GPU Service

GPU Service Corporation
100 Interpace Parkway
Parsippany, New Jersey 07054
201 263-6500
TELEX 136-482
Writer's Direct Dial Number
(201) 263-6013

December 7, 1979

Mr. Richard H. Vollmer
Director, Three Mile Island-2 Support
Office of Nuclear Reactor Regulation
U.S. Nuclear Regulatory Commission
7920 Norfolk Avenue
Bethesda, Maryland 20014

Re: NRC Docket No. 50-289 -- TMI-1 Restart Proceeding

Dear Mr. Vollmer:

In response to the NRC's supplementary requests for financial information telecopied to C. W. Smyth on November 9, 1979, enclosed are eight copies of the following:

1. Response to Request No. 2 (unrecovered cost of TMI replacement energy).

2. Response to Request No. 3 (description of Penelec's temporary investments).

3. Response to Request No. 4 (TMI-1 capacity factor).

4. Response to Request No. 5 (final disposition of PaPUC's TMI-1 show cause proceeding).

5. Response to Request No. 7 (revenue effect of rate increases).

6. Additional response to Request No. 9 (developments in PaPUC's consolidated Met-Ed/Penelec show cause proceeding).

B005 5/1/1

1548 001

7912130 243

Please acknowledge receipt of this material by signing, dating and returning the enclosed copy of this letter. A stamped, pre-addressed envelope is enclosed for that purpose.

Very truly yours,

F. D. Hafer
Vice President,
Rate Case Management

FDH/ret

cc: J. C. Peterson - With enclosures
H. Silver - No enclosures; to be distributed by NRC

1548 002

Person Responsible for Preparation:
F. D. Hafer, Vice President
Rate Case Management, GPU Service Corp.
Telephone: (201) 263-6013
Date: December 7, 1979

GENERAL PUBLIC UTILITIES CORPORATION
Metropolitan Edison Company, Pennsylvania Electric Company
and Jersey Central Power & Light Company
NRC Docket No. 50-289
Three Mile Island Unit No. 1 Restart Proceeding

Response to NRC Staff's Supplemental Financial Information Request No. 2, telecopied 11/9/79 (item number refers to initial requests dated 9/21/79):

"(3) On what basis does GPU assume that current costs of TMI replacement energy are not recovered? Explain in detail."

Response:

As explained on pages 4 through 8 of our response to the NRC's Financial Information Request No. 10-(c) dated 10/19/79, the energy cost adjustment charges of GPU's subsidiaries were increased effective July 1, 1979 to reflect the increases in energy costs the subsidiaries faced as a result of the TMI-2 accident. In order to moderate increases in charges to customers, however, the energy clause charges were levelized over the 18-month period ended 12/31/80. On the assumption that TMI-1 would return to service by 1/1/80, at the time the clause increases were approved by the subsidiaries' state commissions, it was assumed that this period would include low cost nuclear generation from TMI-1 for 12 of the 18 months. As a result of the delay in the return of TMI-1 to service, which is not now expected to occur until late 1980 at the earliest, and increases in energy costs unrelated to the TMI-2 accident, particularly increases in oil costs, the clause increases that became effective in July will not be sufficient to fully recover the energy costs now projected for the subsidiaries, particularly those projected for Met-Ed and Jersey Central. Met-Ed has accordingly petitioned the PaPUC to increase its energy cost adjustment charge effective 1/1/80, as described in more detail in our responses to the NRC's Supplemental Financial Information Request No. 9 dated 11/6/79 and 12/7/79, and a filing with the NJ BPU to increase Jersey Central's energy cost adjustment charge is planned for early 1980.

Person Responsible for Preparation:
J. G. Graham, Treasurer
GPU Service Corporation
Telephone: (201) 263-6130
Date: December 7, 1979

GENERAL PUBLIC UTILITIES CORPORATION
Metropolitan Edison Company, Pennsylvania Electric Company
and Jersey Central Power & Light Company
NRC Docket No. 50-289
Three Mile Island Unit No. 1 Restart Proceeding

Response to NRC Staff's Supplemental Financial Information Request No. 3, telecopied 11/9/79 (item number refers to initial requests dated 9/21/79):

"(3) Describe the "temporary investments" under "external financing" that are projected for GPU and Penelec".

Response:

GPU's, i.e., Penelec's temporary investments shown for the year 1980 in our response to the NRC's Financial Information Request No. 3 dated 10/17/79 represent the utilization of temporary excesses of available cash over cash requirements. Penelec, the GPU Company least affected by the TMI-2 accident, is projected to have excess cash available from time to time in 1980, and correspondingly would invest such funds in typical short-term instruments such as commercial paper, treasury bills and the like.

Person Responsible for Preparation:
R. C. Arnold, Vice President
Generation, GPU Service Corp.
Telephone: (201) 263-6290
Date: December 7, 1979

GENERAL PUBLIC UTILITIES CORPORATION
Metropolitan Edison Company, Pennsylvania Electric Company
and Jersey Central Power & Light Company
NRC Docket No. 50-289
Three Mile Island Unit No. 1 Restart Proceeding

Response to NRC Staff's Supplemental Financial Information Request No. 4, telecopied 11/9/79 (item number refers to initial requests dated 9/21/79):

> "(4.a) Provide justification for the assumed 71 percent plant capacity factor for TMI-1. Indicate the actual plant capacity factor experienced by TMI-1 when it was in commercial operation. Provide total (GPU) operating cost estimates assuming plant capacity factors of 50 percent and 60 percent."

Response:

The 71% annual capacity factor projected for TMI-1 following its return to service (i.e., for the years 1981 through 1985) reflects two basic assumptions: (1) that the unit will undergo a normal refueling outage of 6 weeks duration each year, and (2) that the unit will experience a 20% forced outage rate during the remaining hours of the year.

Based on TMI-1's past performance, which the table below shows has been significantly better than the national average for all nuclear units, which in the aggregate have achieved a lifetime capacity factor of about 60%, the 71% capacity factor projected for TMI-1 is conservative.

Annual TMI-1 Generation
1974-1978

Year	Net Gen. (Gwh) (1)	Capacity Factor (%) (2)
1974 (4 months) (3)	1 978	87.8%
1975	5 542	81.5
1976	4 336	63.6
1977	5 463	80.4
1978	5 674	83.5
Lifetime through 1978	22 993	78.0%

(1) Total unit (owned 50% by Met-Ed, and 25% each by Penelec and Jersey Central).

(2) Ratio of the unit's actual generation to its maximum possible generation, based on the unit's current net summer rating of 776 MW.

(3) Unit began commercial operation on 9/2/74.

In response to the request for estimates of TMI-1's total operating costs assuming capacity factors of 50 and 60 percent, reference is made to our response to the NRC's Financial Information Request No. 4-(a) dated 10/15/79. That response projected the following operating, maintenance and fuel expenses for TMI-1, based on a 71% capacity factor:

	Projected TMI-1 Operating Expenses as Budgeted ($ millions)				
	1981	1982	1983	1984	1985
O&M Expenses Other Than Fuel	$24.8	$27.4	$30.0	$32.9	$36.2
Fuel Expense	11.6	14.4	17.5	20.0	23.2
Total Operating Expenses	$36.4	$41.8	$47.5	$52.9	$59.4

Since the non-fuel operating and maintenance expenses of a base load generating station are essentially fixed, i.e., do not vary with unit output, TMI-1's fuel expense is the only expense that would vary significantly if TMI-1 were to operate at capacity factors of 50 and 60%. At these assumed capacity factors, the unit's fuel expense is projected to be as follows:

	Projected TMI-1 Fuel Expense at Lower than Budgeted Capacity Factors ($ millions)				
	1981	1982	1983	1984	1985
60% Capacity Factor	$ 9.8	$12.2	$14.8	$16.9	$19.6
50% Capacity Factor	$ 8.2	$10.1	$12.3	$14.1	$16.3

Accordingly, the total operating costs projected for TMI-1 would be reduced to the following levels, assuming 50 and 60 percent capacity factors:

	Total Projected TMI-1 Operating Expenses at Lower than Budgeted Capacity Factors ($ millions)				
	1981	1982	1983	1984	1985
60% Capacity Factor	$34.6	$39.6	$44.8	$49.8	$55.8
50% Capacity Factor	$33.0	$37.5	$42.3	$47.0	$52.5

Person Responsible for Preparation:
F. D. Hafer, Vice President
Rate Case Management, GPU Service Corp.
Telephone: (201) 263-6013
Date: December 7, 1979

GENERAL PUBLIC UTILITIES CORPORATION
Metropolitan Edison Company, Pennsylvania Electric Company
and Jersey Central Power & Light Company
NRC Docket No. 50-289
Three Mile Island Unit No. 1 Restart Proceeding

Response to NRC Staff's Supplemental Financial Information Request No. 5, telecopied 11/9/79 (item number refers to initial requests dated 9/21/79):

> "(4.b) Notify the Staff of the final disposition of the PaPUC show cause proceeding regarding the inclusion of TMI-1 capital and operating costs in the rates of Met-Ed and Penelec"

Response:

We will furnish the NRC with a copy of the PaPUC's final order in this proceeding, which we currently estimate will be concluded by the end of March, 1980.

1548 007

Person Responsible for Preparation:
F. D. Hafer, Vice President
Rate Case Management, GPU Service Corp.
Telephone: (201) 263-6013
Date: December 7, 1979

GENERAL PUBLIC UTILITIES CORPORATION
Metropolitan Edison Company, Pennsylvania Electric Company
and Jersey Central Power & Light Company
NRC Docket No. 50-289
Three Mile Island Unit No. 1 Restart Proceeding

Response to NRC Staff's Supplemental Financial Information Request No. 7, telecopied 11/9/79 (item number refers to initial requests dated 9/21/79):

> "(10.c) Indicate the revenue effect of rate increases granted, both in the year granted and in the subsequent year. If the subsequent year is not known, annualize amounts received in the year granted."

Response:

This information is available from our response to the NRC's Financial Information Request No. 10-(c) dated 10/19/79. However, we do intend to summarize the 10-(c) material and complete our response to the NRC's Supplemental Financial Request No. 8, and accordingly will mail this information to the NRC Staff on Monday, December 10, 1979.

Person Responsible for Preparation:
F. D. Hafer, Vice President
Rate Case Management, GPU Service Corp.
Telephone: (201) 263-6013
Date: December 7, 1979

GENERAL PUBLIC UTILITIES CORPORATION
Metropolitan Edison Company, Pennsylvania Electric Company
and Jersey Central Power & Light Company
NRC Docket No. 50-289
Three Mile Island Unit No. 1 Restart Proceeding

Additional response to NRC Staff's Supplemental Financial Information Request No. 9, telecopied 11/9/79 (item number refers to initial requests dated 9/21/79):

> "(10.b and 10.c) Subsequent to our September 21, 1979 request, it was reported (Wall Street Journal, November 2, 1979, p. 12) that the Pennsylvania Public Utility Commission (PPUC) issued a show cause order to Met-Ed regarding the company's ability to provide utility service in Pennsylvania. Provide copies of the PPUC order and copies of Met-Ed's response to the order, when available. Continue to keep the NRC Staff informed of all developments in the show cause proceeding. Provide copies of all subsequent PPCU orders and other directives and Met-Ed responses related to this proceeding."

Response:

As an additional response to this request, enclosed are copies of the following:

1. PaPUC's prehearing order in Docket No. I-79040308 entered 11/30/79.

2. Met-Ed/Penelec motion in Docket No. I-79040308 dated 11/29/79 requesting expedited treatment of Met-Ed's energy clause increase petition, and resolution of "used and useful" issue with respect to TMI-1.

3. Material filed with the PaPUC in Docket No.I-79040308 on 12/6/79, consisting of the following:

3. Continued

(a) Met-Ed/Penelec Statement A (statement of F. D. Hafer in support of Met-Ed's petition to increase its energy cost adjustment charge), and Exhibit A-3 (actual and forecast Met-Ed energy cost data).

(b) Supplement 1 to Met-Ed/Penelec Statement B and Exhibit B-3 (statement of Met-Ed's energy clause revenues, expenses and deferrals for the four-month period July-October, 1979; witness: D. L. Huff).

(c) Met-Ed/Penelec Exhibits D-1, D-2, D-3, D-4 (various Met-Ed/NRC correspondence related to TMI-1, including the NRC's order and notice of hearing dated 8/9/79; witness: R. C. Arnold).

(d) Met-Ed/Penelec Statement E and Exhibit E-1 (overview of GPU's capacity planning, past performance of TMI-1 and economic benefits attributable to the unit; witness: B. H. Cherry).

(e) Met-Ed/Penelec Statement G and Exhibits G-1, G-2, G-3, G-4 and G-5 (power pooling agreements, estimates of savings in energy costs attributable to TMI-related short-term power purchases; witness: E. Newton, Jr.).

(f) Met-Ed/Penelec Statement H and Exhibit H-1 (Met-Ed sales forecast, year 1980).

(g) Met-Ed/Penelec Statement I (description of GPU's efforts to reduce the cost of TMI replacement energy by entering into favorable short-term power purchase agreements with other utilities; witness: R. H. Sims).

(h) Met-Ed/Penelec Statement J and Exhibit J-1 (rate comparisons, Met-Ed versus neighboring utilities; witness: E. F. Carter).

1548 010

PENNSYLVANIA

PUBLIC UTILITY COMMISSION
Harrisburg, PA 17120

Public Meeting held November 29, 1979

Commissioners Present:

W. Wilson Goode, Chairman
Michael Johnson
James H. Cawley
Susan Shanaman
Linda C. Taliaferro

Pennsylvania Public Utility Commission, et al.
v.
Metropolitan Edison Company and Pennsylvania Electric Company, Respondents

Docket No. I-79040308

PREHEARING ORDER

BY THE COMMISSION:

This order supplements the prehearing order issued at this docket on November 16, 1979. On November 27, 1979 a further prehearing conference was held before the Commission presiding en banc. This order contains the rulings and determinations at that prehearing conference.

A. Conduct of the hearings.

Upon the oral motion of the Staff, the presiding commissioners ruled that the decision or decisions of the Commission on the merits in this proceeding will be issued as an initial decision or decisions subject to the filing of exceptions by the parties within a specified time and the ruling of the Commission on those exceptions.

B. Parties.

The presiding commissioners allowed the intervention of the following additional persons:

11. Mrs. Patricia A. Smith

1548 011

12. Pennsylvania Foundrymen's Association and Lebanon Steel Foundry of Lebanon, jointly ("Pennsylvania Foundrymen's Association, et al.")

13. Universal Cyclops Corporation, Electralloy Corporation, Erie Malleable Iron Company, Franklin Steel Company, National Forge Company, Proctor & Gamble Paper Products Company, Talon Textron and Welch Foods, Inc., jointly ("Universal Cyclops Corporation, et al.")

A ruling was deferred on a request to intervene by Lehigh-Pocono Committee of Concern. The Committee was directed to confer with counsel for the Office of Consumer Advocate to determine whether the Consumer Advocate could represent the Committee's interests.

A ruling was also deferred on a petition to intervene filed by the New York Attorney General's Office, Robert Abrams Attorney General ("NYAG"). In response to the NYAG's request to promptly receive all documents filed in this proceeding, the Secretary was directed to serve a copy of all documents hereafter received, at reasonable cost, on the NYAG.

C. Issues.

Respondent Metropolitan Edison Company ("Met Ed") orally moved, in the alternative, that the presiding commissioners:

(a) sever the matter of Met Ed's Petition for Modification of the June 15, 1979 Order and decide that matter expeditiously, or

(b) expeditiously hear and decide the matter of Met Ed's Petition for Modification within the context of these proceedings.

The presiding commissioners refused to accept the oral motion of Met Ed as stated above, and directed that any written petition on this matter be filed not later than Thursday, November 29, 1979. The parties were directed to file their comments to the Met Ed petition not later than noon on Friday, December 7, 1979.

Respondents, Met Ed and Pennsylvania Electric Company, stated their intent to use calendar year 1980 data as the basis for calculating and presenting the effects of removing the costs associated with Three Mile Island, Unit No. 1. The presiding commissioners directed all parties to file comments separately on this issue not later than noon on Friday, December 7, 1979.

D. Scheduling of hearings.

The presiding commissioners set December 10, 11 and 12, 1979 in Hearing Room No. 1 in Harrisburg, Pennsylvania for the initial hearings in this proceeding.

The Respondents agreed to submit prepared direct testimony one week in advance of hearings at which the witnesses will be available for cross-examination.

The subject matter of the initial hearings will be the matter of Met Ed's Petition for Modification. Subsequent hearings will address the status of Three Mile Island, Unit No. 1.

This order may be amended or supplemented as additional matters relating to the conduct of these proceedings are considered; THEREFORE,

IT IS ORDERED: That this order shall be served on all parties to this proceeding.

BY THE COMMISSION,

William P. Thierfelder
Secretary

(SEAL)

ORDER ADOPTED: November 29, 1979

ORDER ENTERED: November 30, 1979

1548 013

LAW OFFICES
RYAN, RUSSELL & McCONAGHY
530 PENN SQUARE CENTER
P. O. BOX 699
READING, PA. 19603
215-372-4761

SAMUEL B. RUSSELL
FREDERICK L. REIGLE
W. EDWIN OGDEN
ERIC L.B. STRAHN
ALAN MICHAEL SELTZER

HAROLD J. RYAN (1972)
JOHN S. McCONAGHY
COUNSEL

November 29, 1979

Mr. William P. Thierfelder, Secretary
Pennsylvania Public Utility Commission
P. O. Box 3265
Harrisburg, Pennsylvania 17120

Re: Metropolitan Edison Company and
Pennsylvania Electric Company
Docket No. I-79040308

Dear Sir:

Enclosed herewith on behalf of Metropolitan Edison Company and Pennsylvania Electric Company is an original and five copies of a written procedural motion which confirms the oral motion made at the Prehearing Conference in the above proceeding on ~~December~~ November 27, 1979.

Very truly yours,

RYAN, RUSSELL & McCONAGHY

Samuel B. Russell

SBR/mp
Enclosures

cc: The Honorable W. Wilson Goode, Chairman)
The Honorable James Cawley) with copy of
The Honorable Michael Johnson) enclosure
The Honorable Susan Shanaman)
The Honorable Linda C. Taliaferro)

BEFORE THE

PENNSYLVANIA PUBLIC UTILITY COMMISSION

Pennsylvania Public Utility Commission et al.	:	
	:	Docket No. I-79040308
v.	:	
	:	
Metropolitan Edison Company and Pennsylvania Electric Company, Respondents	:	

MOTION OF METROPOLITAN EDISON COMPANY ("MET-ED") AND PENNSYLVANIA ELECTRIC COMPANY ("PENELEC") REQUESTING: A. A SEVERANCE (FROM THE PRESENT CONSOLIDATED PROCEEDINGS) OF MET-ED'S PETITION FOR MODIFICATION OF THE ENERGY CLAUSE CHARGE FIXED FOR MET-ED UNDER THE COMMISSION ORDER ENTERED JUNE 19, 1979 AT THE ABOVE DOCKET, OR, IN THE ALTERNATIVE, REQUESTING EXPEDITED HEARING AND DECISION WITH RESPECT TO THAT PETITION IN THE PRESENT CONSOLIDATED PROCEEDINGS, AND B. AN INITIAL DECISION WITH RESPECT TO THE FIRST ISSUE RAISED UNDER THE COMMISSION'S ORDER TO SHOW CAUSE ENTERED SEPTEMBER 21, 1979, NAMELY, "WHY TMI-1 SHOULD BE CONSIDERED USED AND USEFUL IN THE PUBLIC SERVICE".

To the Pennsylvania Public Utility Commission:

A. Request For A Severance, Or, In the Alternative, For Expedited Hearing and Decision, Within the Present Consolidated Proceeding, on Met-Ed's Petition for Modification of Its Energy Clause Charge

1. By Order entered June 19, 1979 at the above docket, the Commission suspended the normal operation of Met-Ed's energy clause (which is the standard form of electric utility energy clause prescribed by the Commission at I.D. 214) and fixed a non-fluctuating or "levelized" energy clause charge in the amount of 8.8 mills per kwh (i.e., 8.4 mills

for energy costs and .4 mills for the associated gross receipts tax) to be collected by Met-Ed during the eighteen month period commencing July 1, 1979.

2. By its petition filed on November 1, 1979, Met-Ed requested that the Commission modify its aforesaid Order by increasing the above mentioned levelized 8.8 mills per kwh charge by an amount of 6.9 mills per kwh. That petition, together with the attachments thereto, is incorporated herein by reference pursuant to 1 Pa. Code §33.3.

3. At its public meeting on November 8, 1979, the Commission consolidated, for purposes of hearing, its Orders to show cause issued at the above docket under dates of September 21, 1979 and November 1, 1979, and Met-Ed's petition for modification.

4. By its memorandum filed on November 23, 1979 in response to the Commission's Prehearing Order dated November 16, 1979, Met-Ed stated a number of reasons why a prompt hearing and decision with respect to its petition is of such importance to Met-Ed and its ability to serve its customers. That memorandum is incorporated herein by reference pursuant to 1 Pa. Code §33.3.

5. Since the entry of the Commission's Order on June 19, 1979, various factors have changed, causing increases in the experienced and anticipated levels of Met-Ed's energy costs. Such changes are detailed in Met-Ed's petition for modification.

6. As appears from Table 3 attached to Met-Ed's petition for modification of its energy clause charge, Met-Ed's energy costs for the six months ending December 31, 1979 are expected to average approximately 25 mills per kwh.

7. Under the Commission's above mentioned June 19, 1979 Order, Met-Ed is permitted to collect currently a total of 16.4 mills of energy costs per kwh of energy furnished to its customers, namely, 8 mills of energy costs per kwh via its base rates and 8.4 mills of energy costs per kwh via its energy clause.

8. If Met-Ed's energy clause had operated in its normal mode since June 30, 1979, (a) the amount of Met-Ed's uncollected energy costs (and the amount of its short-term bank borrowings which had to be incurred to finance such uncollected costs) would be substantially less than is presently the case and (b) the amounts of the energy clause charges to customers since June 30, 1979 would have correspondingly been substantially greater than the amounts recovered under the levelized charge fixed by the Commission.

9. The greater the delay in modifying Met-Ed's presently inadequate energy clause charge, the greater the increase that will have to be made later (a) to recover the rapidly accumulating and uncollected energy costs and (b) to prevent the exhaustion of Met-Ed's short-term borrowing capability (which has to be utilized to finance such uncollected energy costs). See Appendix A to Respondents'

above mentioned memorandum filed on November 1, 1979.

10. Although an electric utility's energy costs represent by far the largest component of that utility's cost of serving its customers, such energy costs are easily and readily identifiable.

11. The Commission, on a number of occasions in the recent past, has very quickly made adjustments, on an emergency or expedited basis, in the levels of electric utility energy cost charges.

12. In order to provide for the urgently needed expedited hearing and decision on the petition to modify its energy clause charge (which Met-Ed urges to be accomplished by January 1, 1980), Met-Ed requests that the Commission either (a) grant a severance of that petition from the present consolidated proceedings (so that it may be the subject of expedited hearing and decision as a separate proceeding) or, in the alternative, (b) provide for expedited hearing and decision on that petition within the context of the present consolidated proceedings.

B. Request That An Initial Decision Be Made As To Whether Three Mile Island Unit No. 1 ("TMI-1") Should Be Considered Used and Useful In The Public Service

13. By its Order entered September 21, 1979, the Commission Ordered Met-Ed and Penelec to show cause with respect to two issues, namely:

"(1) why TMI-1 should be considered used and useful in the public service, and

(2) why all of the costs associated with TMI-1 should not be removed from their respective base rates."

14. The first of such issues involves the determination of a conclusion of law which is common to both of the Respondent companies.

15. The determination of the second of such issues involves the necessity of developing, with respect to each of the two Respondents, Met-Ed and Penelec, a separate base rate case record related to a timely test year period, including the necessarily detailed base rate case direct testimony and cross-examination of the various witnesses of each of the Respondents as well as the witnesses presented by the Commission Staff and the various other parties to the proceeding.

16. If the first of such issues is the subject of an initial decision and if such decision concludes that TMI-1 continues to be used and useful, there will be no necessity for the subsequent presentation of evidence, conduct of hearings or any determination with respect to the second of such issues.

17. While this matter does not involve the high degree of urgency for an early decision as is the case with Met-Ed's above mentioned petition for modification of its energy clause charge, the making of the requested initial

decision (on the foregoing first issue concerning TMI-1) with reasonable promptness during the course of the present proceedings offers the possibility of achieving substantial savings in the amounts of time and effort that might otherwise be required on the part of the Commission, its Staff and the parties to the consolidated proceedings.

18. Therefore, Met-Ed and Penelec join in the suggestion made at the Prehearing Conference on November 27, 1979 by counsel for the Senior Power Action Group and submit that it is in the public interest that an initial decision be made, as promptly as possible during the course of the present proceedings, with respect to the aforesaid first issue raised under the Commission's September 21, 1979 Order to show cause.

Respectfully submitted,

Dated: November 29, 1979

Samuel B. Russell
Ryan, Russell & McConaghy
Attorneys for
Metropolitan Edison Company
and
Pennsylvania Electric Company

Of Counsel
James B. Liberman

Statement of F. D. Hafer In Support of Met-Ed's Petition to Increase Its Levelized Energy Cost Adjustment Charge

Q. Would you please state your name, address and occupation.

A. My name is F. D. Hafer and my business address is 100 Interpace Parkway, Parsippany, New Jersey. I am Vice President, Rate Administration, of GPU Service Corporation ("Service Company"), a subsidiary of General Public Utilities Corporation ("GPU"), the owner of all of the common stock of Metropolitan Edison Company ("Met-Ed") and Pennsylvania Electric Company ("Penelec"). A brief summary of my educational and professional background is attached as Appendix A.

Q. What is the purpose of your testimony?

A. Together with witness John G. Graham, Treasurer of GPU, I am testifying in support of Met-Ed's petition for a 6.9 mill increase in its levelized energy cost adjustment charge filed in this docket on November 1, 1979. That petition has been marked for identification as Met-Ed/Penelec Exhibit A-2.

Q. With respect to the clause petition, could you distinguish the areas of your responsibility and those of Mr. Graham?

A. Yes. A major factor affecting the determination of the level of the clause increase Met-Ed has requested was its projected level of short-term debt during the year 1980, as shown by Figures 1 and 2 of Appendix B to Exhibit A-2. Figure 1 shows that without a revision in Met-Ed's 8.8 mill level charge currently in effect, Met-Ed's short-term debt is projected to exceed its limit under the revolving credit agreement Met-Ed has with its lending banks by May of 1980. Figure 2 shows that the requested 6.9 mill increase, provided it were to become effective on January 1, 1980, would keep Met-Ed's short-term debt within manageable limits. Although I am prepared to give a broad overview of financial matters, detailed support for the cash flow projections employed in this analysis, the terms of the revolving credit agreement as they apply to Met-Ed and GPU, and the necessity for maintaining Met-Ed's short-term debt below its allowed limit will be provided by Mr. Graham. I will also give an overview of the operation of Met-Ed's clause under the provisions of its tariff, and the energy cost projections and assumptions underlying our requested increase will be supported by me. With respect to the latter, I will again defer to specialized witnesses for detailed support as may be necessary.

1548 022

Q. Could you briefly describe the functioning of Met-Ed's energy clause prior to the TMI-2 accident on March 28, 1979?

A. Yes. In accordance with the Commission's directives in I.D. 214, effective July 1, 1978, Met-Ed implemented a "net energy cost rate," or an energy cost adjustment clause that recovered the fuel cost of Met-Ed's internal generation, exclusive of costs incurred after the fuel had been delivered to the plant site, and purchased power costs exclusive of installed capacity and demand charges. The clause was based on a 6-month rolling average of historical costs and had an error correction factor to automatically adjust for clause over or under collections. The tariff pages describing the provisions of this clause, which has been temporarily levelized as a result of the TMI-2 accident, is attached as Appendix A of Exhibit A-2.

Q. You note that Met-Ed's 6-month historical clause was levelized following the TMI-2 accident. Could you elaborate on that?

A. Actually, Met-Ed's 6-month clause was levelized from July 1, 1978 through April 30, 1979 in accordance with procedures mandated by the Commission for effecting a transition from Met-Ed's clause previously in effect to the 6-month clause prescribed by the Commission. In May and June 1979, following the end of this transition procedure, energy cost adjustment charges based on a 6-month rolling

average historical costs were billed. Effective July 1, 1979, the charges that would have been billed under the 6-month clause were temporarily replaced by a level factor of 8.8 mills per Kwh, by the Commission Order entered June 19, 1979 in Docket No. I-79040308. It was anticipated in the Commission's Order that the 8.8 mill level charge would remain in effect for 18 months until December 31, 1980. The addendum to Met-Ed's tariff authorizing the level charge (Appendix A of Exhibit A-2) does, however, permit an earlier revision if requested by Met-Ed or directed by the Commission.

Q. Why was the clause levelized?

A. The levelizing of the clause was basically adopted to moderate steep monthly increases in adjustment charges to customers that otherwise would have been billed under the 6-month clause as a result of the sharp increases in Met-Ed's energy costs that occured following the TMI-2 accident. It was assumed that Met-Ed's unrecovered energy costs which would accumulate during the initial months of billing the level charge (i.e., from July through December 1979) would be recovered in 1980 following the return of TMI-1 to service, which at the time the level charge was determined, was expected to occur by January 1, 1980.

Q. What were the other significant assumptions underlying the Commission's determination of the 8.8 mill level charge?

A. The Commission basically accepted Met-Ed's projections of the cost of TMI replacement energy, which Met-Ed estimated would average about $10 million per month with both TMI units out of service, and drop to about $3.5 million per month following the return of TMI-1 to service. In both cases, the estimates represented the "gross" cost of TMI replacement energy, before offsetting reductions in energy costs expected to result from short-term power purchases that GPU was actively seeking at the time to lessen the impact of the TMI-2 accident. On a "net" basis reflecting these reductions, which the Commission estimated would amount to about 25% of the gross TMI replacement energy cost, the Commission's estimates of the cost of TMI replacement energy were $7.5 million per month with both TMI units out, and $2.5 million per month with only TMI-2 out. The Commission added its estimated TMI replacement energy costs to Met-Ed's energy costs originally budgeted for the 18-month period from July 1, 1979 to December 31, 1980 on the assumption of normal operation of the TMI units, and projected total energy costs for the period of approximately $200 million. The 8.8 mill level charge was then determined by dividing this amount by total sales of 12,257 Gwh projected for the period, deducting the 8 mills of energy costs per Kwh included in retail base rates, and applying a tax factor to make provision for the 4.5% Pennsylvania Gross Receipts Tax. In addition,

although the Commission did not reflect either of the directives in its determination of the 8.8 mill level charge, it (a) authorized the inclusion of the demand component of the cost of TMI-related power purchases as part of the costs recoverable by the energy clause for the period from July through December, 1979, and (b) instructed Met-Ed to negotiate with PJM to eliminate the "split savings" component of the cost of GPU's TMI-related interchange purchases from PJM so as to price such purchases at cost.

Q. Met-Ed's peition for an increase in the 8.8 mill level factor indicates that its energy costs have exceeded the costs assumed in determining that factor. Could you indicate the reasons for this?

A. First, and most importantly, the expected return date of TMI-1 has slipped from the January 1, 1980 date assumed in determining the 8.8 mill level factor to a late 1980 date at the earliest. As will be testified to by witness R. C. Arnold, this slippage is due to the lengthy procedures instituted by the NRC as a precondition for the return of TMI-1 to service. In its annual review meeting before the Commission held on September 21, 1979, Met-Ed included, on page 30 of the booklet handed out at the meeting and incorporated in this record as Exhibit F-1, a capsule summary of the NRC's tentative TMI-1 restart schedule. That schedule indicates that the

NRC could render a decision in the TMI-1 restart proceeding by mid-August, 1980, and Met-Ed has, for purposes of its energy clause petition, accordingly assumed a TMI-1 return date of 9/1/80. Until the regulatory and political climate surrounding the TMI accident stabilizes and although Met-Ed and GPU will exert every effort to get TMI-1 returned to service as soon as possible, this projected return date must be considered tentative at best.

Q. You noted that the Commission assumed Met-Ed would be able to achieve substantial savings in energy costs by virtue of arranging short-term power purchases with other utilities. What has Met-Ed's experience been with such purchases since the accident?

A. Met-Ed believes that it, or more precisely, that GPU acting on behalf of Met-Ed and the other GPU operating companies, has been very agressive in seeking out such purchases, and it is confident that it has carried out the Commission's directives on this score. However, because the price of oil has risen substantially since the time the budget used in determining the level factor was prepared, the savings in energy costs achieved from the purchases have been largely offset by increases in the cost of TMI replacement energy, which is largely oil-fired in source. Analysis of our experience with the purchases through September indicates that they have

reduced Met-Ed's energy costs by about $12.5 million over the 5-month period from May through September, or by about $2.5 million per month. This estimate is supported by the testimony and exhibits of witness E. Newton, Jr. While the estimated monthly savings of $2.5 million from the purchases is in line with the level of savings assumed by the Commission in determining the 8.8 mill level factor, we estimate that Met-Ed's cost of TMI replacement energy with both TMI units out has increased from our original estimate of $10 million per month to about $14 million per month, which represents the average monthly replacement cost Met-Ed has experienced since the TMI accident, i.e., from April through October, 1979. This increase has accordingly more than offset the savings we have achieved from the outside power purchases so far.

Q. Could you briefly indicate how GPU's negotiations to reduce the cost of interchange purchased from PJM have fared?

A. Yes. On October 10, 1979, in response to the Commission's Order, Met-Ed and Penelec filed a petition seeking Commission approval of a PJM proposal to price GPU's TMI-related interchange purchases from PJM at cost plus 10%, rather than on PJM's normal "split-savings" basis. We estimate that savings in interchange costs from this proposal could be as high as $32 million in 1980 on a GPU basis, of which Met-Ed's share would be about $5.5

million, but note that this estimate is not incremental to the savings achieved from the outside power purchases. That is, if the PJM proposal were adopted, the interchange energy purchased under it would largely be in replacement of, rather than in addition to, many of the short-term power purchases we are now making. We would therefore to some extent be simply substituting PJM savings for savings we are now achieving from the outside power purchases. A major advantage of PJM interchange under the cost plus 10% proposal, however, would be the greater reliability of its supply, as compared to the purchases.

Q. Has the PJM proposal gone into effect?

A. The PJM proposal has been approved by the Pennsylvania Commission by its Order entered 11/20/79, but currently is awaiting approval by the Maryland and District of Columbia Commissions. Following approval by these commissions, a filing with the Federal Energy Regulatory Commission ("FERC") will be made and it is anticipated that the FERC will approve the proposal without delay.

Q. In reference to the TMI-related purchases, you noted that witness Newton is providing detailed testimony and exhibits. Is similar testimony being supplied with respect to PJM's cost plus 10% proposal?

A. Yes, it is. Witness R. H. Sims will discuss the current status of the PJM proposal in detail, and also review the contractual arrangements associated with the outside

power purchases. In addition, Mr. Newton's exhibits will summarize the assumptions as to the level of both the outside power purchases and the PJM purchases that were employed in preparing Met-Ed's energy clause increase petition.

Q. You noted earlier that the slippage in the expected return date of TMI-1, and consequently the increase in Met-Ed's energy costs that will result due to the delay in the return of TMI-1 to service, is the primary reason for the need to increase Met-Ed's level energy cost adjustment charge. Have there been, or are there increases in Met-Ed's energy costs as well?

A. Yes. Oil costs have increased substantially since the budget used in determining the 8.8 mill level charge was prepared, and are expected to continue to increase in the future. The cost of coal by comparison has been relatively stable, but may well increase in reaction to the oil price increases. We are now projecting an average coal cost of about $36 per ton for the year 1980. In October, Met-Ed's average cost of coal was about $34 per ton. In the case of oil, Met-Ed's cost increases have been far greater. In the prior proceeding, it was assumed that Met-Ed's average cost of oil for the year 1980 would be about $19.20 per barrel. In October, 1979, Met-Ed paid an average of $28.50 per barrel -- an increase of nearly 50% over the level previously projected

for 1980. Although Met-Ed's oil-fired generation does not supply a large percentage of its energy requirements, increases in oil prices substantially increase Met-Ed's interchange costs because interchange is largely supplied from oil-fired sources.

