UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION
BEFORE THE
ATOMIC SAFETY AND LICENSING BOARD

In the Matter of

The Toledo Edison Company and
The Cleveland Electric Illuminating Company — Docket Nos. 50-346A, 50-440A, 50-441A, 50-500A, and 50-501A

Davis-Besse Nuclear Power Station, Units 1, 2, and 3
and
The Cleveland Electric Illuminating Company, et al
Perry Nuclear Power Plant, Units 1 and 2

PREPARED DIRECT TESTIMONY OF

HAROLD M. MOZER, P.E.
Director of Electrical Engineering

CH2M HILL, Inc.
1500 114th Avenue SE
Bellevue, Washington

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION
BEFORE THE
ATOMIC SAFETY AND LICENSING BOARD

In the Matter of

The Toledo Edison Company and
The Cleveland Electric Illuminating Company

Docket Nos. 50-346A, 50-440A, 50-441A, 50-500A, and 50-501A

Davis-Besse Nuclear Power Station, Units 1, 2, and 3
and
The Cleveland Electric Illuminating Company, et al
Perry Nuclear Power Plant, Units 1 and 2

PREPARED DIRECT TESTIMONY OF

HAROLD M. MOZER, P.E.
Director of Electrical Engineering

CH2M HILL, Inc.
1500 114th Avenue SE
Bellevue, Washington

TESTIMONY OF HAROLD M. MOZER

1. Q. Please state your name and your residence and business addresse

A. My name is Harold M. Mozer. I reside at 4247 - 135 Place S.E., Bellevue, Washington; my office is at 1500 - 114 Avenue S.E., Bellevue, Washington.

2. Q. What is your occupation?

A. I am Director of Electrical Engineering of the firm of CH2M HIL Inc., and am Manager of the Power Department in the Northwest Regional Office of the firm.

3. Q. Please describe the principal activities of CH2M HILL.

A. CH2M HILL is a multi-discipline consulting firm offering the services of engineers, economists, scientists, and planners covering a wide range of specialties. Our largest volume of work is in the planning and design of projects for water, sewer and electric utilities. Our clients include federal, state, and local governments, publicly-owned and investor-owned electr utilities, and a variety of industries including well known companies in the paper, wood products, metals and chemical industries.

4. Q. Does your firm have offices at locations other than Bellevue, Washington?

A. Yes, we have offices in Corvallis and Portland, Oregon; Juneau Anchorage, Alaska; San Francisco, Redding, and Sacramento, California; Denver, Colorado; Boise, Idaho; and Reston, Virginia.

5. Q. What is your professional specialty?

A. I am an electrical engineer.

6. Q. Have you been licensed to practice engineering by any of the States?

A. Yes, I am a registered Professional Engineer in the states of Washington, Oregon, Idaho, California, and Nebraska, and in the province of Alberta, Canada.

7. Q. What is your educational background?

A. I graduated from the University of Nebraska in 1948 with the degree of Bachelor of Science in Electrical Engineering. The electrical engineering curriculum at the University of Nebraska at that time was divided into power and electronics options, and my major courses were in the power option.

8. Q. Have you had any additional formal education?

A. Subsequent to my degree, I have taken courses in computer applications and in advanced modern physics. I also regularly read the trade and technical literature of electrical engineering and the electrical utility industry, attend technical seminars, and practice engineering.

9. Q. Are you a member of any professional societies? If so, what are they?

A. Yes, I am a Senior Member of the Institute of Electrical and Electronics Engineers, known as IEEE. I currently serve on the Executive Committee of the Seattle Section of IEEE. I am also a member of the Power Engineering Society of IEEE, the National

Society of Professional Engineers, and the Washington Society of Professional Engineers.

10. Q. Please outline the significant work experience you have had.

A. Upon graduating from the University of Nebraska, I went to work as an electrical engineer for the U.S. Department of Interior, Bonneville Power Administration (BPA). My first assignment at BPA was in Vancouver, Washington, as an assistant office engineer in the line construction section. Subsequently, in 1949, I was assigned to the staff of the Chief of the Branch of Design and Construction and then to the staff of the Chief Engineer, both in Portland, Oregon, where I worked for the remainder of my time at BPA. On the Chief Engineer's staff, my responsibilities included planning and scheduling major transmission, substation and supporting facilities, preparation of project budgets, preparation of justifications for transmission and related projects, and some special assignments. I left BPA in 1955 to join the consulting firm of H. Zinder & Associates, in Seattle, Washington. In September of 1968, the Seattle office of H. Zinder & Associates became a part of CH2M HILL. Most of my work at H. Zinder & Associates was carried into CH2M HILL, where my responsibilities have subsequently expanded. As mentioned previously, I am manager of the Power Department of the Northwest Regional Office, and Director of Electrical Engineering for the entire firm.

11. Q. Please discuss some of the principal projects involving bulk power supply planning in which you have participated.

A. Virtually all of my work at Bonneville Power Administration was related to the planning and construction of the BPA high-voltage transmission grid in the Pacific Northwest. As a consultant, since 1955, my assignments have encompassed virtually all aspects of the electric power field from small electric distribution system planning to planning and design work on major generating stations and transmission systems.

While with H. Zinder & Associates, I worked on the engineering and economic feasibility studies leading to the development of the Priest Rapids and Wanapum hydroelectric projects by Grant County Public Utility District in the state of Washington. My specific assignments with respect to those projects included - (1) planning the integration and coordination of the projects into the Pacific Northwest transmission network and (2) planning the coordinated operation of the projects with the other generating facilities in the region. From the time the projects were constructed and in operation, I have served for the owners as consultant on operations and maintenance problems.

In 1957 and 1958, I prepared and analyzed transmission system studies which were a part of a power supply plan for the eastern two-thirds of the state of Nebraska. Later I was the project engineer for the design and construction of a 230/115-kV substation that was constructed in Nebraska as a result of that power supply plan. Also, I performed transmission studies, prepared cost estimates, and participated in several aspects of a major study of a 500-kV interconnection

between the Pacific Northwest and Pacific Southwest electric systems. In a study of a proposed coal-fired steam-electric plant for the Pacific Northwest, I performed studies to determine the best way of operating this plant in coordination with the hydroelectric systems of the Pacific Northwest.

Since 1968 I have been a consultant to the Public Power Council, a planning organization of publicly and cooperatively owned electric utilities in the Pacific Northwest. In this work, I have consulted on planning, powerplant cost analysis, and preparation of contracts among several utilities involving power sales, energy and capacity exchanges, and transmission involving hydroelectric, coal-fired steam and nuclear powerplants.

I am currently consulting on the power operation and power marketing aspects of studies of hydroelectric projects in the states of Nebraska and Washington. In January of 1974, I completed a study on the future power supply for the municipal system in Lethbridge, Alberta.

12. Q. Have you authored any papers in the field of bulk power supply?

A. Yes. In 1971 I co-authored with my colleague, Sol Schultz, a paper "Pumped Storage-Cooling Water in the Moses Coulee" describing research we had done on the concept of a large power park in the state of Washington involving pumped storage hydroelectric capacity and thermal electric plants. I presented this paper at the International Conference on Pumped Storage and Its Environmental Effects in Milwaukee, Wisconsin, on 20 September 1971. On 16 May 1973, my colleaque, Dr. Herschel F. Jones, and

I co-authored and jointly presented a paper "Alternative Power Sources of the Future" to the annual conference of the American Public Power Association in New Orleans.

3. Q. Have you had previous experience as an expert witness in administrative and judicial proceedings?

A. Yes, both in the State of Washington and for the U.S. Department of Justice. In the State of Washington I have testified as an expert witness in several matters involving personal and property damage relating to electric utility operations. I prepared testimony for the U.S. Department of Justice for use in antitrust proceedings before the Atomic Energy Commission in the matter of Duke Power Company, Oconee and McGuire Nuclear Stations, AEC Docket Nos. 50-269A, 50-270A, 50-297A, 50-369A and 50-370A. The matter was settled before I was required to give the testimony.

14. Q. Would you summarize the basis for your knowledge of the coordinated planning and operation of electric utility systems?

A. My most specific knowledge is of the operations of the coordinate systems in the Pacific Northwest. I have already described some of the specific assignments I've had with respect to planning of power facilities and transmission in this area. My work as a consultant to the Public Power Council is the principal way in which I remain currently involved in the planning and operations of this very large power system. Of course, it is important to my professional knowledge that I keep familiar through the technical literature of power systems planning and operating concerns on a national and, to a limited extent, an international

basis.

15. Q. Were you retained by the Nuclear Regulatory Commission to prepare testimony in this proceeding?

A. Yes. On 5 December 1973, the Nuclear Regulatory Commission, (NRC), formerly the Atomic Energy Commission, contracted with CH2M HILL to provide engineering assistance to the Commission's office of Antitrust and Indemnity. Subsequent work directives implementing the general provisions of the contract requested engineering services in connection with the antitrust proceedings of the Perry and Davis-Besse Nuclear Powerplant applications.

16. Q. Would you please summarize your preparation for the presentation of this testimony?

A. I have familiarized myself with the general power supply situation in Ohio, in the area where Cleveland Electric Illuminating Company (CEI), Duquesne Light Company (DL), Ohio Edison Company (OE), Pennsylvania Power Company (PP) and Toledo Edison Company (TE) serve their customers. These companies are the Applicants in this proceeding. This work was based upon materials supplied to me by the NRC, which included: (1) Applicants' answers to the questions presented by the Attorney General, (2) information contained in the nuclear powerplant license applications, (3) coordination agreements among the Applicants, and other similiar materials. Also, I traveled to Ohio and visited portions of the electrical system of CEI, the Cleveland Municipal Electric Light and Power System (MELP) and the site of the Perry Nuclear Power

Plant. I have reviewed materials obtained on discovery, in order to obtain additional information and data for the preparation of this testimony.

17. Q. Can you summarize the findings you are presenting in your testimony?

A. Yes. I have found that the Applicants have numerous coordination arrangements among themselves and with other electric utilities in Ohio, Pennsylvania, and Michigan. These coordination arrangements provide them with many power supply options from which they have developed what appears to be a reliable and efficient bulk power supply system.

These same or equivalent power supply options are not generally available to other electric entities (non-Applicant CCCT entities) in the area served by Applicants. In the Cleveland area, for example, CEI has extensive electric facilities. CEI's transmission system virtually surrounds the cities of Cleveland and Painesville, and consequently CEI can limit the power supply options available to MELP and the City of Painesville.

Large nuclear units such as Perry 1 and 2 and Davis-Besse 1, 2, and 3 are significant power supply options available to the Applicants. These are not, however, practical options for the non-Applicant CCCT entities unless made available to those small utilities by the Applicants. Even then, effective utilization of nuclear power requires other

power supply options which would not be available except from the Applicants through Applicants' transmission systems. The transmission systems of the Applicants will be increased in capacity substantially in connection with the addition of the Perry and Davis-Besse nuclear powerplants. Since I do not believe it will be practical for small utilities to construct major transmission facilities, the additional transmission to be constructed and operated in conjunction with the nuclear powerplants will assure further Applicants' ability to restrict or limit power supply options available to small utilities in the areas served by Applicants.

