 13.2kv service.

The University took no position on the company's overall revenue request, it opposes, however, the company's rate proposal. The University stated that if the company would receive the total amount requested, its electric bill would increase by approximately \$690,000 annually or 14.3% (University of Pennsylvania Exhibit II).

It proposes that the present high tension class capacity charge and three block structure be retained. Alternatively it suggests that a ceiling be placed on the present capacity charge that is applicable to the University. A third suggestion is that the high tension class

rate structure be modified to spread the rate increases more equitably. Another suggestion is that non-profit institutions be exempted from the Pennsylvania State Tax Adjustment Surcharge. Finally, it proposed that a separate rate class be developed or special economic assistance be provided for non-profit educational institutions. This proposal should be denied.

The University opposed implementation of a simple block or level rate structure stating that such a structure would not reflect the utility's cost to serve nor economies of scale. If a charge of \$0.04 per kwh for all kwh were established, as proposed by OCA, the result, confined just to energy charges, would be an approximate 40% increase in the University's annual bill.

Governor's Energy Council

Robert A. Shinn, Executive Director of the Governor's Energy Council (GEC), testified concerning PECO's stand-by charges and the Readiness-to-Serve Rider contained in PECO's tariff (GEC Statement No. 1).

The readiness-to-serve rider applies to customers whose electrical requirements are regularly provided by other than company owned facilities, and where the company supply can be substituted for that of the customer. Typically, this type of charge is applied to those customers who have or could develop co-generation facilities, small scale hydro-electric generating units or other alternative energy sources and who wish to use the electric utility as a supplemental source of supply. ^{75/}

^{75/} Apparently the only customer on this rider is one residential customer with a windmill. (Ibid, p. 4)

Mr. Shinn testified that the current structure of the rider hinders the development of alternative energy sources. It does this, in his view, because of the level of demand and energy components (Ibid, p. 4). Like most other rates, except residential, stand-by charges have a demand and an energy component which a customer must pay even if that person were not to take any electricity during the billing period. The demand component is the price set by the company to cover its fixed costs -- the costs which a utility must incur in order to have the capacity to serve its customers. The energy component includes the operating costs or the costs which vary depending on the amount of electricity consumed.

PECO's demand charge component of its readiness-to-serve rider now states that the kilowatt billing demand is the largest of either the contractual demand levels established by the utility and the customer or a ratcheted demand (equal to 90% of the peak level demanded by the customer during the preceding 11 months or 5 kilowatts).

The energy component of the monthly charge cannot be less than what would result from 100 hours use of the billing demand.

As a result, according to the witness, the PECO customer with alternative generating ability ends up paying for the same amount of utility generating capacity that he would without any alternative electricity source. The customer would also pay for a large number of kilowatt hours

every month. Mr. Shinn recommends that the energy component be removed (Ibid, p. 5) and that the demand component should be reduced (Ibid, P. 6).

Mr. Shinn stated that the minimum energy component should be eliminated since a stand-by charge should cover an expense incurred in reserving a certain amount of back-up or reserve capacity. Here, the only operating expense involved is that associated with spinning reserve which is more appropriately covered in the demand charge. He further testified that the demand component should be reduced because it hinders the development of renewable resource technologies in that it imposes a substantial financial hardship. The potential customer would be required to pay for the same amount of capacity twice-once in the capital expenditures for an alternative supply source and again in the demand charge of the utility.

Mr. Shinn proposed that a customer should pay a full demand charge only for those times when an actual demand is placed upon the system, a separate stand-by charge should be applied when the customer is not placing an actual demand on the system. This separate charge would include "a reasonable portion of the transmission and distribution costs and the unavoidable or out-of-pocket costs of maintaining spinning reserve". (Ibid, p. 8)

Mr. Shinn set forth the Stand-by-Service Tariff of the Pacific Gas and Electric Company as a model which might be adopted by this Commission. That provision is attached to this recommended decision as Appendix K.

GEC has made a valuable contribution in pointing out the disincentives now contained in PECO's tariff for the use of cogeneration. Its recommendation should be adopted.

Overall Revenue Increase

The company has proposed that the rate increase be spread by an equal percentage for each rate class except Rate GS, PD, POL and GLP. Since Rates GS and PD are now providing more than the system average return, the increase to these classes was limited to the average for all rates including base fuel of 10.9%. Rate POL was not increased since it is currently providing a return more than twice that of the system average. Rate GLP has been frozen since 1969 and, in order to move customers off this rate, the company proposes an above average increase (PECO Statement No. RCW2, p. 12).

OCA proposes that the increase be spread in an across-the-board fashion with each class bearing an equal percentage increase in revenues. OCA also urged that the percentage should be applied to a base figure that includes fuel. OCA's first proposal would, in effect, leave undisturbed the existing relationship among the classes. This

would be warranted if PECO's cost-of-service study were faulty, but it is not. Of course such studies are subject to different opinions as to methodologies and therefore, should not be slavishly followed --- but neither should cost of service studies be ignored since there would always be a difference of opinion concerning one allocation or another. This proposal should be rejected.

With respect to OCA's second proposal, the Commission has consistently rejected the zero fuel methodology contained in PECO's proposal.

For the reasons stated below, it should be rejected here also. I recognize that, as Trial Staff points out, no party has put any evidence on the record to illustrate the effect of rejecting the zero fuel concept (Trial Staff Reply Brief, p. 44). The company should supply such information to the Commission so that it might be available to them during its deliberations.

XIII. PURPA STANDARDS

The Public Utility Regulation Policy Act of 1978 (PURPA), 16U.C.S., 2601, et seq., requires state regulatory bodies to consider and make a determination concerning whether or not certain rate standards established by the Act are appropriate to be implemented in the state (16 U.S.C. §2621). It is important to note that the Congress specifically stated that nothing prohibits this Commission from making any determination that it is not appropriate to implement any of the delineated standards (16 U.S.C. §2621(a)). The only requirements are that the Commissions determination be arrived at after public notice and hearing; that the determination be in writing; on record evidence; and, if the Commission declines to implement a standard, the reasons for that decision be in writing and available to the public. Section 2621(d) establishes the following standards:

(1) Cost of service. - Rates charged by any electric utility for providing electric service to each class of electric consumers shall be designed, to the maximum extent practicable, to reflect the costs of providing electric service to such class, as determined under section 2625(a) of this title.

(2) Declining block rates. - The energy component of a rate, or the amount attributable to the energy component in a rate,

charged by any electric utility for providing electric service during any period to any class of electric consumers may not decrease as kilowatt-hour consumption by such class increases during such period except to the extent that such utility demonstrates that the costs to such utility of providing electric service to such class, which costs are attributable to such energy component, decrease as such consumption increases during such period.