Q. Could you indicate the combined effect of these increases, as compared to the level of energy costs it was assumed Met-Ed would experience in the prior proceeding?

A. Since July, the first month in which the 8.8 mill level charge was billed, Met-Ed's actual energy costs have averaged about 26 mills per Kwh, as compared to total charges for energy costs allowed (under the Commission's June 19, 1979 Order) of 16.4 mills (8 mills included in base rates, plus the 8.4 mill energy cost component of the 8.8 mill level charge). As noted earlier, the Commission's determination of the 8.8 mill level charge was based on average energy costs projected for an 18-month period, in which TMI-1 was assumed to be in service for the last 12 of the 18 months. The lower energy costs that were expected to occur on the assumption that TMI-1 would be back on line by January 1, 1980 will not in fact occur, and the costs now being experienced by Met-Ed will instead continue at their current level well into 1980. This would indicate that the 8.8 mill charge should be increased by nearly 10 mills, including taxes.

Q. Met-Ed's experience under the level clause through October would indicate that a substantial cost under-recovery has occurred.

A. That's true. I might point out that this result was anticipated in the prior proceeding, but it was also assumed in that proceeding that the initial under-recovery in 1979 would be made up in 1980. This will not now happen due to the delay in TMI-1's return to service. As shown by Met-Ed's statement of clause revenues, expenses and deferrals that will be supported by witness D. L. Huff, Met-Ed's balance of retail energy costs unrecovered as of October 31, 1979 was approximately $51 million, exclusive of the $14 million balance recoverable by base rates. By the end of the year, we estimate the unrecovered balance will increase to about $61 million. If Met-Ed's level charge were increased just to recover this deferred balance, an increase of 8.1 mills, including taxes, would be indicated.

Q. According to your projections, would such an increase be sufficient to provide for the cost increases you discussed previously?

A. No it would not. A "full cost recovery" re-determination of the level charge, essentially replicating the method employed in the prior proceeding would indicate that the 8.8 mill charge should be increased by 10.6 mills.

1548 032

Q. How then did you determine that the 6.9 mill requested increase would be sufficient?

A. Our approach was to determine the minimum clause increase necessary from the standpoint of financial prudence, or the increase that is minimally required to permit Met-Ed to finance, using its currently available resources, energy costs not currently being recovered, thereby effectively deferring a substantial portion of the increased energy costs that will result from the delay in the return of TMI-1 to service to the period following the unit's return, at which time such deferred costs would be billed.

Q. And your cash flow analysis indicated that a 6.9 mill increase would represe c such a minimum increase, that is, provide a margin of safety with respect to Met-Ed's short-term debt limit?

A. Yes, it would, provided it becomes effective on January 1, 1980. As we pointed out in our response to the Commission's prehearing order dated 11/16/79 that was filed with the Commission on 11/23/79, the clause increase required to keep Met-Ed's short-term debt below the margin of safety increases sharply if the increase is delayed. For example, if the effective date of the clause increase were delayed until February 1, 1980, the increase for the period from February through June of 1980 would have to be 8.4 mills per Kwh to keep

Met-Ed's short-term debt from exceeding the margin of safety. The corresponding increase assuming a March 1 effective date would be 10.7 mills.

Q. In making these projections, what was assumed with respect to retaining TMI-1 in rate base?

A. All of our projections assume that Met-Ed's base rates will not be reduced to eliminate the capital and operating costs of TMI-1. If Met-Ed's rates were so reduced -- and Met-Ed is confident that it will be able to demonstrate that they should not be -- Met-Ed's clause increase request would have to be increased by an amount equal to the reduction to keep its short-term debt within the same margin of safety.

Q. What is the impact of the requested increase on charges to customers?

A. As we noted in the clause increase petition, (Exhibit A-2) the 6.9 mill increase would increase charges to all retail customers by about 15.7% (Table 10) and charges to the average residential customer by about 12.3% (Table 9). Even with this increase, Met-Ed's rates would still be lower than the rates applicable to residential customers served by several other Pennsylvania utilities as shown by Figure 6 of Appendix B to Exhibit A-2. We have since updated these comparisons to reflect rates in effect as of December 1, 1979 with essentially the same results, as will be testified to by witness E. F. Carter.

1548 034

Q. Please describe what is represented on Met-Ed/Penelec Exhibit A-3?

A. That exhibit provides a detailed breakdown, by month, of Met-Ed's actual energy costs during the period of July through September, 1979, and projected energy costs for the period of October of 1979 through December of 1980. We expect shortly to update that exhibit to provide the actual data for the month of October, 1979.

Q. Do you have any additional comments to make?

A. Yes. Although Met-Ed is projected to continue to experience substantial cost under-recoveries even if it's requested 6.9 mill clause increase is granted, the reconciliation procedures employed with the clause, which have long been advocated by Met-Ed, insure that there is no possibility of customers experiencing permanent overcharges should Met-Ed's estimates prove to be wrong.

Q. Does this conclude your testimony at this time?

A. Yes, it does.

1548 035

F. D. Hafer

I am Vice President, Rate Administration of GPU Service Corporation.

I have been an employee and/or officer of the GPU System for 17 years. I began such employment in September 1962, having previously attended Drexel Institute in Philadelphia, Pennsylvania, during the period September 1959 through June 1962, where my principal field of study was engineering. During the period September 1962 to June 1968 I was employed by Metropolitan Edison Company, initially as an engineering trainee in the Planning Department, subsequently as engineering assistant in the Economic Analysis and Rates Department and, for the last two years there, my employment was as administrative assistant to that Company's Vice President and Chief Engineer. In June 1968, I was transferred to General Public Utilities Corporation, where I initially served as a staff assistant, becoming Assistant Treasurer in March 1970 and Treasurer in September 1970.

In August 1977 I was elected Vice President - Rate Administration for GPU Service Corporation. During the course of 1977 I was elected to the Boards of Directors of Metropolitan Edison, Jersey Central and Pennsylvania Electric Company. I continued to hold the position of Treasurer for both the Service Company and the Parent Company until the new treasurer was named in September of 1978.

I have appeared as a witness in rate cases of Pennsylvania Electric Company and Metropolitan Edison Company before the Pennsylvania Public Utility Commission, and of Jersey Central

Power & Light Company before the New Jersey Board of Public Utility Commissioners. I have presented testimony in rate cases for those companies before the Federal Power Commission, and have testified before that Commission in a Section 206 investigation involving Metropolitan Edison Company. I have testified as a witness before the Securities and Exchange Commission in a contested proceeding under the Public Utility Holding Company Act of 1935 relating to Metropolitan Edison Company.

I attended the Irving Trust Company utility finance seminar and served as one of three utility industry representatives on the Atomic Industrial Forum ad hoc committee to assess the impact of President Ford's economic program which was presented to a joint session of Congress on October 8, 1974.

On behalf of General Public Utilities Corporation and its subsidiaries, I have periodically made presentations to Moody's Investor Service, Standard & Poor's and other rating agencies. In the course of my duties, I met frequently on an informal basis with utility financial analysts representing banks, insurance companies, pension trusts, brokerage firms and the like. I am a member of an informal group of utility analysts and utility financial officers that meet periodically to discuss matters relating to the electric utility industry. On occasion, I also have represented General Public Utilities Corporation at the periodic meetings of financial officers of public utility holding companies registered under the Public Utility Holding Company Act of 1935.

METROPOLITAN EDISON COMPANY
Forecast (1) System Energy Costs (2)

	July, 1979			August, 1979			September, 1979			October, 1979		
	($000)	MWH	Mills/ KWH	($000)	MWH	Mills/ KWH	($000)	MWH	Mills/ KWH	($000)	MWH	Mills/ KWH
Internal Generation												
Coal												
Titus	$ 1,969	122,670	16.052	$ 2,046	134,249	15.241	$ 1,875	129,921	14.431	$ 1,862	120,791	15.418
Portland	1,402	102,551	13.665	1,435	106,149	13.515	1,064	79,011	13.467	1,967	134,113	14.667
Conemaugh	913	56,348	16.204	1,172	75,083	15.612	2,169	140,377	15.454	785	50,778	15.463
Total	4,284	281,569	15.213	4,653	315,481	14.749	5,108	349,309	14.622	4,614	305,682	15.096
Oil												
Combustion Turbines	295	5,726	51.584	651	11,655	55.873	276	5,062	54.656	755	13,126	57.516
Hydro												
York Haven	-	11,311	-	-	13,181	-	-	14,075	-	-	8,360	-
Nuclear												
TMI	3	(5,357)	-	1	(5,331)	-	1	(4,658)	-	-	-	-
Total Internal Generation	4,582	293,249	15.624	5,305	334,986	15.836	5,385	363,788	14.803	5,369	327,168	16.412
Interchange and Other Energy Purchased												
Interchange Purchased												
From PJM (3)	485	14,358	33.773	877	23,064	38.010	1,212	26,794	45.223	1	26,702	45.900
From GPU	1,908	89,964	21.212	1,417	64,145	22.088	900	20,265	44.401	1,223	46,636	26.231
Total	2,393	104,322	22.941	2,294	87,209	26.299	2,112	47,059	44.869	2,449	73,338	33.393
Interchange (Sold)												
To PJM	(1,506)	(52,352)	28.768	(1,805)	(60,037)	30.058	(1,384)	(41,764)	33.134	(508)	(15,915)	31.900
To GPU	(513)	(4,940)	103.984	(901)	(23,852)	37.783	(2,116)	(56,922)	37.178	(588)	(23,341)	25.200
Total	(2,019)	(57,292)	35.254	(2,706)	(83,889)	32.254	(3,500)	(98,686)	35.467	(1,096)	(39,256)	27.916
Other Energy Purchased (4)												
Borderline	1	10	53.800	1	11	48.273	1	11	51.545	-	-	-
AEP	-	-	-	-	-	-	-	-	-	7,828	276,600	28.300
APS	7,093	257,012	27.598	8,727	325,700	26.795	7,795	267,875	29.098	-	-	-
Jamestown	50	2,140	23.620	186	8,186	22.738	210	9,271	22.620	286	12,600	22.700
PP&L	2,019	57,440	35.160	1,165	30,100	38.719	1,105	28,700	38.513	551	18,750	29.400
Ontario	1,409	47,043	29.949	1,660	52,592	31.555	1,566	49,577	31.581	1,574	49,800	31.600
Total	10,572	363,645	29.074	11,739	416,589	28.178	10,677	355,434	30.036	10,239	357,750	28.620
Total Energy Purchased (Net)	10,946	410,675	26.654	11,327	419,909	26.975	9,289	303,807	30.572	11,592	391,832	29.585
Total Energy Costs	$ 15,528	703,924	22.059	$ 16,632	754,895	22.031	$ 14,674	667,595	21.978	$ 16,961	719,000	23.590
Total Sales	$ 15,528	618,743	25.096	$ 16,632	653,967	25.432	$ 14,674	661,723	22.173	$ 16,961	642,264	26.409

(1) July, August and September, 1979 actual, October, November and December, 1979 forecast

(2) "Energy Costs" are costs recoverable by retail energy clause, all fuel costs and all purchased power costs except demand charges and installed capacity payments

(3) Assumed PJM pricing proposal of average incremental cost plus 10% effective 11/01/79

(4) Includes capacity costs

1548 038

Exhibit No. A-3
Witnesses: J. G. Graham; F. D. Hafer
Page 1 of 6

METROPOLITAN EDISON COMPANY
Forecast (1) System Energy Costs (2)

	November, 1979			December, 1979			6 Months Ended December, 1979		
	($000)	MWH	Mills/ KWH	($000)	MWH	Mills/ KWH	($000)	MWH	Mills/ KWH
Internal Generation									
Coal									
Titus	$ 1,388	88,069	15.760	$ 2,196	141,813	15.485	$ 11,336	737,513	15.371
Portland	2,069	138,678	14.919	3,444	218,123	15.789	11,381	778,625	14.617
Conemaugh	1,252	84,093	14.888	1,613	107,764	14.959	7,904	514,443	15.368
Total	4,709	310,840	15.149	7,253	467,700	15.506	30,621	2,030,581	15.080
Oil									
Combustion Turbines	798	13,557	58.863	833	13,896	59.945	3,608	63,022	57.250
Hydro									
York Haven	-	8,090	-	-	8,360	-	-	63,377	-
Nuclear									
TMI	-	-	-	-	-	-	5	(15,346)	-
Total Internal Generation	5,507	332,487	16.563	8,086	489,956	16.504	34,234	2,141,634	15.985
Interchange and Other Energy Purchased									
Interchange Purchased									
From PJM (3)	1,680	40,686	41.292	1,940	46,982	41.292	7,420	178,586	41.549
From GPU	810	33,402	24.250	520	20,833	24.960	6,778	275,245	24.626
Total	2,490	74,088	33.609	2,460	67,815	36.275	14,198	453,831	31.285
Interchange (Sold)									
To PJM	(260)	(6,898)	37.692	(183)	(4,100)	44.634	(5,646)	(181,066)	31.182
To GPU	(700)	(27,777)	25.201	(1,154)	(45,771)	25.212	(5,972)	(182,603)	32.705
Total	(960)	(34,675)	27.686	(1,337)	(49,871)	26.809	(11,618)	(363,669)	31.947
Other Energy Purchased (4)									
Borderline	-	-	-	-	-	-	3	32	51.125
AEP	5,383	190,200	28.302	5,383	190,200	28.302	18,594	657,000	28.302
APS	1,328	61,500	21.593	1,328	61,500	21.593	26,271	973,587	26.984
Jamestown	286	12,600	22.698	286	12,600	22.698	1,304	57,397	22.719
PP&L	-	-	-	-	-	-	4,840	134,990	35.955
Ontario	1,574	49,800	31.606	1,574	49,800	31.606	9,357	298,612	31.335
Total	8,571	314,100	27.287	8,571	314,100	27.287	60,369	2,121,618	28.454
Total Energy Purchased (Net)	10,101	353,513	28.574	9,694	332,044	29.195	62,949	2,211,780	28.461
Total Energy Costs	$ 15,608	686,000	22.752	$ 17,780	822,000	21.630	$ 97,183	4,353,414	22.324
Total Sales	$ 15,608	664,386	23.492	$ 17,780	712,232	24.964	$ 97,183	3,953,315	24.583

(1) July, August and September, 1979 actual, October, November and December, 1979 forecast

(2) "Energy Costs" are costs recoverable by retail energy clause, all fuel costs and all purchased power costs except demand charges and installed capacity payments

(3) Assumed PJM pricing proposal of average incremental cost plus 10% effective 11/01/79

(4) Includes capacity costs

METROPOLITAN EDISON COMPANY
Forecast System Energy Costs (1)

	January, 1980			February, 1980			March, 1980			April, 1980		
	($000)	MWH	Mills/ KWH	($000)	MWH	Mills/ KWH	($000)	MWH	Mills/ KWH	($000)	MWH	Mills/ KWH
Internal Generation												
Coal												
Titus	$ 2,220	142,997	15.525	$ 1,748	109,003	16.036	$ 2,027	127,797	15.861	$ 1,495	92,782	16 113
Portland	3,352	210,517	15.923	3,042	196,935	15.447	3,246	210,517	15.419	3,190	203,726	15.658
Conemaugh	1,907	129,096	14.772	1,785	120,768	14.780	1,910	129,096	14.795	1,855	124 930	14.848
Total	7,479	482,610	15.497	6,575	426,706	15.409	7,183	467 410	15.368	6 540	421,438	15.518
Oil												
Combustion Turbines	530	8,851	59.880	502	8,282	60.613	541	8,824	61.310	527	8 509	61.934
Hydro												
York Haven	-	8,338	-	-	7,800	-	-	8 338	-	-	8 068	-
Nuclear												
TMI-1	-	-	-	-	-	-	-	-	-	-	-	-
Total Internal Generation	8,009	499,799	16.024	7,077	442,788	15.983	7,724	484,572	15.940	7,067	438,015	16.134
Interchange and Other Energy Purchased												
Interchange Purchased												
From PJM (2)	12,334	265,811	46.401	10,587	228,158	46.402	6,875	148,165	46.401	5,900	127,168	46.395
From GPU	55	2,389	23.022	102	4,422	23.066	153	6,671	22.935	358	15,632	22.902
Total	12,389	268,200	46.193	10,689	232,580	45.958	7,028	154,836	45.390	6,258	142,800	43.824
Interchange (Sold)												
To PJM	-	-	-	-	-	-	-	-	-	-	-	-
To GPU	(149)	(5,399)	27.598	(132)	(4,768)	27.685	(326)	(11,808)	27.608	(337)	(12,215)	27.589
Total	(149)	(5,399)	27.598	(132)	(4,768)	27.685	(326)	(11,808)	27.608	(337)	(12,215)	27.589
Other Energy Purchased(3)												
AEP	-	-	-	-	-	-	-	-	-	-	-	-
APS	1,469	62,500	23.504	1,469	62,500	23.504	1,469	62,500	23.504	1,469	62,500	23.504
Jamestown	307	12,400	24.758	307	12,400	24.758	307	12,400	24.758	307	12,400	24.758
PP&L	-	-	-	-	-	-	-	-	-	-	-	-
Ontario	1,944	56,500	34.407	1,944	56,500	34.407	1,944	56,500	34.407	1,944	56,500	34.407
Total	3,720	131,400	28.311	3,720	131,400	28.311	3,720	131,400	28.311	3,720	131,400	28.311
Total Energy Purchased (Net)	15,960	394,201	40.487	14,277	359,212	39.746	10,422	274,428	37.978	9,651	261,985	36.838
Total Energy Costs	$23,969	894,000	26.811	$ 21,354	802,000	26.626	$ 18,146	759,000	23.908	$ 16,708	700,000	23 869
Total Sales	$23,969	785,420	30.517	$ 21,354	789,178	27.059	$ 18,146	738,331	24.577	$ 16,708	683,135	24.458

(1) "Energy Costs" are costs recoverable by retail energy clause, all fuel costs and all purchased power costs except demand charges and installed capacity payments.

(2) Assumed PJM pricing proposal of average incremental cost plus 10% effective 11/01/79.

(3) Includes capacity costs.

1548 040

METROPOLITAN EDISON COMPANY
Forecast System Energy Costs (1)

	May, 1980			June, 1980			July, 1980			August, 1980		
	($000)	MWH	Mills/ KWH	($000)	MWH	Mills/ KWH	($000)	MWH	Mills/ KWH	($000)	MWH	Mills/ KWH
Internal Generation												
Coal												
Titus	$ 1,869	115,636	16.163	$ 2,243	138,384	16.209	$ 2,333	142,997	16.315	$ 2 369	142,997	16.567
Portland	2,432	155,391	15.651	3,191	201,221	15.858	3,362	210,517	15.970	3,358	210,517	15.951
Conemaugh	1,911	129,096	14.803	1,885	124,930	15.088	1,944	129,096	15.059	1,468	96,961	15.140
Total	6,212	400,123	15.525	7,319	464,535	15.756	7,639	482,610	15.829	7,195	450,475	15.972
Oil												
Combustion Turbines	528	8,452	62.470	532	8,370	63.560	569	8,851	64.287	575	8,851	64.964
Hydro												
York Haven	-	8,338	-	-	8,068	-	-	8,338	-	-	8,338	-
Nuclear												
TMI-1	-	-	-	-	-	-	-	-	-	-	-	-
Total Internal Generation	6,740	416,913	16.166	7,851	480,973	16.323	8,208	499,799	16.423	7,770	467,664	16.614
Interchange and Other Energy Purchased												
Interchange Purchased												
From PJM (2)	6,018	129,692	46.402	3,566	76,861	46.395	3,315	71,440	46.403	5,846	125,998	46.398
From GPU	736	31,998	23.001	364	16,025	22.715	410	18,086	22.669	1,178	50,872	23.156
Total	6,754	161,690	41.711	3,930	92,886	42.310	3,725	89,526	41.608	7,024	176,870	39.713
Interchange (Sold)												
To PJM	-	-	-	-	-	-	-	-	-	-	-	-
To GPU	(193)	(7,003)	27.560	(752)	(27,259)	27.587	(738)	(26,725)	27.615	(191)	(6,934)	27.545
Total	(193)	(7,003)	27.560	(752)	(27,259)	27.587	(738)	(26,725)	27.615	(191)	(6,934)	27.545
Other Energy Purchased(3)												
AEP	-	-	-	-	-	-	-	-	-	-	-	-
APS	1,469	62,500	23.504	1,469	62,500	23.504	1,469	62,500	23.504	1,469	62,500	23.504
Jamestown	307	12,400	24.758	307	12,400	24.758	307	12,400	24.758	307	12,400	24 758
PP&L	-	-	-	-	-	-	-	-	-	-	-	-
Ontario	1,944	56,500	34.407	1,944	56,500	34.407	1,944	56,500	34.407	1,944	56,500	34.407
Total	3,720	131,400	28.311	3,720	131,400	28.311	3,720	131,400	28.311	3,720	131,400	28.311
Total Energy Purchased (Nc	10,281	286,087	35.937	6,898	197,027	35.011	6,707	194,201	34,537	10,553	301,336	35.021
Total Energy Costs	$ 17,021	703,000	24.212	$ 14,749	673,000	21.754	$ 14,915	694,000	21.491	$ 18,323	769,000	23.827
Total Sales	$ 17,02	634,868	26.810	$ 14,749	632,774	23.308	$ 14,915	628,475	23.732	$ 18,323	661,745	27.689

(1) "Energy Costs" are costs recoverable by retail energy clause, all fuel costs and all purchased power costs except demand charges and installed capacity payments.

(2) Assumed PJM pricing proposal of average incremental cost plus 10% effective 11/01/79.

(3) Includes capacity costs.

1548 041

METROPOLITAN EDISON COMPANY
Forecast System Energy Costs (1)

	September, 1980			October, 1980			November, 1980		
	($000)	MWH	Mills/ KWH	($000)	MWH	Mills/ KWH	($000)	MWH	Mills/ KWH
Internal Generation									
Coal									
Titus	$ 2,295	138,384	16.584	$ 1,629	97,050	16.785	$ 2,277	135,294	16.830
Portland	2,522	156,589	16.106	2,615	159,095	16.437	3,352	203,726	16.453
Conemaugh	1,474	96,812	15.225	1,975	129,096	15.299	1,925	124,930	15.409
Total	6,291	391,785	16.057	6,219	385,241	16.143	7,554	463,950	16.282
Oil									
Combustion Turbine	553	8,423	65.654	568	8,557	66.378	558	8,272	67.456
Hydro									
York Haven	-	8,068	-	-	8,338	-	-	8,068	-
Nuclear									
TMI	540	223,488	2.416	562	231,312	2.430	524	223,488	2.345
Total Internal Generation	7,384	631,764	11.688	7,349	633,448	11.602	8,636	703,778	12.271
Interchange and Other Energy Purchased									
Interchange Purchased									
From PJM (2)	-	-	-	266	5,739	46.350	81	1,748	46.339
From GPU	228	10,095	22.585	524	23,141	22.644	115	5,132	22.408
Total	228	10,095	22.585	790	28,880	27.355	196	6,880	28.488
Interchange (Sold)									
To PJM	(2,020)	(71,621)	28.204	(1,256)	(43,612)	28.799	(2,278)	(81,075)	28.097
To GPU	(790)	(28,638)	27.586	(776)	(28,116)	27.600	(2,014)	(72,983)	27.595
Total	(2,810)	(100,259)	28.027	(2,032)	(71,728)	28.329	(4,292)	(154,058)	27.860
Other Energy Purchased (3)									
AEP	-	-	-	-	-	-	-	-	-
APS	1,469	62,500	23.504	1,469	62,500	23.504	1,469	62,500	23.504
Jamestown	307	12,400	24.758	307	12,400	24.758	307	12,400	24.758
PP&L	-	-	-	-	-	-	-	-	-
Ontario	1,944	56,500	34.407	1,944	56,500	34.407	1,944	56,500	34.407
Total	3,720	131,400	28.311	3,720	131,400	28.311	3,720	131,400	28.311
Total Energy Purchased (Net)	1,138	41,236	27.598	2,478	88,552	27.984	(376)	(15,778)	23.831
Total Energy Cost	$ 8,522	673,000	12.663	$ 9,827	722,000	13.611	$ 8,260	688,000	12.006
Total Sales	$ 8,522	669,628	12.726	$ 9,827	645,398	15.226	$ 8,260	666,279	12.397

(1) "Energy Costs" are costs recoverable by retail energy clause, all fuel costs and all purchased power costs except demand charges and installed capacity payments.

(2) Assumed PJM pricing proposal of average incremental cost plus 10% effective 11/01/79.

(3) Includes capacity costs.

METROPOLITAN EDISON COMPANY
Forecast System Energy Costs (1)

	December, 1980			12 Months Ended December 1980		
	($000)	MWH	Mills/ KWH	($000)	MWH	Mills/ KWH
Internal Generation						
Coal						
Titus	$ 2,421	142,997	16.930	$ 24,926	1,526,318	16.331
Portland	3,699	210,517	17.571	37,361	2,329,268	16.040
Conemaugh	2,001	129,096	15.500	22,040	1,463,907	15.056
Total	8,121	482,610	16.827	84,327	5,319,493	15.852
Oil						
Combustion Turbines	599	8,805	68.030	6,582	103,047	63.874
Hydro						
York Haven	-	8,338	-	-	98,438	-
Nuclear						
TMI	565	239,857	2.356	2,191	918,145	2.386
Total Internal Generation	9,285	739,610	12.554	93,100	6,439,123	14.458
Interchange and Other Energy Purchased						
Interchange Purchased						
From PJM (2)	970	20,893	46.427	55,758	1,201,673	46.400
From GPU	268	11,867	22.584	4,491	196,330	22.875
Total	1,238	32,760	37.790	60,249	1,398,003	43.096
Interchange (Sold)						
To PJM	(398)	(12,023)	33.103	(5,952)	(208,331)	28.570
To GPU	(2,008)	(72,747)	27.603	(8,406)	(304,595)	27.597
Total	(2,406)	(84,770)	28.383	(14,358)	(512,926)	27.992
Other Energy Purchased (3)						
AEP	-	-	-	-	-	-
APS	1,469	62,500	23.504	17,628	750,000	23.504
Jamestown	307	12,400	24.758	3,684	148,800	24.758
PP&L	-	-	-	-	-	-
Ontario	1,944	56,500	34.407	23,328	678,800	34.407
Total	3,720	131,400	28.311	44,640	1,576,800	28.311
Total Energy Purchased (Net)	2,552	79,390	32.146	90,531	2,461,877	36.774
Total Energy Costs	$ 11,837	819,000	14.453	$183,631	8,901,000	20.631
Total Sales	$ 11,837	709,143	16.692	$183,631	8,244,274	22.214

(1) "Energy Costs" are costs recoverable by retail energy clause, all fuel costs and all purchased power costs except demand charges and installed capacity payments.

(2) Assumed PJM pricing proposal of average incremental cost plus 10% effective 11/01/79.

(3) Includes capacity costs.

Q. Mr. Huff, are you familiar with the petition of Metropolitan Edison Company for a modification of the Commission's Order entered June 19, 1979 at I-79040308, which has been marked for identification as Met-Ed/Penelec Exhibit A-2?

A. Yes, I am.

Q. Was a part of that petition prepared by you or under your supervision?

A. Yes, the Statement of Retail Energy Clause Revenues, Expenses and Deferrals which is part of Appendix A to the petition, and which has been marked for identification as part of Met-Ed/Penelec Exhibit A-2, was prepared under my supervision.

Q. Please briefly identify what is represented by that portion of Met-Ed/Penelec Exhibit A-2?

A. As stated in Paragraph 5 of Met-Ed's petition, this schedule provides information with respect to the operation of the levelized energy adjustment charge (mandated by the Commission's Order entered June 19, 1979) for the three month period ended September 30, 1979. This information also has been supplied to the Commission in the Company's monthly reports, filed pursuant to Paragraph 12 of that Order. Further, this data corresponds to the reporting requirements set forth in items (a) through (c) of the third paragraph of the Addendum to Rider B (the Energy Cost Adjustment Clause) of Met-Ed's Tariff Electric Pa.PUC No. 42, which was filed with the Commission on June 22, 1979 in compliance with the June 19th

Order. Rider B and the Addendum are also part of Appendix A to the petition.

This schedule shows that for the three month period ended September 30, 1979, retail clause revenues for energy costs amounted to $15.3 million. Total system energy costs amounted to $46.8 million. As stated in Footnote 2 of this schedule, those costs include the demand component of the cost of TMI-related short-term power purchases, consistent with Paragraph 4 of the Commission's Order entered June 19, 1979.

For the three month period ended September 30, 1979, the energy costs (above the level recovered by base rates) applicable to retail sales amounted to $29.5 million. As of the end of September, 1979, $42.3 million of retail energy costs were deferred.

Q. Mr. Huff, I show you what has been marked for identification as Met-Ed/Penelec Exhibit B-3 and ask you if that exhibit was prepared by you or under your supervision?

A. Yes, Exhibit B-3 was prepared under my supervision.

Q. Would you please identify what is represented by that exhibit.

A. Exhibit B-3 provides the same type of information contained in the schedule which I have just described, updated to reflect retail energy clause revenues, expenses and deferrals through the end of October, 1979. For the four month period ended October 31, 1979, energy costs (above the level recovered by base rates) applicable to retail sales amounted to $43.1 million,

an increase of $13.6 million over the three month level at September 30. Met-Ed's balance of retail energy costs deferred rose from $42.3 million as of the end of September, 1979 to $50.9 million for the four month period as of the end of October.

Q. Does this complete your testimony at this time?

A. Yes, but I do wish to point out that I have also submitted Met-Ed/Penelec Statement B and Met-Ed/Penelec Exhibits B-1 and B-2, in connection with a base rate future test year period. In the event that additional testimony may be required in connection with that data or any subsequently filed Met-Ed base rate data, I will furnish such testimony.

Met-Ed/Penelec
Exhibit B-3
Witness: D. L. Huff

METROPOLITAN EDISON COMPANY
Statement of Retail Energy Clause Revenues, Expenses and Deferrals[1]
4 Months Ended October 31, 1979

	July	August	September	October	4 Months October 1979
Sales and Revenues					
Pennsylvania Retail Sales (Gwh)	582	613	625	596	2416
Level Energy Cost Adjustment Charge (mills/Kwh)	8.8	8.8	8.8	8.8	8.8
Clause Revenues Before Billing Adjustments ($ millions)	$ 5.1	$ 5.4	$ 5.5	$ 5.2	$21.2
Billing Adjustments	(0.0)	0.0	0.0	(0.0)	(0.0)
Clause Revenues as Adjusted	$5.1	$5.4	$5.5	$ 5.2	$21.2
(Less): Pa. Gross Receipts Tax @ 4.5%	(0.2)	(0.2)	(0.3)	(0.2)	(0.9)
Retail Clause Revenues for Energy Costs	$ 4.9	$ 5.2	$ 5.2	$ 5.0	$20.3
Expenses					
Total System Energy Costs ($ millions)[2]	$15.5	$16.6	$14.7	$19.5	$66.3
Total System Sales (Gwh)	619	654	662	632	2567
Energy Costs per Kwh Sold (mills)	25.1	25.4	22.2	30.8	25.8
(Less): Energy Costs per Kwh included in Retail Base Rates	(8.0)	(8.0)	(8.0)	(8.0)	(8.0)
Energy Costs per Kwh above Base	17.1	17.4	14.2	22.8	17.8
Energy Costs (above Level Recovered by Base Rates) Applicable to Retail Sales (Costs per Kwh Times Retail Sales)	$10.0	$10.7	$ 8.8	$13.6	$43.1
Deferrals					
Balance of Retail Energy Costs Deferred at Beginning of Month ($ millions)	$28.1	$33.2	$38.7	$42.3	$28.1
Plus: Current Month's Deferral[3]	10.0	10.7	8.8	13.6	43.1
(Less): Current Month's Retail Clause Revenues for Energy Costs	(4.9)	(5.2)	(5.2)	(5.0)	(20.3)
Balance of Retail Energy Costs Deferred at End of Month	$33.2	$38.7	$42.3	$50.9	$50.9

(1) as reported monthly to the Commission

(2) includes demand component of cost of TMI-related short-term power purchases ($7.0 million for 4 months ended October 31, 1979).

(3) includes demand component of cost of TMI-related short-term power purchases ($6.6 million for 4 months ended October 31, 1979).

TESTIMONY OF B. H. CHERRY

Before the Pennsylvania Public Utility Commission

Q. Please state your name and address?

A. My name is Bernard H. Cherry. My address is 100 Interpace Parkway, Parsippany, New Jersey.

Q. By whom are you employed, and in what capacity?

A. I am employed by GPU Service Corporation (GPUSC) as Vice President, Corporate Planning.

Q. Please state your educational, professional background?

A. A resume of my educational and professional background is set forth in Appendix A.

Q. Mr. Cherry, what is the purpose and subject area of your testimony in this case?

A. The purpose of my testimony is twofold: 1) to present a history of the planning and operation of TMI-1; and 2) to demonstrate the substantial benefits that Met-Ed and Penelec customers have already received and can expect to receive in the future, as a result of the operation of TMI-1.

Q. Which of the exhibits that have been marked for identification were prepared by you and under your supervision?

A. Met-Ed/Penelec Exhibit E-1 has been prepared by me or under my supervision.

Q. Have there been substantive benefits to Met Ed and Penelec customers as a result of the construction and operation of TMI-1?

A. Yes, there have been.

Q. Would you tell us what they are, please?

A. Yes. In terms of dollar savings, Met Ed and Penelec customers have saved about $250 million because GPU built and operated TMI-1 rather than an oil-fired plant. This savings accrued over the period of TMI-1 operation, from Sept. 1974 through Dec. 1978. Relative to a coal-fired plant, our customers have saved about $72 million. We expect that the dollar savings will be enormous over a period of 30 years (starting in Sept. 1974); more than $10 billion relative to an oil-fired plant and more than $2 billion relative to a coal-fired plant.

Q. Given that TMI-1 was built, what are the advantages to PJM and PJM's customers?

A. In terms of oil savings, operation of TMI-1 saves about 6.7 million barrels of oil per year in PJM. If we assume the current price of $25 per barrel, this amounts to a savings of $168 million per year.

Q. Would you please describe briefly the generation planning process?

A. In the development of a generation plan, a multitude of sometimes noncomparable considerations must be studied and evaluated and finally a judgement rendered on a specific course of action.

We begin with an energy and load forecast for twenty years that defines expected demand for electric power by our customers. It is then necessary to design a system expansion plan to assure that the required capacity is available in a reliable, cost effective, and environmentally acceptable manner. The resulting plan is a mix of base load, intermediate or cycling, and peaking capacity units, bulk transmission and local distribution networks, all geographically configured in a manner to assure system stability and reliability of the power supply. This is done in a decision environment that recognizes emerging regulations on technology, the maturation of that technology, and in recent years the considerable uncertainties regarding fuel prices.

Q. Please describe the planning thinking at GPU prior to and at the time the decision was made to construct TMI-1?

A. Approximately thirty years ago GPU embarked on a program designed to achieve the benefits of economy of scale in generation facilities by installing units sized to the total GPU system load, rather than the loads of the individual members of the system. Moreover, in order to realize the economies of transporting electric energy by wire rather than coal by railroad, the GPU System built an extensive transmission system and the first two

units at its Shawville Station near the coal fields in Western Pennsylvania. As the system load grew, two additional units were installed at Shawville and another at Seward, also located near the Pennsylvania coal fields.

While it was feasible for the GPU companies to build a significant part of the generating capacity at or near mine mouth, reliability considerations also made it necessary to build generating capacity in the Eastern portions of the service area. Therefore, during this same time frame, coal-fired generating units were installed at the Portland Station (on the Delaware River) and at the Sayreville Station in New Jersey.

The GPU System also did some pioneering work on the development of extra high voltage transmission and in the promotion of tenancy-in-common ownership by nonaffiliated utilities or large mine mouth coal-fired generating stations, which led to the Keystone and then subsequently the Conemaugh and Homer City Stations near Johnstown. The GPU System is a participant, as owner of a fractional interest, in these three stations; Penelec operates these three stations for the respective owners. Additionally, GPU companies constructed the Saxton Nuclear Experimental Generating Station to gain first hand experience with the construction, operation and maintenance of a nuclear generating facility. Through the Atomic Energy Act of 1954, the Federal Government had actively encouraged the development of nuclear generation of electric energy.