18. Q. Are you familiar with "CAPCO Group Memorandum of Understanding" (the Memorandum) dated 14 September 1967?

A. Yes, this was submitted by the Applicants as part of the anti-trust information in response to Question 8 of the information requested by the Attorney General for the Perry application. The Memorandum was executed on 14 September 1967. (Item 15 on my Exihibit HMM-4)

19. Q. To what does the term CAPCO refer?

A. This term refers to a power pool known as the Central Area Power Coordination Group.

20. Q. Who are the members of CAPCO?

A. The applicants for the Perry and Davis-Besse nuclear plant licenses, The Cleveland Electric Illuminating Company, the Duquesne Light Company, the Ohio Edison Company, the Pennsylvania Power Company, and the Toledo Edison Company.

21. Q. What is the purpose of CAPCO as stated in the memorandum?

A. Two specific purposes of CAPCO are stated. These are to:

"1. Further the reliability of bulk power supply through assurance of:

a. An adequate reserve capacity level with reserve capacit coordination.

b. An adequate transmission network.

2. Take advantage of such economies of scale as will be available."

22. Q. Does the CAPCO Memorandum of Understanding provide for jointly committed generating capacity?

A. Yes, the memorandum describes the intent of the CAPCO members to install four large generating units initially. These are two coal-fired and two light-water nuclear electric generating units not named in the agreement but now known as Sammis 7, Eastlake 5, Beaver Valley 1, and Davis-Besse 1, respectively. As regards additional capacity, the Memorandum states "The location, type, size, and timing of future generating units shall be determined by engineering analysis using a one-system concept."

23. Q. What is your understanding of the expression "one-system concept" as used in the Memorandum?

A. For generation and transmission engineering planning, the five member companies of CAPCO would be considered as one single integrated system. In other words, the loads, transmission and generation resources of all five systems are aggregated and

considered as one electric system when determining the pool's generation and transmission requirements.

24. Q. What are the advantages of planning generation using a one-system concept as provided for in the Memorandum?

A. To obtain economies of scale, avoid excesses of capacity, spread risks, share financial burdens, reduce reserve capacity requirements, and coordinate the planning of associated transmission facilities.

25. Q. What is the advantage of planning transmission using a one-system concept as provided for in the Memorandum?

A. By considering the requirements of the CAPCO companies as a whole, the CAPCO integrated system may obtain the desired reliability at minimum overall cost by taking advantage of extra high voltage transmission and by minimizing the number of transmission lines.

26. Q. You have testified that one advantage of planning generation using a one-system concept is avoiding excess capacity. Could you give an example to illustrate this point?

A. CEI indicates in its response to Question 1 of the Attorney General's 20 Questions for the Perry Application a preliminary allocation of 349 MW in 1979 from Perry 1 and another 349 MW from Perry 2 in 1980. If CEI alone would have tried to construct the 1,205-MW Perry units, it would have had an excess capacity of 856 MW in 1979 and 1,712 MW in 1980. This undesirable result is avoided by the joint one-system

planning of CAPCO.

27. Q. Could any one of the Applicants individually build the Perry or Davis-Besse units without the CAPCO arrangement?

A. Only if they had arrangements equivalent to that afforded by CAPCO to dispose of the excess power. Also, they would need means to finance the units, and to provide associated reserves and transmission.

28. Q. How could you illustrate the utilization of economy of scale?

A. My answer to question 26 illustrates that CEI forecasted a need for only about 349 MW in 1979 and an additional 349 MW in 1980 from the Perry units. Assuming that nuclear generating units of 349 MW could even be obtained in today's market, they are not as economical in terms of cost of power as larger units of 800-1,300 MW size. This fact that larger units are generally more economical than smaller ones is often referred to as "economy of scale." Thus, by means of its coordination arrangements in the CAPCO pool, CEI is able to obtain a 349 MW block of capacity in 1 year, but can achieve the economy of scale of the 1,205-MW unit.

29. Q. You have used CEI to illustrate the avoidance of "excess capacity" and the utilization of "economy of scale." Would the same illustration apply to the other four members of CAPCO?

A. Yes, except the actual 1979 and 1980 numbers would not be identical. The preliminary capacity allocations from the

Perry units for the members were as follows:

	TE	DL	OE & PP
Perry 1	193	181	482
Perry 2	193	181	482

30. Q. Why are OE and PP combined?

A. This was the way OE responded to the Attorney General's 20 Questions because PP is a wholly owned subsidiary of OE.

31. Q. Turning again to the CAPCO Memorandum of Understanding, what are the general characteristics of the four initial jointly committed generating units discussed in the Memorandum?

A. CAPCO Unit 1 is the 650-MW coal-fired Sammis 7, installed and operated by OE. Unit 2 is the 650-MW coal-fired Eastlake 5, installed and operated by CEI. Unit 3 is the 856-MW nuclear-fueled Beaver Valley 1, to be installed and operated by DL. Unit 4 is the 906-MW nuclear-fueled Davis-Besse 1, to be installed and operated by TE.

32. Q. Does the CAPCO Memorandum of Understanding refer to specific time periods with respect to CAPCO Units 1 through 4?

A. Yes, it identifies the periods between the dates of commercial operation of Units 1 and 2 as Period A, between Units 2 and 3 as Period B, between Units 3 and 4 as Period C, and between Units 4 and 5 as Period D.

33. Q. Are transmission facilities provided for in the CAPCO Memorandum of Understanding?

A. Yes, The Memorandum states: "Preliminary consideration has

indicated that CEI, DL, and OE should be connected at 345 kV by the commencement of Period A, and that the existing 138-kV connection between OE and TE as strengthened will be an adequate link until Period D." Further on it states: "By the commencement of Period D, a 345-kV system will be required to connect Units 1 through 4 and a major load center of each party as shown schematically on Exhibit A, hereof." The Memorandum also states that "For periods subsequent to Period D, the transmission needs of the CAPCO Group, including interconnections to outside parties shall be studied using a one system concept."

34. Q. Have you reviewed Exhibit A to the Memorandum of Understanding?

A. Yes, it is attached to my testimony as Exhibit HMM-1.

35. Q. In your opinion, are the transmission lines related to the four CAPCO units?

A. Yes, the diagram shows a very pronounced relationship between the four units and the 345-kV transmission system. These transmission lines are required to deliver power from the generating plants to the load areas served by the Applicants.

36. Q. What is the meaning of EHV on Exhibit HMM-1?

A. It means "extra high voltage." In this instance, it is 345 kV.

37. Q. Would this be representative of "economy of scale" in terms of transmission?

A. Compared with the 138-kV transmission of the CAPCO companies, the 345 kV represents an improvement in scale economy.

38. Q. Why is this?

A. It is less costly per kW to transmit power over a fully loaded 345-kV line than it is to transmit the same amount of power over the necessary number of 138-kV lines.

39. Q. What is the capability of 345-kV transmission as compared to 138-kV?

A. It depends on lengths of the transmission line and other system characteristics. Other things being equal, 345-kV has a capability of more than 6 times that of 138-kV.

40. Q. How does the cost of 345-kV transmission compare to 138 kV?

A. Again, it depends on circuit length, other system characteristics, and right-of-way costs. For estimating purposes where little detailed information is available, I would use a ratio of 2 to 1, with the 345-kV being the higher cost.

41. Q. So, based on the above figure, what is the economy-of-scale ratio of 345-kV transmission as compared to 138-kV?

A. Per MW of capability, the above figures would indicate a cost advantage of 345 kV of about three times. However, more reserve transmission capability is required to back up 345 kV and additional substation facilities are needed, so that in my opinion a more realistic factor would be about a 2 to 1 advantage for 345 kV.

42. Q. In your opinion does CAPCO, in its planning of generation and transmission facilities, achieve benefits of economies of scale?

A. Yes.

43. Q. How are these benefits achieved?

A. By permitting the Applicants to construct not only the most economical size generating units, but also to construct 345-kV transmission lines to transfer the power from the generating plants to the loads.

44. Q. Turning now to additional generating units, is CAPCO planning large economy-of-scale generating units other than the four which you have already discussed?

A. Yes, Exhibit HMM-2a and 2b summarizes planned additions through 1984. Two of the units which I have already discussed are also shown on this Exhibit, i.e., Beaver Valley 1 and Davis-Besse 1.

45. Q. Where did Exhibit HMM-2a and 2b come from?

A. From the East Central Area Reliability Coordination Agreement (ECAR) 1975 report to the Federal Power Commission.

46. Q. Which of the generating units shown on Exhibit HMM-2a and 2b are CAPCO units 5 through 9?

A. Mansfield 1, Mansfield 2, Beaver Valley 2, Perry 1 and Perry 2, in that order.

47. Q. What was your source of information for that identification?

A. OE's response to question 1 of the Attorney General's 20 Questions, Perry application.

48. Q. How is the ownership of Perry 1 and Perry 2 allocated among the Applicants?

A. In the CAPCO Unit Ownership Agreement dated as of 28 August 1973, listed as item 29 of my Exhibit HMM-4, the ownership is shown allocated as follows:

	Perry 1	Perry 2
CEI	24.47%	24.47%
DL	13.74%	13.74%
OE	35.60%	35.60%
PP	6.28%	6.28%
TE	19.91%	19.91%
	100.00%	100.00%

49. Q. Does the above ownership allocation illustrate some of the advantages of planning generation on a one-system basis as that term was previously described.

A. Yes, particularly the division and sharing of the financial burden among the parties. It also illustrates the spreading of the risk of unforeseen difficulties, including forced outages, among the parties and the ability to utilize a large economy-of-scale generating unit and associated 345-kV transmission without creating temporary excesses of capacity, as I discussed earlier in my testimony.

50. Q. Can you identify the transmission lines associated with the Beaver Valley 2 and Perry 1 and 2 nuclear units?

A. Yes. For this information I have used the diagrammatic map, identified as my Exhibit HMM-3, which was submitted by CEI in response to Question 8 of the Attorney General's 20 Questions, Perry Application; I also used information in paragraph 5 of the affidavit of Dalwyn R. Davidson in support of Applicants' Motion For Summary Disposition, which was submitted 15 August 1974 in connection with the

matter at hand. There have apparently been some changes in the transmission plan for Perry 1 and 2 between the time Exhibit HMM-3 was prepared and the time of Mr. Davidson's affidavit, so I am relying on Mr. Davidson's data for Perry 1 and 2 transmission. Exhibit HMM-3 shows a 345-kV line from Beaver Valley-Hanna tying Beaver Valley 2 into the 345-kV transmission network. For the Perry 1 and 2 units, short 345-kV line taps will tie the plant into the existing Erie West-Ashtabula-Eastlake line. In addition, the Perry-Hanna, Perry-Inland, and Perry-Harding 345-kV lines will be constructed to tie the Perry plant to other major points of the then existing CAPCO transmission network.