(3) Time-of-day rates. - The rates charged by any electric utility for providing service to each class of electric consumers shall be on a time-of-day basis which reflects the costs of providing electric service to such class of electric consumers at different times of the day unless such rates are not cost-efficient with respect to such class, as determined under Section 2625(b) of this title.

(4) Seasonal rates. - The rates charged by an electric utility for providing electric service to each class of electric consumers shall be on a seasonal basis which reflects the costs of providing service to such class of consumers at different seasons of the year to the extent that such costs vary seasonally for each utility.

(5) Interruptible rates. - Each electric utility shall offer each industrial and commercial electric consumer an interruptible rate which reflects the cost of providing interruptible service to the class of which such consumer is a member.

(6) Load management techniques. - Each electric utility shall offer to its electric consumers such load management techniques as the State regulatory authority (or the nonregulated electric utility) has determined will -

(A) be practicable and cost-effective, as determined under Section 2625(c) of this title,

(B) be reliable, and

(C) provide useful energy or capacity management advantages to the electric utility.

Mr. Williams of the company, and Dr. Bloom of the Commission's Trial Staff and Dr. Rohr of the Office of Consumer Advocate addressed these standards in full. Other witnesses gave consideration to one or several of them. Each standard will be addressed individually.

Cost of Service

PURPA establishes the standard that the rates charged for each class of service be designed to the maximum extent practicable to reflect the cost of providing service to that class. Mr. Williams testified that the company provided as part of its filing requirements a complete cost allocation study based on extensive load testing for all classes of customers (PECO Statement RCW 2A, p. 1). As he explained, the loads of each customer class at the time of the four summer monthly peak system loads are used to allocate the generation and transmission facilities to the various customer classes. The distribution system is allocated to the various customer classes on the basis of the maximum load of each class no matter when it occurs. The costs are divided into customer related, demand related and energy related components. The demand charges and energy charges in Mr. William's view, take into account the cost of providing additional capacity or energy to electric customers. Mr. Williams stated that the company's cost of service study provides proper basis of compliance with this ratemaking standard.

Dr. Bloom in his testimony (Trial Staff Statement No. M.P.B.-1, p. 15) noted that the PURPA standard in this area referred to Section 2625(a) of the Act which provides that in making the determination with respect to the standard concerning cost of service, the costs

of providing electric service to each class of customer shall be determined on the basis of methods prescribed by the regulatory authority.

Such methods shall be to the maximum extent practicable:

- 1) permit identification of differences in cost incurred, for each such class of electric customers, attributable to daily and seasonal time of use of service and
- 2) permit identification of differences in cost-incurrence attributable to differences in customer, demand, and energy components of cost. In prescribing such methods, such State and regulatory authority or non-regulated electric utility shall take into account the extent to which total costs to an electric utility are likely to change if--
 - (A) additional capacity is added to meet peak demand relative to base demand; and,
 - (B) additional kilowatt hours of electric energy are delivered to electric customers.

Dr. Bloom noted that the statutory language does not require use of marginal cost methodology,^{76/} but leaves the choice of costing methodology to the state.

^{76/} Marginal cost may be defined very generally as the cost of society's scarce resources which must be used to produce one additional unit of some commodity or the value of resources that would be saved by producing one less unit of that commodity. See Rate Design for Electric Corporations, 16 NYPSIC 671, 15 P.U.R. 4th 434, 439-40 (NY Public Service Commission, 1976).

Dr. Bloom testified that the use of marginal cost analysis as a basis for determining costs upon which rates are to be established is not appropriate for implementation in the Philadelphia Electric Company service territory at the present time. (Trial Staff Statement M.P.B.-1, p. 17): Dr. Bloom's reasons for this conclusion include his belief that implementation of this methodology may result in a further distortion of price signals to consumers and the revenue gap problem inherent in any marginal cost methodology where revenue requirements are determined on an average cost basis but prices are based on marginal costs. In conclusion, Dr. Bloom stated that the current PECO methodology is well founded and the results of its cost-of-service study reasonably and equitably reflect the relative costs as they occur.

Two witnesses testified in favor of the use of marginal cost pricing. Dr. Robert J. Rohr, appearing for the Office of Consumer Advocate, stated his belief that the PURPA standards require and the PURPA goals require a rate structure which approximates incremental cost ^{77/}(OCA Statement RJR-2, p.6; Tr. 2275). Incremental or marginal cost was defined as the addition to cost associated with some action such as calling for an added kilowatt hour of electricity during peak hours (Ibid, p.7). It is necessary, in Dr. Rohr's opinion, to structure rates in such a manner in order to satisfy the fairness and efficiency criteria set forth by PURPA.

The Consumer Education and Protective Association et al. (CEPA) presented Professor William H. Greene for the purposes of discussing

^{77/} Dr. Rohr does not distinguish between incremental and marginal cost (Tr. 2358).

the principles of marginal cost pricing (CEPA Statement No. 1). Professor Greene recommended the adoption of marginal cost as the basis for the design of electric rates for PECO and the use of time differentiated rates. He testified that when rates are set equal to marginal cost consumers receive the proper information upon which to base their consumption decisions. He noted that although allocated revenues are based on average or embedded costs, rates should be based on marginal costs. The correct marginal cost to use is the marginal social cost, which he defined as the marginal private cost plus external costs (i.e. pollution, the aesthetic costs of transmission and distribution systems). He also rejected the contention that because other fuels are not specifically priced on a marginal cost basis, such pricing of electricity will not result in optimum social welfare. He similarly discounted the problem which may result from setting revenue requirements on an average or embedded cost basis and prices on a marginal cost basis. He proposed simply that any excess revenue be disposed by any means 78/ - it is the marginal cost price system that is important.

He testified additionally that under a marginal cost pricing system, there is no room for declining block rates. At any point in time, marginal costs of serving different customers vary because of their size, but it does not in any way vary because of what those customers consumed earlier in the billing period.

With respect to the use of marginal cost pricing is the design

78/ He specifically proposed a lump sum deduction from the bill of each customer in the class, as long as this deduction is not related to the amount consumed (CEPA Statement No. 1, p. 10).

of utility rates, the Industrial Complainant's witness, Mr. Brubaker was unenthusiastic. First, he believed that since embedded costs are used to establish the company's total revenue requirement, any attempt at costing using a different set of costs would be difficult. There is no rational way, he testified, to convert marginal costs to rates which will equal the utility's total revenue requirement. In addition, he stated, there are no reliable methodologies for calculating marginal costs.

It is recommended that the PURPA standard on cost of service be adopted and that PECO be found in compliance with this standard. The cost-of-service study submitted by PECO should be used in setting rates here. While OCA seems to suggest that federal regulations mandate use of marginal costs, no such requirement exists (Tr. 2135-36).