The decision environment in the mid 1960's, when commitments were being made for TMI-1, was considerably different from that of today. This was an era when the price of fuel oil was approximately $2.40 per barrel, as compared with recent prices of $25.00 or more. This was a time when facilities were being constructed without the regulations of the Clean Air Act Amendments of 1970, and there was a strong national commitment to expand our nuclear generating capacity.

Thus, by the mid 1960's, GPU had substantial existing wholly owned Western coal-fired generating capacity (Shawville, Seward, and Warren) and was committed to several Western Pennsylvania coal facilities then under construction - Keystone (in service 1967/68), Conemaugh (in service 1970/71), and Homer City Units 1 and 2 (in service 1969). Given these commitments, and recognizing that our system was spread from the Atlantic Ocean through the States of New Jersey and Pennsylvania to Lake Erie, our future planning focused on the need for additional base load capacity in the East. Our forecast indicated that increasingly larger quantities of electrical energy would be moving east; hence, for system stability and reliability reasons our attention was directed toward such locations as Oyster Creek (near Toms River, New Jersey) and Three Mile Island (near Middletown, Pennsylvania).

On November 9, 1965 the northeast power failure occurred. On June 5, 1967 the PJM power failure occurred. In response, Public Utility Commissions of the several states (including Pennsylvania) in which the PJM companies operate took a number of steps to insist that those utilities

both increase their demand forecasts and install additional generating capacity to provide greater reserve margins. These steps included meetings of those Commissions as a group with the Chief Executive Officers of the PJM companies as well as continuing pressures from the staffs of the Commissions. This insistence on the part of the Commissions was subsequently documented by the Annual Report of the New Jersey Board of Public Utility Commissioners for the year 1970. In that report the Board related the fact that it had directed New Jersey electric utilities to install generating capacity to meet an objective of providing a 20% reserve margin while assuming their load would double by 1978. Identical conclusions as to the need to construct additional generating facilities to provide at least a 20% reserve margin over the then forecast peak loads were reached by your Commission in its Order of August 8, 1972 in the Met-Ed case at C.19312 and its Order of August 17, 1973 in the Penelec case at C.19561.

Q. Would you please describe the specific studies that led to the decision to construct TMI-1?

A. Beginning in 1962, a series of studies had been made between mine mouth generation in Western Pennsylvania and

coal-fired generation in Eastern Pennsylvania and New Jersey. These studies were uniformly favorable to mine mouth generation, with the resulting transportation of energy by wire rather than by rail. These studies led to the construction of the above mentioned mine mouth generating plants in Western Pennsylvania of Keystone, Homer City and Conemaugh.

The relative economics of mine mouth and Eastern coal-fired generation were also explored in connection with the economic evaluation of Oyster Creek (Report On Economic Analysis For Oyster Creek Nuclear Generating Station, February 17, 1974). This also demonstrated the economic advantage of the Western Pennsylvania mine mouth generation relative to Eastern coal-fired generation.

When studies were made in 1965 of additional nuclear generation for the GPU system (for a unit which became TMI-1), the economic comparison was made between nuclear and mine mouth generation. These 1965 studies showed a long term advantage for the nuclear installation, but probable short term advantage for the then proposed Homer City mine mouth plant. As a result of these studies, a decision was made in June 1965 to proceed first with Homer City.

In 1966, the economics of additional nuclear generation were re-examined, but this time in comparison with a coal-fired unit at the same site as would be selected for the nuclear unit. There are two reasons for this shift in bases of comparison, 1) the particularly attractive conditions applicable to the Homer City Plant were no longer available as an alternative, and 2) coal suppliers had suggested that fuel might be delivered to the GPU site for 20¢ per million Btu, although this was not a firm offer of such a supply.

Even on the basis of this low delivered fuel price, if it should materialize, a nuclear unit installation was found to be advantageous. In November 1966 the decision was made to proceed with a nuclear installation in December 1966, the TMI site was selected for the installation.

The cost estimates used in these 1965 and 1966 studies are far different from those that are presently made for both types of plants because of changes in cost levels and because of changes in scope related in large part to environmental and regulatory considerations.

The major environmental cost of using a coal-fired base load installation includes such items as the discharge of noxious and toxic gases, including sulfur dioxide and nitrogen

oxides, the discharge of particulates, and the presence of unsightly coal and ash storage areas.

Another economic study was performed as part of the environmental report that Metropolitan Edison Company submitted to the Atomic Energy Commission, predecessor of the Nuclear Regulatory Commission, at the time Met-Ed was applying for an operating license. This economic study also showed that TMI Units 1 and 2 would be more economical than either coal- or oil-fired base load units for operating periods in excess of 5,200 hours per year (capacity factor greater than 59%).

Q. Mr. Cherry, would you please describe the operating history of TMI-1?

A. TMI-1's nuclear reactor achieved its first chain reaction on June 5, 1974 and the first electricity was produced on June 19, 1974. During pre-commercial operation, 472,296 megawatt hours of electric energy were produced. On Labor Day, September 2, 1974 the unit went into commercial operation and has since established an exceptional reliability record. From September, 2, 1974 until March 28, 1979, the date of the TMI-2 accident, the 75% undivided interests in TMI-1 owned by Met-Ed and Penelec provided 17.9 million megawatt hours of electric energy or an average of 4.0 million megawatt hours per year. Such average annual generation is equivalent to

the average annual requirements of approximately 530,000 residential customers served by the two utilities. Through 1978, the average annual capacity factor for TMI-1 was about 78%, which was substantially above the national average for nuclear generating units and for modern base load coal-fired generating units. Even if TMI-1 does not resume operation until January 1, 1981, for example, its capacity factor for the period September 1974 through December 1980 would still be about 56%, greater than the reported lifetime capacity factors (through August 1979) of some 20 nuclear plants owned by other electric utilities. Exhibit E-1 compares the capacity factor for TMI-1 to reported values for other nuclear generating units in Pennsylvania.

Q. Have you recently studied the economic benefits that TMI-1 has provided to Met-Ed and Penelec customers relative to alternative methods of electrical energy generation that were available to Met-Ed and Penelec?

A. Yes I have.

Q. To what extent, if any, would operation of TMI-1 avoid the need to burn oil?

A. It would, of course, avoid the burning of considerable quantities of oil.

Q. How much oil would operation of TMI-1 save in 1980?

A. Normal operation of TMI-1 in 1980 would be expected to save about 6.7 million barrels of oil throughout the PJM system.

This is based on a computer simulation of the operation of PJM, including the economic ordered dispatching of units throughout the system. Absence of TMI-1 from the list of operable plants requires that a number of oil-fired steam units, and to a lesser degree oil-fired combustion turbines, be operated to a greater extent than would be required if TMI-1 were in service. Burning this extra oil when an alternative source of energy (TMI-1) is available is contrary to national policy and to President Carter's stated objective of reducing oil consumption for purposes of electricity production.

Q. In addition to the economic benefit of TMI-1, is there any other benefit?

A. Yes. GPU has as a goal attainment of a mix of fuels for baseload generation rather than placing reliance on any one fuel. Experience has shown fuel supplies can be disrupted. Commencing in 1974, reliable oil supplies have been disrupted by international events. In a recent winter, the region faced a coal strike and, in addition, blizzards and crippling cold which froze coal stockpiles.

Nuclear units, because of their economies are usually base loaded. When oil is in short supply, coal is used more extensively to make up the deficiency. Conversely, when coal is unavailable oil is used more extensively. The multiple fuel mix has not only helped GPU avoid serious fuel shortages,

but has permitted GPU to supply electrical energy to neighboring utilities when they could not maintain fuel supplies to meet their load.

TMI-1 offers Met-Ed and Penelec customers lowest cost electrical energy and independence from fuel supply disruptions.

Q. Does this complete your testimony at this time?

A. Yes. In the event that testimony may be required, in conjunction with a base rate future test period, with respect to projected nuclear fuel costs, I will furnish such testimony.

MET-ED/PENELEC STATEMENT - APPENDIX A
EDUCATIONAL BACKGROUND AND EXPERIENCE OF
BERNARD H. CHERRY

Graduated from the University of Illinois with a Bachelor of Science degree in Chemistry and Mathematics and a Master of Science degree in Nuclear Engineering. Did graduate work in nuclear science and engineering at Columbia University. In addition, has participated in courses in Energy Supply and Decision Analysis at the Massachusetts Institute of Technology.

Prior to joining GPU Service Corporation, from 1963 through 1969 served initially as a nuclear engineer and finally as Advanced Reactor Development Manager with United Nuclear Corporation. Responsibilities included the development of advanced fuels for breeder reactors and for the management of light water reactor fuel reload projects.

Joined GPU Service Corporation in 1970 as Nuclear Fuels Manager responsible for all phases of nuclear fuel procurement analysis and planning for the GPU System.

From 1974 through 1977, served as Manager of Fuels with responsibility for overall fuel supply, planning, procurement, and strategy for the utilization of coal, oil, and nuclear fuel in the GPU System.

In 1977 was appointed Vice President of Corporate Planning for GPU Service Corporation with responsibility for all aspects of the development of energy supply and demand strategy for the GPU System, including generation selection, load forecasting, long range planning and fuel supply coordination and planning.

In addition to Mr. Cherry's work at GPU Service Corporation, he is actively engaged in a number of other activities related to energy supply planning and load forecasting. These activities have included serving as Chairman of an Energy Modeling Forum Group focusing on the forecasting of energy demand (funded by the Electric Power Research Institute and administered by Stanford University, membership on the Electric Power Research Systems and Materials Task Force, the Chairmanship of the Edison Electric Institute Nuclear Fuels Committee for three years, membership on American Nuclear Society Fuel Cycle Executive Committee, membership on the Atomic Industrial Forum Nuclear Fuels Task Force, membership on the Atlantic Council Nuclear Fuel Study Group and former member of the Board of Governors of the World Nuclear Fuel Market. He has co-authored 1976 Atlantic Council Nuclear Fuel Policy Paper and the Atlantic Council Policy Paper on Nuclear Power and Non-proliferation.

Met-Ed/Penelec Exhibit E-1
Witness B. H. Cherry

CUMULATIVE CAPACITY FACTORS FOR NUCLEAR UNITS
IN THE COMMONWEALTH OF PENNSYLVANIA

(Cumulative through August 1979)

Unit	Capacity Factor, %
Beaver Valley 1	34.6
Peach Bottom 2	64.5
Peach Bottom 3	66.1
Three Mile Island 1	69.9

Q. Please state your name and address.

A. My name is Edmund Newton Jr. My business address is P.O. Box 1018, Reading, Pennsylvania.

Q. By whom are your employed and in what capacity?

A. I am employed by GPU Service Corporation ("GPUSC") as Vice President-System Operations.

Q. Please state your educational and professional background.

A. A resume of my educational and professional background is set forth in Appendix A.

Q. Mr. Newton, what is the purpose and subject area of your testimony in this case?

A. The purpose of my testimony is to support the interchange and purchased power components of the forecast energy costs shown in Appendix B, Table 3, and the average annual PJM running rate depicted in Appendix B, Figure 5, of the petition of Metropolitan Edison Company for modification of Commission Order entered June 19, 1979 at I-79040308, a copy of which has been marked for identification as Met-Ed/Penelec Exhibit A-2. I will also supplement the testimony of Mr. R. H. Sims who will describe the GPU efforts made during the period following the Three Mile Island ("TMI") accident to secure lower cost energy than that available on a split-savings basis from the Pennsylvania-New Jersey-Maryland Interconnection ("PJM") and the resulting short-term purchase agreements entered into by GPU. I will further present and discuss the major interconnection and bulk power supply agreements to which Metropolitan Edison Company ("Met-Ed") is a party and explain how these agreements affect Met-Ed's bulk power supply and operations, and in particular, form the backdrop for the economic purchase of energy following the TMI accident.

Q. Which of the exhibits which have been marked for identification were prepared by you or under your supervision?

A. Met-Ed/Penelec Exhibits G-3 through G-5 inclusive, were prepared by me or under my supervision. Exhibits G-1 and G-2 are composites of the principal interconnection and bulk power supply agreements affecting Met-Ed, and I will identify, discuss and sponsor them.

Q. You said that you proposed to discuss the major interconnection and bulk power supply agreements to which Met-Ed is a party and explain how these agreements affect its bulk power supply and operations. Would you please identify those agreements?

A. The agreements to which I referred are (1) the GPU Power Pooling Agreement, dated July 21, 1969, as supplemented (identified as Met-Ed/Penelec Exhibit G-1), among Met-Ed, Pennsylvania Electric Company ("Penelec") and Jersey Central Power & Light Company ("Jersey"), which is the basic agreement under which the GPU System operates; and (2) the PJM Agreement, dated September 26, 1956, as supplemented (identified as Met-Ed/Penelec Exhibit G-2), to which the GPU Companies acting in concert, are a party. Both of such agreements, and all amendments and supplements to them, are filed as Tariffs with the Federal Energy Regulatory Commission.

Q. Would you please describe Met-Ed/Penelec Exhibit G-1?

A. Exhibit G-1 is a composite of the GPU Power Pooling Agreement, as amended to date. It includes the original agreement and all subsequent amendments in their presently effective form. As I mentioned the agreement is the major agreement controlling the bulk power operation of the GPU system and establishes the basis under which that operation is carried out and the resulting interchange transactions and billings among the GPU companies are carried out.

The body of this agreement comprises a statement of general principles while supplemental schedules are attached which set forth in detail the various undertakings and transactions covered by the agreement. These supplemental schedules are modified from time to time as changing circumstances require. The general philosophy underlying the GPU System is set out very clearly in Section 1 of Article II of the GPU Power Pooling Agreement, as follows:

> "In order to obtain the maximum benefits of interconnected operation, the location, size and character of the installed generating facilities or the amount and source of any purchased generating capacity, shall be determined on a basis which is most economical for the systems of the individual parties as well as for the Integrated System, giving due consideration to the maintenance of proper and adequate service to the customers of each of the individual parties."

In essence, that agreement and the language I have quoted is designed to reflect the fact that Met-Ed and its affiliates constitute an "integrated public-utility system," as that term is defined in Section 2(a) (29) of the Public Utility Holding Company Act of 1935. An essential part of that statutory definition is the requirement that the physical assets of the entire GPU system, whether owned by one or more electric utility companies, be operated as a single interconnected and coordinated system.

Q. Does the GPU Power Pooling Agreement include any provision for the purchase and sale of installed generating capacity?

A. Yes, it does, and specifically, this is set forth in Article II, Section 2. This section makes the following provision:

"SECTION 2. To equalize the future benefits and burdens related to the installation or purchase of generating capacity, it is the intent that each party hereto shall provide a share, approximately proportional to its expected size, of the planned base-load generating capability of the Integrated System. To provide such share a party may participate in a lifetime ownership of capacity hereafter planned and installed by another, may individually or in association with other parties hereto purchase from others not parties hereto, or may by short-term purchase from parties hereto provide for its forecast temporary need for generating capacity. The amount and duration of such short-term purchases shall be determined from time to time after the effective date of this Agreement; and the conditions of service and the rates and charges therefor shall be set forth as supplementary schedules to be attached hereto."

In general terms, capacity sales and purchases will then be necessary to equalize the generating capacity available to the several companies and to redistribute among the companies the financial burden of providing that capacity. Such routine equalizing capacity transactions are covered by the provisions of Schedule 4.01 to the GPU Power Pooling Agreement.

Q. Does the GPU Power Pooling Agreement provide for transactions other than those of generating capacity?

A. Yes, it does. Also covered by the agreement are the energy and other transactions that permit full advantage to be taken of coordinated planning and operation within the System.

The bulk power facilities of the GPU subsidiary companies are also operated on a coordinated basis with the detailed hour-by-hour operation supervised and accounted for by the GPU System Operations Department, located in Reading. This department is responsible for the reliable and economic operation of the System and for its performance as an integral part of the PJM system. To this end, and subject to GPU's obligations to PJM, the System Operations Department schedules the operation of generating units, their loading for overall economy, and the scheduling of outages

of generating units and of major transmission facilities for maintenance or other reasons. It also does the accounting for the interchange transactions among the GPU companies and for transactions with other utilities.

In summary, it can be said that, as to bulk power facilities, the GPU System is planned and operated as a fully integrated unit.

Q. Would you please explain in some detail what is represented by Met-Ed/Penelec Exhibit G-2?

A. Exhibit G-2 is the PJM Agreement as amended to date. As was the case with Exhibit G-1, Exhibit G-2 is a composite of the original agreement and all subsequent supplements and reflects all amended provisions in their presently effective form. This agreement, to which Met-Ed, along with the other GPU Subsidiaries, is a signatory, is in practical effect a pooling agreement among six separate entities, of which GPU, as a group is one. This is the major agreement under which the GPU System as a group is interconnected with the other electric utilities in the area. In turn PJM is interconnected with outside power pools through inter-pool agreements. There are several inter-pool agreements to which Met-Ed and the other GPU Companies are signatories, but they are basically agreements between the members of PJM and other power pools with the benefits growing out of those agreements flowing back to GPU and to Met-Ed through the medium of the PJM agreement.

Q. Are there any elements of the PJM and the GPU Agreements which affect, in a major way, the bulk power supply and operations of the Met-Ed System?

A. Yes, there are two basic elements. The first which is fundamental to both of these agreements is that there is implicit recognition of the obligation

by each party to the agreements to provide, on balance, a proportionate share of the generating capacity and associated transmission of the overall system. The second is that, under normal conditions and subject to area load protection requirements, the bulk power supply facilities will be operated to achieve the greatest overall economy. Maximum overall benefit can be achieved only if all available generating equipment is operated on a fully coordinated basis which may mean that one company generates in excess of its own immediate requirement with the excess sold on an economy basis to other participants as interchange, while another company may operate so that it is producing only a portion of its requirements and is purchasing the balance as interchange from other members of the pool.

Q. You have spoken about interchange. Would you describe the fundamental principle or principles of the PJM Agreement and the GPU Power Pooling Agreement as they both relate to interchange?

A. The fundamental principle of both of these agreements is a sharing of all benefits and risks incident to operation of the combined bulk power system of all of the parties. Each company will make available for the use of the entire system all of its equipment available at a given time and in turn will draw on the entire system for energy and capacity needs. Each company will retain control of its own equipment so far as determining whether the equipment can be operated without damage and further will take advantage of the output of its own generation to the extent it is needed.

Every piece of generating equipment made available to operate at a given time is operated to the maximum economy of the entire interconnected system without regard to ownership.

Maximum economy is achieved when the incremental cost (the cost of the next unit of output from each generating unit) is equal across the entire system. The highest incremental cost operating at a given moment is referred to as the PJM "running cost" or "running rate".

After the fact, it will be found through a reconstruction of an hour's operation that the dispatch for maximum economy to the PJM running cost will identify some companies as actually generating with their own equipment less than their own load requirements and hence are purchasing from some other member of PJM, while other companies will be found to be generating more than their system load and hence will be selling companies. In each case the quantities being referred to are megawatt hours integrated over an hour for generation, load and interchange. Over a given hour the total amount of energy being purchased will exactly equal the amount being sold.

Q. How are the PJM interchange purchases and sales priced?

A. In general, PJM transactions are made on the basis of sharing the "savings", which in total is the difference between the out-of-pocket cost for the energy being sold by the selling companies and the "avoided" cost which would have been incurred by the purchasers in the event that such energy purchased were replaced from the purchasers' own sources. The final result of these transactions is to provide the buying companies with energy at a lower cost than it would have incurred if there had been no pooling operation, and will provide the selling companies with their out-of-pocket costs plus a share of the total savings generated. In effect, the savings will be shared equally between the buyers and the sellers.

Q. Would you describe how the intra-GPU transactions are made?

A. The GPU Companies as a whole are treated as one company under the PJM Agreement and as a group participate in all transactions with PJM, both buying and selling. In reconstructing interchange transactions after the fact, GPU, in total, is identified as either a buyer or seller and settles with PJM exactly as each other participant in PJM does on a split-savings basis.

However, a further accounting refinement is effected within GPU wherein each company's transactions are reconstructed after the fact to determine the transactions which would have occurred within GPU entirely apart from PJM. For example, if GPU, as a whole, is selling to PJM, the sale will be from the highest incremental cost equipment being run on the GPU System which equipment would not have been loaded to that level in the absence of a PJM transaction. The equipment producing the sale is identified by owning company and cost and the GPU companies actually participating in that sale will be reimbursed fully for the out-of-pocket fuel costs when GPU receives payment from PJM. The excess receipt from PJM, which is the savings component, will be shared among all the GPU companies regardless of their actual participation in the transaction.

Having identified the generation dedicated to PJM during a specific hour, the balance by the same reconstruction procedure is then treated as an intra-GPU transaction. All intra-GPU transactions are priced at "cost" and therefore split-savings are not utilized for the pricing of those transactions. During a given hour the result of this two-part transaction may have the effect of having Jersey generating 100 MW less than its hourly load, in total, but being identified as the seller of 50 MW to PJM

and after the isolation of the PJM transaction, purchasing 150 MW from Met-Ed. The sale of the 50 MW to PJM would be at its highest cost (let's say, $40 per MW hour) and its purchase of 150 MW from Met-Ed at a much lower cost (let's say $25 per MW hour). The end result is that the lowest cost energy is being retained within GPU and the highest cost energy enters into PJM sales.

Similarly, when conditions warrant, GPU may, in total, be purchasing from PJM and the GPU company, whose generation is less than its load, is identified as the purchaser. Such energy is paid for at the full PJM rate by such purchaser. The total GPU actual generation will next be accounted for among its companies in accordance with the respective excesses or deficiencies in meeting the company loads and the resulting intra-GPU transactions paid for on a "cost" basis.

Q. Would you please summarize the cost impact, upon the several GPU Companies of the basic interchange principles you have described?

A. Although all three GPU companies participate in transactions both with PJM and intra-GPU from both a buying and selling standpoint, the transactions with PJM will inherently tend to involve the company with the highest cost generation to a greater extent than the other companies. Jersey tends to have the largest amount of high-cost generation from its oil-fired units at Werner, Sayreville, and of combustion turbines. Therefore, when transactions are caused to take place by the loss of a base load resource such as TMI, the impact from an energy loss standpoint will be proportional to the respective TMI ownerships but the cost impacts

will tend to be related to the cost of the alternative resources available and will tend to impact proportionately more heavily on Jersey than it will on Met-Ed or Penelec.

Q. You earlier referred to the GPU short-term purchases from other power systems since the accident at TMI. Can you describe for us the accounting treatment for those purchases?

A. Each short-term power purchase from other utilities is divided among the three GPU companies in proportion to their ownership in TMI (Met-Ed 50%, Penelec 25%, Jersey 25%). Each company receiving such a purchase treats it in effect as a generating unit whose output it can keep for its own use or sell as interchange in accordance with the GPU and PJM agreements. If the energy is sold to PJM, the cost is based on the energy and operating capacity cost of the purchase and the seller absorbs the associated demand charges. For intra-GPU transactions, the weekly demand charge is divided by the weekly energy purchased and this amount is added to the hourly energy and operating capacity cost.

Q. You referred earlier to the PJM running cost. Will you please describe the PJM running cost as shown in Appendix B, Figure 5 of Met-Ed's petition, Exhibit A-2?

A. The rates shown on Figure 5 are actual average PJM running rates for the period 1970 through 1978. The estimate of 31.7 mills/kwh for 1979 is, in my opinion, a reasonable and appropriate estimate of the average running costs that have occurred and will occur during the 1979 operation of PJM.

Q. Are you familiar with the interchange and purchased power components of the forecast energy costs shown on Table 3 of Appendix B, Exhibit A-2?

A. Yes, I am.

Q. Where can the interchange and purchased power components of such costs be identified?

A. The breakout of such costs can be found in Met-Ed/Penelec Exhibit A-3.

Q. What opinion, if any, do you have with respect to the forecast levels of such interchange and purchased power expenses?

A. In my opinion, such levels of expense are reasonable and appropriate estimates of what Met-Ed can expect to incur in those areas during the forecast period, given the assumptions noted in Table 3. I might add that the assumptions, as noted, which directly relate to the interchange and purchased power components of the energy costs shown in Table 3 include: (a) "cost plus 10%" pricing of TMI-related purchases from PJM, reflected in the PJM proposal contained in the petition for a declaratory order filed by Met-Ed and Penelec on October 10, 1979 and approved by the Commission; (b) the continuation through 1980 of other economic TMI-related purchases; and (c) the inclusion of the demand component of the cost of purchases; and (c) the inclusion of the demand component of the cost of TMI-related purchases through 1980 (the Commission Order of June 19, 1979 would allow recovery of the demand component only until January 1, 1980).

Q. With respect to the contemplated 1980 short-term purchases to reduce the effect of the TMI outage on energy costs, please indicate the amount and cost of Met-Ed's share of such purchases and also indicate the savings expected from such purchases.

A. Met-Ed/Penelec Exhibit G-3, Page 1, shows that Met-Ed's estimated short-term purchases in 1980 will total 1,577 GWH at a cost of $44,639,000. It also shows an estimated savings of $33,031,000 from these purchases when compared to the estimated cost of $77,670,000 if purchased from PJM on a split-savings basis. Page 2 of this exhibit shows the monthly detail of the short-term purchases, and supports the forecast purchased power component of the energy costs reflected in Table 3 of Appendix B of Exhibit A-2.

Q. What is Met-Ed's estimate of its savings resulting from the various short term power purchases since the TMI accident on March 28, 1979?

A. Met-Ed/Penelec Exhibit G-4 shows the most recent monthly estimated cost of TMI replacement energy for the period of April thru October 1979. The exhibit shows the replacement cost before short-term power offset, and the estimated savings from short-term purchases.

Q. What is Met-Ed's estimate of its savings from the PJM proposal which was the subject of the Petition for Declaratory Order filed on October 10, 1979 in Docket No. I-79040308?

A. Paragraph 4 of the petition for a declaratory order states that GPU estimated a savings of $32 million from the PJM special purchase of 7 million mwh. Exhibit G-5 shows that Met-Ed's share of those savings is estimated at $5.5 million from the special purchase in 1980. This amount of savings is included in the interchange component of the energy costs shown in Table 3 of Appendix B, Exhibit A-2 at this time.

Q. Does this complete your testimony?

A. Yes, it does. In the event that additional testimony may be required concerning reserve capacity, interchange and purchased power matters in connection with a basic rate future test year period, I will furnish such testimony.

APPENDIX A

EDUCATIONAL AND PROFESSIONAL BACKGROUND

EDMUND NEWTON JR.

I was graduated from Clemson University in 1952 with a degree of Bachelor of Electrical Engineering and from Massachusetts Institute of Technology in 1954 with a degree of Master of Science in Electrical Engineering. I am a member of the Institute of Electrical and Electronics Engineers and a Registered Professional Engineer in the State of Pennsylvania.

I was employed in 1954 by Metropolitan Edison Company (Met-Ed) within the General Public Utilities (GPU) system. I served as Project Engineer and later as Staff Engineer in the System Engineering Department. In June 1968 I became Manager of Contracts and Rates for Met-Ed, a position which I held until May 1, 1971, when I was transferred to the newly formed GPU Service Corporation in the same capacity. In April 1973 I became a Vice President of Planning and Economics for the GPU Service Corporation and in August 1977 I became Vice President of System Operations.

My general area of concern throughout my employment has been with the provision and operation of the bulk power supply facilities of the GPU System. Among my specific responsibilities from April 1973 until August 1977 was the entire bulk planning process including load forecasting and the capacity program to meet that load. Throughout my employment another area of my responsibility has been the contractual relationships governing the interconnected operations of the affiliates within the GPU group and of the contractual arrangements between the GPU group and electric utilities external to that group. In the performance of these various assignments, I have performed and directed economic studies including cost of service analyses relating, in general, to

contractual relations among GPU affiliates and other interconnected generating and transmission utilities, wholesale for resale customers, and large industrial customers.

From 1969 through August 1977, I was also engaged almost continuously in the preparation of filings for rate increases and in the subsequent formal hearings. In the process I have presented testimony in formal regulatory hearings by the commissions in Pennsylvania, New Jersey, New York and by the Federal Power Commission.

My general area of responsibility since August 1977 in System Operations has been in the coordinating of the planning, development and implementation of policies and procedures to optimize the economics and service reliability of the GPU integrated system operation. Included in the area of my specific responsibilities are the total transmission and distribution functions of the GPU System. Among these functions is the System Operations Department which includes dispatching, interchange accounting and interchange forecasting.

Met-Ed/Penelec Exhibit No. G-1
Witness: E. Newton Jr.

COMPOSITE

POWER POOLING AGREEMENT

AMONG

PENNSYLVANIA ELECTRIC COMPANY

METROPOLITAN EDISON COMPANY

JERSEY CENTRAL POWER & LIGHT COMPANY

(GPU POWER POOLING AGREEMENT)

This is a composite agreement made up of the Original Agreement, dated July 21, 1969, between Pennsylvania Electric Company, Metropolitan Edison Company, New Jersey Power & Light Company, and Jersey Central Power & Light, and the supplement dated June 28, 1974, between Pennsylvania Electric Company, Metropolitan Edison Company, and Jersey Central Power & Light. This Composite Agreement also includes all schedules revised through November 30, 1979.

COMPOSITE

POWER POOLING AGREEMENT
Among
PENNSYLVANIA ELECTRIC COMPANY
METROPOLITAN EDISON COMPANY
JERSEY CENTRAL POWER & LIGHT COMPANY
(Includes Effective Provisions of 7/21/69 and 6/28/74 Agreements)

AGREEMENT made and entered into this twenty-first day of July 1969 (and twenty-eighth day of June, 1974), among PENNSYLVANIA ELECTRIC COMPANY (Penelec), a corporation organized and existing under the laws of the Commonwealth of Pennsylvania; METROPOLITAN EDISON COMPANY (Met-Ed), a corporation organized and existing under the laws of the Commonwealth of Pennsylvania; and JERSEY CENTRAL POWER & LIGHT COMPANY (JC), a corporation organized and existing under the laws of the State of New Jersey.

(PREAMBLES OMITTED)

NOW, THEREFORE, THIS AGREEMENT WITNESSETH, that in consideration of the premises and of the mutual covenants and conditions hereinafter set forth, the parties hereto do hereby covenant and agree with each other as follows:

ARTICLE I

Interconnections to be Made Available

SECTION 1. The parties hereto shall continue to make available the existing transmission interconnections between their respective systems and such other facilities as are required for the reliable and economic operation of the Integrated System.

SECTION 2. By mutual agreement and as required from time to time, the parties hereto shall make future additional expenditures to improve the interconnection transmission lines and facilit es, as well as to construct and to make available additional interconnection transmission lines and facilities.

ARTICLE II

Service to be Rendered

SECTION 1. In order to obtain the maximum benefits of interconnected operation, the location, size and character of the installed generating facilities or the amount and source of any purchased generating capacity, shall be determined on a basis which is most economical for the systems of the individual parties as well as for the Integrated System, giving due consideration to the maintenance of proper and adequate service to the customers of each of the individual parties.

SECTION 2. To equalize the future benefits and burdens related to the installation or purchase of generating capacity, it is the intent that each party hereto shall provide a share, approximately proportional to its expected size, of the planned base-load generating capability of the Integrated System. To provide such share a party may participate in the lifetime ownership of capacity hereafter planned and installed by another, may individually or in association with other parties hereto purchase from others not parties hereto, or may by short-term purchase from parties hereto provide for its forecast temporary need for generating capacity. The amount and duration of such short-term purchases shall be determined from time to time after the effective date of this Agreement; and the conditions of service and the rates and charges therefor shall be set forth as supplementary schedules to be attached hereto.

SECTION 3. As a result of the provisions for installation, ownership and purchase of generating capacity on a forecast basis, individual parties will at times be deficient in generating capacity, and payments shall be made by such party or parties to the other party or parties in compensation for excess generating capacity supplied by them to the deficient parties. The methods of measuring the amount of such deficiency in or excess of generating capacity and of determining the rates and charges are set forth as supplementary schedules and attached hereto.

SECTION 4. The parties hereto, when it is to their mutual advantage or when one or more parties can provide operating capacity or produce and deliver energy at a lower cost than the other party or parties, shall sell to and purchase from each other, or interchange operating capacity or energy, and the methods of determining the rates and charges therefor are set forth as supplementary schedules and attached hereto.

SECTION 5. A party having a deficiency in installed capacity or experiencing a breakdown of equipment, unusual load demands or unusual or abnormal conditions in its system resulting in the need for operating capacity or energy in excess of that available from its normal sources, may call upon any or all of the others to supply emergency operating capacity or energy up to the limits of the load carrying capacity of the interconnection facilities in existence at the time, to the extent of, and for the duration of the need therefor, and the party or parties so called upon shall supply such emergency operating capacity or energy to the extent such is available to it or them and to the extent that the same may be supplied without unduly impairing or jeopardizing service in the system or systems of the supplying party or parties. The methods of determining the rate and charges for operating capacity or energy supplied for the purposes described in this section are set forth as supplementary schedules and attached hereto.

SECTION 6. Generating capacity and energy transactions may also occur between the parties acting as a group and other interconnected systems. The methods of allocation of credits and charges resulting from such transactions are set forth as supplementary schedules and attached hereto.

SECTION 7.* To equalize the future benefits and burdens related to the planned installation of the bulk transmission system, which must be coordinated with the planning of generating facilities provided for in SECTION 1, it is the intent that each party hereto shall provide or be financially responsible for a share of the system, approximately proportional to its expected use of the planned bulk transmission facilities of the Integrated System. In the determination of appropriate shares, as required by this intent, consideration shall be given not only to the ownership of such facilities, but also to (a) payments made or received under this Agreement, (b) payments made or received under agreements with others, (c) relative costs for comparable facilities as influenced by location or time of construction, and (d) the use of such facilities for local supplies. Imbalance among the relative contributions shall be corrected by payments among the Parties as set forth in supplementary schedules to be attached hereto.

* Amended by 6/28/74 supplement.

ARTICLE III

Operation

SECTION 1. The energy to be supplied hereunder shall be in the form of three-phase, sixty-cycle alternating current at a nominal voltage at each delivery point approximately equal to the voltage rating of the particular transmission line interconnections mentioned in Article I hereof.

SECTION 2. Each party shall adjust, maintain and operate the portion of the interconnection facilities made available by it in accordance with good modern practice and in such a manner as will render, to the greatest extent practicable and reasonable, the services intended hereunder, and shall from time to time make such replacement and renewals as may be required to insure the good operating condition of such facilities. Each party shall adjust, maintain and operate the remainder of its system in accordance with good modern practice and in such manner as will, to the greatest extent practicable and reasonable, protect the apparatus and circuits of the others from damage and interruption by lightning, short circuits, potential surges, or otherwise and prevent any disturbance or condition originating in its system from affecting service in the systems of the other parties.

SECTION 3. Estimates of load and generating capacity shall be provided by the parties as often as shall be required to maintain satisfactory operation of the Integrated System, and any and all system records and accounts pertaining thereto shall be made available at reasonable times by all parties to each other.

ARTICLE IV

Points of Delivery

The points of delivery of electric energy supplied hereunder shall be the points of connection of the transmission facilities between the parties hereto.

ARTICLE V

Metering

SECTION 1. All energy flow between the systems of the parties hereto shall be measured by means of suitable metering equipment as now existing or as hereafter mutually agreed upon.

SECTION 2. All metering equipment used under this Agreement may be inspected or tested by qualified representatives of any of the parties hereto at such times as may be mutually agreed upon.

SECTION 3. Procedure in respect to maintenance, testing, calibrating, correction and registration records and precision tolerances of all metering equipment used under this Agreement shall be in accordance with good practice and as may be agreed upon among the parties hereto from time to time.

ARTICLE VI

Indemnity

Each party hereto shall save harmless the other parties hereto of and from any and all loss and damage by reasons of any bodily injury, death, or damage to property caused or sustained in that part of the interconnection facilities owned, controlled or made available by it, notwithstanding that a judgment may be rendered against one or all of the other parties hereto; except that each party hereto shall be responsible for all claims of its own employees, agents and servants growing out of any workmen's compensation law.