51. Q. Based on your previous answer, how would you describe the relationship between the nuclear units and the 345-kV transmission network?

A. There is a strong and direct physical and functional relationship of the nuclear and fossil units to the 345-kV transmission network.

52. Q. To your knowledge, has the 14 September 1967 CAPCO Group Memorandum of Understanding been implemented by additional agreements?

A. Yes. To facilitate the implementation, a number of agreements have been executed including the CAPCO Transmission Facilities Agreement, The CAPCO Administration Agreement, and The CAPCO Basic Operating Agreement.

53. Q. Can you summarize the CAPCO Transmission Facilities Agreement?

A. Yes. This Agreement, effective 14 September 1967, (item 16 on Exhibit HMM-4) appears to be an agreement which implements the transmission portion of the CAPCO Memorandum of Understanding. It describes certain transmission lines and their planned dates of installation, physical construction, ownership, and investment responsibility.

54. Q. Can you summarize the CAPCO Administration Agreement?

A. Yes. This agreement, effective 14 September 1967, (item 17 on Exhibit HMM-4) is best summarized in its Article 1, Purpose of Agreement, which reads: "It is the objective in general of the CAPCO Group to seek and realize the benefits to be effected through coordination in the operation and development of their respective generation and transmission systems. To that end, the Parties have entered into and expect to enter into various agreements for planning, construction and the interconnected operation of facilities, including, among others, the CAPCO Basic Generating Capacity Agreement (Generating Agreement), the CAPCO Transmission Facilities Agreement (Transmission Agreement), and the CAPCO Basic Operating Agreement (Operating Agreement). It is the purpose of this Agreement to define generally the organization and procedures for implementing the objectives set forth in said agreements." To accomplish the purpose of the Agreement, other provisions of the Agreement describe the makeup and duties of an Executive Committee, Standing Committees, and Interim Committees.

55. Q. Can you summarize the CAPCO Basic Operating Agreement?

A. Yes. This is a relatively recent agreement among CEI, DL, PP, OE, and [illegible] which was entered into as of 1 January 1975 and was actually executed on 30 January 1975 (item 33 on Exhibit HMM-4). Its purpose, as stated in the Agreement, is: "to provide for the coordinated operation of the systems of the Parties" in order to obtain benefits of jointly planned and operated generation and transmission facilities, "provide mutual support and a high degree of operating flexibility under a wide range of conditions," "provide for capacity and energy transactions by and among the Parties," "permit effective coordination with other systems, powerpools and coordination groups," and "achieve an equitable sharing of the resulting benefits, responsibilities and expenses."

56. Q. How are the activities under the CAPCO Basic Operating Agreement administered?

A. The Operating Committee, as established by the Administration Agreement, oversees a Coordinating Office and is the working body which directs studies, establishes and administers rules and procedures, and establishes, maintains and revises as necessary The Coordinated Maintenance Schedule.

57. Q. What is the function of the Coordinating Office under The Basic Operating Agreement?

A. This office implements the rules and procedures established

by the Operating Committee in the day-to-day operation of the CAPCO system.

58. Q. Does this Agreement provide for synchronous operation of the CAPCO companies?

A. Yes, according to the Agreement "each party shall operate its system continuously in parallel with each other Party with which it is interconnected." The Agreement states further that "all existing interconnections between the systems of the Parties which now operate closed shall continue to be so operated and all future interconnections between systems of Parties operating at nominal voltages of 138 kV and above shall be operated closed." To say the systems are operated in parallel and with interconnections closed means the same thing to me as operating synchronously.

59. Q. Do the CAPCO companies coordinate maintenance schedules under this Agreement?

A. Yes. The Agreement provides for coordinated maintenance on a one-system basis.

60. Q. Does the Agreement provide for power purchases from non-CAPCO companies?

A. Yes. The Operating Committee, according to the Agreement, is authorized to make outside power purchases for the CAPCO Group.

61. Q. Are there other coordination arrangements provided for in

the Agreement?

A. Several coordination arrangements are provided for in the Service Schedules including:

(1) replacement capacity and energy

(2) short-term power and energy

(3) interchange capacity and energy

(4) economy interchange of operating capacity and/or energy

(5) specific unit capacity and energy

62. Q. How would you characterize these coordination arrangements?

A. To aid in this response, and for future use in my testimony, I have prepared Exhibit HMM-6, giving my understanding of some of the terminology used in bulk power supply activity. Using the terminology of Exhibit HMM-6, I would characterize the coordination arrangements in the Basic Operating Agreement as follows:

(1) "replacement capacity and energy" could correspond to *maintenance power* or *emergency power*, depending on the situation at the time.

(2) "short-term power and energy" corresponds to *short-term power*.

(3) "interchange capacity and energy" is used in the Basic Operating Agreement as a sort of catch-all term applying to transactions not otherwise specifically provided for. It corresponds most closely to *non-displacement power*.

(4) "economy interchange of operating capacity and/or energy" corresponds to *economy power*.

(5) "Specific unit capacity and energy" corresponds to *unit power*.

63. Q. Would you expect that participation in coordination arrangements under the Basic Operating Agreement would have any effect on the generation reserve requirements of the CAPCO members?

A. While I have made no calculation of this, I would expect, based on my experience, that such participation in this, and similar power supply coordination arrangements would have the effect of reducing the generating reserves that each company carries below that which would have to be carried without such coordination arrangements. The reduction of reserves is a fundamental result of arrangements for interchanging *maintenance power* and *emergency power*. Under such interchange arrangements, the companies involved, in effect, share a part of each other's reserves.

64. Q. Can you summarize the CAPCO Basic Generating Capacity Agreement which you referred to in your response to Q. 54?

A. No. To my knowledge, that Agreement has not been executed as yet.

65. Q. Mr. Mozer, along with the CAPCO Agreements you have been discussing, have you reviewed other biparty and multiparty contracts and agreements among t e Applicants and among the Applicants and other electric utilit s?

A. Yes, particularly those dealing with power supply coordination. In the interest of brevity and for further reference in my testimony, I have listed the CAPCO agreements I have discussed and some other contracts and agreements on Exhibit HMM-4.

66. Q. Is this list exhaustive or could there be other power supply coordination agreements which you have not shown?

A. There are others. The ones I have listed are illustrative of the types of power supply arrangements and options available to the Applicants.

67. Q. What types of power supply coordination arrangements or options have been available to the Applicants?

A. On Exhibit HMM-4, for each contract or agreement listed, I show the more significant types of coordination arrangements provided for in the contract or agreement. I also show, in italics, my characterization of each arrangement. In the interest of clarity, I have also summarized my characterization of these arrangements in list form on Exhibit HMM-5.

68. Q. Are you familiar with the 23 February 1965 agreement between OE and CEI?

A. Yes, this is item 8 on Exhibit HMM-4. It provides for jointly committed generating units by OE and CEI and the associated transmission. It preceded the 1967 CAPCO Memorandum of Understanding.

69. Q. What generating units are committed in this agreement?

A. OE's 600-MW Sammis 6 and a CEI 600-MW unit designated as

Unit X. I believe Unit X is now known as Avon Lake 9.

70. Q. Why, in your opinion, did CEI and OE jointly plan the Sammis 6 and Avon Lake 9 units.

A. Even before the 1967 CAPCO Memorandum of Understanding, these two companies found a need for joint planning to achieve economies of scale. The agreement states: "The objective of the parties is the realization on their systems of the economies possible by the use of large steam-electric generating units now technically feasible, together with the concomitant potentials of the strengthened transmission interties required to enable utilization of such units."

71. Q. What is your understanding of a transmission intertie as used in the previous answer?

A. This is a transmission connection between two utilities.

72. Q. What transmission interties are specified in the 23 February 1965 agreement between CEI and OE?

A. (1) A 345-kV line between OE's Star Substation and CEI's Juniper Substation. The agreement states: "Each party shall construct, or cause to be constructed, own, operate and maintain the portion of the line from its terminal to a point to be determined such that the respective investments of the parties allocable thereto, including metering but excluding other terminal facilities, will be approximately equal." (2) A 345-kV line between CEI's Avon Lake Plant and OE's proposed West Lorain Substation, also with equally

divided investments.

73. Q. Does the language you quoted in response to question 70 recognize any relationship between large generating units and transmission interties?

A. Yes, it notes a very direct relationship in that transmission interties are required to enable the utilization of large units.

74. Q. In your opinion would transmission interties be just as important to the utilization of the Perry units as they were to the utilization of the large generating units in the 23 February 1965 agreement?

A. Yes, each of the Perry units will be twice as large as each of those units, and their power output will be shared by five separately located utilities, so I would say that the need for the interties to deliver power from the Perry generating units to the loads are of equal or even greater importance than the interties related to the Sammis and Avon Lake units.

75. Q. Are you familiar with the concept of "staggered construction"?

A. Yes, this is a procedure by which two or more entities coordinate construction of large powerplants to take advantage of economy of scale which would otherwise be unavailable to a single one of the entities alone. The term "staggered" is derived from scheduling the construction of the various entities' powerplants so that the units come on line at different times, a year apart, for

example. The on-line dates are scheduled to meet the combined requirements of the entities participating in the arrangement.

76. Q. Can you give an example of staggered construction?

A. Yes. The 23 February 1965 Agreement between CEI and OE provided for staggered construction of Sammis 6 and Avon Lake 9. CEI purchased one-half the capacity and energy of Sammis 6 for a specific period which was intended to be until the Avon 9 unit was in operation.

77. Q. Let us turn now to the interconnection contract between CEI and OE, dated 29 July 1964. Are you familiar with the provisions of this contract?

A. Yes, this is item 7 on my Exhibit HMM-4.

78. Q. Would you indicate the coordination arrangements provided under the contract?

A. It provides for various power supply exchanges over the interconnections between the two companies. Specifically mentioned are "firm power," "onpeak interchange power," "offpeak interchange power," and "economy interchange power," each of which is listed on my Exhibit HMM-4.

79. Q. Would you characterize these power supply exchanges using the terminology in your Exhibit HMM-6.

A. (1) "firm power" corresponds to *firm power*.

(2) "onpeak interchange power" corresponds to either *emergency power* or *maintenance power*, depending upon the purpose for which it is supplied. The term "onpeak" is

defined in the Agreement as being between the hours of 7:00 a.m. to 10:00 p.m. Monday through Saturday, except that Saturdays or holidays may be designated offpeak times at the discretion of the party furnishing the power.

(3) "offpeak interchange power" corresponds to the same designations as "onpeak interchange power," except that it is supplied during any time period not designated as onpeak.