This does not mean that marginal costs have no place in rate-making. Ideally, it would seem, an economically efficient rate structure will use as a starting point marginal or incremental costs. These prices established in such a rate structure will give the ratepayer the decision as to when the incremental costs outweigh the incremental satisfactions. This also means that an economically efficient rate structure should be based on current or future costs. It is the incurrence of only these costs that can be subject to economizing. Having

stated what would be the ideal case, the question remains to what extent marginal or incremental costs can and should be used in developing electric rate structures. The Trial Staff and the Industrial Complainants here cite many arguments against the use of marginal costs: There is difficulty in calculating such costs; there is the problem of "second best" which may lead to an inefficient allocation of resources; there is the need to reconcile the revenues which would be produced with the utility's revenue requirement; there is the potentially adverse impact on different customers.

The fact that problems exist with the application of this methodology should not be grounds for ignoring it if it has applicability to electric rates, but additional study is needed. I note that the Commission's Final Report in its Generic Rate Structure Investigation (issued December 1977) simply stated that little was available on the record there to provide detailed guidance for the individual utilities in preparing a marginal cost analysis. It appears therefore that a thorough study of this issue for Commission resolution has not been made.

I recommend therefore that the Commission institute forthwith a proceeding to determine if incremental or marginal cost pricing should be applied to the rates of electric energy. If such costs do provide a reasonable basis, then additional study should be given as to how a marginal cost analysis should be prepared, so that each utility can present such an analysis in its subsequent rate filings.

Declining Block Rates

Under this standard, the energy component of a rate to any class of customer may not decrease as consumption increases except where cost justified.

Dr. Bloom testified that, the energy component in all applicable blocks is constant at 1.3753¢ per KWH (PECO Exhibit 1, Schedule IV-C-1). This standard should be accepted by the Commission; PECO is in compliance with this standard.

Time of Day Rates

Under this standard, a utility's rates shall be on a time-of-day basis unless such rates are not cost effective.

At the present time PECO has in place a night service rider for general service customers taking service at primary voltage or higher on rates PD and HT under which these customers are charged rates which are time differentiated (PECO Statement RCW-2A, p. 2; Trial Staff Statement M.P.B.-1, p. 20). The proposed tariff would expand the time differentiated rate format to all demand metered secondary voltage general service customers.

Early in 1980 the company will experiment with demand measurement for residential heating customers. One group of customers will have their demands measured only during on-peak hours. The company intends thereby to provide a price incentive for customers in this

experiment to limit their demands during the on-peak period and thereby obtain knowledge as to the effect of such an incentive. This should determine the feasibility of offering time differentiated rates to this class of customers.

It is recommended that the Commission accept this standard for PECO and find that PECO is in compliance at the present time.

Seasonal Rates

The applicable PURPA standard provides that rates to each class of customers shall reflect the costs of providing service to these customers at different seasons of the year to the extent that such costs vary seasonally for the utility. The company notes that it has had a summer peak for years and that since 1969 the rates to all classes of customers have provided a seasonal price signal. There is a summer-winter differential for energy-only metered customers and a seasonal demand ratchet for demand metered customers (PECO Statement RCW-2A, p. 3).

Trial Staff believes, however, that when monthly average total costs of electric production are considered, the current seasonal rate provisions may not be totally appropriate (Trial Staff Statement MPB-1, p. 21). Trial Staff believes that due to PECO's participation in the PJM pool, there is no casual relationship between total monthly average production costs and monthly peak demands (Trial Staff Exhibit MPB-SR3).

Trial Staff believes that additional study on a pool-wide basis will be required to determine whether PECO should have a rate structure that will focus on the control of peak demand or will be designed to track costs.

The Industrial Complainants recommend that the standard be adopted and that the Commission find that PECO's rates reflect consideration of and implementation of cost-based seasonal rates.

It is recommended that the Commission not adopt this standard at the present time; it should defer any decision until the additional study of cost causality proposed by Trial Staff is completed.

Interruptible Rates

The PURPA standard regarding interruptible rates states that each electric utility shall offer industrial and commercial customers an interruptible rate. The company states that because of its adequate reserve capacity, interruptible rates would provide limited benefits to it but would instead be a discount rate for such customers since the risk of interruption would be small. It has no interruptible rates at this time.

Furthermore as Trial Staff points out, under an interruptible rate, the supplier would be permitted to cease delivery of power. Most large commercial or industrial customers could not operate under conditions where their electric supply might be interrupted for a considerable

period of time. Only specialized operations such as those with self-generation capacity would avail themselves of this rate and only four customers in the Commonwealth now subscribe to such a service where offered (Trial Staff Statement No. M.P.B.-1, pp. 26-27). Trial Staff proposes instead that the company investigate the feasibility of a curtailable rate which would be a combination of firm-interruptible power. That is, a fixed portion of a customer's load would be served on an interruptible basis with a remaining portion on a firm basis.. OCA would have PECO implement such rates on the basis of potential energy savings (OCA Brief, p. 153).

For the reasons stated above, I recommend that the Commission not accept the PURPA interruptible standard at this time. Instead I recommend that the Commission defer any decision until PECO has studied the possibility of a curtailable rate provision as proposed by Trial Staff. Such a study should be completed prior to its next general rate increase filing.

Load Management

Load management has been defined as any method of altering or controlling a utility's customer load (Trial Staff Statement No. M.P.B.-1, P. 23). The PURPA Standard states that each electric utility shall offer to its customers such load management techniques as the appropriate state regulatory authority has determined will be practicable, cost

effective, and reliable. PECO at the present time offers several such techniques including an off-peak residential water heating rate. ^{79/} PECO also has demand metering for large general service customers, a seasonal demand ratchet, off-peak and night service riders, controlled water heating and seasonal rates for energy only metered customers. PECO and the Commission's Trial Staff are also beginning an experimental study of residential load management through continuous and time differentiated demand metering. In addition PECO is proposing here to expand the night service rider and Trial Staff is proposing that PECO expand the controlled water heating rate to allow for additional hard-wired 240 volt appliances and that PECO determine the feasibility of a curtailable rate.

The Commission should adopt the Load Management standards of PURPA and find PECO to be in compliance with such standards. ^{80/}

Lifeline Rates

PURPA also requires that consideration be given to so-called lifeline rates. Specifically, the statute states that no provision of the Act prohibits an essential needs rate ^{81/} from going into effect (16 USC §2624(a) and that if a utility does not have such a rate, the

^{79/} Under this rate approximately 100,000 customers are interrupted for 6 1/2 hours during the on-peak period each day.