ARTICLE VII

Operating Committee

SECTION 1. An Operating Committee shall be established to carry out the intent and spirit of this Agreement, and shall consist of one representative designated by each party hereto. The representatives designated by the parties hereto are authorized to act as agents of the parties as to operating arrangements and all matters associated with the transactions covered by this Agreement. In all decisions made by the Operating Committee in carrying out or operating under the provisions of this Agreement, the parties shall have equal voice and vote and the decisions thus made by a majority of the Operating Committee shall be binding on all parties hereto.

SECTION 2. In order to permit flexibility to conform to changing conditions, the Operating Committee shall cause to be prepared, from time to time, individual schedules setting forth definitions, descriptions of interconnections, methods of determining charges for the interconnection facilities, methods of determining installed and operating capacity obligations, formulae for determining the price and payments for energy and generating capacity, and any other matters requisite or appropriate to the carrying out of this Agreement. Upon acceptance by all of the parties hereto of any such schedule in the manner hereinafter provided in this section and satisfaction of all applicable regulatory requirements, said schedule shall become a part of this Agreement.

SECTION 3. By its execution of this Agreement, each of parties hereto represents that its Board of Directors has conferred upon its President, or any Vice President, authority in its name and on its behalf to accept any and all such schedules as said officer or officers shall approve. The initial schedules which are attached hereto and hereby made a part of this Agreement shall be deemed to

have been so accepted by each of the parties hereto, but each of such schedules shall be subject to revision or deletion by action on behalf of all of the parties hereto through the execution of a substitute schedule revising or deleting any or all of the schedules.

SECTION 4.* A Vice President of the Service Company is hereby authorized to file with the Federal Power Commission on behalf of all the parties hereto, this Agreement, amendments or supplements made by them to this Agreement, and revised schedules prepared by them to replace those attached to and made a part of this Agreement.

ARTICLE VIII

Monthly Billing

SECTION 1.* On or before the seventh working day of each month the Service Company, as Agent shall prepare or cause to be prepared statements for all transactions under this Agreement which occurred during the preceding month. Payments of the net amounts due shall be made directly among the parties hereto on or before the twentieth day of the month.

SECTION 2. The monthly amounts owed to or due from PJM or others, and which are to be allocated under the terms of this Agreement, shall be so allocated by the Service Company among the parties hereto. The Service Company, as Agent, shall make timely collection of such amounts and either deliver them to the Agent for PJM, or to others as appropriate, or distribute them among the parties hereto.

ARTICLE IX

Waiver of Rights

Any waiver at any time of any rights as to any default hereunder or any other matter arising hereunder shall not be deemed a waiver as to any default or other matter subsequently occurring.

ARTICLE X

Cancellation of Agreement

The Agreement dated September 24, 1956, together with all supplements thereto, among the parties hereto, is hereby cancelled and terminated as of the effective date of this Agreement; provided, however, that nothing herein contained shall be construed to relieve any of the parties to the said Agreement from any liability or obligation to the others arising thereunder prior to said effective date of termination thereof.

*Amended by 6/28/74 Supplement.

ARTICLE XI*

Effective Date and Termination

This Agreement shall become effective on the later of September 1, 1969 (August 1, 1974) or the first day of the month following its acceptance for filing under the Federal Power Act, and shall continue in full force and effect until any party hereto shall give to the others not less than three (3) years' written notice of its desire or intention to terminate the same.

ARTICLE XII

Successors and Assigns

This Agreement and all of the terms and conditions hereof shall be binding upon and enure to the benefit of the parties hereto and their respective successors and assigns.

Executed on behalf of

Pennsylvania Electric Company

Metropolitan Edison Company

Jersey Central Power & Light Company

1548 084

*Amended by 6/28/74 Supplement.

GPU POWER POOLING AGREEMENT

Index of Schedules

Schedule Number	Date of Issue	Subject
2.01	7/21/69	Transmission Line Interconnections - Penelec and Met-Ed
2.02	6/28/74	Transmission Line Interconnections - Met-Ed and Jersey Central
2.06	6/28/74	Miscellaneous Facilities Made Available by Parties Hereto
2.07	6/28/74	Additional Transmission Facilities Made Available By Met-Ed
2.08	7/21/69	Facilities and Services Made Available to PJM
3.01	6/28/74	Costs of Certain Special Facilities and Related Monthly Charges
3.02	6/28/74	Investment and Charges for Interconnection Facilities at Voltages Below 115 kV and of Specified Transmission Facilities - Met-Ed - Jersey Central
4.01	3/30/79 ~~4/25/77~~	Installed Capacity Obligations Within GPU and Related Charges
4.02	7/21/69	Operating Capacity Obligations and Charges
4.04	4/28/76	Regulating Capability Obligations and Charges
4.11	10/08/76	Recognition of Actual Weekly Peaks
4.12	10/08/76	Recognition of Actual Unavailable Capacities
4.21	10/08/76	Annual Allocation of GPU Installed Capacity
4.211	10/08/76	Forecast Diversified Planning Period Peaks (P)
4.212	3/30/79 ~~10/08/76~~	Forced Outage Rate Adjustments (F)
4.213	10/08/76	Load Drop Adjustments (D)
5.01	6/28/74	Transmission Charges

Schedule Number	Date of Issue	Subject
5.02	10/08/76	Transmission Charges and Loss Adjustment for Delivery of Three Mile Island Unit #1 Output
5.03	6/29/78	Charges Related to New 500 kV Transmission Facilities
5.04	11/24/78	Allocation of PJM 500 kV System Losses
6.01	6/28/74	Metering Points
7.01	6/28/74	Interchange Energy Transactions and Charges
7.02	7/21/69	Rates and Payments - Components of Operating Capacity and Energy Costs
8.01	6/28/74	Allocation of Installed Capacity Payments to OR from PJM
8.02	6/28/74	Allocation of Payments to OR from PJM for Operating Capacity and Energy Transactions
8.03	6/28/74	Allocation of Savings - GPU Group Share of Savings on Transactions Between PJM and Other Areas of Pools (external groups) - Miscellaneous Allocations
8.04	4/28/76	Allocation of Payments to OR from PJM for Regulating Capacity
9.02	6/28/74	Allocation of Expenses - PJM and Miscellaneous Items
9.03	6/28/74	Allocation of Interarea Tie Costs
10.01	6/28/74	Participation in Administration of PJM Agreement
11.01	10/08/76	Definitions

Penelec—Met-Ed—N.J. Agreement
Schedule 2.01 Rev.
Date of Issue 1-21-69
Date Effective
Super. Sched. No.
Date of Super. Sched.

SUBJECT: TRANSMISSION LINE INTERCONNECTIONS - PENELEC AND MET-ED

Met-Ed and Penelec shall make available the following existing transmission interconnections between their respective systems:

1. At a point on the boundary line of Cumberland and Adams Counties, Pennsylvania, where Penelec's 115 KV line from its Carlisle Pike Substation meets Met-Ed's 115 KV line from its Gardners Substation.

2. At a point near Montebello in Perry County, Pennsylvania, where Penelec's 230 KV line from its Lewistown Substation meets Met-Ed's 230 KV line from its Middletown Junction Substation.

ACCEPTED:

Pennsylvania Elec. Co.
By /s/ N.G. Dodson

Metropolitan Edison Co.
By /s/ F. Cox

New Jersey P&L Co.
By /s/ R.F. Bovier

Jersey Central P&L Co.
By /s/ R.F. Bovier

SUBJECT: TRANSMISSION LINE INTERCONNECTIONS - MET-ED AND JC

Met-Ed and JC shall make available transmission interconnections between their respective systems at the points on the boundary line between the Commonwealth of Pennsylvania and the State of New Jersey in the Delaware River, as follows:

1. Approximately 0.25 mile south of the Portland-Columbia Bridge where Met-Ed's 34.5 KV line from its Mt. Bethel Substation meets JC's 34.5 KV line from its Columbia Substation.

2. Approximately 0.6 mile north of the Belvidere Bridge where Met-Ed's 34.5 KV line from its Richmond Substation meets JC's 34.5 KV line from its Pequest River Substation.

3. Approximately 0.85 mile north of Getters Island where Met-Ed's 34.5 KV line from its Lehigh Water Substation meets JC's 34.5 KV line from its Marble Hill Substation.

4. Approximately 1.25 miles south of the Easton-Phillipsburg Bridge where Met-Ed's 34.5 KV line from its South Easton Substation meets JC's 34.5 KV line from its Phillipsburg Substation.

5. Approximately 0.75 mile south of Raubsville where Met-Ed's 34.5 KV line from its Raubsville Substation meets JC's 34.5 KV line from the Gilbert Station.

6. Directly south of and adjacent to the Gilbert Station where Met-Ed's 115 KV lines from its Glendon Substation meet JC's 115 KV lines from the Gilbert Station.

7. Directly southeast of and adjacent to the Gilbert Station where JC's 34.5 KV line from the Gilbert Station meets Met-Ed's 34.5 KV line No. 712.

8. Approximately 1.0 mile north of the Frenchtown Bridge where Met-Ed's 34.5 KV line No. 712 meets JC's 34.5 KV line from its Frenchtown Substation.

9. Directly east of and adjacent to the Gilbert Station where JC's 34.5 KV line from the Gilbert Station meets Met-Ed's 34.5 KV line No. 714.

10. Approximately 0.75 mile south of the Milford Bridge where Met-Ed's 34.5 KV line No. 714 meets JC's 34.5 KV line from the vicinity of Milford.

11. Directly southeast of and adjacent to the Gilbert Station where JC's 34.5 KV line from the Gilbert Station meets Met-Ed's 34.5 KV line No. 28.

12. Approximately 2.0 miles north of Belvidere and 0.25 mile east of Boardman's Island where Met-Ed's 115 KV line from its Portland Substation meets JC's 115 KV line from the vicinity of Belvidere.

13. Approximately 0.1 mile southwest of Tocks Island and 2.25 miles east of Shawnee-on-Delaware where Met-Ed's 34.5 KV line from its Bushkill Falls Substation meets JC's 34.5 KV line from the Kittatinny Substation at Mount Vernon, New Jersey.

14. Directly north of and adjacent to the Portland Station where Met-Ed's 230 KV line from its Portland Station meets JC's 230 KV line from its Greystone Substation.

15. Directly north of and adjacent to the Portland Station where Met-Ed's 230 KV line from its Portland Station meets JC's 230 KV line from its Kittatinny Substation.

16. Directly south of and adjacent to JC's Gilbert Station where Met-Ed's 230 KV line from its Hosensack Substation meets JC's 230 KV line from its Gilbert Substation.

ACCEPTED:

Pennsylvania Electric Co.	Metropolitan Edison Co.	Jersey Central P&L Co.
By	By	By

Penelec--Met-Ed--JC Agreement
Schedule 2.06 Rev. 1
Date of Issue 6/28/74
Date Effective 8/1/74

SUBJECT: MISCELLANEOUS FACILITIES MADE AVAILABLE BY PARTIES HERETO

1. The parties hereto shall make available for use by the Integrated System such telemetering and communications facilities as are required to carry out the intent and purpose of this Agreement.

3. The parties hereto shall, upon request, make available to other individual parties hereto such telemetering and communications facilities as may be necessary for their efficient operation.

1548 091

ACCEPTED:

Pennsylvania Electric Co. By _____

Metropolitan Edison Co. By _____

Jersey Central P&L Co. By _____

Penelec--Met-Ed--JC Agreement
Schedule 2.07 Rev. 1
Date of Issue 6/28/74
Date Effective 8/1/74

SUBJECT: ADDITIONAL TRANSMISSION FACILITIES MADE AVAILABLE BY MET-ED

1. By a separate Agreement, dated October 30, 1964, Met-Ed has established interconnections with Pennsylvania Power & Light Company (PL) and Met-Ed and PL have each agreed to furnish certain transmission service to the other, said interconnections and service being subject to change from time to time in accordance with the Agreement. As a result of the establishment of such interconnections between Met-Ed and PL and such reciprocal transmission service, Met-Ed can make use of PL's facilities for the transmission of energy between Penelec and JC. Moreover, the facilities of Met-Ed and PL provide parallel paths between the facilities of Penelec and the portion of the Met-Ed system in the vicinity of the Delaware River, and it is impossible to control the division of flow of energy over the several parallel paths.

2. Under these circumstances, all energy delivered between the facilities of Penelec and the facilities of JC and subject to Schedule 7.01 shall be deemed to be energy delivered by Met-Ed as though the whole of the transmission service between the systems of Penelec and of JC were provided by Met-Ed and, in connection with such transactions, Met-Ed shall be deemed to be a transmitting party within the meaning of Schedule 7.01.

1548 092

ACCEPTED:

Pennsylvania Electric Co. Metropolitan Edison Co. Jersey Central P&L Co.

By _____ By _____ By _____

Penelec—Met-Ed—NJ—JC Agreement
Schedule 2.C8 Rev.
Date of Issue 1-1-87
Date Effective
Super.Sched.No.
Date of Super.Sched.

SUBJECT: FACILITIES AND SERVICES MADE AVAILABLE TO PJM

1. So long as all the parties hereto, as the GPU Group, shall be participants in PJM, each of the parties hereto shall, to the extent, for the purposes, and subject to the limitations provided in the Agreement establishing PJM: (1) make its own facilities available for use in PJM, (2) furnish the services therein provided for, and (3) take the action necessary on its part to further the cooperation and achieve the coordination therein contemplated.

1548 093

ACCEPTED:

Pennsylvania Elec.Co.
By /s/ N.G.Dodson

Metropolitan Edison Co.
By /s/ F.Cox

New Jersey P&L Co.
By /s/ R.F.Bovier

Jersey Central P&L Co.
By /s/ R.F.Bovier

SUBJECT: COSTS OF CERTAIN SPECIAL FACILITIES AND RELATED MONTHLY CHARGES

1. The facilities described in Schedules 2.01 to 2.06, or in additional schedules replacing or extending these facility descriptions, are considered as special facilities for which interparty charges should be made, except for interconnecting lines at 115 KV or higher voltage, the uses of which are otherwise recognized by transmission charges.

2. Charges shall be made at the rate of 1% per month applied to the actual or estimated costs of the special facilities. Where the facilities are supplied for the exclusive use of any party, that party shall pay the entire charge. Where the facilities are for joint use, the users shall be considered equally responsible for costs, except that, in the case of the jointly used facilities described in Schedule 2.06, the responsibility for monthly costs shall be allocated among the parties hereto in proportion to their respective annual size factors (as defined in Schedule 11.01).

3. The costs shown in Schedules 3.02 to 3.05, or in additional schedules replacing or extending them, shall be actual costs to the extent available. Estimated costs of new facilities are to be replaced with actual costs when these are determined. Costs may be based for certain facilities on the application of average unit costs to an inventory of facilities in service. Where lower voltage use of poles

by owning party exists, an appropriate credit to cost has been made to reflect such use. Costs of the interconnecting facilities for joint use include metering, but exclude line terminals.

1548 095

ACCEPTED:

Pennsylvania Electric Co.
By J. Smith

Metropolitan Edison Co.
By M. Butz

Jersey Central P&L Co.
By J. E. [illegible]

Penelec--Met-Ed--JC Agreement
Schedule 3.02 Rev. 1
Date of Issue 6/28/74
Date Effective 8/1/74

SUBJECT: INVESTMENT AND CHARGES FOR INTERCONNECTION FACILITIES AT VOLTAGES BELOW 115 KV AND OF SPECIFIED TRANSMISSION FACILITIES - MET-ED--JC

Schedule 2.02 Item No.	Line No.	Line Designation	KV	(Dollars) Investment in Joint Use Facilities by		(Dollars) Investment in Exclusive Use Facilities by		Note
				Met-Ed	JC	Met-Ed	JC	
1	13	Mt. Bethel, Pa. - Columbia, N.J.	34.5			25,961		
2	722	Richmond, Pa. - Pequest River Substation, N.J.	34.5	45,370	34,480			
3	6	Lehigh Water Co., Pa. - Marble Hill, N.J.	34.5	9,900	19,150			(a)
4	18	S. Easton, Pa. - Phillipsburg, N.J.	34.5	33,761	31,400			(a)
5	29	Raubsville, Pa. - Gilbert Station, N.J.	34.5	9,234	89,996			
7 & 8	712	Gilbert Station, N.J. via Pa. to Frenchtown, N.J.	34.5			91,756		
9 & 10	714	Gilbert Station, N.J. via Pa. to Milford, N.J.	34.5	42,481	6,058	28,231		
11	28	Gilbert Station, N.J. - Ferndale, Pa.	34.5	40,294	7,160			
-13 -	H-710	Bushkill Falls, Pa. - Kittatinny, N.J.	34.5	____	____	____	126,968	
				180,590	198,244	145,948	126,968	

Monthly Payments for Facilities

Joint Use Facilities

Excess JC investment	$188,244 - $180,590 =	$7,654
Met-Ed pays JC	$7,654 x 1/2 x 1% =	$38.27

Exclusive Use Facilities

Excess Met-Ed investment	$145,948 - $126,968 =	$18,980
JC pays Met-Ed	$18,980 x 1% =	$189.80

Net Total Payment - JC to Met-Ed $151.53

(a) Estimated cost to be replaced by actual when available.

ACCEPTED:

Pennsylvania Electric Co. By _____

Metropolitan Edison Co. By _____

Jersey Central P&L Co. By _____

Penelec-Met-Ed-JC Agreement
Schedule 4.01 Rev. 5
Date of Issue March 30, 1979
Date Effective June 1, 1979

SUBJECT: INSTALLED CAPACITY OBLIGATIONS
WITHIN GPU AND RELATED CHARGES

1. The responsibility for capacity, equal in total to the Installed Capacity of the Integrated System, shall be allocated among the parties by application of the methods specified in Schedules 2.21, 2.211, 2.212 and 2.214 of the PJM Interconnection Agreement. Modifications of those PJM Schedules, appropriate for application within the Integrated System, are identified herein as Schedules 4.21 and 4.211 to 4.213. Computations made annually in accordance with these schedules provide the basis for the specified week-by-week capacity accounting.

2. Within GPU the capacity accounting shall be on a weekly basis. The Weekly Capacity Obligations (WCO) of each party shall be the sum of its Basic Capacity Obligation (BCO), as determined under Schedule 4.11(5), and its Unavailable Capacity Adjustment (UCA), as determined under Schedule 4.12(4).

3. The Weekly Capacity Obligation of each party shall be compared with its Installed Capacity to determine the excess or deficiency of capacity for each party. If the Installed Capacity of a party changes during the week, the value used here shall be the average of its capacities actually installed on each weekday, excluding holidays.

4. Those parties that are deficient in capacity shall make payments to those parties having excess capacity at a weekly rate for each kilowatt of capacity deficiency according to the following schedule:

Effective June 1, 1979 $0.490 per kW-week

1548 098

ACCEPTED:

Pennsylvania Electric Co. Metropolitan Edison Co. Jersey Central Power & Light Co.

By _____ By _____ By _____

Penelec-Met-Ed-NJ-JC Agreement
Schedule 4.02 Rev. ____
Date of Issue ____
Date Effective ____
Super. Sched. No. ____
Date of Super. Sched. ____

SUBJECT: OPERATING CAPACITY OBLIGATIONS AND CHARGES

1. The reserve operating capacity obligations of the GPU Group, including spinning, scheduled or other classifications of reserve, are determined under the PJM Agreement. These Group obligations for each peak period shall be allocated among the parties hereto during each month on the basis of their monthly size factors for the immediately preceding month.

2. Each of the parties hereto shall provide or account for daily operating capacity obligations determined as follows:

(a) For each peak period, its load for the hour of the GPU Group period peak, plus its allocated share of the GPU Group reserve operating capacity obligation; and

(b) For all other periods, the actual loads of its system plus its allocated share of the GPU Group reserve operating capacity obligation.

3. The obligation of each party for each period shall be compared with the operating capacity actually provided by it, to determine the excess or deficiency of operating capacity for each party.

4. Those parties (if any) that are deficient in operating capacity shall make payments to those parties (if any) having excess operating capacity for supplies of operating capacity limited in amount either to that which is required, or that which is available, whichever is smaller

5. Operating capacity charges shall be based on the supplier's costs; if there are more than one supplier, the per unit charge shall be the weighted average per unit cost of the several suppliers. If there is an excess of peak period operating capacity available within the GPU Group, after accounting for supplies to or from PJM, the cost of this excess shall be allocated among the parties on the same basis as is applied in paragraph 1.

1548 099

ACCEPTED:

Pennsylvania Elec. Co.
By /s/ N.G. Dobson

Metropolitan Edison Co.
By /s/ F. Cox

New Jersey P&L Co.
By /s/ R.F. Dovier

Jersey Central P&L Co.
By /s/ R.F. Dovier

SUBJECT: REGULATING CAPABILITY OBLIGATIONS AND CHARGES

1. The total regulating capability requirement of the GPU Group shall be as determined under the Pennsylvania - New Jersey - Maryland (PJM) Interconnection Agreement. Each of the parties hereto shall provide or otherwise account for their share of the total requirement in accordance with this Schedule.

2. The total regulating capability requirement, and the amount of regulating capability provided by each party hereto, shall be accounted for hourly.

3. The summation of hourly total regulating capability requirements in each month shall be allocated among the parties hereto in proportion to their monthly size factor for the immediately preceding month. Excesses or deficiencies of regulating capability of any party hereto shall be determined as the difference between their allocated share of the total requirement and the amount actually provided by that party in the same monthly period.

4. Payments for deficiencies shall be made by those parties hereto (if any) which have provided insufficient regulating capability to those parties hereto (if any) which have provided excess capability, provided that the supplies of regulating capability shall be limited in amount to the lesser of (1) the amount required or (2) the amount available.

5. Rates for regulating capability settlements among the parties hereto shall be the same as those then in effect under the PJM Agreement.

1548 101

ACCEPTED:

Pennsylvania Electric Co.	Metropolitan Edison Co.	Jersey Central P&L Co.
By [signature]	By [signature]	By [signature]

SUBJECT: RECOGNITION OF ACTUAL WEEKLY PEAKS

1. Actual weekly peaks shall be recognized in the week-by-week capacity accounting in accordance with the terms of this Schedule.

2. The average weekly peak loads of each party shall be estimated for each Planning Period. If a major loss or addition of firm load, such as, but not limited to, the transfer of a large load from one supplier to another, is expected to occur during a Planning Period, but after the summer peak of the party or parties involved, such expected loss or addition shall be ignored in the determination of the estimated average weekly peak for the purposes of this paragraph and of Schedule 4.213 and for the determination of the forecast winter peak used in Schedule 4.211. If the loss or addition is expected to occur before the summer peak, the forecast average weekly peak shall be determined as though the loss or addition existed during the entire Planning Period.

3. The ratio for each party of its Forecast Capacity Responsibility (FCR), determined as in Schedule 4.21(1), to its estimated average weekly peak for the same planning period shall be determined. These ratios shall be called the Annual Adjustment Ratios (AAR).

4. Each week, the actual weekly peak of each party shall be multiplied by its Annual Adjustment Ratio. The ratio of the product for each party to the sum of the products for all parties shall be called the Weekly Allocation Factor (WAF).

5. The GPU installed capacity for the week, less the sum of the Unavailable Capacity Adjustments specified in Schedule 4.12(4), shall be multiplied by the Weekly Allocation Factor. The products are the Basic Capacity Obligations (BCO) of each party to be accounted for under Schedule 4.01. If the GPU Installed Capacity changes during the week, the value used here shall be the average of the capacities actually installed on each weekday, excluding holidays.

1548 103

ACCEPTED:

Pennsylvania Electric Co. Metropolitan Edison Co. Jersey Central P&L Co.

By _____ By _____ By _____

SUBJECT: RECOGNITION OF ACTUAL UNAVAILABLE CAPACITIES

1. Actual Unavailable Capacities shall be recognized in the week-by-week capacity accounting in accordance with the terms of this Schedule.

2. The forecast average of each party's 52 weekly Unavailable Capacities shall be determined for each Planning Period as the algebraic sum of:

(i) its forecast average Installed Capacity during the Planning Period times its forecast average forced outage rate as used in Schedule 4.212;

(ii) the forecast average of its Unavailable Capacity in each week because of planned and maintenance outages, and

(iii) the forecast average of its miscellaneous adjustments in each week, both as used in Schedule 4.213.

3. The actual average Unavailable Capacity of each party shall be determined each week as the average of the unavailable amounts in the 52 weeks ending with the current week for which an accounting is required.

4. Fifty percent of the excess of the above actual average over the forecast average for each party shall be assigned as the Unavailable Capacity Adjustment in that party's Weekly Capacity Obligation to be accounted for under Schedule 4.01. If the actual average for the week is less than the forecast average of any party, 50% of the difference shall be assigned as a credit to that party's Weekly Capacity Obligation.

5. The 50% used in 4. above corresponds to a 0.5 factor specified in Schedule 3.01 of the PJM Interconnection Agreement. If this factor is changed in the PJM Agreement, consideration shall be given by the Operating Committee to a corresponding change in the factor used herein.

1548 105

ACCEPTED:

Pennsylvania Electric Co. Metropolitan Edison Co. Jersey Central P&L Co.

By _____ By _____ By _____

SUBJECT: ANNUAL ALLOCATION OF GPU INSTALLED CAPACITY

1. The annual allocation of the GPU Installed Capacity shall be made in May of each year for the succeeding Planning Period. The capacity allocated to each party under the terms of this schedule shall be called its Forecast Capacity Responsibility (FCR).

2. For any Planning Period, the FCR of a party shall be calculated as follows:

$$FCR = P \times \left(1 + \frac{R + F + D}{100}\right)$$

Where:

P = the forecast diversified Planning Period peak of the party, in megawatts, determined in accordance with Schedule 4.211 hereof;

R = the margin of the weighted average GPU Installed Capacity for the Planning Period over the forecast Planning Period peak of the Integrated System, in percent of such Planning Period peak;

F = the forced outage rate adjustment, in percent, determined in accordance with Schedule 4.212 hereof;

D = the load drop adjustment in percent, determined in accordance with Schedule 4.213 hereof.

3. It is recognized that changing conditions and improvements in techniques may require from time to time the addition of other factors in the above equation and the revision or deletion of factors currently included therein. If any such change is made in the equation or factors specified in the PJM Interconnection Agreement, a corresponding change

in this Agreement shall be considered by the Operating Committee. If any changes are then approved, this schedule and related subschedules shall be appropriately revised and supplemented and shall thereupon be made effective.

4. The forecast data used for these computations shall be the most recent available prior to the beginning of a Planning Period. As to the Planning Period for which an accounting is next to be accomplished, there is no need that such data agree with those used in PJM computations for the same Planning Period.

1548 107

ACCEPTED:

Pennsylvania Electric Co.
By _____

Metropolitan Edison Co.
By _____

Jersey Central P&L Co.
By _____

SUBJECT: FORECAST DIVERSIFIED PLANNING PERIOD PEAKS (P)

1. The forecast diversified Planning Period peaks (P) of the parties shall be determined in accordance with this Schedule so long as the forecast Planning Period peak of the PJM Interconnection is a summer peak.

2. For the purposes of this schedule, the forecast maximum one hour load of a party during the period June through September of a Planning Period shall be its summer peak, and the forecast maximum one hour load during the period December through March of the Planning Period shall be its winter peak.

3. The forecast diversified Planning Period peak of a party shall be its Planning Period peak as defined herein reduced by its Planning Period peak diversity entitlement and its summer peak diversity entitlement.

4. In a Planning Period, each party shall be classified as either a summer peaking system or a winter peaking system. In the determination of such classification the winter peak of each party shall be reduced by the excess of the total capability of its Installed Capacity under winter operating conditions over its total capability under summer operating conditions. For the purpose of this schedule, such total capabilities shall be defined as the respective net capabilities of its units planned to be in service as of December 1, adjusted for firm capacity purchases and sales in the December through March period, and reduced by the limitations specified in Schedule 11.01(5), such net

capability adjustments and limitations being respectively determined for winter and summer operating conditions. A party having a summer peak which exceeds its winter peak so reduced shall be classified as a summer peaking system, and its Planning Period peak shall be equal to such summer peak. A party which has a winter peak so reduced which exceeds its summer peak shall be classified as a winter peaking system. The Planning Period peak of a winter peaking system shall be equal to the average of (i) its reduced winter peak for the Planning Period and (ii) the greater of its summer peak for the Planning Period or its reduced winter peak for the Planning Period immediately preceding.

5. The Planning Period peak diversity entitlement of a winter peaking system shall be one half the difference between its Planning Period peak and its summer peak. The Planning Period peak diversity entitlement of a summer peaking system shall be the ratio of the difference between its summer peak and its reduced winter peak to the sum of such differences for all the summer peaking systems multiplied by the sum of the Planning Period peak diversity entitlements of the winter peaking systems. In the event that the total of the Planning Period peak diversity entitlements of all parties so determined exceeds the sum of the differences between the summer peaks and reduced winter peaks of the summer peaking systems, such entitlements shall be proportionately reduced to equal in total such lower sum.

6. The summer peak diversity entitlement of a party shall be the ratio of its summer peak to the sum of the summer peaks of all parties multiplied by the difference between such sum of summer peaks and the forecast Planning Period peak of the Integrated System.

1548 110

ACCEPTED:

Pennsylvania Electric Co.

By _____

Metropolitan Edison Co.

By _____

Jersey Central P&L Co.

By _____

SUBJECT: FORCED OUTAGE RATE ADJUSTMENTS (F)

1. Forced outage rate adjustments (F) of the parties in a Planning Period shall be determined in accordance with this schedule.

2. The forced outage rate adjustment shall be the amount, in percentage points, by which the average forced outage rate of a party hereto is more or less than the average forced outage rate of the Integrated System, multiplied by a factor. If more, such adjustment shall be considered plus (+) in the equation in Schedule 4.21(2); if less, such adjustment shall be considered minus (-) in such equation.

3. The factor used in 2. represents the change in requirement for capacity installed on the PJM Interconnection in percent of peak load for every one percentage point change in average forced outage rate on the PJM Interconnection. If a change is made in this factor, as used in PJM Interconnection accounting, a change in GPU accounting shall be considered by the Operating Committee. Upon approval by the Operating Committee, such change shall be made effective as to future Planning Periods.

4. The average forced outage rate of a party hereto in a Planning Period shall be the average of the forced outage rates, weighted for unit size and expected time in service, attributable to all of its generating units planned to be in service including capacity purchased

and excluding capacity sold, other than capacity purchased or sold under the PJM Interconnection Agreement. Such rate shall also include the adjustment, if any, for system capacity unavailable due to energy limitations determined in accordance with definitions and criteria recognized and applied in the PJM Interconnection. For the purposes of this Schedule, the average forced outage rate of the GPU System shall be the average of the average forced outage rates of all the parties hereto weighted by their respective diversified Planning Period peaks. All rates shall be in percent.

5. The forced outage rate of a unit not yet in service or which has been in service less than one full calendar year at the time of forecast shall be the mature rate for that size and type of unit, as estimated and used in the calculation of the forecast requirements of the PJM Interconnection.

6. The forced outage rate of a unit in service three or more full calendar years at the time of forecast shall be the average rate experienced by such unit during the three most recent calendar years. Historical data shall be consistent with those data that are reported to the PJM Interconnection.

7. The forced outage rate of a unit in service at least one full calendar year but less than three full calendar years at the time of the forecast shall be determined as follows:

Full Calendar Years of Service	
1	One-third the rate experienced during the calendar year plus two-thirds the mature rate.
2	Two-thirds the average rate experienced during the two calendar years plus one-third the mature rate.

ACCEPTED:

Pennsylvania Electric Co. By _____

Metropolitan Edison Co. By _____

Jersey Central P&L By _____

1548 113

SUBJECT: LOAD DROP ADJUSTMENTS (D)

1. Load drop adjustments (D) of the parties in a Planning Period shall be determined in accordance with this schedule.

2. A party shall be considered to have a need for load drop when in a Planning Period the ratio (load drop ratio) of the algebraic sum of (1) the forecast average of its 52 weekly peak loads, (2) the forecast average of its Unavailable Capacity in each week because of planned and maintenance outages, and (3) the forecast average of its miscellaneous adjustments, to its Planning Period peak, is greater than the load drop ratio for the Integrated System.

3. For the purposes of this schedule, the load drop ratio for the Integrated System shall be the average of the load drop ratios of all the parties weighted by their respective Planning Period peaks.

4. The load drop adjustment, expressed in megawatts, of a party having a need for load drop shall be (1) the increase in percent reserve requirement corresponding to the load drop ratio of such party, less the increase in percent reserve requirement on the Integrated System corresponding to the load drop ratio of the Integrated System, multiplied by (2) the Planning Period peak of the party, and (3) 0.5, to reflect a sharing of such needs and the supplying thereof among the parties. The relationship of increases in percent reserve requirement to various load drop ratios shall be as determined in connection with the latest calculation of the Forecast Requirement of the PJM Interconnection.

5. The total of the load drop adjustments of parties having need for load drop (total adjustment) shall be considered as supplied by the parties having load drop ratios equal to or less than the load drop ratio of the Integrated System.

6. The load drop adjustment of a party supplying load drop shall be the total adjustment times the ratio of (1) the product of the Planning Period peak of such party and the excess of the load drop ratio of the Integrated System over the load drop ratio of such party to (2) the sum of such products of all parties supplying load drop.

7. The load drop adjustments, as expressed in megawatts, shall be converted to percentages, for use in the equation in Schedule 4.21(2), by dividing the respective megawatt amounts by the diversified Planning Period peaks of the several parties. Load drop adjustments of parties needing load drop shall be considered plus (+), and adjustments of the parties supplying load drop shall be considered minus (-) in such equation.

1548 115

ACCEPTED:

Pennsylvania Electric Co. By _____

Metropolitan Edison Co. By _____

Jersey Central P&L Co. By _____

Penelec--Met-Ed--JC Agreement
Schedule 5.01 Rev. 1
Date of Issue 6/28/74
Date Effective 8/1/74

SUBJECT: TRANSMISSION CHARGES

1. For the transmission services involved in the delivery of capacity and energy, the party receiving these services shall make monthly payments to the supplier of these services and to any additional transmitting party.

2. For transmission of the interchange energy provided under Article II, Section 4 (also under Schedule 7.01), the monthly transmission charge shall be the amount determined by application of the following charges to the monthly amounts of energy supplied and transmitted:

Transmission by Penelec	-	0.5 mills per KWH
by Met-Ed	-	0.5 mills per KWH
by JC	-	0.5 mills per KWH

3. For transmission of capacity and associated energy, from the service area of one party to another pursuant to Article II, Section 2, the monthly charges shall be set forth in revisions of or supplements to this Schedule.

1548 116

ACCEPTED:

Pennaylvania Electric Co. By _____

Metropolitan Edison Co. By _____

Jersey Central P&L Co. By _____

Penelec--Met-Ed--JC Agreement
Schedule 5.02 Rev. 1
Date of Issue 10/8/76
Date Effective 11/8/76

SUBJECT: TRANSMISSION CHARGES AND LOSS ADJUSTMENT FOR DELIVERY OF THREE MILE ISLAND UNIT #1 OUTPUT

1. Met-Ed shall make a transmission charge for the delivery of the output of that 50% part of TMI Unit #1 that is the entitlement of Penelec and JC. The monthly amount of the charge shall be $0.55 per kilowatt times 50% of the generating capacity rating of TMI Unit #1.

2. Of the total monthly transmission charge, Penelec shall pay 25% and JC shall pay 75%, the difference being in recognition of all conditions associated with such separate deliveries.

3. As compensation for transmission losses incurred in the Met-Ed system and associated with the delivery of 50% of the TMI output to Penelec and JC, the metered hourly amounts of Met-Ed load shall be reduced by 1.2% of 50% of the TMI net generation. The reduction in metered load shall be offset by an increase in the amount of net interchange delivered by Met-Ed.

4. Of the total compensation for losses, Penelec shall provide 25% and JC shall provide 75%. Such compensation shall be provided by an increase in the metered hourly amounts of load and a corresponding decrease in the amount of net interchange delivered by Penelec and JC.