(4) "economy interchange power" corresponds to economy power.

80. Q. Have there been any supplements to the CEI-OE 29 July 1964 interconnection agreement?

A. There were supplements dated 21 March 1967, 16 September 1971, and 1 January 1973.

81. Q. What is the essence of the 1967 supplement?

A. It provided for another class of power, referred to as "short-term power".

82. Q. What is "short-term power"?

A. This is described in my Exhibit HMM-6 as short-term power.

83. Q. What was the essence of the 16 September 1971 supplement to the OE-CEI interconnection agreement?

A. It was an interim agreement covering the entitlement of CEI to receive capacity and energy from the W. H. Sammis No. 7 Unit during the period beginning with the date of commercial operation of Sammis 7 and ending with the date of commercial operation of the Eastlake No. 5 Unit.

84. Q. How would you characterize this agreement?

A. This is a form of a *unit power* purchase.

85. Q. What was the essence of the 1 January 1973 supplement to the Agreement?

A. This was an interim agreement covering the entitlement of CEI to purchase from OE, during the period from 1 January 1973 through 30 September 1973, about 10 MW of capacity and energy from short lead time capacity installed on the OE system.

86. Q. How would you characterize "short lead time capacity" using the terminology of Exhibit HMM-6?

A. "Short lead time capacity" (SLTC) is a type of *peaking power* obtained from relatively small size diesel or combustion turbine driven generators which can be installed in a relatively short period--2 to 3 years as compared with 5 to 10 years for large steam turbine generating units.

87. Q. Prior to 1975, to your knowledge, with what electric utilities, if any, other than OE, did CEI have power supply agreement?

A. CEI had agreements which provide for various power supply coordination arrangements with the Pennsylvania-Jersey-Maryland Group (PJM), with Ohio Power Company (OP), with Pennsylvania Electric Company (Penelec), with DL and with TE.

88. Q. Do you know of any recent power supply agreements since 1 January 1975 that CEI has entered into with electric entities other than OE and those listed in your answer to

question 87?

A. Yes. On 13 January 1975 CEI entered into an interconnection agreement with the City of Painesville, Ohio, which operates a municipal electric system (Painesville). On 17 April 1975 CEI entered into an agreement with the City of Cleveland, Ohio, which operates a municipal electric light and power system (MELP).

89. Q. What are the CEI coordination arrangements with DL that you refer to in your answer to Question 87?

A. An agreement dated 7 May 1973 (identified as item 28 on Exhibit HMM-4) indicates that CEI and DL are owners of undivided interests as tenants-in-common in the 650-MW coal-fired Eastlake No. 5 generating unit. This 7 May 1973 agreement between them provides for CEI to purchase and DL to sell that amount of DL's share of Eastlake No. 5 operating capacity and/or energy which DL does not itself use.

90. Q. How would you characterize this arrangement?

A. This is essentially an arrangement for sale of economy power. The economies are shared on a split-the-savings basis. This arrangement provides a particular advantage because the jointly-owned unit is located in the area served by CEI. Because of this location, an energy sale to CEI from DL's portion of the unit eliminates the need for transmitting that energy as would be required if the energy would be obtained from many alternative sources.

91. Q. What are the CEI arrangements with TE referred to in your response to Question 87?

A. An agreement dated 25 July 1972 is identified as item 27 on my Exhibit HMM-4. I would refer to the arrangement provided for in this agreement as a *unit power* entitlement by TE to a portion of CEI's portion of Eastlake No. 5 Unit. The entitlement was to begin with the commercial operation of the Eastlake No. 5 Unit and end with the date of commercial operation of the Beaver Valley No. 1 Unit.

92. Q. Would you summarize the power supply coordination arrangements in the agreements between CEI and Penelec which you referred to in your answer to Question 87.

A. There are actually two agreements dated 23 July 1965, identified as items 9, and 10 on my Exhibit HMM-4. One is a Facilities Agreement describing the ownership and operation of the transmission facilities interconnecting the two companies. The other is for a firm power sale of 100 MW by CEI to Penelec from about 1 December 1965 to 31 May 1967.

93. Q. In the facilities agreement you just identified, what use is to be made of the transmission facilities interconnecting CEI and Penelec?

A. The Agreement, in Article 2.1, provides that the interconnection facilities shall be used for any transactions agreed to by CEI and Penelec "Under this or any other agreement."

94. Q. Is this Agreement still in effect?

A. As far as I can tell, it is. The agreement has no provision for cancellation or for termination on a specified date.

95. Q. Could you describe the power supply coordination arrangements between CEI and PJM which you referred to in your answer to Question 87?

A. There is an interconnection agreement dated 30 September 1965 (item 11, Exhibit HMM-4) which provides for coordinated planning and coordinated operations through an Operating Committee and an advisory Planning Committee. The agreement describes the "installed capacity requirement" and a ready reserve capacity requirement." It provides for "economy operating capacity, emergency operating capacity, economy energy, emergency energy, short-term operating capacity, and short-term energy."

96. Q. What are the power supply coordination arrangements between CEI and OP which you referred to in your answer to Question 87?

A. These are included in agreements identified as items 4 and 5 on Exhibit HMM-4. There is a Facilities Agreement and an Operating Agreement, each dated 14 June 1962. The Facilities Agreement describes the 345-kV transmission facilities and obligations therewith between the two companies. Article 2 of the Operating Agreement summarizes its purpose as follows:

> "2.01 It is the purpose in general of the parties to seek and realize all benefits practicable to be effected through coordination in the operation and development of their respective systems. It is understood by the parties that

such benefits may be realized by them by carrying out under stated terms and conditions various interconnection services and transactions that may include among others:

> the furnishing of mutual emergency and standby assistance; the interchange, sale, and purchase of energy to effect operating economies; the coordination of maintenance schedules of generating and transmission facilities; the transfer of electric energy through the transmission system of one party for the benefit of the other; the sale and purchase of firm power and associated energy, and the sale and purchase of short-term electric power and energy available on the system of one party and needed on the system of the other so as to facilitate more economic construction of generating capacity on the systems of both parties.

In furtherance of such purpose the parties shall appoint an Operating Committee as provided under Article 7."

97. Q. Have you reviewed a 29 May 1969 agreement among the Applicants?

A. Yes, this is listed as item 24 on Exhibit HMM-4. It provides for TE to exercise an option to obtain 200 MW of short-term power reservation from the Michigan Companies (Consumers Power Company and The Detroit Edison Company). Portions of this reserved power would then be sold by TE to OE, DL and CEI, and delivered by TE over its transmission system to OE, and by OE over its transmission system to DL and to CEI.

98. Q. How was the 200 MW of reserved power to be allocated among the Companies?

A. Amendment No. 1 to the Power Agreement dated 26 May 1971 shows the following allocation:

CEI - 15 MW

DL - 85 MW

OE - 10 MW

Presumably, TE would retain the remaining 90 MW.

99. Q. Would the transmission of this power involve transmission facilities other than CAPCO transmission?

A. Yes. The agreement states: "Each of the parties will make available its transmission facilities and those contemplated by the CAPCO Memorandum to permit carrying out the arrangements described in this agreement."

100. Q. Could the transmission service to be performed be described, in your opinion, as a wheeling arrangement?

A. Yes. The agreement states: "Each party that transmits energy to any other party pursuant to this Agreement, shall deliver from its system an amount of energy equal to that which is received for delivery to another party, plus or minus the decrease or increase (as the case may be) in electrical losses agreed to appropriately reflect those expected to be incurred on its system resulting from the transmission of such energy." Wheeling is a term used in the electric utility industry to describe the use of one utility's

transmission system to move the power of one or more other utilities. In a wheeling arrangement the energy transfer usually is intended and scheduled as differentiated from *uncontrollable power flows* which are not intended but occur and are accepted as a consequence of interconnected operation.

101. Q. Are you familiar with any other wheeling arrangements among utilities?

A. Yes. In the Pacific Northwest, with which I am most familiar, the Bonneville Power Administration has several wheeling contracts with utilities, both investor-owned and publicly-owned, to transmit power from remotely located powerplants to various load centers. I deal with applications of the Bonneville Power Administration wheeling arrangements from time-to-time on behalf of my clients.

102. Q. In your opinion, is there a particular desirability of wheeling?

A. A major benefit of wheeling is to avoid duplication of transmission facilities. Usually the alternative to wheeling is to construct an independent transmission line or lines between the points for which power transfer is desired. When there is a transmission system that is planned to serve the area on a orderly basis, it is usually uneconomical and environmentally undesirable to construct duplicating transmission facilities. I do not believe it is either good engineering or proper environmental practice to construct a duplicating transmission

line if, by a wheeling arrangement, such duplication can be avoided.

103. Q. Please elaborate on some of the reasons you see which make duplicating transmission lines undesirable.

A. From an engineering standpoint, duplication tends to be wasteful, therefore probably uneconomical, and should be avoided. I want to, of course, be careful to distinguish between a duplicating transmission line as I use the term, and a transmission facility which may be planned to be built in parallel with another line deliberately to provide reliability. What I mean here by a duplicating transmission facility is one that is unnecessary to do the job inasmuch as the power to be moved over the duplicating facility can be moved over existing facilities if suitable agreements to do so are reached among the entities involved. At this time, environmental and related problems are probably as significant as economics to the need to avoid duplication of transmission facilities. A high-voltage transmission line is quite visual when constructed overhead as most of them are. Some members of the public perceive transmission lines to be unsightly and, therefore, undesirable. The use of valuable land for transmission line rights-of-way is an increasing problem, particularly in urban areas. The land area necessary for the construction of transmission lines in both urban and increasingly developed rural areas is limited. These are the principal reasons I see for

avoiding duplication of facilities.

104. Q. How is wheeling related to the power supply options of electrical entities?

A. An electrical entity may have opportunities to purchase firm power or obtain other power supply services from an entity not located immediately adjacent to its operating area. Either the addition of other transmission connections or utilization of wheeling to avoid duplicating transmission lines would be needed to take advantage of such power supply opportunities. Access to wheeling, therefore, permits an electrical entity to consider a wider range of power supply options than it can do without wheeling or equivalent transmission lines of its own.

105. Q. With what other utilities does OE have power supply coordination arrangements other than CEI?

A. OE also has power supply coordination arrangements in agreements with PP, its wholly owned subsidiary, with DL, with TE, with the Allegheny Power System (APS) subsidiaries West Penn Power Company (WP) and Monongahela Power Company (MP), with Ohio Power (OP), with Dayton Power and Light (DPL), and with Columbus Southern and Ohio Electric (CSOE). These are identified on Exhibit HMM-4.

106. Q. What power supply coordination arrangements does OE have with PP?

A. An agreement dated 26 September 1952 (item 2 on Exhibit HMM-2), provides for (using the terminology of my Exhibit HMM-6)

emergency power, firm power, nonfirm power, nondisplacement power, transmission service, economy power, standby power, and *maintenance power*. This agreement was amended on 29 March 1955 and again on 5 December 1959.