^{80/} PECO has filed with this Commission as part of this proceeding a Load and Cost Management Report pursuant to the Commission Order in R.I.D. 438.

^{81/} Such a rate is to be defined by the state agency but, the statute notes, the essential needs rate will be lower than a rate reflecting the cost of providing service to that class. 16 U.S.C. §2624(a)

regulatory agency shall determine whether such a rate should be implemented. Lifeline rate concept has been defined on the record here as the establishment of special below-cost subsidized rates for users of small quantities of electricity (Trial Staff Statement No. M.P.B.-1, P. 32). It is not so much a specific rate proposal as a concept that consumers should be able to obtain the electricity essential for basic human needs at an affordable rate, even if that rate is below the cost of service.

This issue was considered in the Commission's Generic Rate Structure Investigation conducted at PRMD-7(1977). The Final Report issued by the Commission concluded that, while a relationship between average KWH usage and income does exist, the variance or range of KWH usage within any income level precludes using KWH alone as a means of determining with accuracy the level of income. The general lifeline concept will penalize, the Report concluded, many low income consumers who need assistance, while benefitting others not in need of aid (Generic Rate Structure Investigation (PRMD-7, Final Report, p. 21)).

It is with that background that the record developed on this in this proceeding must be considered. Mr. Williams of PECO and Dr. Bloom of the Trial Staff specifically addressed the lifeline issue. Mr. Williams testified that the conclusions contained in PRMD-7 are valid today (PECO Statement No. RCW-2A, p. 7). Any "lifeline" assistance should, in his

opinion, be provided by State agencies and not through utility rates. He additionally noted that as a result of various rate structure directives from this Commission in recent PECO rate cases, the low use customer has received very little increase in rates. In fact, the low use residential customer in PECO's service territory using 250 KWH per month has experienced a slight decrease in his electric bill, from \$14.75 in December 1974 to \$14.64 in July 1979. For comparison purposes, the customer using 1000 KWH per month has experienced a 33% increase from \$46.00 to \$61.12.

Dr. Bloom was of the opinion that a simple lifeline rate as defined in PURPA has been in effect in PECO's service territory for several years in the sense that some minimum level of residential service is being provided at a price below the cost to provide that service. He stated that at present rates 11.5% of monthly bills (well over 100,000) produce a zero or negative rate of return. ^{82/} Six percent of monthly bills, corresponding to 100 KWH per month or less (over 60,000 bills) have a negative rate of return in excess of 4.0% (Trial Staff Statement No. M.P.B.-1, pp. 35-36; Trial Staff Exhibit M.P.B.-L1). This phenomenon was also noted by Mr. Williams (Tr. 1105-1107; PECO Exhibit & RCW-4). Mr. Williams noted that the existing residential rate is providing service up to the level of approximately 200 KWH per month at a price below the cost to provide that service. The point where residential usage reaches the system average return of 10 percent is 1250 KWH.

^{82/} If the company were granted its total increase, this number would drop to 9.5%.

Ninety-six percent of residential bills fall below that amount. Therefore, under the PURPA definition, almost all residential customers of PECO receive a lifeline rate.

Dr. Bloom also made an analysis of the effect recent rate increases have had on consumer's bills. He concluded that 62 percent of residential bills have experienced increases of approximately 1% per year for consumption in the range of 100-500 KWH per month during the period 1975-1979 (Trial Staff Exhibit M.P.B.-L3).

OCA argues that the current rate proceeding, due to the statutorily imposed time constraints, does not comply with the requirements of PURPA for an evidentiary hearing on this matter and proposes that the Commission set the matter down for another investigation.

The Industrial Complainants and U. S. Steel argue that implementation of lifeline rates would be impossible. One difficulty with a targeted lifeline proposal is defining the amount of electricity required to maintain essential human needs. Two witnesses, Mr. Williams and Dr. Bloom addressed this issue.

Mr. Williams testified that the minimum monthly energy needs necessary to supply essential human requirements for a non-heating customer is 250 KWH, ^{83/} broken down as follows:

^{83/} For the customer heating his home with electricity, a total of 12,000 kwh during the light heating season months must be added.

	<u>KWH/Mo.</u>
Washer	9
Iron	13
Refrigerator	90
Toaster	3
TV	22
Radio	6
Clocks	3
Lighting	33
Furnace Motor	33
Electric Frypan or Grill	25
Misc. Small Appliances	<u>13</u>
	<u>250</u>

Using the assumption contained in Chairman Goode's letter that the rates applicable to these minimum needs are set at a rate designed to recover no more than 75% of the indicated cost of service of these customers, no change in the company's current rate structure relationships would be required. As shown in PECO Exhibit RCW-1, p. 49, the proposed rate for 250 KWH per month is about equal to 75% of the indicated cost of service. The revenue deficiency is collected from high use Rate R customers and customers in other rate classifications.

Dr. Bloom listed several essential needs for which electricity provides power, including: lighting, refrigeration, water heating, space heating and cooking. Only lighting and refrigeration are usually powered by electricity which adds to the complexity of designing an essential human need rate. Such a rate also should take into account family size (Trial Staff Exhibit M.P.B.-L11-13). Dr. Bloom also noted the differences in level of consumption between suburban and residential

customers of PECO, estimating that average monthly usage in the suburbs is approximately 117 KWH per month greater (Trial Staff Statement No. M.P.B.-1, p. 40; Trial Staff Exhibit M.P.B.-L14).

First, I believe that this proceeding qualifies under 16 U.S.C. §2602(6)(A) as an evidentiary hearing. All participants had notice both in the Commission's August 9, 1979 Order and Chairman Goode's memo that this issue would be considered. Considerable time has been taken and testimony filed on this issue.

Second, I recommend that the Commission not direct PECO to implement a specific human needs rate. The reasons given in the Final Report of PRMD-7 are appropriate today as when written. It is impossible to tailor a rate to benefit the truly needy. As Dr. Bloom points out, there is a great potential for discrimination and abuse in attempting to set an essential needs rate strictly on level of usage. I find nothing in this record to support the premise that the needy are necessarily small consumers of electricity. If the purpose of such a rate is to benefit the poor, care must be taken that the level set is not such as to benefit the wealthy resident of a well-insulated townhouse who leaves on weekends when the whole purpose of this is to assist the large immobile family on public assistance living in poorly insulated house and relying on television as the sole means to provide diversion and electric resistance heaters to provide some warmth.

No persons could have listened to the public statements given in the course of these hearings without being acutely aware that something must be done soon to assist in the payment of energy bills --- electric, gas and heating oil. But an essential needs rate would not benefit those who need assistance.