ACCEPTED:

Pennsylvania Electric Co. By _____

Metropolitan Edison Co. By _____

Jersey Central P&L Co. By _____

1548 117

SUBJECT: CHARGES FOR 500 KV TRANSMISSION FACILITIES ASSOCIATED WITH TMI UNIT #2 AND THE SUSQUEHANNA-EASTERN AGREEMENT

1. Met-Ed shall make a charge to Penelec and to JC for 500 kV transmission facilities it has provided to deliver the output of TMI Unit #2 and to provide other services. Such charge shall represent an allocation of Met-Ed's total financial responsibility for such facilities to reflect the service provided to Penelec and to JC.

2. Financial responsibility for those facilities which are related to delivery of the output of TMI Unit #2, consisting of facilities installed by Met-Ed under terms of the Susquehanna-Eastern 500 kV Transmission System (S-E System) Agreement (Met-Ed Rate Filing in Docket ER 76-743), other associated facilities installed by Met-Ed, and S-E System facilities installed by others on which Met-Ed incurs annual charges, shall be allocated among the three GPU companies in proportion to their ownership interests in TMI Unit #2.

3. Financial responsibility for those S-E System facilities installed by Met-Ed, or for which it makes payments to others, which replace a portion of the Juniata-Peach Bottom 500 kV line or reinforce the existing 500 kV network to provide improved regional reliability shall be allocated among the three GPU companies as follows: two-thirds in proportion to their ownership of Keystone and Conemaugh generating stations and one-third in proportion to their annual size factor as defined in Schedule 11.01.

4. Met-Ed shall make the following transmission charges, based on the costs of construction of the several facilities, as noted below:

	Related to KC Ownership and Size Factor $/mo.	Related to TMI #2 Ownership $/mo.	Total $/mo.
To Penelec	3,993	129,040	133,033
To JC	17,837	129,040	146,877

Upon approval of the GPU Operating Committee adjustment of these charges shall be made to reflect (a) any change in the current ownership interests in TMI Unit #2, (b) the actual Annual Size Factor of each Planning Period, and (c) any change in Capital Investment in the facilities covered by this, or the S-E System Agreement.

ACCEPTED:

Pennsylvania Electric Co.	Metropolitan Edison Co.	Jersey Central P&L Co.
By _____	By _____	By _____
PRESIDENT	PRESIDENT	PRESIDENT

1548 119

Penelec--Met-Ed--JC Agreement
Schedule 5.04 Rev. ____
Date of Issue 11/24/78
Date Effective 12/30/78

SUBJECT: Allocation of PJM 500kV System Losses

1. The losses on the 500kV transmission systems in PJM assigned to GPU under the terms of the Susquehanna-Eastern 500kV Transmission System (S-E System) Agreement for delivery of TMI Unit #2 output shall be allocated among the GPU Companies in proportion to their capacity entitlement in TMI Unit #2.

2. The losses on the 500kV transmission systems in PJM assigned to GPU under the terms of the Extra High Voltage Transmission System (EHV) Agreement will follow that agreement and shall be allocated among the GPU Companies 2/3 to the Keystone-Conemaugh Generating Station Function and 1/3 to the Inter-area Tie Function. The losses assigned to the Generating Station Function shall be allocated to the Keystone and Conemaugh Generating Station Owners as specified in the EHV Agreement. The losses assigned to the Inter-area Tie Function shall be allocated among the GPU Companies in proportion to their respective Annual Size Factors.

3. Each company's allocated losses shall be added to its load on an hour by hour basis, and a corresponding adjustment shall be made in its net interchange.

ACCEPTED:

Jersey Central P&L Co.	Metropolitan Edison Co.	Pennsylvania Electric Co.
By	By	By
		VICE PRESIDENT

1548 120

Penelec--Met-Ed--JC Agreement
Schedule 6.01 Rev. 1
Date of Issue 6/28/74
Date Effective 8/1/74

SUBJECT: METERING POINTS

The interconnection metering points are listed and identified below in the same order as the interconnections are described in Schedules 2.01 and 2.02:

Schedule No.	Item No.	Line No.		KV
			Penelec and Met-Ed	
2.01	1	976	Gardners, Pa.	115.0
2.01	2	1002	Juniata, Pa.	230.0
			Met-Ed and JC	
2.02	1	13	Columbia, N.J.	4.6
2.02	2	722	Pequest River Sub., N.J.	34.5
2.02	3	6	Marble Hill, N.J.	34.5
2.02	4	18	Phillipsburg, N.J.	34.5
2.02	5	29	Gilbert Station, N.J.	34.5
2.02	6	911 & 912	Gilbert Station, N.J.	115.0
2.02	7 & 8	712	Metering not required	
2.02	9 & 10	714	Near Upper Black Eddy, Pa.	4.6
2.02	11	28	Gilbert Station, N.J.	34.5
2.02	12	927	Portland, Pa.	115.0
2.02	13	H-710	Mt. Vernon, N.J.	34.5
2.02	14	1007	Portland Station, Pa.	230.0
2.02	15	1010	Portland Station, Pa.	230.0
2.02	16	1015	Hosensack, Pa.	230.0

Necessary changes in the listed meter locations shall be agreed upon from time to time by the Operating Committee.

ACCEPTED:

Pennsylvania Electric Co. By _____

Metropolitan Edison Co. By _____

Jersey Central P&L Co. By _____

154

SUBJECT: INTERCHANGE ENERGY TRANSACTIONS AND CHARGES

1. The energy interchange among the parties hereto is the result of (a) overall economic operation as modified at times by transmission limitations, the need for emergency supplies and area protection and (b) PJM accounting that retains for use of the GPU Group the lowest cost Group energy available for such use. The net amount of interchange energy supplied or received by each party hereto shall be determined hourly. These amounts are the residuals required to balance each party's hourly net load with its net generation and net receipts, after accounting for firm supplies to or from others, and for energy amounts associated with other capacity supplies provided under Article II, Section 2, of this Agreement.

2. The suppliers of interchange energy for use by other parties hereto shall be paid their respective costs, determined as provided in Schedule 7.02.

3. In all energy transmission between Penelec and JC, Met-Ed shall be considered a transmitting party and be entitled to compensation for losses and for its transmission service. The amount of Met-Ed's transmission service in each hour shall be the minimum amount consistent with the energy that is supplied by and required from GPU sources, and without regard to any different basis used for the pricing of interchange energy supplies.

4. For the purpose of pricing interchange, when there are more than one supplier of interchange within any hour (including both PJM and the parties hereto), each receipt of interchange shall be considered to be from all suppliers in amounts proportional to the available supplies. The resulting average charge per kilowatt-hour, exclusive of Met-Ed's charge for transmission, shall be the same to each of the parties hereto that is receiving interchange during that hour.

ACCEPTED:

Pennsylvania Electric Co. Metropolitan Edison Co. Jersey Central P&L Co.

Penelec-Met-Ed-NJ-JC Agreement
Schedule 7.02 Rev
Date of Issue 7-21-69
Date Effective
Super. Sched. No.
Date of Super. Sched.

SUBJECT: RATES AND PAYMENTS - COMPONENTS OF OPERATING CAPACITY AND ENERGY COSTS

Operating Capacity

In accounting for operating capacity supplied to the other parties, each party shall include the following components of cost or their equivalents:

1. Boilers
   (a) Firing-up cost
   (b) No-load cost
   (c) Peak-prepared-for maintenance cost
   (d) Incremental labor cost
   (e) Other incremental operating costs

2. Machines
   (a) Starting cost from cold to synchronized operation
   (b) No-load cost for each hour or fraction thereof
   (c) Incremental labor cost
   (d) Other incremental operating costs

Energy

In accounting for energy supplied to the other parties, each party shall include the following components of cost or their equivalents:

(a) Incremental fuel cost
(b) Incremental maintenance cost
(c) Incremental labor cost
(d) Other incremental operating costs
(e) Incremental transmission losses - Considered to be 5% of the incremental energy costs, items (a) to (d) above, applicable to each party, including Met-Ed as a transmitting party, except that for energy transactions that would theoretically require an east to west flow of energy, Met-Ed's losses shall be considered to be negligible.

The Operating Committee shall from time to time define in detail the determination of the costs entering into the several components.

1548 124

ACCEPTED:

Pennsylvania Elec. Co.	Metropolitan Edison Co.	New Jersey P&L Co.	Jersey Central P&L Co.
By /s/ N.C. Dodson	By /s/ F. Cox	By /s/ R.F. Bovier	By /s/ R.F. Bovier

Penelec--Met-Ed--JC Agreement
Schedule 8.01 Rev. 1
Date of Issue 6/28/74
Date Effective 8/1/74

SUBJECT: ALLOCATION OF INSTALLED CAPACITY PAYMENTS TO OR FROM PJM

1. Payments to or from PJM in any month for installed reserve capacity shall be allocated among the parties hereto in proportion to their respective annual size factors; except that, when the amount of such payment is affected by the allocation to the GPU Group of a transmitting party's share of an installed capacity benefit accruing to PJM under contracts with other areas or pools, such transmitting party's share shall be assigned within the Group to the party (or parties) hereto that provides the transmitting service; and the allocation within the Group of the payment to or from PJM shall reflect the effect of this assignment.

1548 125

ACCEPTED:

Pennsylvania Electric Co. Metropolitan Edison Co. Jersey Central P&L Co.

Penelec--Met-Ed--JC Agreement
Schedule 8.02 Rev. 1
Date of Issue 6/28/74
Date Effective 8/1/74

SUBJECT: ALLOCATION OF PAYMENTS TO OR FROM PJM FOR OPERATING CAPACITY AND ENERGY TRANSACTIONS

1. For all operating capacity or energy supplied by PJM to the GPU Group, full payments shall be made by the receiving party or parties. When there are several receiving parties, the payments made by each shall be proportional to the services received by each, measured daily for operating capacity and hourly for energy.

2. For all operating capacity or energy supplied to PJM by the GPU Group, the supplying company shall be paid full costs for such supply, and any excess of PJM payment over GPU Group costs shall be allocated among the parties hereto in proportion to their respective annual size factors, as an offset to costs of PJM operation and of transmission services for which no direct compensation is provided.

1548 126

ACCEPTED:

Pennsylvania Electric Co. Metropolitan Edison Co. Jersey Central P&L Co.

SUBJECT: ALLOCATION OF SAVINGS - GPU GROUP SHARE OF SAVINGS ON TRANSACTIONS BETWEEN PJM AND OTHER AREAS OR POOLS (EXTERNAL GROUPS) - MISCELLANEOUS ALLOCATIONS

1. All savings on PJM operating capacity or energy transactions with External Groups allocated to the GPU Group, except savings allocated to the Group as a transmitting party, shall be allocated monthly among the parties hereto in proportion to their respective annual size factors.

2. Any payments allocated by PJM to the GPU Group for installed reserve capacity supplied to or by an External Group shall be allocated monthly among the parties hereto in proportion to their respective annual size factors.

3. Any share of savings or of specific transmission charges allocated to the GPU Group as a transmitting party shall be assigned within the Group to the party (or parties) hereto that provides the transmitting service. If the allocation to the GPU Group is based on its relative investment in transmission facilities or on other appropriate factors as among the PJM member companies, then a similar basis of allocation shall be used for the assignment of the savings within the GPU Group.

4. If, in addition to savings, any amounts are assigned to the GPU Group as compensation for losses, such amounts shall be allocated among the parties hereto in proportion to their losses incurred in providing the services involved, as these losses may be determined and specified from time to time by the Operating Committee.

5. Any additional minor savings arising out of participation in PJM, such as, but not limited to Savings from Coordinated Hydro Operation, shall be allocated among the parties hereto in proportion to their respective annual size factors.

1548 128

ACCEPTED:

Pennsylvania Electric Co. Metropolitan Edison Co. Jersey Central P&L Co.

By _____ By _____ By _____

Penelec--Met-Ed--JC Agreement
Schedule 8.04 Rev.
Date of Issue 4/28/76
Date Effective 6/1/76

SUBJECT: ALLOCATION OF PAYMENTS TO OR FROM PJM
FOR REGULATING CAPABILITY

1. For all regulating capability supplied by PJM to the GPU Group, payment shall be made by the receiving party or parties at the rates then in effect under the PJM Agreement.

2. For all regulating capability supplied to PJM by the GPU Group, the supplying company or companies shall be paid for such supply at the rates then in effect under the PJM Agreement.

1548 129

ACCEPTED:

Pennsylvania Electric Co.
By

Metropolitan Edison Co
By

Jersey Central P&L Co.
By

Penelec--Met-Ed--JC Agreement
Schedule 9.02 Rev. 1
Date of Issue 6/28/74
Date Effective 8/01/74

SUBJECT: ALLOCATION OF EXPENSES - PJM AND MISCELLANEOUS ITEMS

1. The GPU Group share of monthly expense for operation of PJM and for planning and other activities associated therewith shall be allocated among the parties hereto in proportion to their respective annual size factors.

2. The GPU Group share of monthly expense for participation in various area, regional or national groups that are concerned with reliability or other aspects of coordinated planning and operation, such as but not limited to the Mid-Atlantic Area Coordination Group (MAAC), shall be allocated among the parties hereto in proportion to their respective annual size factors.

1548 130

ACCEPTED:

Pennsylvania Electric Co. Metropolitan Edison Co. Jersey Central P&L Co.

By _____ By _____ By _____

Penelec--Met-Ed--JC Agreement
Schedule 9.03 Rev. 1
Date of Issue 6/28/74
Date Effective 8/01/74

SUBJECT: ALLOCATION OF INTERAREA TIE COSTS

The monthly GPU Group share of transmission costs allocated to the Interarea Tie Function under the Extra High Voltage Transmission System Agreement, dated April 27, 1967, as supplemented or amended, shall be allocated among the parties hereto in proportion to their respective annual size factors.

1548 131

ACCEPTED:

Pennsylvania Electric Co. Metropolitan Edison Co. Jersey Central P&L Co.

By _____ By _____ By _____

Penelec--Met-Ed--JC Agreemen
Schedule 10.01 Rev. 1
Date of Issue 6/28/74
Date Effective 8/01/74

SUBJECT: PARTICIPATION IN ADMINISTRATION OF PJM AGREEMENT

1. The parties hereto, as the GPU Group, have the right to designate, on behalf of the GPU Group, a representative to serve on the Management Committee established pursuant to the terms of the PJM Agreement and to change its representative from time to time. This representative shall be designated by the unanimous action of the Presidents of the parties hereto, and Met-Ed shall thereupon serve notice of any such designation upon the other parties to the PJM Agreement in accordance with the terms thereof.

2. Representatives of the GPU Group on other PJM Committees shall be designated from time to time by the GPU Operating Committee.

3. The System Operation Department of the Service Company is authorized, on behalf of the parties hereto, to furnish the office of PJM with the information and data that may be required from time to time in connection with the administration of the PJM Agreement and operations thereunder.

1548 132

ACCEPTED:

Pennsylvania Electric Co. Metropolitan Edison Co. Jersey Central P&L Co.

By _____ By _____ By _____

SUBJECT: DEFINITIONS

As used in this Agreement:

1. System shall mean the interconnected electric supply system of a party hereto and its interconnected subsidiaries, and each party hereto may include in its system the electric supply systems of other than parties hereto with which it is operating in parallel, provided its interconnection agreements with such other party or parties do not conflict with this Agreement.

2. Integrated System shall mean the combined systems of the parties hereto.

3. Load shall mean an amount of kilowatt-hours integrated during a clock-hour, and when used as a measure of a system's energy requirements shall mean net load, exclusive of generating station auxiliaries and lighting.

4. Generating Capacity shall mean the net load which an electric generating unit can supply under summer conditions to be specified from time to time by the Operating Committee. When used in a collective sense, it shall mean the sum of the generating capacities of all of the electric generating units in a system.

5. Installed Capacity shall mean the generating capacity adjusted for capacity sales or purchases other than planned purchases or sales under Schedule 2.01(e) of the PJM Agreement, limitations imposed by transmission facilities, reactive kilovolt amperes and any other cause

which prevents the simultaneous full utilization of such generating capacity under conditions to be specified by the Operating Committee.

6. Operating Capacity shall mean the amount of power which can be delivered to the system by electric generating facilities either synchronized with the system or scheduled and available to operate upon short notice. The notification period shall be determined from time to time by the Operating Committee.

7. Unavailable Capacity shall mean the algebraic difference at any time between Installed Capacity and available capacity at that time. Available capacity shall be determined in accord with definitions and criteria currently applicable to the reporting of available capability in PJM. As used in Schedule 4.12, actual Unavailable Capacity for each week shall be determined as the average of the unavailable amounts at the GPU peak hour on each weekday, excluding holidays.

8. Annual Size Factor shall be determined in May of each year for the succeeding Planning Period and shall be for each party the ratio its Forecast Capacity Responsibility, bears to the weighted average GPU Installed Capacity in the same period.

In the event of major loss or addition of load by any party foreseen to occur or occurring during a Planning Period the Annual Size Factor shall also be determined for load conditions existing both before and after the loss or addition. For each determination, the forecast summer and winter peak loads and the forecast average weekly peaks shall be mutually consistent for each party and be representative of the loads that would be forecast either without or with the major loss or addition of load. The respective Annual Size Factors, so

determined, shall apply to the portions of the Planning Period before and after the change in load.

9. Monthly Size Factor shall mean a ratio determined monthly on a calendar month basis as the average for each party of the four or five weekly ratios for each party. The weekly ratio for each party is the ratio of its weekly maximum hourly load to the weekly sum of such maximum loads of each party. The number of weeks used within each calendar month are determined for this purpose by the number of Fridays within the month.

10. Planning Period shall initially mean the twelve months beginning June 1 and extending through May 31 of the following year, but shall be modified as necessary to conform to changes subsequently introduced in the PJM Agreement.

1548 135

ACCEPTED:

Pennsylvania Electric Co.
By _____

Metropolitan Edison Co.
By _____

Jersey Central P&L Co.
By _____

/PENELEC
Met-Ed Exhibit No. G-2
Witness: E. Newton Jr.

PENNSYLVANIA-NEW JERSEY-MARYLAND INTERCONNECTION

COMPOSITE

(PJM AGREEMENT)

This is a Composite Agreement made up of the original agreement, dated September 26, 1956 and supplemental agreements dated January 28, 1965, April 1, 1974 and June 15, 1977, between Public Service Electric and Gas Company, Philadelphia Electric Company, Pennsylvania Power & Light Company, Baltimore Gas and Electric Company, Pennsylvania Electric Company, Metropolitan Edison Company, Jersey Central Power & Light Company and Potomac Electric Power Company. A list of all schedules revised through November 30, 1979 have also been provided.

COMPOSITE

PENNSYLVANIA-NEW JERSEY-MARYLAND
INTERCONNECTION AGREEMENT

(INCLUDES ALL EFFECTIVE PROVISIONS OF JANUARY 28, 1965,
APRIL 1, 1974 AND JUNE 15, 1977)

THIS AGREEMENT, made and entered into this 26th day of September 1956 (and January 28, 1965, April 1, 1974 and June 15, 1977), by and between PUBLIC SERVICE ELECTRIC AND GAS COMPANY, a New Jersey corporation (herein called PS); PHILADELPHIA ELECTRIC COMPANY, a Pennsylvania corporation (herein called PE); PENNSYLVANIA POWER & LIGHT COMPANY, a Pennsylvania corporation (herein called PL); BALTIMORE GAS AND ELECTRIC COMPANY, a Maryland corporation (herein called BC); POTOMAC ELECTRIC POWER COMPANY, a District of Columbia and Virginia corporation (herein called PEPCO); PENNSYLVANIA ELECTRIC COMPANY, a Pennsylvania corporation (herein called PN); METROPOLITAN EDISON COMPANY, a Pennsylvania corporation (herein called ME); and JERSEY CENTRAL POWER & LIGHT COMPANY, a New Jersey corporation (herein called JC), the latter three companies (herein called collectively GPU Group) all being subsidiaries of General Public Utilities Corporation.

(OBSOLETE PREAMBLES OMITTED)

* All signatories agree that except as hereby expressly amended the PJM Interconnection Agreement, as heretofore amended and supplemented, shall remain in full force and effect.

* All signatories hereby authorize the Manager of the Office of the Interconnection to file with the Federal Power Commission, on their behalf, this and all future supplements to the PJM Interconnection Agreement requiring such filing. The similar authorization by all the signatories except PEPCO, contained in Letter Agreement dated September 24, 1962, is hereby cancelled.

WITNESSETH THAT:

** WHEREAS, the signatories hereto are signatories to an agreement, dated September 26, 1956, as amended and supplemented, known as the Pennsylvania-New Jersey-Maryland Interconnection Agreement (ACREEMENT): and

** WHEREAS, the signatories hereto own and operate fully-interconnected electric supply systems, and the planning and operations of the bulk power supply facilities of such systems are coordinated pursuant to the AGREEMENT and various other agreements including the Mid-Atlantic Area Coordination Agreement (MAAC), dated April 23, 1971; and

** WHEREAS, each signatory hereto relies on the bulk power supply systems of the other signatories hereto in providing reliable service to its customers; and

** WHEREAS, the signatories hereto are coordinating the installation of generating capacity additions and major transmission facilities; and

** WHEREAS, it is desired to amend the Agreement to set forth the respective rights and obligations of the Parties Hereto with respect to such coordination.

NOW THEREFORE, the signatories hereto, each in consideration of the agreements of the others herein set forth, hereby mutually agree as follows:

* Added by 1/28/65 Supplement.

** Added by 4/1/74 Supplement.

ARTICLE 1

Definitions

1.1 As used in this AGREEMENT:

** a) "Party Hereto" shall mean each of the following: PS, PE, PL, BC, PEPCO and GPU Group;

b) "System" shall mean the interconnected electric supply system of a Party Hereto and its interconnected subsidiaries, and each Party Hereto may include in its system the electric supply systems of any party or parties other than Parties Hereto with which it normally operates in parallel, provided its interconnection agreements with such other party or parties do not conflict with such inclusion;

* c) "Net Capability" shall mean the number of megawatts of electric power which can be delivered by an electric generating unit of a System under conditions and criteria specified by the OPERATING COMMITTEE and approved by the MANAGEMENT COMMITTEE. Net Capabilities for all units shall be determined for both summer and winter operating conditions;

* d) "System Capacity" shall mean the sum of the Net Capabilities, based on specified summer operating conditions, of all electric generating units of a System, with proper adjustments for firm capacity commitments of such System independent of this AGREEMENT, and decreased by the amount of the limitations imposed by transmission facilities, reactive kilovolt-amperes or any other limitations which prevent the simultaneous utilization of said firm capacity commitments or Net Capabilities of said units, such limitations to be determined under conditions and criteria specified by the OPERATING COMMITTEE and approved by the MANAGEMENT COMMITTEE;

* e) "Contract Capacity" shall mean the number of megawatts of electric power which a Party Hereto has provided to meet its obligations hereunder for electric generating capacity and shall be equal to the System Capacity of a System with proper adjustments for firm commitments under Schedule 2.01 (d)(3) and 2.01 (e), (f), (g), and (h);

* f) "Planning Period" initially shall mean the twelve months beginning June 1 and extending through May 31 of the following year, provided as changing conditions may require, the MANAGEMENT COMMITTEE shall specify other planning periods;

1548 139

* Added by 4/1/74 Supplement.

** Underlined amended by 1/28/65 Supplement.

* g) Unless otherwise qualified, "load" and "capacity" shall mean megawatts of load and megawatts of capacity;

** h) "Unavailable Capability" shall mean the algebraic difference at any time between System Capacity and the available capability at that time. Available capability shall be determined according to definitions and criteria specified by the OPERATING COMMITTEE and approved by the MANAGEMENT COMMITTEE. The several component causes of unit unavailability, namely: (1) forced outages, (2) planned and maintenance outages and (3) miscellaneous adjustments, shall be determined according to definitions and criteria specified by the OPERATING COMMITTEE and PLANNING AND ENGINEERING COMMITTEE and approved by the MANAGEMENT COMMITTEE.

ARTICLE 2

GPU Group

2.1 The allocation among PN, ME, and JC of their collective obligations hereunder as the GPU Group shall be the sole responsibility of said companies, but they undertake that they will, during the period that this Agreement shall be effective, have in force one or more arrangements for the allocation of the whole of such collective obligations and will, from time to time, upon the request of any of the other signatories hereto, furnish said requesting other signatory with a copy of their then effective arrangements relating to such allocation.

ARTICLE 3

Organization

3.1 The supply systems of the signatories hereto, functioning as a coordinated electrically interconnected supply system, shall be known as the PENNSYLVANIA-NEW JERSEY-MARYLAND INTERCONNECTION (herein called THE INTERCONNECTION).

3.2 Each Party Hereto, by written notice signed by an officer legally authorized to commit such Party Hereto, and served upon the other Parties Hereto, shall appoint one representative to serve on a MANAGEMENT COMMITTEE, with authority to act for it in the administration of all matters pertaining to THE INTERCONNECTION and to perform such other duties as are hereinafter specified. In the case of the GPU Group, which shall be entitled to but one representative, such notices shall be given by or served on ME. The initial members of the MANAGEMENT COMMITTEE shall be so appointed within thirty (30) days after execution of this AGREEMENT, and by similar notice, any Party Hereto may, at any time, change its representative on the MANAGEMENT COMMITTEE.

* Added by 4/1/74 Supplement.
** Amended by 4/1/74 Supplement.

Each member of the MANAGEMENT COMMITTEE may, at any time, by written notice to the other members, designate a substitute to act for him with respect to any matter specified in such notice. The members of the MANAGEMENT COMMITTEE shall have equal authority, and all decisions made or directions given by the MANAGEMENT COMMITTEE shall be unanimous and binding upon the Parties Hereto.

3.3 The MANAGEMENT COMMITTEE shall establish an Office of THE INTERCONNECTION, initially to be located near Philadelphia, Pennsylvania, and shall appoint a Manager, who, pursuant to policies established by the MANAGEMENT COMMITTEE, with other necessary personnel under his supervision, shall have the following duties and responsibilities:

* (i) to perform such functions as may be directed by the MANAGEMENT COMMITTEE;

* (ii) to coordinate the operation and maintenance of the bulk power supply facilities of THE INTERCONNECTION used for both load and reactive supply, subject to the provisions of 4.1, so as to maintain reliability of service and obtain the maximum overall economies consistent therewith;

* (iii) to coordinate the operation and maintenance of the bulk power supply facilities of THE INTERCONNECTION with such facilities of the systems of others not party to this AGREEMENT in accordance with agreements between the signatories hereto and such other systems to secure reliability and continuity of service and other advantages of pooling on a regional basis;

* (iv) to coordinate interchange accounting and maintain records pertaining to the operation of THE INTERCONNECTION;

* (v) to furnish such information and reports as are required to keep the Parties Hereto fully informed of the outlook for, the functioning of, and results achieved by THE INTERCONNECTION;

* (vi) to file with the Federal Power Commission on behalf of the signatories hereto, this AGREEMENT, amendments or supplements hereto, and revised schedules to replace those attached to and made a part of this AGREEMENT;

* (vii) to consult with the OPERATING COMMITTEE, provided for in 3.4, regarding operating principles, practices and procedures as they relate to the achievement of overall reliability and economy of operation of THE INTERCONNECTION;

*(viii) to consult with the PLANNING AND ENGINEERING COMMITTEE, provided for in 3.5, regarding the plans of the Parties Hereto as they relate to the reliable and economic operation of THE INTERCONNECTION;

* Added by 4/1/74 Supplement.

* (ix) to initiate and make operating studies of the bulk power supply facilities of THE INTERCONNECTION and make such recommendations and initiate such actions as may be necessary to maintain reliable operation on THE INTERCONNECTION;

Initially, all regular personnel of the Office of THE INTERCONNECTION shall be employees of PE. During the continuance of such arrangement, the Manager shall report to the PE Member of the MANAGEMENT COMMITTEE in matters pertaining to personnel administration. In all other matters he shall report to the MANAGEMENT COMMITTEE. The cost of the Office of THE INTERCONNECTION and expenses associated therewith, including salaries and expenses of said personnel, space and any necessary facilities, shall be shared by the Parties Hereto in accordance with Schedule 9.01.**

3.4 Each member of the MANAGEMENT COMMITTEE shall appoint, by written notice to the other members, a representative to serve on an OPERATING COMMITTEE. The Manager shall be a non-voting member of the OPERATING** COMMITTEE. The MANAGEMENT COMMITTEE shall designate the Chairman, who shall arrange meetings as required and report Committee findings to the MANAGEMENT COMMITTEE. Except as otherwise provided, recommendations and decisions of the OPERATING COMMITTEE shall be by majority vote of its members. Minority recommendations may be submitted, and upon request of any Party Hereto, any decision shall be subject to approval by the MANAGEMENT COMMITTEE.

The OPERATING COMMITTEE shall:

* (i) establish and revise as necessary operating principles, practices and procedures for THE INTERCONNECTION consistent with this AGREEMENT and the policies established by the MANAGEMENT COMMITTEE;

* (ii) cooperate with the Manager in conducting the operation of THE INTERCONNECTION to achieve a high overall level of reliability and economy of service in accordance with established operating principles, practices and procedures, recognizing individual system operating requirements for load and for reactive supply, contractual obligations and other pertinent factors;

*(iii) in conjunction with each Party Hereto, review and evaluate the operating practices and procedures of such Party Hereto relating to the overall operating reliability of the bulk power supply facilities of THE INTERCONNECTION including location, character and amounts of spinning reserve and regulating capacity, adequacy of automatic control, sources and need for reactive capacity, voltage schedules and other pertinent conditions, and make recommendations to such Party Hereto with respect thereto;

* Added by 4/1/74 Supplement.
** Underlined amended by 6/15/77 Supplement.

* (iv) cooperate with the Manager with regard to studies and investigations concerning overall reliability of the bulk power supply facilities of THE INTERCONNECTION made in accordance with 3.3 (ix) and in carrying out such actions as may be initiated as a result of such studies and investigations;

* (v) advise the PLANNING AND ENGINEERING COMMITTEE, provided for in 3.5, regarding the plans of the Parties Hereto as they relate to the reliable and economic operation of THE INTERCONNECTION;

* (vi) establish practices for accounting in accordance with this AGREEMENT for electric generating capacity obligations and interchange of energy and operating capacity;

* (vii) perform such other studies and investigations as may be directed by the MANAGEMENT COMMITTEE or hereinafter specified in this AGREEMENT;

*(viii) appoint subcommittees and task forces when needed to assist it in carrying out its duties and responsibilities hereunder.

* 3.5 Each member of the MANAGEMENT COMMITTEE shall appoint, by written notice to other members, a representative to serve on a PLANNING AND ENGINEERING COMMITTEE. The MANAGEMENT COMMITTEE shall designate the Chairman, who shall arrange meetings as required and report committee findings to the MANAGEMENT COMMITTEE. Except as otherwise provided, recommendations and decisions of the PLANNING AND ENGINEERING COMMITTEE shall be by majority vote of its members. Minority recommendations may be submitted, and upon request of any Party Hereto, any decision shall be subject to approval by the MANAGEMENT COMMITTEE.

The PLANNING AND ENGINEERING COMMITTEE shall:

* (i) on a continuing basis review the planning principles, procedures and standards established or subsequently established in accordance with 4.2 relating to matters affecting the overall design and reliability of the bulk power supply facilities of THE INTERCONNECTION and make recommendations to the MANAGEMENT COMMITTEE with respect thereto;

* (ii) in conjunction with each Party Hereto, review, evaluate and coordinate the planning for generating capacity, reactive capability and voltage control, and transmission facilities of such Party Hereto and other matters relevant to the reliability of such bulk power supply facilities of the Parties Hereto and maintain a continuing composite long-range plan to provide adequate and reliable service on THE INTERCONNECTION;

* Added by 4/1/74 Supplement.

*(iii) periodically recommend to the MANAGEMENT COMMITTEE the Forecast Requirements for electric generating capacity of THE INTERCONNECTION, and prepare and submit to the MANAGEMENT COMMITTEE the allocation of such Forecast Requirements to each Party Hereto as provided in schedules attached and made a part hereof;

* (iv) perform such other studies and investigations as may be directed by the MANAGEMENT COMMITTEE or hereinafter specified in this AGREEMENT;

(v) appoint subcommittees and task forces when needed to assist in carrying out its duties and responsibilities hereunder.

* 3.6 The MANAGEMENT COMMITTEE shall establish from time to time such other committees as it deems necessary.

* 3.7 To facilitate and provide for the work of the Office of THE INTERCONNECTION and of the several committees appointed by the MANAGEMENT COMMITTEE, each Party Hereto shall:

* (i) maintain adequate records and provide data required for (a) the coordination of operations, (b) the accounting for all interchange transactions, (c) the preparation of required reports, (d) the coordination of planning, including those data required for capacity accounting, (e) the preparation of maintenance schedules, (f) the analysis of system disturbances, and (g) such other purposes as will contribute to the reliable and economic operation of THE INTERCONNECTION;

* (ii) provide such recording, telemetering, communication and control facilities as are required for the coordination of its operations with those of the other Parties Hereto, including equipment required both in norml operation and for the recording and analysis of system disturbances;

*(iii) provide adequate and properly trained manpower to (a) permit participation in the coordinated operation of THE INTERCONNECTION, (b) meet its obligation on a timely basis for supply of records and data, (c) serve on committees and participate in their required investigations, and (d) share in the representation of THE INTERCONNECTION in inter-regional and national and national reliability activities;

* (iv) share in the costs of committee activities and investigations (including costs for consultants, computer time and other appropriate items), communication facilities used by all the Parties Hereto (in addition to those provided in the Office of THE INTERCONNECTION), and such other expenses of THE INTERCONNECTION as are approved for payment by the MANAGEMENT COMMITTEE. Unless ** otherwise agreed by the MANAGEMENT COMMITTEE, the share of such costs assigned to each Party Hereto shall be proportional to its allocated cost for the Office of THE INTERCONNECTION, as provided in 3.3.

* Added by 4/1/74 Supplement.
** Underline amended by 6/15/77 Supplement.

ARTICLE 4

Coordinated Planning and Operation

* 4.1 Each Party Hereto shall cooperate with the other Parties Hereto in the coordinated planning and operation of the bulk power supply facilities of its System so as to obtain the greatest practicable degree of reliability, compatible economy and other advantages from the pooling of the respective electric system loads, electric generating capacities and electric transmission facilities, and each shall render to the others the services provided to be rendered hereunder, and may render such other services as the interconnection of their Systems makes possible and will be of mutual advantage to them and to the public served by them; provided, that each Party Hereto shall retain sole control over its wholly-owned facilities for use in THE INTERCONNECTION, and that such facilities shall always be first available to the owner for its own use, except as otherwise agreed to. In furtherance of such cooperation each Party Hereto shall:

* (i) consult with the other Parties Hereto and coordinate the installation of its electric generation and transmission facilities with those of such other Parties Hereto so as to maintain reliable service to its own electric customers and those of the other Parties Hereto and to obtain the maximum overall economies consistent therewith;

* (ii) cooperate with the signatories of MAAC to augment the reliability of the bulk power supply facilities of the region;

(iii) make available to THE INTERCONNECTION the electric generating capacity available for operation in excess of its System requirements;

(iv) make available to THE INTERCONNECTION its electric transmission facilities available in excess of its System requirements;

* (v) provide or contractually arrange for sufficient transmission ** line and transformer capacity between its electric generating plants and its connections with the bulk power transmission facilities of any other Party or Parties Hereto, for delivery of a capacity amount equal to the sum of its equitable share of the Forecast Requirement of THE INTERCONNECTION, as provided in 6.1, plus any System Capacity which it supplies to another Party Hereto, less the sum of its own weekly peak load plus Unavailable Capacity at the time of such load plus any System Capacity which it receives from another Party Hereto.

For the purposes of this subsection a transmission connection between any Party ...to and any other Party or Parties Hereto may be considered also to include:

* Added by 4/1/74 Supplement.
** Underline amended by 6/15/77 Supplement.