107. Q. What is the transmission service provision to which you have just referred?

A. Section 2.05 of the 26 September 1952 contract states:

> "In order that energy acquired from a neighboring utility may be transmitted through the system of either of the parties hereto for delivery to another neighboring utility, or for use by one of the parties hereto, it is agreed that a charge of 1/2 mill per kilowatt hour will be added to the purchase price thereof, to compensate the company through whose system such energy flows for losses incurred in its transmission system, for the use of its transmission facilities and for administrative expense associated therewith."

The 5 December 1959 amendment adds a proviso at the end of the above paragraph as follows:

> "provided that this section shall not be applicable to energy delivered between the parties hereto pursuant to the terms of the Intercompany Power Agreement among Ohio Valley Electric Corporation and the sponsoring Companies, dated 10 July 1953, or any amendment thereto."

108. Q. Does Section 2.05 of this OE-PP contract conform with your

understanding of a wheeling arrangement?

A. Yes, it provides that energy may be transmitted through the system of either of the parties and provides compensation to the company through whose system such energy flows.

109. Q. What power supply coordination arrangements does OE have with OP?

A. An Interconnection Agreement of 1 January 1952, item 1 on Exhibit HMM-4, and an agreement for sale and delivery of energy dated 20 June 1968, item 21 on Exhibit HMM-4.

110. Q. Please summarize the 1 January 1952 Interconnection Agreement between OP and OE.

A. In Article 2.1 of this Agreement, broad objectives of coordinated operation are stated and various interconnection services and transactions which may be carried out under stated terms and conditions are listed. The list includes economy energy, emergency capacity and energy, coordination of maintenance schedules, wheeling, and short-term firm power. However, in Article 2.2 of the Agreement is the provision that such interchange services actually will be provided only when set forth in service schedules arranged from time to time between the parties. The initial agreement provided for only one service schedule. This service schedule provides for interchange power which specifically includes economy energy and nondisplacement energy. On 1 May 1967 the Agreement was supplemented to provide for the sale of short-term power.

111. Q. Please summarize the 20 June 1968 agreement between Ohio Power

Company and Ohio Edison Company.

A. The 20 June 1968 agreement between OE and OP (item 21 on Exhibit HMM-4) establishes an arrangement whereby OE would receive bulk energy from OP at its Points of Interconnection with OP and concurrently deliver power in behalf of OP at the Ohio Edison Delivery Points.

112. Q. How would you characterize this arrangement?

A. It is a form of *wheeling*. Ohio Edison is providing a transmission service for Ohio Power by contracting to receive electrical energy from Ohio Power at several points on their interconnected transmission systems and to concurrently deliver electrical energy, after allowance for losses, to another utility at other points for the account of Ohio Power.

113. Q. By what term does the contract refer to the electrical energy that is received by OE?

A. Contract Energy. The agreement states:

> "Contract Energy means electric energy which Ohio Power shall deliver or cause to be delivered to Ohio Edison for purchase by Ohio Edison as herein provided.

114. Q. By what term does the contract refer to the electrical energy that is delivered by Ohio Edison for the account of Ohio Power?

A. Delivery Points Energy. The agreement states:

> "Delivery Points Energy means all the electric energy required by the Cooperatives for delivery and resale to consumers in the State of Ohio now or hereafter receiving

service from the distribution system or systems of a particular *Cooperative connected to any Ohio Edison Delivery Point* from time to time established and in operation hereunder, but only to the extent so required for ultimate consumption by such consumers within the State of Ohio or for consumption by the Cooperatives within said State in the operation of their respective facilities and systems; provided, however, that, for purposes of determining the amount of the Delivery Points Energy required at any time, there shall not be included any quantity of electric power and/or energy furnished to any consumer when the furnishing of power and/or energy to such consumer by a Buckeye Member is proscribed by the law of the State of Ohio reflected in Section 4905.26.1, Revised Code of Ohio, as said Section is in effect at the date of this Agreement. It is understood and agreed that the term "consumer" as used in said Section 4905.26.1 applies to any customer of a power and/or energy supplier whether served at wholesale or at retail." (Emphasis added.)

115. Q. Why do you say this energy is delivered by Ohio Edison for the account of Ohio Power?

A. The agreement states:

"Ohio Edison Delivery Point means any point at which any part of the Delivery Points Energy is delivered by Ohio Edison to Ohio Power hereunder. The initial Ohio Edison

Delivery Points are listed in Exhibit A hereto."

116. Q. The above quote says "to" Ohio Power. Why do you conclude that this means "for the account of" Ohio Power?

A. Because the physical connections at each Ohio Edison Delivery Point are actually to the distribution system of a Cooperative and not to the Ohio Power. This fact is substantiated by my answer to Question 114 defining "Delivery Points Energy."

117. Q. Can you illustrate this arrangement?

A. Yes. To do this I have prepared Exhibit HMM-7. On Exhibit HMM-7 the Ohio Power Company and the Ohio Edison electrical systems are represented by rectangles labeled accordingly. The details of these systems within the areas they serve are not significant to this discussion except for the items which I will mention. The lines connecting the OP and OE systems are representative of the transmission interconnections between these systems as provided for in the Interconnection Agreement of 1 January 1952 between OE and OP. The breaks which I show in these lines represent the physical locations of the Points of Interconnection between OE and OP. Initially, there were four such points. On the right side of the diagram are indicated the Ohio Edison Delivery Points. The actual physical connection at each of the OE Delivery Points is to a Cooperative electrical entity, not to Ohio Power. In accordance with the contract, energy is intended to flow in like amounts, after adjusting for losses, from Ohio Power to Ohio Edison across the Points

of Interconnection concurrently and across the OE Delivery Points from Ohio Edison to Ohio Power, but physically to the systems of the Cooperative which are connected to the Delivery Points.

118. Q. What is your basis for concluding that the receipt of and delivery of the energy are intended to be concurrent?

A. The contract states:

> "Points of Interconnection Hourly Demand for any hour means the kilowatt demand which, for such hour, is equal to the product of the Ohio Edison Delivery Points Hourly Demand for such hour multiplied by the applicable Delivery Loss Correction Factor established as provided in Section 23 hereof, and such amount shall constitute the Contract Energy deliverable during such hour"

The above paragraph states that the energy from OP to OE (Contract Demand) shall equal the energy delivered from OE to OP (Delivery Points Hourly Demand) after the latter is adjusted for transmission losses.

119. Q. Are there any Agreements listed on your Exhibit HMM-4 which you have not previouly discussed?

A. Yes, those are items 3, 6, 12-14, 18-20, 22, 23, 25, 26, and 29-32 in Exhibit HMM-4. I mentioned items 34 and 35, but will discuss them in more detail later in my testimony.

120. Q. Are there any power supply coordination arrangements provided for in any of those agreements listed in your previous

answer that are substantively different than the various arrangements you have already discussed?

A. No.

121. Q. Mr. Mozer, have you included exhibits with your testimony to demonstrate the power supply transactions actually engaged in by the Applicants?

A. Yes the "System Energy Accounting For the Year", schedule 9, FPC form 12, as reported by each of the Applicants to the Federal Power Commission for the year 1973 is shown on Exhibits HMM-8d, 8i, 8n, 8r, and 8v.

122. Q. What is your purpose in showing these exhibits?

A. To show the magnitudes of the energy transfers with other systems by each Applicant.

123. Q. To what does an energy transfer refer?

A. To electric energy received from other systems or electric energy delivered to other systems. Such energy transfers would occur over the interconnections or connections between the systems. These transfers do not include energy delivered to ultimate consumers.

124. Q. What is your understanding of the data given in part B of Schedule 9 of FPC Form 12?

A. The data show the magnitude of energy tranferred to and from other electric entities by the entity preparing the Form 12.

125. Q. In your opinion, what does line B(1) of these Exhibits demonstrate about the power supply coordination activities of the Applicants?

A. The Applicants engage in considerable power supply transfers which indicates to me a high degree of coordination activity. A more detailed breakdown of these kWh figures is shown on Exhibits HMM-8a, 8b, 8c, 8f, 8g, 8h, 8k, 8m, 8p, 8q, 8t, and 8u. I am presenting these latter exhibits merely to indicate the amounts of energy transferred by the Applicants. I do not think it would be worthwhile and am not prepared to discuss each item individually.

126. Q. On Exhibit HMM-8n for OE, an entry of 308,814,000 kWh (shown in column 3 is not identified. Have you been able to determine what this figure represents?

A. Yes, Exhibit HMM-8k2, taken from OE's Power System Statement to the FPC, shows the breakdown for this figure. This figure represents the power exchanged pursuant to the Agreement with OE and OP which I previously characterized as equivalent to a wheeling agreement.

127. Q. Does Toledo Edison's 1973 Annual Report to the Federal Power Commission indicate delivery of power to Buckeye members?

A. Yes. My Exhibit HMM-8w shows a page of Toledo Edison's 1973 Annual Report to the Federal Power Commission, FPC Form 1. TE classifies this delivery as "Transmission of Electricity For/By Others (wheeling)."

128. Q. Did the other Applicants include an entry for "Transmission of Electricity For/By Others" in their 1973 annual reports to the Federal Power Commission?

A. OE and CEI indicated "none." PP described certain payments made with respect to the CAPCO transmission facilities (Exhibit HMM-8s1) and DL indicated transmission by others (Exhibit HMM-8j) with respect to its transmission arrangement with West Penn Power Company and Monongahela Power Company. DL also indicated certain payments made and received with respect to CAPCO transmission facilities.

129. Q. Are you aware of any electric entities which also distribute power to ultimate consumers within the general area in which CEI serves?

A. Yes. MELP and Painesville are the only ones I am aware of which serve within this area.

130. Q. To what do the letters MELP refer?

A. Municipal Electrical Light and Power system of the City of Cleveland. This is a municipal electric entity which provides electric service to ultimate consumers in parts of the City of Cleveland.

131. Q. What was MELP's annual peakload in 1973?

A. 111,750 kilowatts.

132. Q. In percentage terms, how did this compare to the peakload of CEI?

A. MELP's 1973 peakload was 3.4 percent of CEI's 1973 peakload of 3,242,000 kilowatts.

133. Q. In your testimony, Mr. Mozer, what does "Painesville" refer to?

A. The City of Painesville municipal electric system.

134. Q. What was Painesville's annual peakload in 1973?

A. 25,000 kilowatts.

135. Q. In percentage terms, how did this compare to the peakload of CEI?

A. This was 0.8 percent of CEI's 1973 peakload.

136. Q. Have you studied the relationships between CEI and MELP, and CEI and Painesville? If so, please describe these relationships, first, between CEI and MELP.