Inverted Rates

The Commission's suspension order of August 9, 1979 also requests that consideration be given to whether some form of inverted rates should be adopted. Mr. Williams and Dr. Bloom addressed this issue. Mr. Williams pointed out that the question of inverted rates was reviewed as part of PRMD-7 and it was concluded in that proceeding that inverted rates were not appropriate because they did not track costs. Mr. Williams agreed with that conclusion. He also stated that an inverted rate structure would create revenue instability (PECO Statement No. RCW2-A, pp. 7-8).

Dr. Bloom also opposed an inverted rate structure. In addition to the points raised by Mr. Williams, Dr. Bloom noted a paradox associated with this concept. In essence, he stated, if the method works, and a consumer cuts back on usage there must be a revenue erosion problem; if it does not and the consumer does not alter his usage, then PECO could realize a windfall. Dr. Bloom also pointed out that the inverted rate form also assumes that most of a utility's growth occurs at the tail end

portions of the rate schedule. An analysis of the percentage of energy sold to customers as a function of monthly consumption over the time period 1972 through 1978 for residential customers, shows that growth in blocks is for all practical purposes uniform (Trial Staff Statement No. M.P.B.-1, p. 44; Trial Staff Exhibit M.P.B.-1R1).

Dr. Bloom also noted that PECO now has inverted rates for residential and residential water heating customers. He proposes that this be gradually eliminated and instead the residential rates should consist of a flat rate -- that is, a uniform charge per KWH and a customer charge (Trial Staff Exhibit M.P.B.-IR3). Ten other utilities in the Commonwealth have a separately-stated customer charge and such a charge is proposed here.

I recommend that an inverted rate structure not be implemented for several reasons. First, it has not been shown that such a rate structure would track costs. Indeed, the record here indicates that, to the contrary, such a rate structure would mandate a collection of revenue which is out-of-phase with the costs incurred in providing service. As Dr. Bloom and Mr. Brubaker point out, the cost to serve a customer depends on such things as voltage levels, load factors and customer costs in relation to other costs. All things being equal, any of these factors generally implies lower per unit cost. Furthermore, implementation of such a rate structure would promote revenue instability.

Class Rates of Return

Several witnesses testified on Chairman Goode's proposal that the following rates of return be considered reasonable goals for the various classes of service:

Residential - 80 - 100% of System Average
Commercial - 95 - 105% of System Average
Industrial - 100 - 120% of System Average

All opposed such a stated goal. Mr. Williams argued that the Commission's goal should be to strive for an equal rate of return from all classes. Any other goal is discriminatory in his opinion. Mr. Brubaker argued the same point. Dr. Bloom noted that PECO's rate structure is set up on the basis of the physical manner in supplying service, i.e., voltage level, not in end use. Application of the proposed goals to PECO's system would have the effect of penalizing efficient utilization of resources.

I recommend that such a proposal not be the goal of the Commission. First, as Dr. Bloom points out, PECO's rate classifications are based, not on end use, but on the physical manner in supplying power (Trial Staff Statement M.P.B.-1, pp. 48-49). Second, there appears to be no basis for this distribution except to benefit arbitrarily one class of customer as against another.

Allocation of Peaking Units and Transmission Facilities

Chairman Goode's memo also proposed that peaking units be allocated on the basis of contribution to the system peak and other generating units on the basis of energy usage. He also set forth the

proposal that that portion of the transmission system designed to meet system peak be allocated on the basis of contribution to system peak while remaining investment in transmission facilities be allocated on the basis of energy usage.

Mr. Williams noted that PECO has submitted a cost allocation which allocated all of the production and transmission system on the basis of the individual class contribution to system peak. Another allocation using individual class energy use was submitted. These results are shown below:

	<u>HT</u>	<u>PD</u>	<u>GS</u>	<u>RH</u>	<u>R</u>
Single Peak	12.24%	13.39%	15.18%	12.86%	8.86%
Energy	10.37%	14.28%	18.35%	8.55%	9.93%
Average of 4 Summer Peaks (Company)	11.59%	12.32%	15.72%	12.82%	9.36%

Mr. Williams noted that Chairman Goode's proposal would be part way between the single peak and the energy allocation methods. Dr. Bloom noted that PECO's allocation methodology (the average of the four summer peaks) generally produces rates of return between the two other methods. Dr. Bloom opposed the Goode allocation method because, in his view, it is not proper to utilize a single allocation methodology for assigning production and transmission expenses. He was also of the opinion that if this proposal be given further consideration, equity would require a subdivision of energy costs relative to the allocation of the capital expenses (Trial Staff Statement No. M.P.B.-1, pp. 52-53).

Mr. Brubaker testified that it is inappropriate to classify a portion of these costs on the basis of energy since, in his view, investment in generation plant is a demand related cost. He also argued that, if this methodology were adopted, energy costs allocated to that group of customers who are required to bear the higher capital costs associated with this equipment, should be reduced to recognize the lower operating costs which result from the higher capital costs of the base load plants.

It is recommended that this proposal not be adopted.

Declining Block Rates

Chairman Goode also requested that consideration be given to the question of whether declining block rates encourage consumption and/or inhibit conservation. Specifically, whether rates such as proposed rate HT contain conservation incentives and whether declining block rates are cost justified.

Many of these questions were addressed earlier in the context of the PURPA Standards. Dr. Bloom testified that in his view any type of rate structure which is not cost reflective by being priced below cost will encourage consumption and inhibit conservation. If it is designed properly, this form of rate structure should neither encourage consumption nor inhibit conservation. In his view, rates such as HT are designed based upon the relationship between load factor and diversity factor and produce prices which are reflective of costs. As such, he testified that these rates contain appropriate conservation incentives.

Mr. Williams also testified that the company's rates are designed to reflect cost of service, including those few rates with declining energy blocks. The proposed Rate HT contains three energy blocks. These are required to follow the cost curve which rises rapidly at low-load factors and then tapers off at high load factors (PECO Exhibit No. RCW-1, pp. 46-49). Since the rate follows cost of service, in his view, it contains conservation incentives. Mr. Brubaker testified in a similar manner (Industrial Complainants Statement No. 2, pp. 15-16).

The answer to Chairman Goode's question, quite simply, is that any type of rate structure that does not reflect costs will encourage consumption and inhibit conservation. The record shows that proposed rates PD and HT are designed based upon the relationship between load factor and diversity factor. Since this rate design produces rates which reflect costs, they contain appropriate conservation incentives.

Elimination of Revenue Associated With Energy

Chairman Goode's memo also requested a discussion of whether it is proper to eliminate revenue associated with the energy component contained in base rates prior to distributing the revenue increase. Mr. Williams testified that after total energy expenses are removed from rates, the items remaining are other expenses and return on plant investment. Practically all expenses other than energy have increased since the last case due to inflation, according to Mr. Williams. Although

plant investment included in rate base since the last case has not increased, the return on that investment is, in the company's opinion, not adequate. It is, therefore, appropriate to increase the total non-energy portion of all rates.