* (a) transmission facilities which may be used by a Party Hereto to the extent of its capacity located in jointly owned plants, for which such facilities were provided, plus any additional capacity therein that may be available for power transfer between it and other Parties Hereto; and

* (b) parallel transmission lines external to any Party Hereto and to THE INTERCONNECTION, through which power transfers to other Parties Hereto may be arranged;

** (vi) provide or contractually arrange for sufficient transmission line and transformer capacity, so that with all such facilities in service, the output of its electric generating plants can be delivered to its customers without relying on the transmission facilities of any Party Hereto, other than the Party or Parties Hereto with which such contractual arrangements have been made. Electric generating plants shall include stations for which a Party Hereto has full or partial ownership or a contractual entitlement to all or part of the output of the plant, regardless of the location of such facility;

** (vii) include in any contractual arrangements for the sale or purchase of generating capacity and energy, independent of this AGREEMENT, from a Party Hereto or others not party to this AGREEMENT, adequate provisions to meet the transmission obligations as herein set forth;

**(viii) bear its equitable share of the annual costs assigned to the inter-area tie function under the Extra High Voltage Transmission System Agreement dated April 27, 1967, as supplemented from time-to-time. Such share shall be determined by methods consistent with the said AGREEMENT;

*** (ix) provide sufficient reactive capability and voltage control facilities to (1) meet the reactive requirements of its system and (2) adequately maintain voltage levels and stability required by the bulk power supply facilities of THE INTERCONNECTION;

* (x) coordinate the operating schedules of its generating facilities with those of the other Parties Hereto so as to maintain reliable service to its own customers and those of the other Parties Hereto and to obtain the maximum operating economies consistent therewith;

* (xi) coordinate its schedules of planned outages of generation and transmission facilities with those of the other Parties Hereto so as to maintain reliable and economic operation on THE INTERCONNECTION;

** (xii) cooperate with the other Parties Hereto in the analysis, formulation and implementation of plans to prevent or eliminate conditions which impair the reliability or the economic development of THE INTERCONNECTION;

*Added by 4/1/74 Supplement.
**Added by 6/15/77 Supplement.
***Deleted by 6/15/77 Supplement.

* (xiii) engage in coordination with the other Parties Hereto and with others in the planning and operation of the regional bulk power supply facilities to secure a high level of reliability and continuity of service and other advantages of pooling on a regional basis;

* (xiv) adopt and apply THE INTERCONNECTION standards as accepted by the MANAGEMENT COMMITTEE with respect to system design, equipment ratings, operating practices and maintenance practices;

** (xv) cooperate with the other Parties Hereto in the implementation of all emergency procedures of THE INTERCONNECTION in recognition of the need to pursue a uniform operating policy in all service areas and to meet its obligations under this AGREEMENT;

** (xvi) maintain a proportion of its load subject to control by automatic underfrequency load-shedding devices at least equal to that approved from time-to-time by the MANAGEMENT COMMITTEE;

* 4.2 The MANAGEMENT COMMITTEE shall review the recommendations of the PLANNING AND ENGINEERING COMMITTEE provided for in 3.5 (i) and shall establish planning principles, procedures and standards relating to the adequacy and reliability of the bulk power supply facilities of THE INTERCONNECTION which shall not be inconsistent with the principles, procedures and standards of MAAC.

* 4.3 Each Party Hereto shall submit periodically to the PLANNING AND ENGINEERING COMMITTEE through its representative on that committee its plans for the addition, modification and removal of generation and bulk power transmission facilities. Such submittals shall cover a period of years specified by the MANAGEMENT COMMITTEE from time to time. Deviations from previously submitted plans shall be brought promptly to the attention of the PLANNING AND ENGINEERING COMMITTEE by the same means.

* 4.4 The continuing composite long-range plan to provide adequate and reliable service on THE INTERCONNECTION, maintained by the PLANNING AND ENGINEERING COMMITTEE in accordance with 3.5 (ii), shall be based on the plans submitted under 4.3. Such plan shall adequately meet individual requirements and obligations of the Parties Hereto under this AGREEMENT, and shall reflect (i) benefits of inter-area ties and obligations under agreements with others not party to this AGREEMENT, (ii) the need for inter- and intra-regional transmission and (iii) any other forecast conditions and facility additions that could contribute to overall reliability and compatible economy of service in THE INTERCONNECTION.

* 4.5 If, after review of the plans of any Party Hereto under 3.5 (ii), members of the PLANNING AND ENGINEERING COMMITTEE believe that such plans are not in accord with the planning principles, procedures and standards established under 4.2, and may adversely affect THE INTERCONNECTION and regional reliability, they shall so inform such Party Hereto through its representative on the PLANNING AND ENGINEERING COMMITTEE and request that the proposal be modified to conform to such planning principles, procedures and standards.

* Added by 4/1/74 Supplement.
** Added by 6/15/77 Supplement.

*4.6 Each Party Hereto shall report to the OPERATING COMMITTEE through its representative on that Committee as promptly as possible changes in its operating practices and procedures relating to the reliability of the bulk power supply facilities of THE INTERCONNECTION. The OPERATING COMMITTEE shall review such reports in accordance with 3.4 (iii), and if any change in operating practice or procedure of the Party Hereto is not in accord with the established operating principles, practices and procedures for THE INTERCONNECTION and such change adversely affects THE INTERCONNECTION and regional reliability, it shall so inform such Party Hereto through its representative on the OPERATING COMMITTEE and request that such change be modified to conform to such operating principles, practices and procedures.

ARTICLE 5

Planning Period Load Diversity Entitlements

*5.1 Planning Period load diversities on THE INTERCONNECTION, for the purposes of this AGREEMENT, and the entitlements and obligations of each Party Hereto with respect thereto, shall be defined and determined in accordance with a schedule attached and made a part hereof.

ARTICLE 6

Electric Generating Capacity Requirements and Obligations

*6.1 The electric generating capacity requirement of THE INTERCONNECTION shall be an amount of capacity sufficient to carry the load, permit maintenance and provide reserve adequate to achieve a high degree of reliability. The MANAGEMENT COMMITTEE, after consideration of the recommendations of the PLANNING AND ENGINEERING COMMITTEE provided for in 3.5 (iii), shall determine the Forecast Requirements for electric generating capacity of THE INTERCONNECTION for specified Planning Periods and ratify the allocation of equitable shares thereof to each Party Hereto.

*6.2 Prior to a specified Planning Period each Party Hereto shall plan to install or shall otherwise arrange for sufficient Contract Capacity and associated transmission facilities to carry its equitable share of the Forecast Requirement of THE INTERCONNECTION for such period. Each Party Hereto shall submit to the MANAGEMENT COMMITTEE its plans for fulfillment of its obligations under this Section as provided in a schedule attached and made a part hereof.

*6.3 The Accounted-For Requirement for electric generating capacity of THE INTERCONNECTION shall be determined for each Planning Period and each Party Hereto shall account for its equitable share thereof in accordance with a schedule attached and made a part hereof.

1548 148

*6.4 A Party Hereto that has less Contract Capacity than its equitable share of the Accounted-For Requirement of THE INTERCONNECTION shall be considered deficient by the amount of the difference.

* Added by 4/1/74 Supplement.

*6.5 In the planning of its capacity installations and purchases, each Party Hereto shall provide generating capacity of such character that, under normal operating conditions, it can supply, if needed, the energy requirements of its own load and its allocated share of spinning reserve and regulating capacity, provided, however, that any Party Hereto may install or participate in ownership of units of any size that it finds appropriate to its needs, subject only to the responsibility for possible additional reserve in accordance with schedules attached and made a part hereof.

ARTICLE 7

Operating Capacity Requirement and Obligations

** 7.1 The Operating Capacity Requirement of THE INTERCONNECTION shall be an amount of capacity in operation, or capable of operation within a specified time, sufficient to carry the load on any day and to provide reserve adequate to achieve a level of reliability consistent with the policies established by the MANAGEMENT COMMITTEE. Operating capacity shall include specific amounts of synchronized capacity under automatic response as regulating capability for control of tie line loading and frequency of THE INTERCONNECTION. The OPERATING COMMITTEE shall determine the daily Operating Reserve Requirement of THE INTERCONNECTION in accordance with Schedule 6.02. The OPERATING COMMITTEE shall determine the Regulating Capability Requirement of THE INTERCONNECTION in accordance with the operating practices of THE INTERCONNECTION as accepted by the MANAGEMENT COMMITTEE.

** 7.2 The Operating Capacity Obligation of each Party Hereto shall be its equitable share of the Operating Capacity Requirement of THE INTERCONNECTION. Such shares shall be determined in accordance with Schedule 6.03.

** 7.3 A Party Hereto whose operating capacity in any period of a day is less than its Operating Capacity Obligation shall be considered deficient by the amount of the difference and shall make payments for such deficiency in accordance with Schedule 6.03.

** 7.4 The Regulating Capability Obligation of each Party Hereto shall be its equitable share of the total regulating capability provided by all Parties Hereto to meet the Regulating Capability Requirement of THE INTERCONNECTION. Such shares shall be determined in accordance with Schedule 6.01.

** 7.5 A Party Hereto whose regulating capability in any hour is less than its Regulating Capability Obligation shall be considered deficient by the amount of the difference and shall make payments for such deficiency in accordance with Schedule 6.01.

* Added by 4/1/74 Supplement.
** Added by 6/15/77 Supplement.

ARTICLE 8

Accounting

* 8.1 CAPACITY ACCOUNT. The payments for adjusted planned purchases of capacity and for deficiencies in Contract Capacity payable or receivable by Parties Hereto shall be determined in accordance with schedules attached and made a part hereof.

** 8.2 OPERATING CAPACITY ACCOUNT. The payments for deficiencies in operating capacity payable or receivable by Parties Hereto shall be determined in accordance with Schedule 6.03.

** 8.3 REGULATING CAPABILITY ACCOUNT. The payments for deficiencies in regulating capability payable or receivable by Parties Hereto shall be determined in accordance with Schedule 6.01.

** 8.4 ENERGY ACCOUNT. The payments for interchange of energy payable or receivable by Parties Hereto shall be determined in accordance with schedules attached.

** 8.5 COMPONENTS OF COST OR REPLACEMENT VALUE. Each Party Hereto in accounting for daily operating capacity and energy supplied to or received from THE INTERCONNECTION shall include the components of cost or replacement value in accordance with Schedule 8.01.

** 8.6 TRANSMISSION LOSSES. Compensation to Parties Hereto for their out-of-pocket cost of supplying losses incurred in transmission of energy through their own facilities for others shall be accounted for by a method acceptable to the OPERATING COMMITTEE.

** 8.7 ADJUSTMENT FOR LOSSES. For the purpose of accounting under this AGREEMENT each Party Hereto may adjust its metered loads to reflect the incremental changes in transmission losses incurred by its System as a result of transactions with others. All such adjustments of load shall be determined by methods acceptable to the OPERATING COMMITTEE.

ARTICLE 9

Interchange with Others

9.1 Any Party Hereto may enter into interchange arrangements with others who are not Parties Hereto with respect to the delivery or receipt of capacity and energy to fulfill its obligations hereunder or for any other purpose.

** 9.2 The Parties Hereto collectively may enter into agreements with others not party to this AGREEMENT to secure the advantages of pooling on a regional basis. The allocation and accounting among Parties Hereto of payments and charges for services and transactions under such agreements shall be in accordance with schedules attached.

* Added by 4/1/74 Supplement.
** Added by 6/15/77 Supplement.

ARTICLE 10

Metering

10.1 The quantities of electric energy involved in determination of the amounts of the billing rendered hereunder shall be ascertained by the means of meters installed, maintained and read either at the expense of the Party on whose premises the meters are located or as otherwise provided for by agreement between the Parties concerned.

10.2 Procedures with respect to maintenance, testing, calibrating, correction and registration records, and precision tolerance of all metering equipment shall be in accordance with good operating practices.

The expense of testing any meter shall be borne by the party owning such meter, except that when a meter tested upon request of another party is found to register within the established tolerance the party making the request shall bear the expense of such test.

10.3 All metering of energy required herein shall be the integration of kilowatthours in the clock hour, and the quantities thus obtained shall constitute the kilowatt load for such clock hour, provided however that adjustment shall be made for other contractual obligations of any Party Hereto as may be required to determine the quantity to be accounted for hereunder, and for transmission losses as provided in 8.7. **

* 10.4 The meter locations to be used by the Parties Hereto in determining their energy transactions on THE INTERCONNECTION shall be as agreed upon from time to time by the OPERATING COMMITTEE.

ARTICLE 11

Billing

*** 11.1 At the end of each month and by the fifth working day of the following month, the Office of THE INTERCONNECTION shall prepare a statement showing the debits and credits to each Party Hereto for adjusted planned purchases and sales of capacity, for Accounted-For Deficiencies and Excesses of Contract Capacity, for interchange of Operating Capacity, Regulating Capability, and Energy, and for any allocated share of transactions with others not party to this AGREEMENT. From the net party balances so determined, the Office of THE INTERCONNECTION shall prepare billing statements for all transactions which occurred during the month, and PE, as agent for THE INTERCONNECTION, shall make collection and disbursements pursuant to such statements on or before the first banking day common to all the Parties Hereto following the nineteenth day of the month in which the billing statements are prepared. Interest on uncollected amounts shall accrue daily from the date due until the day upon which collection is made at a rate equal to 130% of the prime rate per annum as established from time-to-time during such period of delinquency by the Chase Manhattan Bank (National Association) or its successor.

* Added by 4/1/74 Supplement.
** Underline amended by 6/15/77 Supplement.
*** Added by 6/15/77 Supplement.

* 11.2 PE shall pay the costs of the Office of THE INTERCONNECTION as provided for in 3.3 and shall issue monthly bills to the other Parties Hereto for their share of such costs and the costs associated with those other facilities and activities which are to be shared under 3.7 (iv). Such bills shall be paid monthly.

ARTICLE 12

Waiver of Rights

12.1 Any waiver of the rights of any signatory or Party Hereto as to any default of any other signatory or Party Hereto or any other matter arising hereunder shall not be deemed a waiver as to any default or other matter subsequently occurring.

ARTICLE 13

Liability

13.1 As between the signatories hereto, except as may be otherwise agreed upon between individual signatories with respect to specific interconnections, each signatory will save the others harmless of and from any and all loss and damage by reason of bodily injury, death or damage to property caused or sustained on the portion of the transmission system employed in THE INTERCONNECTION and controlled and made available by it, notwithstanding that a judgement may be rendered against two or more of the signatories or against a single signatory, other than the signatory controlling the portion of such transmission system upon which such injury, death or damage occurred, except that each signatory shall be responsible for all claims of its own employees, agents and servants growing out of any Workmen's Compensation Law.

ARTICLE 14

Effective Date, Termination and Assignment

14.1 This AGREEMENT shall become effective as of November 4, 1956, and, subject to action of any regulatory authority having jurisdiction, shall continue in effect for an initial period of three (3) years, and thereafter from year to year until terminated by consent of all signatories hereto; provided, however, that any signatory hereto at any time may withdraw from this AGREEMENT upon three (3) years' written notice to the other signatories: all subject to the provisions of Schedule 1.11 attached and made a part hereof.

14.2 The rights and obligations created by this AGREEMENT and all supplements thereto shall enure to and bind the successors and assigns of the respective signatories hereto, provided, however, that they shall not be assigned by any signatory without the written consent of the other signatories unless the assignee concurrently acquires substantially all of the electric operating properties of the assigner.

Except as hereinabove provided, the terms and conditions of the AGREEMENT shall remain in full force and effect.

* Added by 6/15/77 Supplement.

SCHEDULE 1.11

Issued: April 1, 1974

Effective: June 1, 1974

TERMINATION AND WITHDRAWAL

(a) Upon termination of this AGREEMENT, final settlement for obligations under Article 6 shall include the accounting for the period ending with Friday of the last calendar week for which the AGREEMENT is effective.

(b) Obligations under Article 6 of a signatory hereto withdrawing from this AGREEMENT in accordance with Section 14.1 shall continue through the period ending with Friday of the last calendar week of the Planning Period in which such withdrawal is effective.

SCHEDULE 2.01

Issued: April 1, 1974

Effective: June 1, 1974

FORECAST REQUIREMENTS OF THE INTERCONNECTION

(a) Section 6.1 of this AGREEMENT provides that Forecast Requirements for electric generating capacity of THE INTERCONNECTION shall be determined for specified Planning Periods and be equitably shared among the Parties Hereto. The Forecast Requirements of THE INTERCONNECTION and the equitable shares thereof shall be expressed in megawatts.

(b) The MANAGEMENT COMMITTEE shall make determinations of the Forecast Requirements of THE INTERCONNECTION for all of the Plannng Periods included in the composite long-range plan of THE INTERCONNECTION maintained by the PLANNING AND ENGINEERING COMMITTEE in accordance with Section 4.4 of this AGREEMENT. The recommendations of the PLANNING AND ENGINEERING COMMITTEE submitted for consideration of the MANAGEMENT COMMITTEE in connection with such determinations shall be made in accordance with the guidelines set forth in Schedule 2.11 or revision thereof.

Forecast Requirements shall be determined annually before April 30. Any of such Forecast Requirements may be revised from time to time by the MANAGEMENT COMMITTEE, except that, unless otherwise agreed by the MANAGEMENT COMMITTEE, the Forecast Requirements of THE INTERCONNECTION covering the next three full Planning Periods following suc annual determination shall be considered firm and not subject to redetermination thereafter.

SCHEDULE 2.01

(c) Each Forecast Requirement of THE INTERCONNECTION determined under paragraph (b) hereof shall be allocated in equitable shares among the Parties Hereto in accordance with Schedule 2.21 or revision thereof.

(d) Each Party Hereto shall submit to the MANAGEMENT COMMITTEE its plans for carrying the share (hereinafter called Forecast Obligation) of the Forecast Requirement allocated to it for each Planning Period under paragraph (c) hereof, through:

(1) installation of generating capacity; and

(2) purchases of generating capacity and energy, independent of this AGREEMENT, from a Party Hereto or others not party of this AGREEMENT; and

(3) purchases of additional required capacity from other Parties Hereto in accordance with paragraph (e) hereof at the rates specified in Schedule 4.01 or revisions thereof in effect at the time the service is supplied.

Capacity planned to be installed by a Party Hereto after the beginning of a Planning Period may be used to satisfy its Forecast Obligation in the portion of the Planning Period during which such capacity is scheduled to be in service. The plans of each Party Hereto shall also indicate the nature and current status of commitments with respect to each addition, retirement and sale or purchase of capacity included in its plans. The MANAGEMENT COMMITTEE shall review the adequacy of the submittals hereunder both as to timing and magnitude.

SCHEDULE 2.01

(e) Unless otherwise agreed by the MANAGEMENT COMMITTEE, the plans submitted by each Party Hereto under paragraph (d) for a Planning Period shall be considered a firm commitment as of a date two years prior to the beginning of such Planning Period. Planned purchases of capacity provided under subparagraph (3) thereof shall be from Parties Hereto which have planned System Capacities in excess of their respective Forecast Obligations. The planned sale by each such supplying Party Hereto shall be determined by allocation in direct proportion to the amounts of such forecast in excess as of the time such commitments are made by the purchasing Party Hereto.

Such planned sales shall thereupon likewise be considered firm commitments of the supplying Parties Hereto, provided, however, that when the actual System Capacity of a Party Hereto during any portion of the Planning Period is less than its planned System Capacity for the same portion of the Planning Period, planned sales and purchases for such portion of the Planning Period shall be limited or increased as provided in (f), (g) and (h) below. Such adjusted planned sales and purchases shall thereupon be used in the determination of Contract Capacities.

(f) The adjusted planned purchase of any Party Hereto shall be the amount by which the smaller of its planned or actual System Capacity is deficient in comparison with its Forecast Obligation.

(g) Adjusted planned purchases of capacity as provided in (f) shall be apportioned to and supplied by other Parties Hereto to the extent that the smaller of their planned or actual System Capacity exceeds their respective Forecast Obligations.

SCHEDULE 2.01

(h) If the sum of the excesses determined in (g) is less than the sum of the deficiencies determined in (f), then the adjusted planned sales shall be the respective excesses of the supplying Parties Hereto and the adjusted planned purchases shall be the sum of the excesses determined in (g) allocated in proportion to the deficiencies determined in (f).

SCHEDULE 2.11

Issued: April 1, 1974

Effective: June 1, 1974

GUIDELINES FOR CALCLATION OF FORECAST REQUIREMENTS OF THE INTERCONNECTION

(a) By application of suitable probability methods to appropriate data and forecasts for THE INTERCONNECTION, the Forecast Requirements for electric generating capacity of THE INTERCONNECTION shall be calculated for specified Planning Periods as the amounts of capacity which provide an acceptable level of reliability.

(b) The calculations of Forecast Requirements by the PLANNING AND ENGINEERING COMMITTEE, as called for in Section 3.5 (iii) and referred to in Section 6.1 of this AGREEMENT, shall consider the following data and forecasts for THE INTERCONNECTION and such additional data and forecasts as are found necessary to meet changes in method of computation or in system conditions:

(1) Estimates of summer and winter peak loads for each Planning Period as specified in Schedule 2.211, based on estimates for each System prepared by the respective Parties Hereto reflecting a 50% probability of occurrence and on summer peak diversities determined by the PLANNING AND ENGINEERING COMMITTEE from recent experience.

(2) Estimates of seasonal load shape which are consistent with forecast averages of 52 weekly peak loads prepared by the Parties Hereto for their respective Systems.

(3) Variability of loads within each week, due to weather and other recurring and random factors, as determined by the PLANNING AND ENGINEERING COMMITTEE.

SCHEDULE 2.11

(4) Unit sizes and types for both existing and proposed units.

(5) Forced outage rates for existing mature units, as determined by the PLANNING AND ENGINEERING COMMITTEE from recent experience, and for immature and proposed units based upon forecast rates related to unit type, size and other pertinent characteristics.

(6) Planned and maintenance outages of generating units as determined by the PLANNING AND ENGINEERING COMMITTEE, based on forecasts submitted by the Parties Hereto for their respective Systems.

(7) Miscellaneous adjustments to System Capacity due to all causes, as determined by the OPERATING COMMITTEE, based on forecasts submitted by the Parties Hereto for their respective Systems.

(8) Interconnections with other areas and the capacity available as the result of such interconnections, as limited by transmission and the probable availability of generation in excess of load requirements in such areas.

SCHEDULE 2.21

Issued: April 1, 1974

Effective: June 1, 1974

ALLOCATION OF FORECAST REQUIREMENTS TO PARTIES HERETO

(a) The Forecast Requirement of THE INTERCONNECTION shall be allocated to the Parties Hereto in accordance with this schedule.

(b) For any Planning Period, the Forecast Obligation of a Party Hereto shall be calculated as follows:

$$\text{Forecast Obligation} = P \times \left(1 + \frac{R+F+U+D}{100}\right)$$

Where:

P = the forecast diversified Planning Period peak of the Party Hereto, in megawatts, determined in accordance with Schedule 2.211 hereof;

R = the margin of the Forecast Requirement for the Planning Period over the forecast Planning Period peak of THE INTERCONNECTION, in percent of such Planning Period peak;

F = the forced outage rate adjustment, in percent, determined in accordance with Schedule 2.212 hereof;

U = the large unit adjustment, in percent, determined in accordance with Schedule 2.213 hereof;

D = the load drop adjustment, in percent, determined in accordance with Schedule 2.214 hereof.

(c) It is recognized that changing conditions and improvements in techniques may require from time to time the addition of other factors in the above equation and the revision or deletion of factors currently included therein. If, in the opinion of a Party Hereto, any such change is required, such

Party Hereto shall request that the MANAGEMENT COMMITTEE have the matter studied and a recommendation made. Upon approval of a change by the MANAGEMENT COMMITTEE, this schedule and related subschedules shall be appropriately revised and supplemented and shall thereupon be made effective.

(d) If, during any portion of a Planning Period for which capacity commitments have been made in accordance with Schedule 2.01 (e), the Forecast Requirement of THE INTERCONNECTION exceeds the sum of the System Capacities expected to be available on THE INTERCONNECTION, the Forecast Requirement of THE INTERCONNECTION as determined in Schedule 2.01 (b) shall be reduced for that portion of the Planning Period to such sum. The Forecast Obligation of each Party Hereto shall be reduced to equal (1) its forecast diversified Planning Period peak plus (2) the product of a reduction ratio and the difference between its Forecast Obligation as determined under paragraph (b) hereof and its forecast diversified Planning Period peak. Such reduction ratio shall be (1) the difference between the sum of the System Capacities expected to be available on THE INTERCONNECTION and the forecast Planning Period peak of THE INTERCONNECTION divided by (2) the difference between the Forecast Requirement of THE INTERCONNECTION as determined in Schedule 2.01 (b) and such Planning Period peak.

(e) If the loads of any Party Hereto contain elements for which such Party Hereto is not required to furnish reserve capacity, suitable adjustment shall be made with respect to the capacity obligations of such Party Hereto as approved by the MANAGEMENT COMMITTEE.

SCHEDULE 2.211

Issued: April 1, 1974

Effective: June 1, 1974

FORECAST DIVERSIFIED PLANNING PERIOD PEAKS (P)

(a) The forecast diversified Planning Period peaks of the Parties Hereto (P) shall be determined in accordance with this schedule so long as the forecast Planning Period peak of THE INTERCONNECTION is a summer peak.

(b) For the purposes of this schedule, the forecast maximum one hour load of a System during the period June through September of a Planning Period shall be its summer peak, and the forecast maximum one hour load during the period December through March of the Planning Period shall be its winter peak.

(c) The forecast diversified Planning Period peak of a Party Hereto shall be its Planning Period peak as defined herein reduced by its Planning Period peak diversity entitlement and its summer peak diversity entitlement.

(d) In a Planning Period each Party Hereto shall be classified as either a summer peaking System or a winter peaking System. In the determination of such classification the winter peak of each Party Hereto shall be reduced by the excess of its total capability under winter operating conditions. For the purpose of this schedule, such total capabilities shall be defined as the respective Net Capabilities of its units planned to be in service as of December 1, adjusted for firm capacity purchases and sales in the December through March period, independent of this AGREEMENT, and reduced by the limitations specified in 1.1 (d), such Net Capability adjustments and limitations being respectively determined for winter and summer operating conditions. A Party Hereto having a summer peak which exceeds its winter peak so reduced shall be classified as a summer peaking

SCHEDULE 2.211

System, and its Planning Period peak shall be equal to such summer peak. A Party Hereto which has a winter peak so reduced which exceeds its summer peak shall be classified as a winter peaking System. The Planning Period peak of a winter peaking System shall be equal to the average of (i) its reduced winter peak for the Planning Period and (ii) the greater of its summer peak for the Planning Period or its reduced winter peak for the Planning Period immediately preceding.

(e) The Planning Period peak diversity entitlement of a winter peaking System shall be one half the difference between its Planning Period peak and its summer peak. The Planning Period peak diversity entitlement of a summer peaking System shall be the ratio of the difference between its summer peak and its reduced winter peak to the sum of such differences for all the summer peaking Systems multiplied by the sum of the Planning Period peak diversity entitlements of the winter peaking Systems. In the event that the total of the Planning Period peak diversity entitlements of all Parties Hereto so determined exceeds the sum of the differences between the summer peaks and reduced winter peaks of the summer peaking Systems, such entitlements shall be proportionately reduced to equal in total such lower sum.

(f) The summer peak diversity entitlement of a Party Hereto shall be the ratio of its summer peak to the sum of the summer peaks of all Parties Hereto multiplied by the difference between such sum of summer peaks and the forecast Planning Period peak of THE INTERCONNECTION.

SCHEDULE 2.212

REVISION NO. 1

(Supersedes Initial Schedule Issued April 1, 1974)

Issued: June 15, 1977

Effective: August 1, 1977

FORCED OUTAGE RATE ADJUSTMENTS (F)

(a) Forced outage rate adjustments of the Parties Hereto (F) in a Planning Period shall be determined in accordance with this schedule.

(b) The forced outage rate adjustment shall be the amount, in percent, by which the average forced outage rate of a Party Hereto is more or less than the average forced outage rate of THE INTERCONNECTION, multiplied by a factor. If more, such adjustment shall be considered plus (+) in the equation in Schedule 2.21 (b); if less, such adjustment shall be considered minus (-) in such equation.

(c) The factor in (b) represents the change in requirement for capacity installed on THE INTERCONNECTION in percent of peak load for every one percent change in average forced outage rate on THE INTERCONNECTION. Such relationship shall be regularly reviewed (initially annually) by the PLANNING AND ENGINEERING COMMITTEE in connection with its calculations of Forecast Requirements of THE INTERCONNECTION, using methods and data consistent with those utilized therein. If such review indicates a change in the relationship, the PLANNING AND ENGINEERING COMMITTEE shall report its finding and recommendation to the MANAGEMENT COMMITTEE. Upon approval by the MANAGEMENT COMMITTEE, changes in

1548 164

ACCEPTED BY FPC
EFFECTIVE
SEPTEMBER 1, 1977

SCHEDULE 2.212

the factor shall be made effective only as to Planning Periods for which capacity commitments have not yet been made in accordance with Schedule 2.01 (e).

(d) The average forced outage rate of a Party Hereto in a Planning Period shall be the average of the forced outage rates, weighted for unit size and expected time in service, attributable to all of its generating units planned to be in service including capacity purchased and excluding capacity sold independent of this AGREEMENT. Such rate shall also include the adjustment, if any, for system capacity unavailable due to energy limitations determined in accordance with definitions and criteria specified by the OPERATING COMMITTEE and approved by the MANAGEMENT COMMITTEE. For the purposes of this Schedule, the average forced outage rate of THE INTERCONNECTION shall be the average of the average forced outage rates of all the Parties Hereto weighted by their respective diversified Planning Period peaks. All rates shall be in percent.

(e) The forced outage rate of a unit not yet in service or which has been in service less than one full calendar year at the time of forecast shall be the mature rate for that size and type of unit, as estimated and used by the PLANNING AND ENGINEERING COMMITTEE in the calculation of the Forecast Requirement of THE INTERCONNECTION.

(f) The forced outage rate of a unit in service three or more full calendar years at the time of forecast shall be the average rate experienced by such unit during the three most recent calendar years. Historical data shall be based on official reports of the Parties Hereto under rules and practices approved by both the OPERATING COMMITTEE and the PLANNING AND ENGINEERING COMMITTEE.

SCHEDULE 2.212

(g) The forced outage rate of a unit in service at least one full calendar year but less than three full calendar years at the time of the forecast shall be determined as follows:

Full Calendar Years of Service	
1	One-third the rate experienced during the calendar year, plus two-thirds the mature rate.
2	Two-thirds the average rate experienced during the two calendar years, plus one-third the mature rate.

SCHEDULE 2.213

REVISION NO. 1

(Supersedes Initial Schedule Issued April 1, 1974)

Issued: June 15, 1977

Effective: August 1, 1977

LARGE UNIT ADJUSTMENTS (U)

(a) Large unit adjustments of the Parties Hereto (U) in a Planning Period shall be determined in accordance with this schedule whenever the Net Capability of units included in the planned System Capacity of a Party Hereto as of September 30 of the Planning Period is in excess of the specified size of unit defined herein.

(b) The large unit adjustment shall be a specified percent of the amount, in megawatts, by which such excess of a Party Hereto is more or less than a proportionate part of the total of such excesses of all Parties Hereto, allocated to each Party Hereto in accordance with the ratio of its forecast diversified Planning Period peak to the Planning Period peak of THE INTERCONNECTION. If more, such adjustment shall be considered plus (+) in the equation in Schedule 2.21 (b); if less, such adjustment shall be considered minus (-) in such equation. For use in such equation, the adjustment of a Party Hereto shall be expressed in percent of its forecast diversified Planning Period peak. The specified size of unit initally shall be 900 MW.

(c) Whenever through ownership or purchase the System Capacity of a Party Hereto includes a portion of the capability of a unit larger than the specified size, the megawatts assigned to the Party Hereto

1548 167

ACCEPTED BY FPC
EFFECTIVE
SEPTEMBER 1, 1977

SCHEDULE 2.213

with respect to the capability of such unit in excess of the specified size shall be in proportion to the ownership or purchase by the Party Hereto.

(d) The percentage factor in item (b) represents the effect on the requirement for capacity to be installed on THE INTERCONNECTION of the operation of units larger than the specified size, as planned at the time this Schedule initially becomes effective. Such factor, and the specified size of unit, shall be regularly reviewed (initially annually) by the PLANNING AND ENGINEERING COMMITTEE in connection with its calculations of Forecast Requirements of THE INTERCONNECTION, using methods and data consistent with those utilized therein. If such review indicates a change in the effect on capacity requirements, or that the specified size of unit should be increased, the PLANNING AND ENGINEERING COMMITTEE shall report its finding and recommendation to the MANAGEMENT COMMITTEE. Upon approval by the MANAGEMENT COMMITTEE, changes in the factor, the specified size of unit, or both shall be made effective only as to Planning Periods for which capacity commitments have not yet been made in accordance with Schedule 2.01 (e).

SCHEDULE 2.214

REVISION NO. 1

(Supersedes Initial Schedule Issued April 1, 1974)

Issued: June 15, 1977

Effective: August 1, 1977

LOAD DROP ADJUSTMENTS (D)

(a) Load drop adjustments (D) of the parties Hereto in a Planning Period shall be determined in accordance with this schedule.

(b) A Party Hereto shall be considered to have a need for load drop when in a Planning Period the ratio (load drop ratio) of the algebraic sum of (1) the forecast average of its 52 weekly peak loads, (2) the forecast average of its Unavailable Capability in each week because of planned and maintenance outages, and (3) the forecast average of its miscellaneous adjustments, to its Planning Period peak, is greater than the load drop ratio for THE INTERCONNECTION.

(c) For the purposes of this schedule, the load drop ratio for THE INTERCONNECTION shall be the average of the load drop ratios of all the Parties Hereto weighed by their respective Planning Period peaks.

(d) The load drop adjustment, expressed in megawatts, of a Party Hereto having a need for load drop shall be (1) the increase in percent reserve requirement on THE INTERCONNECTION corresponding to the load drop ratio of such Party Hereto, less the increase in percent reserve requirement on THE INTERCONNECTION corresponding to the load drop ratio of THE INTERCONNECTION, multiplied by (2) the Planning Period peak of the Party Hereto, and (3) 0.5, to effect a sharing of such needs and the supplying thereof among the Parties Hereto. For each

1548 169

ACCEPTED BY FPC
EFFECTIVE
SEPTEMBER 1, 1977

SCHEDULE 2.214

Planning Period, the relationship of increases in percent reserve requirement of THE INTERCONNECTION to various load drop ratios of THE INTERCONNECTION shall be determined by the PLANNING AND ENGINEERING COMMITTEE in connection with its calculation of the Forecast Requirement of THE INTERCONNECTION for the Planning Period, using methods and data consistent with those utilized therein. The PLANNING AND ENGINEERING COMMITTEE shall report such determination and its recommendation to the MANAGEMENT COMMITTEE. Upon approval by the MANAGEMENT COMMITTEE, changes in the relationship shall be made effective only as to Planning Periods for which capacity commitments have not been made in accordance with Schedule 2.01(e).

(e) The total of the load drop adjustments of Parties Hereto have need for load drop (total adjustment) shall be considered as supplied by the Parties Hereto having load drop ratios equal to or less than the load drop ratio of THE INTERCONNECTION.

(f) The load drop adjustment of a Party Hereto supplying load drop shall be the total adjustment times the ratio of (1) the product of the Planning Period peak of such Party Hereto and the excess of the load drop ratio of THE INTERCONNECTION over the load drop ratio of such Party Hereto, to (2) the sum of such products of all Parties Hereto supplying load drop.

(g) The load drop adjustments, as expressed in megawatts, shall be converted to percentages, for use in the equation in Schedule 2.21(b), by dividing the respective megawatt amounts by the diversified Planning Period peaks of the several Parties Hereto. Load drop adjustments of Parties Hereto needing load drop shall be considered plus (+), and adjustments of the Parties Hereto supplying load drop shall be considered minus (-) in such equation.

SCHEDULE 3.01

Issued: April 1, 1974

Effective: June 1, 1974

ACCOUNTED-FOR REQUIREMENTS AND OBLIGATIONS

(a) Section 6.3 of this AGREEMENT provides that an Accounted-For Requirement for electric generating capacity of THE INTERCONNECTION shall be determined for each Planning Period and be equitably shared among the Parties Hereto. The Accounted-For Requirement of THE INTERCONNECTION as determined in paragraph (c) hereof and the equitable shares thereof shall be expressed in megawatts.