A. Yes. I have studied the relationships from both documents and other data that are available and from my personal observations in the Cleveland area. In Exhibit HMM-9, I have drawn a diagram of the general relationships between MELP and CEI. MELP is a virtually self-contained electric utility system. It provides its own electric power supply from the MELP-owned steam power-plant and from combustion turbine plants located in Cleveland. Until the recent energization of the MELP-CEI 138-kV inter-connection, MELP was not synchronously interconnected with CEI or with any other electric utility. CEI is a much larger electric utility than MELP. Because of its size and joint action arrangements with other utilities, CEI can feasibly install and participate in large nuclear power-plants. CEI owns and operates all existing transmission lines immediately adjacent to MELP which would be needed for MELP to utilize potential power sources outside of the MELP system. To the extent that CEI has refused to provide MELP with the use of CEI's transmission system, CEI has limited

MELP's power supply options. The lack of transmission facilities or access to transmission facilities has isolated MELP from the opportunity to participate in coordinated planning and operation with utilities other than CEI. MELP would require the transmission services of CEI, and possibly other CAPCO members, to obtain access to a selection of power supply sources and power supply services to allow MELP opportunities to select what it considers to be the best power supply arrangements and technology at any time.

137. Q. Can you describe the present relationships between CEI and the City of Painesville's electrical system?

A. Yes. The City of Painesville's electric system, with respect to the CEI system, is essentially in a similar situation as that which exists between CEI and MELP. The City of Painesville has its own electric generating plant, which is serving the loads in and nearby the city and is operating completely isolated. CEI has transmission lines in the immediate vicinity of the City of Painesville, which are part of CEI's large interconnected transmission system. There are no other transmission lines, that is, lines owned by other utilities, to which Painesville would have ready access. In other words, the City of Painesville could have access to alternative power supplies and power supply services only by access to and through the CEI transmission system. In summary, I would describe Painesville's situation to be

essentially the same as the situation for MELP, except that Painesville does not yet have a physical interconnection with CEI.

138. Q. Having described the specific situations that you have identified regarding the relationships between CEI and the municipal electrical systems of Cleveland and Painesville, can you describe generally the power supply relationships among electrical entities, particularly the relationships between relatively small entities and larger utilities serving in the same or immediate vicinity.

A. Yes. To aid in this discussion, I have prepared Exhibit HMM-10, which I have called the Generalized Diagram of Electric Utility Power Supply Relationships. First of all, any electric utility, large or small, would be in the most advantageous position to supply its customers if it has opportunities to select what the utility considers the best power supply arrangements and technology at any given time from among the greatest number of options. The small electric utility can sometimes provide some or all of its own generation; however, it is generally advantageous for any utility to be interconnected with others in order to achieve specific benefits derived from bulk power supply coordination. When a utility, large or small, is interconnected with one or more of its neighbors, and these utilities undertake coordinated planning and operations of their electric systems, the benefits to be

achieved include opportunities to reduce cost by taking advantage of the economies of scale--large powerplants and high voltage transmission lines usually cost less on a unit-cost basis than smaller scale facilities. Coordinated operations through interconnections also permit electric utilities to achieve other economies by sharing reserve requirements, undertaking exchanges of electric energy, and centralizing the overall operations and dispatching functions. While many variations of this general model can be drawn, I believe Exhibit HMM-10 represents a situation frequently found and is quite similar to the specific situation I have already described for CEI, MELP, and the City of Painesville.

139. Q. Have you reviewed the 17 April 1975 interconnection agreement between CEI and MELP, item 35 on Exhibit HMM-4?

A. Yes. In this agreement MELP is referred to as "the City".

140. Q. What services are to be rendered under this Agreement?

A. Service Schedule A provides for Emergency Service.

141. Q. Does the Agreement provide for any other services?

A. Not specifically, although paragraph 2.2 states that it is the intention of the Parties to enter into good-faith negotiations for the purpose of reaching agreement on service schedules for other services.

142. Q. Have you any comments on Section 2.1 of this CEI-MELP Agreement?

A. Yes. Section 2.1 states:

"Subject to the provisions of subsection 2.2 of this section 2,

in the event of a breakdown or other emergency in or on the System of either Party which impairs or jeopardizes the ability of the Party suffering the emergency to meet the loads of its system, the other Party shall deliver to such Party electric service in amounts up to and including 100 MVA which 100 MVA is hereby designated and herein called Emergency Capacity."

I am concerned that the 100-MVA requirement could impose an unusual and unjustifiable burden on the relatively small system of the City, whereas it would be a negligible burden on CEI's large system.

143. Q. Do the provisions of subsection 2.2 referred to in the above quote remove or limit the 100-MVA responsibility of the City?

A. Not under normal conditions. Under the agreement the responsibility is limited only if and when the City is experiencing an emergency on its own system.

144. Q. What is the effect on the City of the 100-MVA responsibility?

A. The effect could be to require the City to carry a reserve margin of approximately 100 MW. Based on its 1975 peakload projection of 126 MW, this represents a reserve margin of about 70 percent.

145. Q. What is the effect on CEI of the 100-MVA responsibility?

A. A 100-MW requirement represents a margin of 3.0 percent based on CEI's projected 1975 peak of 3,300 MW.

146. Q. Is it not equitable, in your opinion, that if the City is entitled to receive 100 MVA of emergency power, then it

should be required to provide 100 MVA of emergency power to CEI?

A. No, because the effect of the requirement could be to place an unequal burden on the City, based on a percentage of the peakloads of the entities.

147. Q. What, in your opinion, would be a fair method or arrangement for setting an obligation to provide emergency power?

A. The obligation on each party should be to provide emergency power on a best-effort basis up to the limit of the capability of the interconnection.

148. Q. Based on your experience with contractual arrangements, what reasons could account for the City accepting such a provision?

A. It is possible that the principals involved in the negotiation overlooked the possible impact of the provision, or since the City had long been operating without a synchronous interconnection, needed a synchronous interconnection, and had no alternate choices of Companies to interconnect with, it may have accepted this provision to obtain an interconnection as preferable to no synchronous interconnection at all.

149. Q. Have you reviewed the interconnection agreement between CEI and Painesville?

A. Yes, it was entered into on 13 January 1975. This is listed as item 34 on Exhibit HMM-4.

150. Q. What services are to be rendered under the agreement?

A. Section 2.1 of the agreement provides for the following

services and transactions:

2.11 the furnishing of mutual emergency assistance,

2.12 the sale and purchase of short-term power and energy,

2.13 the sale and purchase of limited term power and energy,

2.14 the sale and purchase of firm or long-term power and associated energy,

2.15 the interchange, sale, and purchase of economy energy when available on the system of CEI and needed on the system of the City,

2.16 maintenance power and energy.

Service Schedules are included with the agreement for each of the above services except for 2.14, the sale and purchase of firm or long-term power and associated energy.

151. Q. What is the purpose of the Service Schedules?

A. Primarily to set the terms, conditions and method of determining the compensation for the particular service.

152. Q. Have you any comments on Section 2.11 of Service Schedule E of the CEI-Painesville agreement?

A. Yes. The last sentence of Section 2.11 of Service Schedule E which provides for maintenance power and energy states:

> "Delivery of such energy, subject to the provisions of this Subsection 2.1, may be taken at such times and at such rates of take as the receiving Party may elect up to a maximum rate of take of 25,000 kilowatts."

The burden of the 25,000 kW requirement is many times greater

for the small system of Painesville as compared with the large system of CEI.

153. Q. If Painesville is entitled to receive 25 MW, then in your opinion, shouldn't they be obligated to provide 25 MW?

A. No, not for maintenance energy, because the 25-MW requirement could be equivalent to a reserve requirement. This could impose a particular hardship on Painesville because there is no provision in the agreement for transmission services to outside sources, other than CEI. Thus, in my opinion, Painesville could not shop for short-term power and energy and, therefore, could be saddled with the equivalent of a demand charge for the whole year to provide the necessary capacity for short time periods.

154. Q. Would the equivalent of an annual demand charge be equitable for maintenance energy?

A. No, because Painesville would be subject to the demand charge, whereas CEI, in effect, would not.

155. Q. Why have you testified that CEI, in effect, would not be subject to the demand charge?

A. Because the 25-MW requirement is only a very small percentage of the total reserves normally carried by CEI.

156. Q. Previously, you discussed the 14 June 1962 Operating Agreement between CEI and OP. Are you familiar with the scheduled maintenance provision of that contract?

A. Yes, the last sentence of paragraph 2.11 of Service Schedule

B states:

"Delivery of such energy, subject to the provisions of this subsection 2.1, may be taken at such times and at such rates of take as the receiving party may elect up to a maximum rate of take of 100 MW."

157. Q. Is this provision in this CEI-OP agreement similiar to the maintenance provision in the CEI-Painesville agreement?

A. Yes.

158. Q. Do you have the same type of concern over the CEI-OP Maintenance provision as you previously discussed concerning the CEI-Painesville provision?

A. No, because the 100-MW requirement is much less than the normal reserve requirements carried by each of those utilities.

159. Q. What, in your opinion, would be a fair and reasonable method for placing a limit on the maintenance power?

A. The limit should be that imposed by the capacity of the interconnection facilities or by the availability of the power. If the power is limited to that available, then no hardship is imposed on either party, and neither party has to install unnecessary capacity.

160. Q. Based on your experience with contractual arrangements, what reasons could account for Painesville accepting such a provision?

A. It is possible that the principals involved in the negotiation

overlooked the possible impact of the provision, or since Painesville was operating isolated at the time, needed an interconnection, and had no alternative choices of companies to interconnect with, it may have accepted this provision in order to obtain the interconnection contract as preferable to no interconnection agreement at all.

161. Q. Does Painesville's interconnection agreement with CEI give Painesville all of the power supply options, which in your opinion, would be desirable?

A. No. When fully implemented, the agreement will give Painesville some options it did not have prior to execution and implementation of the interconnection agreement. However, the agreement does not provide for transmission services to outside sources of supply.

162. Q. Why, from an engineering standpoint, should Painesville be allowed access to outside sources of supply?

A. To have an opportunity to reduce its costs of supplying its customers and to be less dependent on CEI. An electrical system planner or system operator needs to have as many power supply options as possible to choose from in order to obtain the lowest overall cost of power supply.

163. Q. Do you have conclusions regarding MELP's access to outside power sources?

A. Yes. My conclusions are the same as those I have in this regard for Painesville. I believe MELP is disadvantaged by not having

such access to outside power sources.

164. Q. Are you familiar with geographic relationships of the areas in which CEI, MELP, and Painesville serve and have physical facilities?

A. Yes. On the map, Exhibit NRC-101, one can see how the transmissi system and area in which CEI serves virtually surrounds each of the areas in which MELP and Painesville serve.

165. Q. How is this physical relationship relevant to the ability of CEI to limit the power supply options available to MELP and Painesville?