Dr. Bloom noted that all major electric utilities in Pennsylvania are made whole on fuel/energy costs by means of the Energy Adjustment Clause. Since fuel costs are not at issue here, it is proper, in his opinion, to exclude the energy component of fuel from base rates prior to distributing any rate increase.

The Industrial Complainants agree with PECO and Trial Staff. The OCA argues the opposite.

The Commission has many times considered this issue most recently in PECO's gas rate case (R-79030781). There, the Commission stated (mimeo, p. 65).

The Trial Staff also proposes a redistribution of the allowable revenue increase based on an average of base revenues less fuel costs and sales volumes. This proposal results in an increased burden on the residential customers to the benefit of the industrial customers rather than under PECO's proposal for distribution of the revenue increase.

We have, in past proceedings, rejected any revenue distribution based on a "zerofuel" methodology as proposed by Trial Staff (Pa. P.U.C. v. West Penn Power Co., R.I.D. 183; Pa. P.U.C. v. West Penn Power Co., R.I.D. 369; Pa. P.U.C. v. Peoples Natural Gas Co., R.I.D. 99). We stated in Pa. P.U.C. v. West Penn Power Co., R-78100685, that the weakness of the argument of the Industrial Complaints (advocating

the "zerofuel" methodology) is that utilizing "reason (f) or increase" as a basis for allocation of costs requires the ability to identify all costs increases and to properly allocate them among the various classes who are responsible for their incurrence."

We therefore reject Trial Staff's proposed redistribution of the allowable revenue increase for the reason quoted above.

The same reasons, for and against this methodology were advanced in this proceeding. In the absence of any new evidence, the Commission's stated policy should be affirmed and the increase recommended here allocated in the traditional manner, i.e., with the revenue associated with the energy component included in base rates prior to distributing the rate increase.

Operating Practice Standards of PURPA

In addition to the six standards discussed applicable to rate-making, PURPA also contains five Federal Standards regarding utility operations which must be considered. 16 U.S.C. §2623(b). These standards are as follows:

- (1) Master metering - To the extent determined appropriate under Section 2625(d) of this title, master metering of electric service in the case of new buildings shall be prohibited or restricted to the extent necessary to carry out the purposes of this chapter.

energy used in the unit, and the long run benefits to the electric consumers in the building exceed the costs of purchasing and installing separate meters.

Mr. Williams, testifying for PECO, believed that the objectives of PURPA could be achieved with master metering by the company and submetering of the individual tenants load by the landlord as well as by individual metering of all of the tenants. According to the company, the customer receives the same direct price signal under either arrangement. PECO points out that in some cases it may be desirable to have the landlord supply the total heating and ventilating load as well as the energy for water heating. It proposes that the Company's Tariff Rule 13.1 (Resale of Service) be revised to specify individual metering by the company of the landlord for the basic electric service supply to each unit of a multi occupancy building.

Mr. Robert Rosenthal testified for the Trial Staff. He noted that based on a 1975 study, approximately 12 percent of the dwelling units in the Philadelphia area are master metered along with a majority of the commercial space (Trial Staff Statement No. RAR-1, p. 10). Mr. Rosenthal pointed out that there is a lack of incentive to conserve where the tenant does not pay for his individual service. Master metered apartment dwellers consume on the average 35 percent more energy than individually metered apartment dwellers. In Philadelphia one study

- (2) Automatic adjustment clauses - No electric utility may increase any rate pursuant to an automatic adjustment clause unless such clause meets the requirements of Section 2625(e) of this title.
- (3) Information to consumers - Each electric utility shall transmit to each of its electric consumers information regarding rate schedules in accordance with the requirements of Section 2625(f) of this title.
- (4) Procedures for termination of electric service - No electric utility may terminate electric service to any electric consumer except pursuant to procedures described in Section 2625(g) of this title.
- (5) Advertising - No electric utility may recover from any person other than the shareholders (or other owners) of such utility any direct or indirect expenditure by such utility for promotional or political advertising as defined in Section 2625(h) of this title.

Master Metering

Under the PURPA standards separate metering shall be determined appropriate for any new building if there is more than one unit in the building; the unit's occupant has control over a portion of the electric

showed that master-metered apartment dwellers consumed 60 percent more energy. Mr. Rosenthal recommended that master metering be restricted to current locations for residential service and that new residential buildings be required to have individual metering for each dwelling unit. His recommendation with respect to commercial buildings was different. He felt that the relatively small amount of this expense and its tax deductible status for commercial operations would affect the conservation effect from individual metering. In addition, general commercial building design might well cause problems in implementing master metering. For these reasons, he concluded that the PURPA standards should not be adopted for commercial application.

Mr. Rosenthal stated, however, that there was no basic difference between his recommendations and those of Mr. Williams (Tr. 2177).

I recommend that this standard be adopted for service to residential dwellings, but, for the reasons given by Mr. Rosenthal, the standard not be adopted for commercial customers.

Automatic Adjustment Clause

The PURPA Standard for automatic adjustment clauses requires that the clause be determined at least every four years to provide incentives for efficient use of resources. In addition the clause is to be reviewed at least every two years with respect to each utility, to insure the maximum economies in those operations to which the clause

applies. Mr. Williams testified that the Commission under Section 1307(d) has already established an annual audit procedure for the energy clause to review fuel procurement procedures. Under Section 1307(e), each utility must reconcile total fuel expense and revenues. Both Mr. Williams and Mr. Rosenthal agree that these procedures are in compliance with the second requirement of PURPA.

Mr. Rosenthal contends that under the current energy clause no factor operates as an incentive for efficient use of resources (Trial Staff Statement No. RAR-1, p. 16). Mr. Williams, however, believes that the Section 1307(d) hearings provide a strong incentive to the utility to purchase fuel at the lowest possible cost (PECO Statement No. RCW2-A, p. 5).

Mr. Rosenthal noted that the Commission investigated the problems of incentives at I.D. 214 and concluded there that inclusion of "efficiency incentives" within an energy or fuel clause was impractical.^{84/} He recommended that the Commission not adopt the PURPA standard since it has already concluded that use of efficiency incentives within an energy clause could be counterproductive. All other portions of the PURPA standard are in agreement with current Commission policy. He further

^{84/} I.D. 214 concluded after 15 public hearings across the Commonwealth resulting in 2,290 pages of testimony.

noted that I.D. 214 is about to be reopened and that this provides another opportunity to reexamine the potential for efficiency incentives.

I recommend that the Commission not adopt this standard.