(b) The equitable share (herein called Accounted-For Obligation) for each Party Hereto of the Accounted-For Requirement of THE INTERCONNECTION shall be equal to its Forecast Obligation for a Planning Period, plus an adjustment equal to the algebraic sum of the following for such Planning Period:

(1) The actual average of its 52 weekly peak loads during the Planning Period minus the forecast average of its 52 weekly peak loads; and

(2) The acutal average of its 52 weekly Unavailable Capabilities during the Planning Period minus the forecast average of its 52 weekly Unavailable Capabilities, all multiplied by 0.5. The forecast average of its 52 weekly Unavailable Capabilities shall be determined as the algebraic sum of:

(i) forecast average System Capacity during the Planning Period times its forecast average forced outage rate,

(ii) the forecast average of its Unavailable Capability in each week because of planned and maintenance outages, and

SCHEDULE 3.01

(iii) the forecast average of its miscellaneous adjustments in each week.

The factor 0.5 may be changed from time to time by the MANAGEMENT COMMITTEE to reflect current conditions.

(c) The Accounted-For Requirement for electric generating capacity of THE INTERCONNECTION shall be the sum of the Accounted-For Obligations of the Parties Hereto.

(d) In the event that the Accounted-For Requirement of THE INTERCONNECTION as determined in paragraph (c) hereof is greater than the sum of the actual Contract Capacities of the Parties Hereto during any portion of a Planning Period, the Accounted-For-Requirement of THE INTERCONNECTION shall be reduced to equal such sum for that portion. The Accounted-For Obligation of each Party Hereto shall be reduced to equal (1) its forecast diversified Planning Period peak plus (2) the product of a reduction ratio and the difference between its Accounted-For Obligation as determined under paragraph (b) hereof and its forecast diversified Planning Period peak. Such reduction ratio shall be (1) the difference between the sum of the actual Contract Capacities of the Parties Hereto and the forecast Planning Period peak of THE INTERCONNECTION divided by (2) the difference between the Accounted-For Requirement of THE INTERCONNECTION as determined in paragraph (c) hereof and such Planning Period peak.

(e) The Accounted-For Excess of a Party Hereto shall be the amount by which its actual Contract Capacity exceeds its Accounted-For Obligation. The Accounted-For Deficiency of a Party Hereto shall be the amount by which its Accounted-For Obligation exceeds its actual Contract Capacity.

SCHEDULE 3.01

(f) Those Parties Hereto that have Accounted-For Deficiencies during any portion of a Planning Period shall make payments to those that have Accounted-For Excesses during that portion in proportion to the respective Accounted-For Excesses, at the rate provided for in Schedule 4.01.

SCHEDULE 4.01

REVISION NO. 2

(Supersedes Revision No. 1 Issued April 11, 1977)

Issued: March 15, 1979

Effective: June 1, 1979

RATES AND PAYMENTS FOR CONTRACT CAPACITY

(a) Payment by a Party Hereto for planned purchases of capacity under Schedule 2.01 and for Accounted-For Deficiencies under Schedule 3.01 shall be based on a rate determined annually by the MANAGEMENT COMMITTEE. The annual rate effective June 1, 1979 shall be $25.55 per kilowatt.

(b) Planned purchases shall be determined for each portion of a Planning Period, measured in days, as required by changes in planned and actual System Capacities. Payments shall be made by Parties Hereto that have adjusted planned purchases to those supplying Parties Hereto that have adjusted planned sales in that portion at a daily rate equal to 1/365 of the rate specified in (a).

(c) Accounted-For Deficiencies and Excesses shall be determined for each portion of a Planning Period, measured in days, as required by changes in Accounted-For Obligations or actual Contract Capacities. Payments shall be made by the Parties Hereto that have Accounted-For Deficiencies to those that have Accounted-For Excesses in that portion at a daily rate equal to 1/365 of the rate specified in (a).

(d) Billings under (b) and (c), and under Schedules 5.01 (c) and (d) and 5.02 (c) and (d), shall be monthly with respect to the portion or portions of the Planning Period in a month. Such billings shall be kept current through estimates made during the Planning Period, from time to time as required by changes in actual System and Contract Capacities, or quarterly as required by

SCHEDULE 4.01

Accounted-For Obligations. All estimated computations and payments shall be revised as required at the end of the Planning Period to reflect actual conditions.

SCHEDULE 5.01

REVISION NO. 1

(Supersedes Initial Schedule Issued April 1, 1974)

Issued: June 15, 1977

Effective: August 1, 1977

ALLOCATION AMONG PARTIES HERETO OF SHORT-TERM POWER RESERVATIONS

(a) Allocation among Parties Hereto of Short-Term Power reservations under agreements between the Parties Hereto and others not party to the AGREEMENT, and the accounting and billing within THE INTERCONNECTION in connection with such reservations, shall be made in accordance with this schedule.

(b) Operating capacity and energy transactions associated with such reservations shall be accounted for and billed within THE INTERCONNECTION in accordance with other schedules of this AGREEMENT.

(c) When the Parties Hereto reserve power from others during a Planning Period, each Party Hereto shall pay to the billing agent its share of the charges with respect to such reservation (exclusive of charges covered by (b) hereof) in proportion to its Accounted-For Obligation (as the same may be adjusted in accordance with Schedule 2.21(e)) in that portion of the Planning Period.

(d) When others reserve power from the Parties Hereto during a Planning Period, such reservation shall be allocated among those Parties Hereto having Accounted-For Excesses not sold to meet Accounted-For Deficiencies in that portion of the Planning Period in proportion to such unsold Accounted-For Excesses; provided, however, that the portion of such reservation, if any, which cannot be so allocated shall be allocated

SCHEDULE 5.01

among all Parties Hereto in proportion to their respective actual Contract Capacities, after adjustments for sales already allocated under this paragraph and for sales and purchases under Schedule 3.01.

(e) When others reserve power from the parties Hereto during a Planning Period, payments received with respect to such reservation (exclusive of payments covered by (b) hereof) shall be devided into two parts; (i) the part representing payment for generating capacity, and (ii) the part representing payment for transmission services, the division being 70% for generating capacity and 30% for transmission services, subject to review from time-to-time as the MANAGEMENT COMMITTEE shall direct. Part (i) of the payments shall be allocated among the Parties Hereto in the same proportions as determined in (d). Part (ii) of the payments shall be allocated among the Parties Hereto as provided in Schedule 5.03. Each Party Hereto shall receive from the billing agent, its share of the payments as so allocated.

SCHEDULE 5.02

REVISION NO. 1

(Supersedes Initial Schedule Issued June 26, 1974)

Issued: June 15, 1977

Effective: August 1, 1977

ALLOCATION AMONG PARTIES HERETO OF EXTENDED EMERGENCY AND SUPPLEMENTAL OPERATING CAPACITY PAYMENTS AND CHARGES

(a) Allocation among Parties Hereto of those portions of the payments and charges for Extended Emergency and Supplimental operating capacity, as defined in agreements between the Parties Hereto and others, which are determined at specified rates under such agreements, and the billing within THE INTERCONNECTION in connection therewith, shall be made in accordance with this schedule.

(b) Those portions of such payments and charges which are for operating capacity and energy shall be accounted for and billed within THE INTERCONNECTION in accordance with other schedules of this AGREEMENT.

(c) When the Parties Hereto purchase Extended Emergency and Supplemental operating capacity from others during a Planning Period, each Party Hereto shall pay to the billing agent a share of the portions described in (a) of the charges with respect to such transactions in proportion to its Accounted-For Obligation (as the same may be adjusted in accordance with Schedule 2.21(e)) in that portion of the Planning Period in which the services were purchased.

(d) When others purchase Extended Emergency and Supplemental operating capacity from the Parties Hereto during a Planning Period, the portion described in (a) of the payments with respect to such transactions shall be divided into two parts: (i) the part representing payment

SCHEDULE 5.02

for generating capacity and (ii) the part representing payment for transmission services, the division being 70% for generating capacity and 30% for transmission services, subject to review from time to time as the MANAGEMENT COMMITTEE shall direct. Part (i) of the payments shall be allocated among the Parties Hereto in proportion to their respective actual Contract Capacities in that portion of the Planning Period in which the services were provided, after adjustments for sales and purchases under Schedules 3.01 and 5.01. Part (ii) of the payments shall be allocated among the Parties Hereto as provided in Schedule 5.03. Each Party Hereto shall receive from the billing agent its share of the payments as so allocated.

SCHEDULE 5.03

Issued: June 26, 1974

Effective: August 1, 1974

ALLOCATION AMONG PARTIES HERETO OF TRANSMISSION SERVICE CHARGES FOR CAPAICTY TRANSACTIONS

(a) Allocation among Parties Hereto of transmission service charges related to, or part of capacity transactions under agreements between the Parties Hereto and others not party to the AGREEMENT, and the billing within THE INTERCONNECTION in connection therewith, shall be made in accordance with this schedule..

(b) When others provide transmission services to the Parties Hereto, each Party Hereto shall pay to the billing agent a share of the charges for such service in proportion to its Accounted-For Obligation in that portion of the Planning Period in which the services were provided.

(c) When the Parties Hereto provide transmission services to others, each Party Hereto shall receive from the billing agent a share of payments received with respect to such transmission service charges. The share allocated to each Party Hereto shall be proportioned to the investment of each in specified bulk power transmission facilities, appropriately adjusted for other arrangements it may have involving its responsibilities for investment in any of such facilities. The determination of such shares shall be made in accordance with the procedures set forth in Exhibit A, attached hereto. Such procedures shall be reviewed from time to time and shall be revised, if required, as agreed by the MANAGEMENT COMMITTEE.

(d) For the purpose of this schedule, the investment of each Party Hereto in specified bulk power transmission facilities shall be that classified

SCHEDULE 5.03

as plant in service on its books of account, initially as of December 31, 1973; and the transmission charge allocation ratio be revised annually on June 1 each year to reflect such investments as of the previous December 31.

SCHEDULE 5.03

EXHIBIT A

DETERMINATION OF INVESTMENTS IN
BULK POWER TRANSMISSION FACILITIES OF PARTIES HERETO
AND OF TRANSMISSION ALLOCATION RATIOS

For purposes of this Schedule, the bulk power transmission facilities of the Parties Hereto shall be all facilities operated at 110 kv or higher voltage levels, but not including facilities used for, or related to step-down transformation to voltages below 110 kv. The extent of the investment in such specified bulk power transmission facilities shall be determined from the transmission investments recorded in the annual Form 1 reports to the Federal Power Commission and other appropriate company records, in accordance with the following procedure:

1. Tabulate for each Party Hereto:

   (a) Allocate investment responsibilities in the jointly planned systems 500 kv and above, such as the Keystone-Conemaugh transmission system, as determined by the participation percentages under the relevant agreements.

   (b) Other investments in facilities 500 kv and above not subject to allocation as part of a system included in (a).

   (c) Investment in transmission lines operated at 110 to 345 kv.

   (d) Total reported investment in transmission lines, exclusive of 500 kv and above.

   (e) Investment in balance of reported transmission plant (equal to total reported transmission plant investment less item (d) and less investment in all owned facilities 500 kv and above).

SCHEDULE 5.03

EXHIBIT A

(f) Adjustments (plus or minus) of investment responsibility on a multi-party basis as agreed and reported to PJM by the involved Parties Hereto.

2. Determine the portion of item 1(e) that is applicable to 110 kv or higher voltages, by multiplying 1(e) by 75% times the ratio of item 1(c) to item 1(d).

3. Determine the bulk power transmission investment for each Party Hereto by adding items 1(a), (b), (c), (f) and 2.

4. Determine the transmission charge allocation ratio for each Party Hereto by dividing its item 3 by the sum of the corresponding amounts for all Parties Hereto.

SCHEDULE 5.04
TO THE PJM AGREEMENT

Issued: December 12, 1977

Effective: January 1, 1978

ALLOCATION AMONG PARTIES HERETO OF PAYMENTS AND CHARGES FOR CONSERVATION ENERGY

(a) Agreements between the Parties Hereto, acting as a group, and others not party to the AGREEMENT, provide for the generation and delivery of Conservation Energy as defined in such agreements. Allocation among Parties Hereto of those portions of the payments and charges for Conservation Energy which are determined at specified rates under such agreements, and the billing within THE INTERCONNECTION in connection therewith, shall be made in accordance with this schedule.

(b) Those portions of such charges by others for the generation of Conservation Energy and those portions of such payments to the Parties Hereto for the generation of Conservation Energy shall be accounted for and billed within THE INTERCONNECTION in accordance with Schedule 7.03 of this AGREEMENT.

(c) When the Parties Hereto purchase Conservation Energy from others, each Party Hereto shall pay to the billing agent a share of the charges described in (a) in proportion to its Accounted-For Obligation (as the same may be adjusted in accordance with Schedule 2.21 (e)) in that portion of the Planning Period in which the energy was purchased.

(d) When others purchase Conservation Energy from the Parties Hereto, the portion of the payments described in (a) shall be divided as follows:

(1) 70% representing payment for generating capacity shall be allocated among the Parties Hereto in proportion to their respective actual Contract Capacities in that portion of the Planning Period in which the services were provided, after adjustments for sales and purchases

under Schedules 3.01 and 5.01.

(2) 30% representing payment for transmission services shall be allocated as provided in Schedule 5.03.

The foregoing division of payments shall be reviewed from time to time and shall be revised upon approval by the MANAGEMENT COMMITTEE. Each Party Hereto shall receive from the billing agent its share of the payments as so allocated.

(c) When the Parties Hereto transmit Conservation Energy for others, the portion of the payments described in (a) shall be divided as follows:

(1) 57% representing payment for transmission services shall be allocated as provided in Schedule 5.03;

(2) 12% representing payment for administrative expenses shall be allocated as provided in Schedule 9.01;

(3) 31% representing payment for transmission losses shall be allocated in two parts:

(A) One-third representing payment for additional losses on the 500 KV systems shall be allocated in accordance with Schedule 12.03 or revision thereof of the Extra High Voltage Transmission System (EHV) Agreement.

(B) Two-thirds representing payment for additional losses on the lower voltage transmission lines shall be allocated in proportion to the additional losses incurred by each Party Hereto as determined by computer load flow analysis for typical transactions.

The foregoing division of payments shall be reviewed from time to time and shall be revised upon approval by the MANAGEMENT COMMITTEE. Each Party Hereto shall receive from the billing agent its share of the payments as so allocated.

SCHEDULE 5.05

Issued: January 19, 1979

Effective: April 1, 1979

ALLOCATION AMONG PARTIES HERETO OF SAVINGS AND PAYMENTS RESULTING FROM TRANSMISSION OF ECONOMY ENERGY FOR OTHERS

(a) Allocation among Parties Hereto of savings and payments accruing to PJM under agreements between the Parties Hereto and others not party to this AGREEMENT, as compensation for transmission of economy energy for others, and the accounting within THE INTERCONNECTION in connection therewith, shall be made in accordance with this schedule.

(b) The savings accruing to PJM shall be allocated among the Parties Hereto in proportion to their transmission investment effective for the then current revision of Schedule 5.03.

(c) Payments received by PJM for additional transmission losses incurred in transmitting economy energy for others shall be divided into two parts:

(1) One-third representing payment for additional losses on the 500 KV systems shall be allocated in accordance with Schedule 12.03 or revision thereof of the Extra High Voltage Transmission System (EHV) Agreement.

(2) Two-thirds representing payment for additional losses on the lower voltage transmission lines shall be allocated in proportion to the additional losses incurred by each Party Hereto as determined by computer load flow analysis for typical transactions.

The foregoing division of payments shall be reviewed from time to time and shall be revised upon approval by the MANAGEMENT COMMITTEE.

(d) Each Party Hereto shall receive from the billing agent its allocated share of savings for transmitting economy energy for others as determined in (b) and its allocated share of payments by others for transmission losses as determined in (c).

SCHEDULE 6.01

REVISION NO. 1

(Supersedes Initial Schedule Issued April 15, 1976)

Issued: June 15, 1977

Effective: August 1, 1977

ACCOUNTING FOR REGULATING CAPABILITY

(a) Section 7.1 of this AGREEMENT provides for the determination of a Regulating Capability Requirement for THE INTERCONNECTION.

(b) The total regulating capability provided by all Parties Hereto to meet the Regulating Capability Requirement of THE INTERCONNECTION shall be accounted for each hour.

(c) The proportional share of such total regulating capability allocated to each Party Hereto shall be determined by the ratio of (1) its concurrent Operating Capacity Obligation determined in accordance with Schedule 6.03 hereof to (2) the sum of such obligations for all Parties Hereto.

(d) A Party Hereto whose regulating capability in any hour is more or less than its proportional share as determined under (c) shall be considered to have an excess or deficiency, respectively, by the amount of such difference.

(e) Each Party Hereto that has a deficiency in any hour shall be debited and each Party Hereto that has an excess shall be credited in the Regulating Capability Account at rates determined from time-to-time by the OPERATING COMMITTEE, subject to the approval of the MANAGEMENT COMMITTEE. Such rates shall be representative of the energy replacement costs and other variable operating costs on THE INTERCONNECTION for the particular type of equipment operated to provide such excess.

1548 187

ACCEPTED BY FPC
EFFECTIVE
SEPTEMBER 1, 1977

SCHEDULE 6.02

Issued: June 15, 1977

Effective: August 1, 1977

OPERATING RESERVE REQUIREMENT AND ALLOCATION

(a) Section 7.1 of this AGREEMENT provides for the determination of an Operating Reserve Requirement for THE INTERCONNECTION.

(b) By application of suitable probability methods to appropriate data for THE INTERCONNECTION, the operating reserve required for THE INTERCONNECTION shall be determined by the OPERATING COMMITTEE for specified periods of a day to maintain reliability of service. Such determinations shall consider the probability of load deviations from forecast, the probability of equipment malfunction or failure, the load level on PJM, the time of day, and the season of the year.

(c) The OPERATING COMMITTEE shall specify from time-to-time the portion of the Operating Reserve Requirement which must be synchronized to provide spinning reserve (Spinning Reserve Requirement) and the remaining portion which shall be capable of operation within specified times.

(d) The proportional share of the Spinning Reserve Requirement of THE INTERCONNECTION allocated to each Party Hereto shall be determined by the ration of (1) the average of its loads at the time of THE INTERCONNECTION PEAK LOAD EACH WEEK TO (2) the average of THE INTERCONNECTION peak loads each week, all as measured during the weeks of the corresponding seasonal period of the preceding year. The seasonal periods shall be specified from time-to-time by the OPERATING COMMITTEE.

SCHEDULE 6.03

Issued: June 15, 1977

Effective: August 1, 1977

ACCOUNTING FOR OPERATING CAPACITY

(a) For the purpose of accounting under this AGREEMENT, the Operating Capacity Obligation of each Party Hereto shall be an amount of synchronized capacity equal to:

(1) During a peak period, its estimated peak load for that period, adjusted for its share of estimated load diversity applied in the determination of the estimated peak load for THE INTERCONNECTION, plus its share of the Spinning Reserve Requirement allocated in accordance with Schedule 6.02.

(2) During all other hours, its actual load plus its share of the Spinning Reserve Requirement allocated in accordance with Schedule 6.02.

The time and duration of the peak periods each day shall be specified by the Office of THE INTERCONNECTION.

(b) Load diversity on THE INTERCONNECTION, for the purpose of this schedule, shall be the remainder obtained by subtracting the estimated peak load of THE INTERCONNECTION for any period from the sum of the estimated individual System peak loads of the Parties Hereto for such period. The preoprtional share of the estimaed load diversity on THE INTERCONNECTION in any peak period allocated to each Party Hereto shall be determined by the same ratio as in Schedule 6.02(d).

(c) A Party Hereto whose synchronized capacity during a peak period is more or less than its obligation as determined under (a) shall be

1548 189

ACCEPTED BY FPC
EFFECTIVE
SEPTEMBER 1, 1977

considered to have an excess or deficiency, respectively, by the amount of such difference.

(d) Each Party Hereto that has a deficiency of synchronized capacity shall determine its replacement value as the avoided cost to operate available equipment in amount equal to its deficiency. In the event that the capacity of available equipment of a Party Hereto is less than its deficiency, it shall use as the replacement value for such difference the weighted average cost per kilowatt, increased by 20%, of the highest cost capacity operated on THE INTERCONNECTION by Parties Hereto, equal in amount of capacity to the total synchronized capacity deficiencies of all Parties Hereto for which equipment is not available to determine replacement values.

(e) Each Party Hereto that supplies excess synchronized capacity by operating equipment for THE INTERCONNECTION which is excess to its own requirements shall determine its cost to operate such equipment and shall charge such cost in the Operating Capacity Account. In the event the total capacity of such equipment exceeds the sum of the deficiencies of the Parties Hereto, the costs for the highest cost equipment in amount of capacity equivalent to such sum shall be charged in the Operating Capacity Account and the costs for the remaining equipment shall be charged in the Energy Account.

(f) Each Party Hereto that supplies excess synchronized capacity by operating equipment for THE INTERCONNECTION but uses any part of such equipment to meet its own requirements (incidental excess) shall charge for such excess in the Operating Capacity Account either at zero cost or in a manner specified by the OPERATING COMMITTEE. In the event the total of the deficiencies of the Parties Hereto is greater than the total

SCHEDULE 6.03

amount of capacity operated for THE INTERCONNECTION by Parties Hereto having excesses for which costs are charged in the Operating Capacity Account, the difference shall be allocated equally to the extent possible to the Parties Hereto having incidental excesses except that the amount allocated to any Party Hereto shall not exceed the amount of its incidental excess.

(g) The daily savings accruing to the Parties Hereto for the supply and receipt of operating capacity during peak periods shall be computed as the difference between (1) the total costs charged in the Operating Capacity Account for all peak periods of a day of Parties Hereto having excesses and (2) the total replacement values for all peak periods of a day of the Parties Hereto having deficiencies. One-half of the daily savings shall be allocated to those Parties Hereto supply operating capacity in proportion to the amount of capacity so supplied, and the other half shall be allocated to those Parties Hereto receiving operating capacity in proportion to the total replacement values of each such Party Hereto.

(h) Each Party Hereto that has a deficiency in operating capacity during peak periods shall be debited in the Operating Capacity Account its total replacement value for all peak periods of the day less its allocated share of the daily savings. Each Party Hereto that supplies operating capacity during peak periods shall be credited in the Operating Capacity Account for its total cost for all peak periods of the day plus its allocated share of the daily savings.

(i) All debits and credits arising from a deficiency in the Operating Capacity Obligation of any Party Hereto in hours other than during peak periods shall be entered in the Energy Account.

SCHEDULE 6.04

Issued: June 15, 1977

Effective: August 1, 1977

ACCOUNTING FOR INTERCHANGE OF
OPERATING CAPACITY WITH OTHERS

(a) Accounting among the Parties Hereto for the interchange of operating capacity between THE INTERCONNECTION and others not party to the AGREEMENT shall be made in accordance with this schedule.

(b) When economy operating capacity is received by THE INTERCONNECTION from others, the amount and value of avoided operation of each Party Hereto each day shall be determined by the Office of THE INTERCONNECTION based on unit operating costs provided by the Parties Hereto. Each Party Hereto who avoided operating its generating equipment shall be debited an amount halfway between its value of avoided operation and the billing amount paid by THE INTERCONNECTION to others for an equivalent amount of operating capacity received, but in no event shall such debit exceed its value. The amount of operating capacity from others received by each Party Hereto shall be considered as synchronized capacity for purposes of accounting under Schedule 6.03.

(c) When Emergency, Supplemental or Short Term operating capacity, as defined in agreements between the Parties Hereto and others, is received without energy by THE INTERCONNECTION from others during peak periods of a day, it shall be allocated each peak period by the Office of THE INTERCONNECTION among the Parties Hereto in proportion to their deficiencies, as determined in Schedule 6.03(c), for which they cannot

ACCEPTED BY FPC
EFFECTIVE
SEPTEMBER 1, 1977

SCHEDULE 6.04

provide replacement values on their own equipment. The corresponding value of such operating capacity to each Party Hereto shall be determined by the Office of THE INTERCONNECTION as the average cost of the operating capacity supplied by others, increased by 20%. Each Party Hereto who received an allocated share shall be debited an amount halfway between its assigned value and its allocated share of the total billing amount paid by THE INTERCONNECTION for the operating capacity received. The amount of operating capacity from others allocated to each Party Hereto shall be considered as synchronized capacity for purposes of accounting under Schedule 6.03.

(d) When Emergency, Supplemental or Short Term operating capacity is received with energy by THE INTERCONNECTION from others during peak periods of a day, and when Emergency, Supplemental or Short Term operating capacity is received by THE INTERCONNECTION from others in hours other than during peak periods, the operating capacity costs charged by others will be included in the allocation and accounting for Emergency, Supplemental or Short Term energy under Scheudle 7.03(d).

(e) When operating capacity is supplied without energy by THE INTERCONNECTION to others during peak periods of a day, on equipment specifically operated by THE INTERCONNECTION for such supply, the cost of supply in each peak period shall be determined by the Office of THE INTERCONNECTION based on unit operating costs provided by the Parties Hereto. Each Party Hereto whose generating equipment was operated for such supply shall be credited an amount halfway between its cost and the billing amount paid by others to THE INTERCONNECTION

SCHEDULE 6.04

for the operating capacity supplied from its equipment, but in no event shall such credit be less than its cost.

(f) When operating capacity is supplied without energy by THE INTERCONNECTION to others during peak periods of a day from excess synchronized capacity operating for THE INTERCONNECTION, the cost of supply in each peak period shall be determined by the Office of THE INTERCONNECTION based on unit operating costs provided by the Parties Hereto. Each Party Hereto shall be credited a share of the billing amount paid by others for the operating capacity supplied in proportion to its share of the Spinning Reserve Requirement determined in accordance with Schedule 6.02(d).

(g) When Emergency, Supplemental or Short Term operating capacity is supplied with energy by THE INTERCONNECTION to others during peak periods of a day, and when Emergency, Supplemental or Short Term operating capacity is supplied by THE INTERCONNECTION to others in hours other than during peak periods, the cost of generation increased by each Party Hereto as determined under Schedule 7.03(e) shall include the operating capacity costs and all debits and credits shall be entered in the Energy Account.

(h) The difference between the sum of the amounts debited or credited to the Parties Hereto under (b), (c) and (e) and the amounts paid to or received from others by THE INTERCONNECTION shall be allocated as a credit to all Parties Hereto as follows:

(1) One-third in proportion to the System Capacity of each party Hereto at the time of the transaction.

SCHEDULE 6.04

(2) Two-thirds in proportion to the transmission investment of each Party Hereto effective for the then current revision of Schedule 5.03.

(i) When the interchange of operating capacity with others during a peak period is such that all or part of the economy operating capacity received by THE INTERCONNECTION is equal in amount to all or part of the economy operating capacity supplied by THE INTERCONNECTION (or similarly for Emergency operating capacity), the difference between the billing amounts paid and received by THE INTERCONNECTION for that equal amount of operating capacity shall be determined and each Party Hereto shall be credited for a share of such difference allocated as provided in (h).

SCHEDULE 7.01

Issued: June 15, 1977

Effective: August 1, 1977

ACCOUNTING FOR INTERCHANGE OF ENERGY

(a) Each Party Hereto shall inform the Office of THE INTERCONNECTION of the net amount and cost of energy supplied by it to THE INTERCONNECTION or the net amount and replacement value of energy received by it from THE INTERCONNECTION for each hour of the day.

(b) The Office of THE INTERCONNECTION shall determine the net amount and cost of energy supplied by THE INTERCONNECTION to others not party to this AGREEMENT and the net amount and replacement value of energy received by THE INTERCONNECTION from others for each hour of the day.

(c) The total amounts of energy supplied in (a) and (b) in each hour shall be checked against and reconciled with the total amounts of energy received in (a) and (b) in that hour.

(d) The accounting among the Parties Hereto for energy supplied by THE INTERCONNECTION to others not party to this AGREEMENT and for energy received by THE INTERCONNECTION from others shall be determined by the Office of THE INTERCONNECTION in accordance with Schedule 7.03.

(e) The accounting for energy interchange among the Parties Hereto, after adjustment by the Office of THE INTERCONNECTION for interchange with others in accordance with Schedule 7.03, shall be determined by the Office of THE INTERCONNECTION for each hour as follows:

(1) Each Party Hereto receiving energy from THE INTERCONNECTION shall be debited for energy received at a rate per kilowatthour halfway between its replacement value per kilowatt and the weighted

ACCEPTED BY FPC
EFFECTIVE
SEPTEMBER 1, 1977

SCHEDULE 7.01

average cost per kilowatthour of all Parties Hereto supplying energy to THE INTERCONNECTION during that hour.

(2) Each Party Hereto supplying energy to THE INTERCONNECTION shall be credited for energy supplied at a rate per kilowatthour halfway between its cost per kilowatthour and the weighted average replacement value per kilowatthour of all Parties Hereto receiving energy from THE INTERCONNECTION during that hour.

(3) When a Party Hereto operates or would have operated boiler capacity and/or machine capacity solely for economical energy generation, the cost or replacement value of such operating capacity shall be considered as a part of the total cost or replacement value of its energy interchanged during that hour.

(4) When a Party Hereto receives energy from THE INTERCONNECTION to supply pumping energy for its pumped storage hydro capacity, it shall use as the replacement value of such energy, the weighed average cost per kilowatthour, increased by 20%, of the highest cost block of energy generated on THE INTERCONNECTION in the same hour, equal in amount to the total pumping energy received from THE INTERCONNECTION by all Parties Hereto in that hour.

(5) When a Party Hereto receives energy from THE INTERCONNECTION for which it has no replacement value, it shall use as the replacement value of such energy the weighed average cost per kilowatthour, increased by 20%, of the next highest cost block, below the block determined in (4), of energy generated on THE INTERCONNECTION in the same hour equal in amount to the total energy of all Parties Hereto for which there is no replacement value.

SCHEDULE 7.02

Issued: June 15, 1977

Effective: August 1, 1977

ACCOUNTING FOR CONVENTIONAL HYDRO ENERGY

(a) Any Party Hereto whose System includes hydro capacity shall have the right to determine whether or not such capacity is to be operated for THE INTERCONNECTION.

(b) Each Party Hereto whose hydro capacity is operated for THE INTERCONNECTION shall determine each hour the difference between the hydro kilowatthours actually generated and the hydro kilowatthours needed for most economical use on its own load curve. The net saving in operating cost of such Party Hereto by operation of its hydro capacity on the load curve of THE INTERCONNECTION shall be allocated 50% to such Party Hereto and the other 50% among the other Parties Hereto in proportion to their respective shares as determined in accordance with Schedule 6.02(d). The method of determining such net savings shall be prescribed from time-to-time by the OPERATING COMMITTEE.

(c) Each Party Hereto whose hydro capacity is operated as a synchronous condenser for spinning reserve by the Office of THE INTERCONNECTION and is excess to the Party Hereto in meeting its operating capacity obligation, shall be credited at a rate determined from time-to-time by the OPERATING COMMITTEE. The cost of condenser operation on THE INTERCONNECTION shall be allocated as a debit to all Parties Hereto in proportion to their respective shares as determined in accordance with Schedule 6.02(d).

1548 198

ACCEPTED BY FPC
EFFECTIVE
SEPTEMBER 1, 1977

SCHEDULE 7.03
REVISION NO. 1

TO THE PJM AGREEMENT

(Supersedes Initial Schedule Issued June 15, 1977)

Issued: December 12, 1977

Effective: January 1, 1978

ACCOUNTING FOR INTERCHANGE OF ENERGY WITH OTHERS

(a) Accounting among the Parties Hereto for the interchange of scheduled and inadvertent energy between THE INTERCONNECTION and others not party to the AGREEMENT shall be made in accordance with this schedule.

SCHEDULED INTERCHANGE

(b) Except as provided in (c), (d), and (e), when scheduled energy is received by THE INTERCONNECTION from others, the amount and value of avoided generation of each Party Hereto shall be determined each hour by the Office of THE INTERCONNECTION based on the ascending order of unit operating costs provided by the Parties Hereto. Each Party Hereto whose generation was avoided shall be debited for the amount of such avoided generation at a rate per kilowatthour halfway between its value of avoided generation per kilowatthour and the average billing rate paid by THE INTERCONNECTION for the energy scheduled to be received during that hour, but in no event shall such debit exceed its value. The information provided under Schedule 7.01(a) by each Party Hereto whose generation was avoided shall be adjusted by the amount and value of its avoided generation, to reflect the receipt of such energy from others.

(c) Prior to the pumping cycle in the operation of pumped storage hydro plants of the Parties Hereto, the Office of THE INTERCONNECTION shall determine for each plant a pumping cutoff rate defined as the generation rate per kilowatthour on THE INTERCONNECTION at which pumping shall be reduced or discontinued because energy generated above that rate for pumping would provide uneconomical

energy during the generating cycle. During any hour in which economy energy is received by THE INTERCONNECTION from others and the amount of energy utilized by the Parties Hereto for pumping exceeds the amount that could have been generated on THE INTERCONNECTION at or below the pumping cutoff rate, such amount of excess shall be considered avoided generation valued at the pumping cutoff rate in determining the value of avoided generation in (b).

(d) When scheduled energy is received by THE INTERCONNECTION from others, any part of which is Emergency, Supplemental or Short Term energy, as defined in agreements between the Parties Hereto and others, the amount of such part shall be allocated each hour by the Office of THE INTERCONNECTION among the Parties Hereto in proportion to their respective energy receipts as reported under Schedule 7.01(a) for which they cannot provide replacement values (including pumping energy receipts, if any). The corresponding value of such energy to each Party Hereto shall be determined by the Office of THE INTERCONNECTION as the average cost to generate such energy by others, increased by 20%. Each Party Hereto who received an allocated share of such energy shall be debited for the amount of its share at a rate per kilowatthour halfway between its assigned value per kilowatthour and the average billing rate paid by THE INTERCONNECTION for Emergency, Supplemental or Short Term energy received during that hour. The information provided under Schedule 7.01(a) by each Party Hereto who received a share of such energy shall be adjusted by the amount allocated to each, to reflect the receipt of such energy from others.

(e) When scheduled energy is received by THE INTERCONNECTION from others, any part of which is Conservation Energy, as defined in agreements between the Parties Hereto and others, the amount of such part shall be allocated each hour by the Office of THE INTERCONNECTION among the Parties Hereto in the following sequential steps:

(1) To those Parties Hereto whose generation was curtailed and who report energy receipts under Schedule 7.01(a) in proportion to their respective amounts of curtailed generation but not in excess of their energy receipts, and

(2) Any remaining amount after step (1) to all Parties Hereto who report energy receipts under Schedule 7.01(a) in proportion to such receipts after adjustment for the allocation in step (1).

The corresponding value of such energy to each Party Hereto shall be determined by the Office of THE INTERCONNECTION as the average cost to supply such energy by others, increased by 20%. Each Party Hereto who received an allocated share of such energy shall be debited for the amount of its share at a rate per kilowatthour halfway between its assigned value per kilowatthour and the average billing rate paid by THE INTERCONNECTION for Conservation Energy received during that hour. The information provided under Schedule 7.01(a) by each Party Hereto who received a share of such energy shall be adjusted by the amount allocated to each, to reflect the receipt of such energy from others. Each Party Hereto who received a share of such energy shall be debited or credited, as the case may be, for its share of any supplemental bill from others to adjust for the suppliers' out-of-pocket cost of replacement fuel, as provided for in the agreements with others, in proportion to its allocation of Conservation Energy.

(f) When scheduled energy is supplied by THE INTERCONNECTION to others, the amount and cost of generation increased by each Party Hereto to supply the energy shall be determined each hour by the Office of THE INTERCONNECTION based on unit operating costs provided by the Parties Hereto. When such scheduled energy is Emergency, Conservation, Supplemental or Short Term

the cost of generation increased by each Party Hereto shall include the operating capacity costs. Each Party Hereto whose generation was increased shall be credited for the energy supplied at a rate per kilowatthour halfway between its cost per kilowatthour and the average billing rate paid by others to THE INTERCONNECTION for the scheduled energy supplied during that hour, but in no event shall such credit by less than its cost. The information provided under Schedule 7.01(a) by each Party Hereto who supplied energy to others shall be adjusted by the amount and cost of the energy supplied, to reflect the delivery of such energy to others. Whenever THE INTERCONNECTION renders a supplemental bill to others for the supply of Conservation Energy, as provided for in agreements with others, each Party Hereto with billing adjustments shall be debited or credited, as the case may be, its respective amounts of such supplemental bill.