A. I have touched on this situation in the answer to an earlier question. With the physical relationships that exist, either MELP or Painesville would have to have electrical connections through the geographic area in which CEI now serves and has transmission facilities in order to have access to power supply opportunities other than dealing with CEI. Such outside electrical connections could be accomplished either by (1) constructing independent transmission facilities, or (2) having suitable arrangements to use the CEI transmission facilities.

166. Q. Earlier you said that you believe it is impractical for MELP and Painesville to construct transmission facilities through the CEI system in order to interconnect with other electrical entities. What are the factors that lead you to this conclusion?

A. The principal factors are (1) cost, (2) environmental concerns, and (3) problems of obtaining state or local approval for what

would likely involve duplication of transmission facilities.

167. Q. What are the cost factors that would be impediments to MELP or Painesville constructing their own transmission lines through the area in which CEI serves and has electrical facilities?

A. Because of MELP's and Painesville's relatively small loads, especially those of Painesville, only lower voltage transmission lines, probably 138-kV or lower, could be justified. Because of economy of scale, the lower voltage lines would result in a cost of transmission per kilowatt higher than it would be with wheeling over the 345-kV lines that the Applicants are constructing.

168. Q. Why do you believe that there would be problems of MELP and Painesville obtaining approval for duplicating transmission lines?

A. I believe that chapter 4906 of the Ohio Revised Code entitled "Power Siting" would be a strong impediment to duplicating transmission lines.

169. Q. What are the provisions in chapter 4906 that you use to base your opinion about duplication of transmission facilities?

A. In section 4906.10, covering "Guidelines for Granting or Denying Certificate" is the provision that "the commission shall not grant a certificate for the construction, operation, and maintenance of a major utility facility, either as proposed or as modified by the commission, unless it finds and determines: (1) The basis of the need for the facility; (2) The nature of the probable environmental impact; (3) That the facility

represents the minimum adverse environmental impact, considering the state of available technology and the nature and economics of the various alternatives, and other pertinent considerations; (4) In case of an electric transmission line, that such facility is consistent with regional plans for expansion of the electric systems serving this state and interconnected utility systems; and that such facilities will serve the interests of the electric system economy and reliability; . . ." It seems clear, especially in points 3 and 4 of the portion of Section 4906.10 that I've quoted, that it is the intent of the State of Ohio that duplicate transmission facilities be avoided.

170. Q. What do you see as the impact of Ohio Revised Code, chapter 4096, upon the power supply options for MELP and the City of Painesville's electric systems?

A. Each of these utility's power supply options is severely limited without access to neighboring power systems. This access would have to be provided either by separate transmission lines or by transmission services provided by CEI. Inasmuch as CEI has a transmission network in the area which is adequate to serve the area, there would be strong pressure to avoid duplicating transmission lines. Whether or not such duplicating transmission facilities would be permitted under Ohio Revised Code, chapter 4096, in the event that CEI absolutely refused to provide transmission services, or

whether CEI could be forced to provide these transmission services under Ohio Revised Code, chapter 4906, is a legal matter which I am not qualified to comment on. As an engineer, however, I have no question that one of the purposes of chapter 4906 is to avoid duplication of transmission facilities, and I find such purpose to be consistent with practices I find in my current professional experience.

171. Q. Turning now to the Applicants, including CEI, can you find any general relationships between the generating plants, including the nuclear plants, and the transmission systems of the Applicants and the ability of these utilities therefore to limit the power supply options of smaller electrical entities in the areas in which the Applicants serve?

A. Yes. I think there is a definite relationship here. The existing loads and generation of the Applicants have provided a need to construct and operate the transmission network now in the area. The need to add nuclear powerplants and other powerplants in the region in turn creates a clear need to greatly expand and increase the capacity of this transmission network. Because of the existing transmission system which is being strengthened and expanded to accommodate the nuclear plants that are being installed, it becomes increasingly difficult for a small electric utility to obtain the necessary approvals to construct its own transmission system which would in essence duplicate

portions of the already adequate transmission systems of the Applicants. Since it appears that is would be unlikely that any of the small electrical entities could construct its own transmission, then the Applicants, as owners of virtually all of the transmission and load control facilities in the region, have the ability to plan and construct these facilities and either to permit or to deny access to their use by the small electrical entities.

172. Q. Is nuclear power a supply option that an electrical entity, such as MELP, Painesville, or other small electrical entities or such as the other non-Applicant CCCT Entities, would want to consider?

A. Yes. Nuclear power plant is among the most important alternatives for an electrical entity's baseload power supply. It often is an especially attractive option today.

173. Q. Why is this?

A. Nuclear power has a lower overall cost at many locations than other alternatives. Nuclear units tend to be higher in initial cost per kilowatt than similar size fossil-fuel-type plants, but have lower and more stable overall costs than the fossil fuel plants. For this reason a nuclear plant provides a more assured cost base for long-range power supply. This is an important factor which now attracts electric utilities to nuclear powerplants. An additional factor which makes a nuclear powerplant especially [illegible]

and increasingly so, is that a nuclear powerplant avoids the use of fossil energy resources.

174. Q. Is there a need for coordinated operation with other utilities by a utility that has a nuclear powerplant as one of its power sources?

A. The need for coordination is especially important when a utility has a nuclear powerplant. It is conceivable that a very large utility might be able to have all of the coordination opportunities within its own system, but this is not generally the case. Usually a utility installing large nuclear units, such as Perry and Davis-Besse, finds it essential to operate in a coordinated way with one or more of its neighboring utilities. There is, therefore, a strong relationship between a utility's nuclear powerplants and its coordination arrangements.

175. Q. If a utility has nuclear power as a portion of its power supply, either by ownership or by purchase of a unit share of power, are there certain additional power supply arrangements that the utility must have before nuclear power can be used effectively in its system?

A. Yes. There are several factors that must be considered and arrangements that must be provided for in order to fully utilize nuclear power.

176. Q. Can you discuss these power supply arrangements which are required in effectively using nuclear power?

A. Yes. A nuclear powerplant is most economical when operated on a utility's system as much of the time as possible. When the nuclear plant operates, it normally generates at a fairly uniform load. On the other hand, an electric utility load is not usually uniform throughout the day or through the various times of the year. The electric utility load tends to vary and have what are often called "peaks and valleys." Generally, a well designed system will have only enough nuclear power so that the nuclear power does not substantially exceed the baseload. This requires that the utility have additional power resources which can supply the intermediate and peakloads. The utility must have so-called "intermediate" and "peaking" resources on its system or must obtain all or a part of them from neighboring utilities.

In order to utilize nuclear power, as with any other power supply, a provision must be made to carry a certain level of reserves. The level of reserves that must be carried can be reduced substantially if the utility can pool reserves with neighboring utilities through arrangements for sharing emergency and maintenance capacity and energy. A nuclear unit requires scheduled shutdowns for maintenance and for refueling. If the nuclear plant is supplying a major portion of the baseload, as I have heretofore described, then when the plant is shut down for any reason some power supply source must be found to carry this load during the

shutdown period of the nuclear unit. Therefore, in order to fully utilize a nuclear powerplant, a utility must have either replacement capacity on its own system to operate during the period of nuclear plant shutdown, or perhaps better, it can arrange to share with one or more of its neighboring utilities the necessary reserves to cover their respective maintenance and forced-outage shutdown periods.

Additionally unless the nuclear powerplant is located immediately adjacent to, or in, a utility's service area, the utility will need transmission services to deliver power from the nuclear plant to its system.

177. Q. Can a utility obtain these power supply arrangements you just described for a nuclear plant without transmission interconnections with other utilities?

A. Yes, but only in an unusual case. A large utility which has a nuclear power supply that is small with respect to its total load, a variety of other power supply resources available, a diverse load, and a transmission system, all within its own load area, might very well get along without any transmission interconnections.

178. Q. Could the non-Applicant CCCT Entities effectively utilize nuclear power in their systems without transmission interconnections and arrangements for transmission services?

A. No, not at all. None of these entities are large utilities which would match the characteristics of the large utility I

just described. Each would require transmission of nuclear power to its system. Some may integrate a nuclear supply with their own present generation, but they would have limited opportunities to take advantage of alternatives without interconnections.

179. Q. In considering the Perry and the Davis-Besse nuclear plants, what do you view as the relationship of these powerplants to the transmission systems of the Applicants?

A. I have previously discussed various general aspects of power supply and transmission systems. Bearing in mind that the basic purpose of transmission is to move a large amount of electric power from one point to another, usually from a generating station to a load center, it then follows that when a very large generating station, like a nuclear powerplant, is brought into service at a location remote from major load areas, a transmission line or several transmission lines must be built. As a practical matter with the Perry and the Davis-Besse plants, the transmission lines being planned by the Applicants are designed to operate in a fully coordinated manner with the existing transmission systems. The nuclear powerplants, therefore, require that major transmission be constructed; good planning and good engineering requires that this transmission be fully integrated into the existing transmission systems of all of the interconnected utilities.

180. Q. Do you perceive a relationship between the construction of the Perry and Davis-Besse nuclear powerplants and the ability of the non-Applicant CCCT Entities to construct independent transmission facilities at some time in the future to acquire coordination benefits?

A. As I have already testified, I believe that it would be impractical for any of the non-Applicant CCCT entities to construct any transmission lines where such transmission lines would have to traverse areas now carrying transmission lines of the Applicants. With the addition of the Perry and Davis-Besse nuclear plants, Applicants must greatly strengthen their transmission systems and, therefore, the overall transmission network. By providing this greatly strengthened transmission system, the possibility would become even more likely than it is now that any line proposed by any of the non-Applicant CCCT Entities would duplicate existing transmission facilities. It is my opinion, therefore, that the construction of the Perry and the Davis-Besse powerplants and the construction of the transmission system additions required in conjunction with these powerplants have a direct connection with and a definite influence on the increasing inability of the non-Applicant CCCT Entities to act independently in order to maximize the number of power supply options to which they can take advantage.

181. Q. Are you aware of a proposal to wheel 30 MW of power from the

Power Authority of the State of New York (PASNY) to the MELP system via the transmission lines of CEI?

A. Yes. My principal information on this proposal was obtained from the petition of American Municipal Power-Ohio, Inc. to intervene in the proceedings of Dockets No. 50-440A and 50-441A. Exhibit L of that petition is a letter dated 30 August 1973 in which CEI said it was not willing to enter into an agreement to wheel power from PASNY to Ohio and to the City of Cleveland.

182. Q. Do you perceive a relationship between the proposed Perry nuclear plant and the delivery of PASNY power to the MELP system, and if so, please describe this relationship?

A. It has been requested that the PASNY power be wheeled to MELP over the CEI system. In accordance with Mr. Davidson's affidavit, Exhibit 11, item 6, page 4, CEI has capacity to wheel this power over its existing transmission system. Inasmuch as there is capacity to wheel the PASNY power over the existing CEI system, and I have no reason to doubt this, there is therefore, little justification that MELP could give for constructing its own facility to transmit this power. Such construction by MELP would be duplication of facilities in my view, and would likely not be permitted. Therefore, at the present time, MELP cannot obtain power from PASNY, unless it is wheeled over the CEI system.