Information To Consumers

The PURPA Standard requires that the Company on an annual basis supply each electric consumer a clear and concise explanation of the existing rate schedule and any rate schedule applicable to the consumer. The explanation must be provided to new customers within 30 days of joining the system and each consumer must be informed of any change within 30 days of application for such change.

Mr. Williams noted that within 30 days of joining the system, a new residential customer receives all applicable residential rate schedules. Within 30 days after application for a rate increase is filed, the company sends each customer a notice of the increase including the effect on an average residential bill. Additionally, each customer is offered on an annual basis, a copy of the Consumer Bill of Rights.

Mr. Rosenthal noted that except for annually informing customers of rate schedule availability, the PURPA requirements are not different from current operating procedures. Mr. Rosenthal recommended that the PURPA standard should be adopted since current statutory regulations are in compliance and were formulated within the PURPA guidelines. The

additional requirement of informing consumers annually of their own and other applicable rate schedules will contribute to a better informed consumer.

The standard should be adopted and PECO directed to bring its operating procedures into compliance.

Termination of Service

The applicable PURPA Standard regarding termination of service requires that no electric service may be terminated unless reasonable prior notice is given to the consumer and the consumer has a reasonable opportunity to dispute the reasons for such termination. It also prohibits termination when it would be especially dangerous to health and the consumer shows that he is unable to pay in accordance with the company's billing or that he can pay only in installments.

Mr. Williams testified that the extensive service termination procedures established as a result of 76-PRMD-10, equal or exceed those designated by PURPA.

Mr. Rosenthal also referred to the Commission's investigation at 76-PRMD-10 and noted that the investigation at that docket contained public hearings throughout the Commonwealth. PECO's tariff (Supplement No. 85 to Tariff Electric Pa. P.U.C. No. 24) is in compliance with 76-PRMD-10. Mr. Rosenthal recommended adoption of the PURPA standards, noting that PECO would be in compliance.

The standard should be adopted and PECO found to be in compliance.

Advertising

Under the applicable PURPA Standard no electric utility may recover from any ratepayer any direct or indirect expenditure for promotional or political advertising. Advertising is defined as the commercial use, by an electric utility, of any media, including newspaper printed matter, radio and television, in order to transmit a message to a substantial number of members of the public or to the utility's consumers. Political advertising is defined as any advertising for the purpose of influencing public opinion with respect to legislative, administrative or electoral matters or with respect to any controversial issue of public importance. Promotional advertising means advertising for the purpose of encouraging any person to select or use the service or additional service of an electric utility or the selection or installation of any appliance or equipment designed to use the utility's service. The Act specifically lists six types of advertising which are deemed not to be political or promotional. They are:

1. advertising which informs electric consumers how they can conserve energy or can reduce peak demand for electric energy;
2. advertising required by law or regulation, including advertising required under Part 1 of Title II of the National Energy Conservation Policy Act;

3. advertising regarding service interruptions, safety measures or emergency conditions;
4. advertising concerning employment opportunities with such utility;
5. advertising which promotes the use of energy efficient appliances, equipment or services;
6. any explanation or justification of existing or proposed rate schedules, or notifications of hearings thereon.

Mr. Rosenthal stated that Part 1 of Title II of the National Energy Conservation Policy Act, subtitled the Utility Program, will deal with residential conservation measures. Expenses for this advertising would be greater under the PURPA standard than the past Commission allowance. Mr. Rosenthal recommended adoption of the PURPA Standard. Mr. Williams stated his belief that the company does not engage in any political, promotional or institutional advertising as defined in the Act. (PECO Statement 2A, p.6).

OCA requests the Commission to adopt this standard and requests that the Commission find that the company has complied with the promotional advertising standard, but defer any decision on whether PECO has complied with this standard until a decision has been reached in the proceeding at Docket No. C-78080549, Keystone Alliance, et al. v. Philadelphia Electric Co. (OCA Brief pp. 102-13).

CEPA urges adoption of the PURPA Standard in this area. In addition it claims that the record here shows expenditures of \$661,172 for political advertising and requests that this amount be eliminated from claimed operating expenses. Finally, it requests the institution of an investigation to assure that all expenses associated with political advertising can be identified and charged below the line ^{85/} (CEPA Brief, pp. 101-04).

There is little controversy over the promotional advertising standard. All parties agree that it should be adopted and that PECO complies with its requirements. I recommend to the Commission that it be adopted.

The area of political advertising is more controversial. ^{86/} First, it should be noted that we are not discussing "political" advertising in terms of political elections. That, of course, is a below the line item. The dispute arises here over expenditures promoting one view in a controversial matter, nuclear energy.

^{85/} "Below the line" is a term used to mean that the shareholders, not the ratepayers, bear the cost.

^{86/} It should be noted at this point that the Commission has considered the issue of controversial advertising at length and has failed to adopt any policy. See 76-PRMD-6.

For the reasons detailed below, I recommend that the Commission not adopt that part of the PURPA standard which addresses advertising "with respect to any controversial issue of public importance." Instead, I would recommend that the Commission consider adopting a policy of permitting a small lump-sum allowance (such as one-half of one percent to one percent of revenues) in operating expenses to cover all institutional advertising.^{87/} I can think of nothing more fruitless from the standpoint of this Commission, its staff, the company and its ratepayers than spending valuable time poring over specific advertisements and attempting to decide what portion should be allowed as an appropriate advertising expense. Surely the time thus spent could be put to better use with a higher pay-back ratio to consumers.

The traditional prohibition against political advertising being borne by ratepayers arose during the debates on public versus privately-supported power. In such a case there was no question that the advertising involved was obviously for the benefit of the stockholders. Today, however, the issues are much more complicated and, I believe, it is in the ultimate interest of the ratepayer that all points of view be presented. There are no simple answers to such questions as

^{87/} Institutional advertising is a rather amorphous phrase covering such things as advertising associated with implementation of the National Energy Conservation Policy Act, safety, meter reading, plans for changes and improvements in service, etc.

the comparative safety and economics of nuclear versus fossilfueled generation. Nor can it be simply stated, as some parties do here, that the advertisements on this subject are primarily for the benefit of utility stockholders. Nothing in the record here shows that this is the case and such a view is extremely difficult to maintain with respect to utilities plans to build extremely costly nuclear plants, for example, when the companies are forced to finance that construction, in part, by selling their common stock below book value. ^{88/} There is a definite ratepayer interest in a free and fair public discussion of the issues and that utilities have an important contribution to make regardless of whether one agrees with the content of their messages in any specific instance.