(g) The difference between the sum of the amounts debited or credited to the Parties Hereto under (b), (d), (e), and (f) and the amounts paid to or received from others by THE INTERCONNECTION shall be allocated as a credit to all Parties Hereto as follows:

(1) One-third in proportion to the System Capacity of each Party Hereto at the time of the transaction.

(2) Two-thirds in proportion to the transmission investment of each Party Hereto effective for the then current revision of Schedule 5.03.

(h) When the scheduled interchange with others in an hour is such that all or part of the energy received by THE INTERCONNECTION is equal in amount to all or part of the energy supplied by THE INTERCONNECTION, the difference between the billing amounts paid and received by THE INTERCONNECTION for the equal amount of energy shall be determined and each Party Hereto shall be credited for a share of such difference allocated as provided in (g).

INADVERTENT INTERCHANGE

(i) Inadvertent interchange shall be determined by the Office of THE INTERCONNECTION as the net difference each hour between the metered and the scheduled interchange with others.

(j) Inadvertent interchange shall be accounted for each hour by the Office of THE INTERCONNECTION as follows:

(1) When the metered interchange exceeds the scheduled interchange, the inadvertent interchange shall be accounted for at the average rate per kilowatthour of all generation avoided or supplied by the Parties Hereto, depending on the direction of inadvertent flow.

(2) When the scheduled interchange exceeds the metered interchange, the inadvertent interchange shall be accounted for at the average billing rate paid to or received from others, depending on the direction of inadvertent flow.

(3) When the metered interchange is opposite in direction to the scheduled interchange, the inadvertent interchange shall be accounted for in two parts:

(A) The energy actually recieved or supplied shall be accounted for at the average rate per kilowatthour of all generation avoided or supplied by the Parties Hereto, depending on the direction of inadvertent flow;

(B) The balance of the inadvertent interchange shall be accounted for at the billing rate paid to or received from others, depending on the direction of inadvertent flow.

(k) Each Party Hereto shall be debited or credited, as appropriate, for its share of the cost or value of inadvertent interchange determined in (j) and allocated as provided in (g).

1548 204

SCHEDULE 8.01

Issued: June 15, 1977

Effective: August 1, 1977

COMPONENTS OF COST OR REPLACEMENT VALUE

(a) Each Party Hereto shall include the following components or their equivalent in the determination of costs or replacement values for operating capacity supplied or received from THE INTERCONNECTION:

(1) Boilers

Firing-up cost;

No-load cost during period of operation;

Peak-prepared-for maintenance cost;

Incremental labor cost;

Other incremental costs.

(2) Machines

Starting cost from cold to synchronized operation;

No-load cost during period of operation;

Incremental labor cost;

Other incremental operating costs.

(b) Each Party Hereto shall include the following components or their equivalent in the determination of costs or replacement values for energy supplied or received from THE INTERCONNECTION:

Incremental fuel cost;

Incremental maintenance cost;

Incremental labor cost;

Other invremental operating costs.

1548 205

ACCEPTED BY FPC
EFFECTIVE
SEPTEMBER 1, 1977

SCHEDULE 8.01

(c) Replacement values shall be quoted only for capacity available for operation, as determined from time-to-time by the OPERATING COMMITTEE.

(d) All fuel cost or replacement value components shall employ the marginal fuel price experienced by the Party Hereto.

(e) The OPERATING COMMITTEE shall from time-to-time define in detail the method of determining the costs entering into the said components, and the Parties Hereto shall adhere to such definitions in the preparation of incremental costs used on THE INTERCONNECTION.

SCHEDULE 9.01

REVISION NO. 1

(Supersedes Initial Schedule Issued June 15, 1977)

Issued: March 15, 1979

Effective: June 1, 1979

ALLOCATION OF THE COST AND EXPENSES
OF THE OFFICE OF THE INTERCONNECTION

(a) The cost of the Office of THE INTERCONNECTION and the expenses associated therewith as provided in Sections 3.3 and 3.7(iv) of this AGREEMENT shall be allocated to the Parties Hereto in accordance with this schedule.

(b) The respective share for each Party Hereto applicable to monthly bills issued by PE in accordance with Section 11.2 for expenses incurred during a Planning Period shall be the sum of the following:

(1) One-third of the total cost and expenses divided equally among the Parties Hereto;

(2) One-third of the total cost and expenses multiplied by the ratio of the actual diversified peak load for each Party Hereto to the sum of the actual diversified peak loads for all Parties Hereto as determined for the preceding Planning Period in accordance with the procedure used for the determination of Forecast Diversified Planning Period Peaks and described in Schedule 2.211; and

(3) One-third of the total cost and expenses multiplied by the ratio of the Accounted-For Interchange of each Party Hereto to the sum of the Accounted-For Interchange for all Parties Hereto as determined for the preceding Planning Period.

(c) The Accounted-For Interchange of each Party Hereto for a Planning Period shall be the absolute sum of its Accounted-For Energy Interchange with other Parties Hereto as determined under Schedule 7.01(e) and its Accounted-For Energy Interchange with others as determined under Schedule 7.03 for each hour of the said Planning Period.

METROPOLITAN EDISON COMPANY
Forecast Short Term Purchases from Other Utilities
Year 1980

	Amount GWH	Total Cost ($000)	Rate $/MWH
Total Short Term Purchases	1,577	44,639	28.3
Estimated Savings(1) from Short Term Purchases	-	33,031	20.9
Estimated Alternative Cost	-	77,670	49.2

(1) Savings based on alternative purchases from PJM at cost plus split savings.

METROPOLITAN EDISON COMPANY
FORECAST SHORT TERM PURCHASES FROM OTHER UTILITIES
PERIOD: November, 1979 thru December, 1980

COMPANY	Energy & O.C. Amount GWH	Energy & O.C. Cost ($000)	Demand Cost ($000)	Total Cost ($000)
	November, 1979			
Ontario	49.8	1,324.7	249.0	1,573.7
Jamestown	12.6	286.0	0	286.0
APS	61.5	1,028.4	300.0	1,328.4
AEP	190.2	4,257.7	1,125.0	5,382.7
Total	314.1	6,896.8	1,674.0	8,570.8
	December, 1979			
Ontario	49.8	1,316.2	257.5	1,573.7
Jamestown	12.6	286.0	0	286.0
APS	61.5	1,018.4	310.0	1,328.4
AEP	190.2	4,220.2	1,162.5	5,382.7
Total	314.1	6,840.8	1,730 0	8,570.8
	January, 1980			
Ontario	56.5	1,686.1	257.5	1,943.6
Jamestown	12.4	307.5	0	307.5
APS	62.5	1,158.8	310.0	1,468.8
Total	131.4	3,152.4	567.5	3,719.9
	February, 1980			
Ontario	56.5	1,703.1	240.5	1,943.6
Jamestown	12.4	307.5	0	307.5
APS	62.5	1,178.8	290.0	1,468.8
Total	131.4	3,189.4	530.5	3,719.9
	March, 1980			
Ontario	56.5	1,686.1	257.5	1,943.6
Jamestown	12.4	307.5	0	307.5
APS	62.5	1,158.8	310.0	1,468.8
Total	131.4	3,152.4	567.5	3,719.9
	April, 1980			
Ontario	56.5	1,694.6	249.0	1,943.6
Jamestown	12.4	307.5	0	307.5
APS	62.5	1,168.8	300.0	1,468.8
Total	131.4	3,170.9	549.0	3,719.9
	May, 1980			
Ontario	56.5	1,686.1	257.5	1,943.6
Jamestown	12.4	307.5	0	307.5
APS	62.5	1,158.8	310.0	1,468.8
Total	131.4	3,152.4	567.5	3,719.9
	June, 1980			
Ontario	56.5	1,694.6	249.0	1,943.6
Jamestown	12.4	307 5	0	307 5
APS	62.5	1,168.8	300.0	1,468.8
Total	131.4	3,170.9	549.0	3,719.9
	July, 1980			
Ontario	56.5	1,686.1	257.5	1,943.6
Jamestown	12.4	307.5	0	307.5
APS	62.5	1,158.8	310.0	1,468.8
Total	131.4	3,152.4	567.5	3,719.9
	August, 1980			
Ontario	56.5	1,686.1	257.5	1,943.6
Jamestown	12.4	307.5	0	307.5
APS	62.5	1,158.8	310.0	1,468.8
Total	131.4	3,152.4	567.5	3,719.9
	September, 1980			
Ontario	56.5	1,694.6	249.0	1,943.6
Jamestown	12.4	307.5	0	307.5
APS	62.5	1,168.8	300.0	1,468.8
Total	131.4	3,170.9	549.0	3,719.9
	October, 1980			
Ontario	56.5	1,686.1	257.5	1,943.6
Jamestown	12.4	307.5	0	307.5
APS	62.5	1,158.8	310.0	1,468.8
Total	131.4	3,152.4	567.5	3,719.9
	November, 1980			
Ontario	56.5	1,694.6	249.0	1,943.6
Jamestown	12.4	307.5	0	307.5
APS	62.5	1,168.8	300.0	1,468.8
Total	131.4	3,170.9	549.0	3,719.9
	December, 1980			
Ontario	56.5	1,686.1	257.5	1,943.6
Jamestown	12.4	307.5	0	307.5
APS	62.5	1,158.8	310.0	1,468.8
Total	131.4	3,152.4	567.5	3,719.9
	Total Year, 1980			
Ontario	678.0	20,284.2	3,039.0	23,323.2
Jamestown	148.8	3,690.0	0	3,690.0
APS	750.0	13,965.6	3,660.0	17,625.6
Total	1,576.8	37,939.8	6,699.0	44,638.8

Met-Ed/Penelec Exhibit No G-4
Witness: E. Newton Jr.

METROPOLITAN EDISON COMPANY
Estimate of Savings Resulting From Short Term Power Purchases
April-October, 1979
($ millions)

Month	Estimated TMI Replacement Cost Before Short Term Purchase Offset	Estimated TMI Replacement Cost After Short Term Purchase Offset	Estimated Savings from Short Term Power Purchases
April	10.7	10.7	0
May	10.4	9.8	(0.6)
June	10.5	9.9	(0.6)
July	14.4	11.3	(3.1)
August	15.7	11.2	(4.5)
September	16.1	12.4	(3.7)
October	19.6	15.9	(3.7) (P)
Average Amount Contemplated By Commission's June 19, 1979 Order	10.0	7.5	(2.5)

(P) Preliminary - presumed the same as September.

1548 210

Met-Ed/Penelec Exhibit No G-5
Witness: E. Newton Jr.

METROPOLITAN EDISON COMPANY
Estimate of Savings from PJM Special Purchase
Year 1980

Estimated Unit Savings from PJM Special Purchase:

$$\frac{\$32,000,000 \text{ estimated GPU total savings}}{7,000,000 \text{ mwh GPU purchase}} = \$4.6/\text{mwh}$$

Met-Ed Estimated 1980 savings from PJM Special Purchase:

1,200,000 mwh PJM purchase x $4.6/mwh = $5.5 million

1548 211

Q. Please state your name and address.

A. My name and address are E. W. Schleicher, 2800 Pottsville Pike, Reading, Pa.

Q. By whom are you employed and in what capacity?

A. I am employed by Metropolitan Edison Company (to which I shall from time to time refer to as "Met-Ed" or the "Company") in the capacity of Vice President-Consumer ..ffairs.

Q. Describe briefly the nature and scope of your responsibilities in that position.

A. As Vice President of Consumer Affairs, I have responsibility for most of the Company's customer-related activities, including billing and collection, coordinating applications for service and requests for information, development and implementation of load management programs, public and employee communications, rate administration and load and sales forecasts.

Q. Please state your educational background and experience.

A. I have set them forth in the attached Appendix A.

Q. Have you previously presented testimony before this Commission?

A. Yes, I have. I testified in Met-Ed's Pennsylvania retail rate cases docketed at RID 64, RID 170 and 171, RID 434 and RID 626.

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

A. The initial purpose of my testimony is to support the basis for the 1980 sales forecast as it appears in Columns 2 and 4 on Table 3 of Appendix B to the petition Met-Ed filed seeking a modification of the provision of

the Commission Order entered June 19, 1979 with respect to the Company's net energy clause.

Q. Would you briefly describe how you determined the 1980 sales forecast?

A. The starting point was to analyze historical annual kWh sales within each rate group. These sales were adjusted for weather conditions to provide a normalized base from which abnormalities due to temperature variations had been removed. Sales resulting from factors such as increased number of customers and major expansions planned by large industrial customers were added to the base. Data on these factors was obtained via surveys of major commerical and industrial customers, and from area contractors and developers. Industrial sales were adjusted to reflect an expected mild recession beginning in latter 1979 and continuing into 1980.

Q. Would you please identify what is represented by Met-Ed Exhibit H-1 which is attached to your direct testimony.

A. Yes. This exhibit, which was prepared under my direct supervision, provides a breakdown of our present forecast of sales by customer class by month for 1980.

Q. Explain the distinction in the development of total sales and retail sales as shown in Table 3.

A. After retail sales were determined by the method just described, a sales forecast for the seven resale customers we serve was prepared. Each municipality or company is projected individually, based on personal contacts with the customers. These non-jurisdictional sales as forecast for

1980 will show a marked decline because Hershey Electric, our largest resale customer, has been acquired by Pennsylvania Power and Light Company and will stop receiving service from Met-Ed in March of 1980.

Q. What is the forecasted percentage increase in total sales for 1980 over 1979?

A. 1 per cent.

Q. What has been your historical growth rate for the past few years?

A. About 6 per cent.

Q. Does this complete your testimony at this time?

A. Yes. In the event that testimony will be required with respect to business office and consumer service expenses in a base rate test year period, I will furnish such testimony.

Appendix A to Met-Ed/Penelec Statement H
Educational Background and Experience
of
E. W. Schleicher

Graduated from Penn State University in 1949 with BSEE. Graduate of University of Michigan Public Utility Executive Program in 1956, and EEI Graduate Management Course in 1976.

Career with Met-Ed began in the summers of 1947 and 1948 as a trainee in the Transmission Engineering Department. In 1949, became a permanent employee as a Cadet Engineer in the Substation Department in Reading, Pennsylvania. In 1950, was transferred to York as Industrial Engineer. In 1954, returned to Reading as Supervisor of Residential Sales. In 1956, was appointed District Sales Manager in Lebanon. In 1956, returned to York as Director-Commercial and Residential Sales. In 1963, became Division Sales Manager. In 1968, returned to Reading as Corporate Sales Manager. Elected Vice President-Marketing in 1970. Was assigned responsibility for Consumer Services, Communication Services, Rate Administration and Governmental Affairs, and in 1971 was elected to the Board of Directors and the Executive Committee. In November 1974, became Vice President-Consumer Affairs and was additionally assigned the responsibility for Business Office Operations.

Utility industry experience includes participation as a member of Edison Electric Institute (EEI) and Pennsylvania Electric Association (PEA) committees. Presently serving as vice chairman of the PEA Executive Committee.

METROPOLITAN EDISON COMPANY
RETAIL SALES FORECAST
1980

Sales in GWH	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
Residential Non-Total Elec.	164	165	156	152	137	135	148	162	156	149	139	153	1816
Residential Total Electric	122	116	110	77	53	37	35	35	36	38	62	95	816
Total Residential	286	281	266	229	190	172	183	197	192	187	201	248	2632
Commercial	156	154	146	130	122	131	145	147	146	127	130	143	1677
Industrial	269	280	284	290	296	302	274	292	305	302	300	275	3469
Public St. & Hwy. Lighting	4	4	3	3	3	3	3	3	3	4	4	4	41
Other Sales to Public Auth.	17	19	18	14	12	10	8	8	8	11	13	15	153
TOTAL	732	738	717	666	623	618	613	647	654	631	648	685	7972

Met-Ed/Penelec Exhibit H-1
Met-Ed Witness: E. W. Schleicher

Q. Would you please state your name and address?

A. Robert H. Sims, my business address is 100 Interpace Parkway, Parsippany, New Jersey.

Q. By whom are you employed and in what capacity?

A. I am employed by GPU Service Corporation as Vice President - Power Supply.

Q. What is your educational and professional background?

A. I was graduated from Ohio State University with the degree of Bachelor of Industrial Engineering in 1942 and am a registered professional engineer. After service in the United States Army, during which I attained the rank of Captain, I worked for several years with the American Telephone and Telegraph Company. I joined Jersey Central Power & Light Company (JCP&L) in 1948 as an engineer at its Allenhurst Engineering Headquarters. I later became Operating Superintendent and then Division Manager for JCP&L's Coast Division with headquarters in Asbury Park. In 1959, I was promoted to Superintendent of Transmission and Meters for both JCP&L and New Jersey Power & Light Company. In 1960, I became Superintendent of Operations for both companies. In 1965, I was made Vice President of both companies, and in 1970 a Director of both companies. With formation of GPU Service Corporation in 1971, I was elected Vice President - Operations in that Company, and in 1975 Vice President - Power Supply, a position I presently hold.

Q. What are your duties and responsibilities with GPU Service Corporation?

A. I am responsible for bulk power supply pooling agreements both between the GPU Companies themselves and between the GPU system and external power systems, and for feasibility and coordinating supplies and negotiations

with respect to, and utilization of, transmission systems, both internal and external to the GPU system. I also serve as the GPU representative on the Management Committee of the Pennsylvania New Jersey Maryland Interconnection ("PJM"), the Executive Board of the Middle Atlantic Area Council, Administrative Committees under various transmission agreements, and as Chairman of the GPU Operating Committee which administers the GPU power pooling agreements.

Q. What is the purpose and subject area of your testimony?

A. To describe the efforts made during the period following the Three Mile Island (TMI) accident to search for lower cost energy supplies for the GPU System.

Q. Why was the search for lower cost energy supplies necessary after the TMI accident and not before?

A. Prior to the TMI accident the GPU System's base load energy requirements were being met as economically as any system in the surrounding region, with incidental purchases and sales from outside sources being conducted under the existing PJM Agreement on a split savings basis. Any short term power purchases would have resulted in increasing GPU's average energy cost.

As a result of the accident, GPU lost the use of two major low cost base load energy sources (TMI 1 and 2) whose energy output was immediately replaced by purchases under the existing PJM Agreement on a split savings basis. Since within PJM almost all of this energy was supplied from other PJM member companies' oil-fired steam generating units, and GPU's only immediate alternative to such purchases was its even higher-cost oil-fired combustion turbines, these two items (which determined the price of such

purchases under the split savings formula) combined to drive GPU's total energy costs up by very substantial amounts.

Q. Will you please summarize the efforts that were made by you or those under your supervision to search for alternative sources of power?

A. In response to such a question it is probably most convenient to break the situation down into two segments, namely, that which took place within PJM and that which took place external to PJM. As to within PJM, as indicated earlier the added cost of energy from PJM after the TMI accident arose for two reasons. First, the PJM energy being supplied to GPU came from high-cost oil-fired units and second, the pricing of that energy on a split savings basis escalated that already high cost by amounts approximating 30 to 50%. The large unanticipated sales by other PJM Companies to GPU, at a price determined under split savings, resulted in substantial revenues to them in excess of their cost. While GPU could not expect the other PJM Companies to sell below their cost, it did immediately open discussions with the other PJM Companies in an effort to reduce or eliminate the unanticipated added revenues accruing to them because of split savings. GPU's position in such negotiations was further reinforced by your Order of June 15, 1979 which specifically stated in its findings that:

> "Metropolitan Edison Company and Pennsylvania Electric Company will incur higher purchase power costs while the selling companies will generate unexpected revenues.
>
> The Commission is of the opinion that the split savings pricing of interchange sales during emergency conditions is not in the public interest. We will direct Met-Ed and Penelec to petition FERC and to negotiate with the other members of the PJM Power

Pool to eliminate split savings during emergency conditions and to price such power at cost."

Efforts within PJM first began to bear fruit when on June 7, 1979 your Commission granted a Pennsylvania Power & Light Company (PP&L) petition for a Declaratory Order permitting PP&L to sell 200 MW of output from its Martins Creek oil-fired generating station to the GPU Companies at cost. This agreement was immediately filed with the Federal Energy Regulatory Commission ("FERC") on June 9, 1979. Supply commenced on June 11, 1979, although it was subsequently suspended on June 22, 1979 at PP&L's request until formal FERC acceptance was received. FERC accepted the filing on July 9, 1979 and energy has been supplied since that date. In this connection, it might be noted that the PP&L agreement will terminate when the proposed revision of the PJM agreement becomes effective.

In furtherance of additional relief from normal PJM split savings accounting, GPU continued negotiations with the other PJM member companies, which efforts culminated in a petition for declaratory order to your Commission dated October 10, 1979 requesting that a determination be made that a proposed revision of the PJM agreement satisfied the intent of the above quoted directive of your June 15, 1979 Order. The PJM proposal would permit GPU to purchase up to 1100 MWhr per hour and up to 7,000,000 MWhr in 1980 at cost plus 10%, in lieu of purchase on a split savings basis. Your Commission approved this petition on November 8, 1979. The PJM proposal is now in process of being filed with the Maryland and District of Columbia Commissions by certain of the PJM selling companies and after their acceptance will be filed with FERC, after which benefits can finally start accruing to the customers of the GPU companies.

Q. Mr. Sims, will you please now discuss your efforts in obtaining lower cost power from outside PJM?

A. Our efforts to obtain lower cost energy from sources outside PJM have obviously been directed to those areas where low cost energy might be available, namely, areas having available coal, hydro or nuclear capacity. Our survey determined that to the south of PJM in the Virginia Electric and Power Company area, such capacity was short and no economic power available. To the north and northeast of PJM in the New York Power Pool and up into New England, some capacity was available but was oil-fired and, therefore, uneconomical since transmission costs would also have to be reflected as an additional expense. GPU was aware that some capacity might be available in Canada from the Ontario Hydro Power Commission ("Ontario Hydro"), but there were some problems since GPU had no direct transmission ties with Ontario Hydro. The remaining area was to the west of PJM through the Allegheny Power System ("APS") to which GPU had direct ties and as a member of PJM had stand-by interchange agreements. Therefore, immediately after the accident, GPU directed its efforts to the west with APS and to the north with Ontario Hydro and with the Niagara Mohawk Power Corporation ("Niagara Mohawk") (with whom both Ontario Hydro and GPU had transmission interconnection facilities). GPU's negotiations with APS about possible energy purchases from it and our request that it survey systems interconnecting with it and located in coal supplying areas to the west of APS resulted in GPU's receiving energy starting May 7, 1979 on an as available basis from companies such as the American Electric Power System, Central Illinois Public Service, Columbus and Southern Ohio Power Company, Illinois Power Company and Indianapolis Power and Light Company, in addition to receiving energy directly from the APS Companies. These purchases have been a major lower cost alternative to PJM's split savings

energy, have supplied amounts up to 1000 MWhr per hour and were the major element in making the GPU System a nominal net seller of energy within PJM during the months of July, August and September of 1979.

Our negotiations with Ontario Hydro determined that a reasonable amount of coal-fired energy was available at a price beneficial to GPU's customers, but our discussions with Niagara Mohawk brought to light the fact that a transmission limitation existed and that therefore this Ontario Hydro supply would have to be limited to 200 MW. To obtain, this supply, GPU relied on an existing international agreement between Ontario Hydro and Niagara Mohawk for power purchased from Ontario Hydro by Niagara Mohawk, which in turn delivered the power to the GPU companies through a wheeling agreement which Niagara Mohawk filed with FERC on July 9, 1979.

In our discussions with Niagara Mohawk, it offered energy to GPU from its Oswego Station which, although oil-fired, burned high sulphur fuel and was competitively priced. This agreement was never consummated because shortly thereafter Niagara Mohawk's oil suppliers informed it of a supply disruption and as a result that offer was withdrawn.

One small, but very attractive, short term capacity purchase from the north of PJM was an offer obtained from the Jamestown, New York Municipal System for coal-fired energy from capacity they had in cold standby since it received the major portion of its supply from the Power Authority of the State of New York ("PASNY"). Since Jamestown was fed by PASNY through the Niagara Mohawk system, a purchase and wheeling agreement similar to the Ontario Hydro agreement was developed and filed with the FERC on July 16, 1979. This offer of 40 MW of coal-fired energy located approximately

10 miles north of GPU's service area has been a firm and beneficial supply to GPU's customers.

It should be noted in all of the power purchases from outside PJM each of the major suppliers has required payment of a capacity charge. In addition, all of the supplies from outside PJM have a transmission or wheeling charge associated with the purchase. Even with the two aforementioned charges which do not appear in a GPU purchase from within PJM, the total cost of obtaining the energy delivered from all of the suppliers outside PJM was lower than the cost of alternative PJM interchange energy available. All attempts by GPU to purchase major amounts of energy lower in cost than within PJM, from suppliers outside PJM, without any capacity or wheeling charge were unacceptable to the suppliers.

Q. Were there any possible sources of economic power which you did not investigate and utilize since the accident at TMI?

A. On the basis of our exhaustive search, we conclude that there were no sources of economic power which we did not investigate, and there were no sources of power which were evaluated as being economic (as compared with the cost of power purchased on a split savings basis from PJM) which we did not utilize, when available, since the accident at TMI.

Q. Are you prepared to quantify the results of the various power purchase agreements you helped to negotiate?

A. No. The day to day operations under the various agreements are the responsibility of the GPU System Operations Department under Mr. E. Newton Jr., who will present testimony as to the benefits that have accrued under these agreements.

1548 223

Q. Would you please state your name and address?

A. My name is Eugene F. Carter and my business address is P. O. Box 1018, Reading, Pennsylvania.

Q. By whom are you employed and what is your present position?

A. I am employed by the GPU Service Corporation ("Service Corporation") as Assistant Vice President-Rates.

Q. Please state your educational and professional qualifications.

A. A resume of my educational and professional qualifications is attached as Appendix A.

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

A. The purpose of this testimony is to support the averments in Paragraph 13 of the petition of Metropolitan Edison Company ("Met-Ed") for modification of the Commission order entered June 19, 1979 ("Petition") and Figure 6 and Tables 9 and 10 which are included in Appendix B which was attached to the Petition.

Q. What is your testimony with respect to Paragraph 13 of the Petition?

A. I supplied the factual data which supports the averments contained in Paragraph 13. Those averments (a) summarize the overall impact that the proposed 6.9 mill increase in the levelized energy clause charge will have upon the overall charges to Met-Ed's retail customers and upon the charges to its typical residential customer using 500 kWh per month; and (b) indicate the additional retail revenue that Met-Ed estimates will be realized as a result of the requested increase. The detailed

support for the percentage and overall revenue impact of the proposed increase to the levelized energy adjustment charge are contained on Table 10, Table 9, and Figure 6 in Appendix B to the Petition.

Q. Please explain the contents of Table 10.

A. Table 10 demonstrates the total charges to retail customers after giving effect to the 6.9 mill proposed increase in the level energy adjustment charge. The reference point for Table 10 is RID 434, the proceeding in which the current base rates of Met-Ed were established by Commission Order adopted in May of 1978. To the average base rate charge of 34.590 mills per kWh allowed in that case, was added (a) a tax surcharge of 0.249 (i.e., .0072 of the base charge) and (b) the presently effective 8.8 mill levelized energy cost adjustment charge to show the currently effective average annual charge to retail customers of 43.639 mills per kWh. The proposed 6.9 mill per kWh increase in the levelized energy cost adjustment charge represents a 15.7% increase in the total charges to retail customers. The total revenue impact of the 6.9 mill increase in the levelized energy cost adjustment is developed near the bottom of Table 10 where the projected increase is applied to 7,972 gWh of sales (the projected retail sales for 12 months ended December 31, 1980) to produce an overall revenue increase of $54.6 million. Of that $54.6 million,

$52.2 million is associated with the recovery of energy costs and the additional $2.4 million is associated with the recovery of gross receipts taxes.

Q. Please explain the contents of Table 9 of Appendix B of the Petition.

A. Table 9 demonstrates the dollar and percent impact on the total charges for various monthly usage levels of a residential (Rate RS) customer. For the typical residential customer using 500 kWh per month, the projected increase is $3.43 per month, or 12.5%.

Q. Please explain the contents of Figure 6 of Appendix B of the Petition.

A. Figure 6 has been excerpted from the review by Met-Ed/Penelec before this Commission on September 21, 1979. The chart was used to support one of the significant conclusions that "Currently and historically, Met-Ed and Penelec rates compare favorably with other Pennsylvania utilities". Figure 6 (as so excerpted from Page 7 of the Met-Ed/Penelec review presentation) has been modified to reflect the impact of the proposed 6.9 mill increase on the total charges to a typical Met-Ed retail customer and the relationship of the total charges (after such increase) to the total charges of similar residential customers of other Pennsylvania electric utilities (as of September 1, 1979).

Q. Do the results shown on Tables 10, 9 and Figure 6 also

reflect today's conditions or have changes occurred which would necessitate their update?

A. To reflect current conditions, each of the tables would have to be modified. For example, effective for service rendered on and after November 2, 1979, Met-Ed's tax adjustment surcharge, Rider A, was increased from .72% to 6.92% pursuant to the Commission's direction, as a result of the passage of Act No. 1979-27. Tables 10 and 9 reflect the previous lower tax surcharge percentage. Figure 6 likewise is out of date to the extent that all computations were based on rates in effect on September 1, 1979; utilities other than Met-Ed have likewise increased tax surcharge percentages in the interim; moreover, changes have occurred in the energy adjustment clause charges of various utilities; in addition, changes have also occurred due to summer/winter differentials in the base rates of the various utilities. Met-Ed/Penelec Exhibit J-1 is an update of Figure 6 and shows the comparative bills for a typical retail customer of the various Pennsylvania electric utiltiies during December of 1979. We propose to update these tables and figures periodically in order to reflect currently effective total charges.

Q. Does that conclude your direct testimony at this time?

A. Yes.

APPENDIX A

Eugene F. Carter

Resume of Educational and Professional Qualifications.

I was graduated from Pennsylvania State University with a degree of Bachelor of Science in Electrical Engineering in 1958. I have completed postgraduate extension courses in higher mathematics, computer programming and applications and have attended various utility conferences and seminars relative to my field of endeavor. I recently completed the PUEP Course at the University of Michigan.

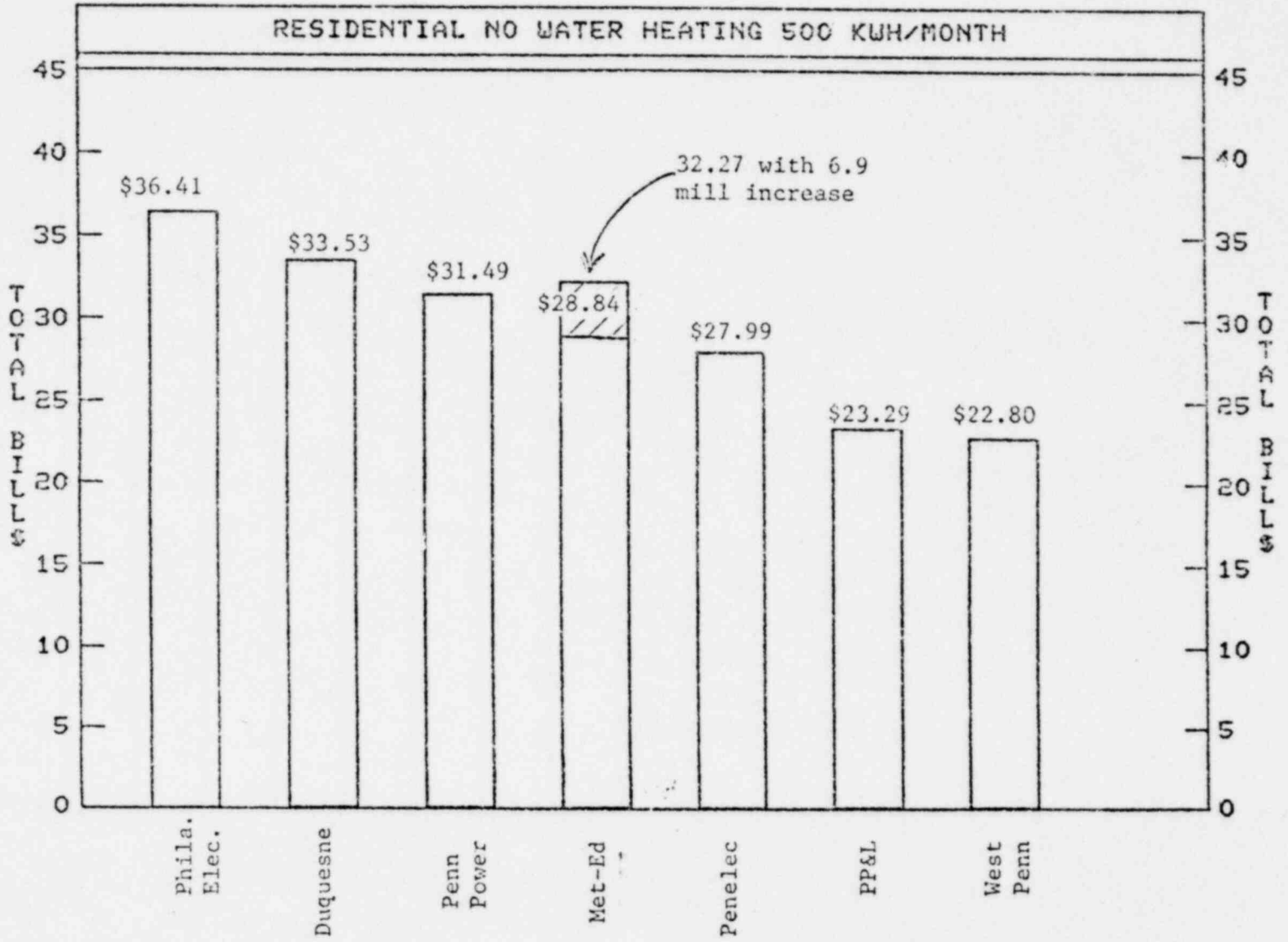
I am employed by the Service Corporation as Assistant Vice President - Rates, responsible for the development of rates and rate structure recommendations for the General Public Utilities Corporation ("GPU") operating companies; for coordinating the rate activities of all the GPU operating subsidiaries with regard to rate administration and application; for coordinating the cost study activity of the Service Corporation and evaluating the rate design recommendations being advanced by the rate departments of the operating companies and outside consultants; for preparation, revision and direction of sales revenue forecasts as related to the energy sales forecasts of the operating companies; and for application and evaluation of load research data acquired throughout the GPU operating companies.

I have been employed by the Service Corporation since its organization on May 1, 1971, first as Assistant Manager - Rates, since April, 1973 as Manager - Rates and, since October 1977, as Assistant Vice President - Rates. Between February 1, 1971 and May 1, 1971, I functioned in the capacity of a

Staff Engineer for the GPU Service Corp. Previously, I was employed by Pennsylvania Electric Company ("Penelec"), one of the three operating subsidiaries of the GPU System, as System Engineer - Rate. From October 19, 1964 to 1971, my main experience with Penelec was in the Rate and Property Valuations Department. Prior to that, I was employed by the Cory Corporation in Richmond, Virginia, in the capacity of Sales and Office Manager. From 1958 until my employment with Cory, I worked for Sylvania Electric Products, Inc., at Brookville, Pennsylvania, as a Product Engineer.

I have testified as a rate witness since 1969 in all Penelec retail rate proceedings, since 1970 as a rate witness for all Metropolitan Edison Company ("Met-Ed") retail rate proceedings and as a rate witness for Jersey Central Power & Light including the former New Jersey Power & Light since 1970. I have also testified in rate matters in New York State. I have submitted testimony in various FERC wholesale for resale rate cases relative to rate design. Finally, I testified in the recent Pennsylvania Generic Rate Structure Investigation Docket NO. 76-PRMD-7. The above companies are all operating companies of the parent corporation, GPU.

Typical Bill Comparisons
Pennsylvania Utilities
Rates in Effect December, 1979



1548 230

Met-Ed/Penelec Exhibit J-1
Witness: E. F. Carter