The contention that costs of such advertisements should be put below the line has been answered by Chairman Alfred E. Kahn in his separate dissenting and concurring statement to the New York State Public Service Commission's Statement of Policy on Advertising and Promotional Practices of Public Utilities (issued February 25, 1977). There he stated:

^{88/} See, e.g., Long Island Lighting Co., Case 26887 (Order issued May 28, 1976), mimeo p.9 New York Public Service Commission.

. . . Since we set our allowance for return on equity at something close to the minimum cost of capital, and most companies in the state are in any event earning something short of that amount, any continuation of such "disallowed" expenditures by utility company managements would in principle require us to raise the return on equity allowance correspondingly. In these circumstances, telling companies to put certain expenditures "below the line" comes out either to telling them to stop making the expenditures entirely, or is essentially cosmetic -- and a trifle insincere.

I would have been happy to go along with the resolution of this dilemma proposed by Commissioner Berlin to the RG&E and LILCO cases -- namely that utility companies be required to provide equal support for the presentation of opposing viewpoints. A reading of the responses to our call for comments on this subject persuades me, however, that his proposed requirement would expose us to endless litigation; I reluctantly conclude that its administration would be simply impractical.

In these circumstances, my own preference would be to extend the modest lump-sum allowance we have decided to provide for institutional advertising to cover discussions of general public policy issues such as the desirability of nuclear power as well. The logic, I suggest, is the same: company managements are likely to feel a continued obligation to present their views on the merits of nuclear energy; they are likely to feel that this is in the interest of their ratepayers, possible more than their stockholders (who hardly benefit when companies must sell stock below book value in order to finance these extremely costly plants); and I would be inclined to agree.

Following this same reasoning, I repeat my extreme satisfaction at the Commission's resolution of the issue of institutional advertising. Our decision here is both sensible and non-ideological. We decline to cater to the vulgar view, often demagogically expressed, that public utility companies have no right to communicate with their customers, or to answer the often unjust criticisms to which they are subjected, and that if they wish to do so, the expenditures should be placed "below the line" -- an expedient that is in my judgment something of a sham.

The specific items which CEPA proposes to eliminate for operating expense are listed below:

<u>Item</u>	<u>Cost</u>	<u>Location in Record</u>
Peach Bottom & Limerick Information Center	\$137,891	CEPA Exhibit 2, Attachment 7
Films	28,175	CEPA Exhibit 2, Attachment 4
Written Materials	38,000	CEPA Exhibit 2, Attachments 1-3; Tr. 1737-8
Dues paid to industry lobbying associations (EEI and AIF)	193,000	CEPA Exhibit 3
Energy education program	260,809	CEPA Exhibit 6-8 Tr. 1478
"Three Mile Island" pamphlet	3,297	CEPA Exhibit 4, Tr 1465-70
TOTAL	<u>\$661,172</u>	

PECO responds that none of these items fall within the definition of political advertising contained in the PURPA standard (PECO Reply Brief, p.50) since none involve the commercial use of the media to transmit a message. PECO states that it incurred these expenses for educational and informational purposes, the program and written material were not transmitted by the commercial use of any media rather but were made available to persons and groups upon their request.

Upon reviewing the record here I am in basic agreement with the company. The only items I find which might violate the PURPA standard are advertisements placed in newspapers by the Edison Electric Institute (EEI) and the Atomic Industrial Forum (AIF). Since part of PECO's dues paid for these advertisements, it would seem to fall within the PURPA prohibitions. The amount of PECO's dues to these trade associations which went toward paying for these advertisements has not been determined on the record, but can be described as de minimis. Even if all of PECO's dues to EEI and AIF went towards nuclear advertising, a contention absurd on its face, the amount involved would be \$193,000 less than ^{89/}0.02% of revenues.

In the event the Commission adopts the PURPA standards on political advertising, I recommend that PECO be found in substantial compliance.

^{89/} For every \$100 of revenues, less than 2 cents goes to EEI and AIF.

XIV. CONCLUSION

Upon review of the record here, I conclude that Philadelphia Electric Company has shown the need for additional revenue relief of \$79,871,000 (Tables II-IV). The amount of rate relief recommended, almost \$80,000,000, although large in absolute terms, is the lowest reasonable amount that can be supported on this record. This amount is based on actual costs which the company is now or will experience during the time the rates set here are in effect. It is based on the lowest reasonable valuation of PECO's investment, reflecting plant which is used and useful to the ratepayer consistent with actual operating conditions and the high standards of service which PECO's customers have come to expect. The return recommended reflects the minimum necessary so as not to impair the utility's financial integrity.

PECO has been experiencing the devastating economic effects of inflation and high interest rates like every other consumer; but unlike other retailers who may gradually and continually pass on cost increases, PECO can only do so with this Commission's approval. If this Commission has been doing its job in paring PECO's earlier rate requests to the bone, there is little room for the company to absorb cost increases and still maintain high levels of service. Therefore, when a rate hike comes, it necessarily is substantial.

Rates must reflect economic realities and, eventually, they will. This will either come through a series of gradual moderate increases which will permit the maintenance of existing service standards and at the same time cause the minimum disruption possible to ratepayers' budgets or it will come only after considerable trauma, necessitating larger increases than otherwise necessary due to the weakening of the company's financial posture. There can be no avoidance of these costs, only a temporary postponement which will ultimately result in higher costs to consumers;

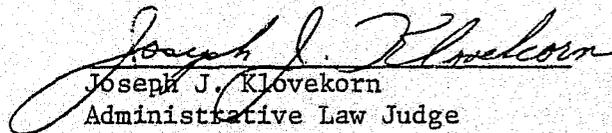
THEREFORE,

IT IS RECOMMENDED:

1. That the several complaints shall be deemed dismissed, except as otherwise indicated heretofore.
2. That Philadelphia Electric Company shall file, effective for service rendered on or after the date of entry of the Commission's Order, or within thirty (30) days thereafter, as it may elect, tariff or tariff supplements prepared in accordance with the Recommended Decision, containing rates designed in accordance with the recommendations herein regarding rate structure to provide annual electric operating revenues of \$1,244,558,000, exclusive of state tax adjustment surcharge revenues and net energy clause revenues.

3. That Philadelphia Electric Company shall file detailed calculations with the tariff filing which shall demonstrate to the Commission's satisfaction that the filed rates comply with this Order.
4. That the tax surcharge shall be computed in accordance with the State Tax Adjustment Surcharge Order of March 10, 1970, as revised.
5. That upon the filing of tariff revisions acceptable to the Commission as being in compliance with the Commission's Order, and upon Commission approval of the tariff revisions, the inquiry and investigation at R-79060865, et al., shall be terminated and the record marked closed.

Recommended to the Pennsylvania
Public Utility Commission


Joseph J. Klovekorn
Administrative Law Judge

Dated: February 29, 1980