Mr. Davidson also states in his affidavit that after

the increased transmission capacity associated with the Perry project is constructed, CEI will continue to have ample capacity in its system to transfer 30 MW of PASNY power to MELP. Inasmuch as the transmission lines constructed in conjunction with the Perry Nuclear Plant will continue the situation whereby CEI has ample capacity to wheel PASNY power to MELP, and also strengthen the CEI transmission network, then after Perry is in operation MELP would appear to have even less likelihood than it does now of being able to get approval to construct an independent transmission line to deliver PASNY power. It follows, therefore, that the construction of the Perry nuclear plant continues and even strengthens the situation whereby MELP is unable to obtain 30 MW of PASNY power unless wheeling over the CEI system is permitted by CEI; the construction of the Perry plant and the attendant need to strengthen the CEI transmission system, therefore, weakens the opportunity for MELP to take advantage independently of any attractive alternative power supplies.

183. Q. Can any electric utility consider installing a nuclear plant as a resource toward meeting its future power supply needs?

A. No. A nuclear plant is an option that most utilities would like to have the opportunity to consider, but it is an option which is not available to the small electrical entity, except through participation with others. As I have discussed previously in this testimony, nuclear powerplants are

most economical only in relatively large sizes--approximately 800 to 1,300 MW. A small or relatively moderate size utility, of say 100-MW load, can't now consider independently constructing a nuclear powerplant of 800 MW or larger to take advantage of the economy of scale available in large plants. Therefore, in order for nuclear power to be a valid option for the utility that cannot justify constructing a full-scale plant of its own, the utility must have an opportunity to participate with one or more other utilities to share the nuclear plant, and to coordinate with each other to provide the necessary reserves, maintenance backup, and the other supplemental power supply services which I have already described.

184. Q. If a small electrical entity such as MELP has access to nuclear power by means of participating in a small share of a large powerplant, will this entity require any transmission services? If so, what are they?

A. Yes. The small electrical entity will require transmission services to obtain access to various power supply options. As I have already said, it will be necessary that the nuclear power be delivered to the entity's system; I would expect the delivery of the nuclear power to be a fundamental part of any arrangement permitting participation in the nuclear powerplant by the small system. However, to make practical and economical use of the nuclear power, the small system

should have access to a group of additional power supply options such as I have previously described. All of these power supply options are important to maximize the utilization of nuclear power, and they can be accomplished only with access to transmission services to permit the coordination with one or more other utilities.

185. Q. Mr. Mozer, returning to the generalized diagram shown on your Exhibit HMM-10, would this, in your opinion, be applicable to the situation with respect to MELP, Painesville and the other CCCT entities.

A. Yes, the block labeled "smaller distributor" would correspond to MELP, Painesville and the other non-Applicant CCCT entities. The block labeled "large electric utility" would correspond to the Applicants of this proceeding.

186. Q. What is the significance of the dashed lines passing through the block labeled "large electric utility"?

A. Access to the indicated power supply options and services can be obtained, from a practical standpoint, only through arrangements with the Applicants. The Applicants, therefore, have control over the power supply options available to the other CCCT entities.

187. Q. What is the effect of this control which the Applicants have over the other CCCT entities?

A. The Applicants, if they choose, can effectively prevent the other CCCT entities from developing and/or maintaining a

reliable and economic power supply system.

188. Q. Mr. Mozer, what services or arrangements would be required from the Applicants to provide MELP, Painesville and other non-Applicant CCCT entities opportunities to obtain those options required to put together an economic bulk power supply system?

A. One or more interconnections with the Applicant(s) and participation with Applicants in coordinated power supply planning and development and in coordinated operations would be fundamental needs. Specific arrangements and services should include access to (1) nuclear generation, (2) large-scale baseload fossil generation (3) intermediate load generation (4) peaking generation (5) transmission services (wheeling) (6) emergency power (7) maintenance power (8) economy power (9) specified amount firm power (10) full-requirement firm power and (11) partial-requirement firm power.

189. Q. In your previous answer, what do you mean by "access to"?

A. One or more interconnections and arrangements with the Applicants whereby the non-Applicant CCCT entities could obtain the power supply options and opportunities under reasonable conditions and at reasonable costs.

190. Q. What do you mean by "under reasonable conditions"?

A. The conditions should be those required to administer the service arrangement or joint enterprise and to protect the reliability of the combined systems. The conditions should

not impose unfair or unnecessary requirements or restrictions. The service arrangements should be offered in an unbundled fashion, that is, in order to obtain one service, a CCCT entity should not be required to take other services which it does not desire.

191. Q. What did you mean in your answer to Question 189 "at reasonable costs"?

A. The costs should be those associated with providing the particular service arrangement or joint enterprise. A cost for a particular desired service should not be based on the costs of a bundle of services. Also, the costs should not be based on benefits expected unless such benefits can be clearly established.

192. Q. Why shouldn't costs be based on benefits expected?

A. An expected benefit often is based on a hypothesis and not on fact. One must speculate as to what would have been done if it hadn't been done the chosen way. For illustration, if a bus driver were to charge on the basis of benefits to the passenger, he would have to speculate as to whether the passenger would have taken a taxi, driven his car, hitchhiked, or walked, had he not taken the bus.

193. Q. When would it be proper to base costs on benefits to be derived?

A. When the alternative can be clearly established. For example, for economy energy transactions, the energy sources which are being substituted for are clearly identifiable.

Such transactions, typically, are paid for on a split-the-savings basis.

194. Q. Mr. Mozer, in your response to Question 188, did you arrange the opportunities needed by the non-Applicant CCCT entities in order of importance?

A. No, because the order of importance would depend on the situation of each particular entity at a given point in time.

195. Q. What are some of the factors that could affect the order of importance of the opportunities needed?

A. The location of the entity with respect to available power supply options, the magnitude of the entity's electric load, the characteristics of the entity's electric load, the magnitude, characteristics and mix of the entity's existing generation, the extent and characteristics of the entity's transmission system, and the existing service arrangements and power supply options available to the entity.

Perhaps a better understanding of these factors can be had by classifying the entities into three groups. The first group are those entities such as Painesville and MELP which now have generation in excess of their peakload requirements. Especially important options for these entities would include access to: coordinated planning, development and operations; transmission services; emergency, maintenance and economy capacity and energy, nuclear and other

baseload power; intermediate and peaking generation.

A second group are those entities which have some generation of their own now, but not enough to meet their full load requirements. Access to partial requirement firm power would be of fundamental importance to these entities, along with the options needed by the first group.

The third group are those entities which now have no generation of their own. For these entities, access to full-requirement firm power is essential. The other options needed by the first and second groups would be needed for this group of entities to be able to plan and develop the most economical bulk power supply system to meet future needs.

196. Q. Does Painesville's 13 January 1975 interconnection agreement with CEI provide all of the options needed by Painesville for its long-term power supply needs?

A. No, because most of Painesville's power supply options under the agreement continue to be under CEI's control. It cannot reach for alternatives beyond CEI until it receives access to the integrated transmission system. Also, there is no certainty as to the permanence of the power supply services under the present agreement because of the escape clause in the service schedules which would allow CEI to withdraw the services at any time.

197. Q. What escape clause are you referring to?

A. Under the Special Provision in each service schedule, except the one for Economy Interchange, it states:

"The Parties accordingly agree that. . . particularly since the transactions contemplated by this schedule are intended to be reciprocal in character when it is in the interests of both Parties so to be. . . either Party may at any time and from time to time in the future *take such action* under the agreement *as such Party shall consider to be in the best interest of such Party*, including action to file any tariff or rate schedule designed to supersede this schedule in its application to such Party as a supplier of electric service." (Emphasis added.)

198. Q. Why would an entity which does not generate or transmit electric power need any option other than full-requirement power?

A. At some time such an entity may find it desirable to provide all or a portion of its own power supply needs. This may be by self-generation, firm power purchase, or participation cooperatively with other entities in a power supply project. These courses of action are foreclosed if the entity lacks the options necessary to put together a reliable and economic power supply.

199. Q. Mr. Mozer, could you clarify for us the difference between "full-requirement firm power" and "specified-amount firm capacity and energy" as you have used these terms.

A. This is my way of distinguishing between firm power as required to meet in full the varying load cycle of an entity (full-requirement firm power) versus firm power contracted for in a given amount for a given period of time (specified-amount firm capacity and energy). The former is often referred to as "wholesale for resale" power. The latter is sometimes referred to among the Applicants as short-term operating capacity and energy, interim power and energy, or limited-term power and energy.

200. Q. Why have you not included "unit power" in your response to Question 188?

A. Access to nuclear generation, large-scale baseload fossil generation, intermediate load generation, or peaking generation could each be by a "unit power" type of arrangement or an "ownership" type arrangement.

201. Q. What is the difference between a "unit power" type of arrangement and an "ownership" type of arrangement?

A. A "unit power" arrangement would be a contractual right to receive a portion of the capacity and energy from the particular unit for a specified period of time or for the life of the unit, but without actual ownership in the unit.

202. Q. Why is access to intermediate load and peaking generation needed to effectively use nuclear power?

A. For the forseeable future, nuclear power is economical only for the baseload portion of the load cycle. To be a useful

option, nuclear power must be supplemented by other types of power to fill the remaining portion of the load cycle. Peaking and intermediate load generation provides this supplemental power that is needed to accomplish an economic power supply mix.

203. Q. Couldn't partial-requirement firm power be used to provide this supplemental power?

A. Yes, this would be an alternative, but may not be the most economic alternative, particularly if a non-Applicant CCCT entity has only one supplier to turn to.

204. Q. Why is access to large-scale baseload fossil generation needed in addition to nuclear power?

A. The nuclear power to which an entity has economic access may not be sufficient in itself to fulfill the baseload requirements of that entity. Thus, in order to fulfill such requirements, the entity must have access to other baseload power. Without such access, it may not be economical for the entity to take advantage of the nuclear option.

205. Q. Why are emergency power and maintenance power needed?

A. When the nuclear plant or other generation resource is out of service due to forced outages or planned maintenance, replacement capacity and energy are needed. It generally is not economical for each entity to provide individually its full requirement of seldomly used standby capacity for such

replacement purposes. Thus, electric utilities commonly form a reserve pool to draw from in times of need. Reserve sharing is then accomplished through emergency and maintenance power transactions.

206. Q. Why did you not list reserve sharing as one of the options in your response to Question 188?

A. Because the benefits of a reserve sharing arrangement are realized through emergency and maintenance power exchanges.

207. Q. Why is access to transmission a needed option?

A. First, the non-Applicant CCCT entities generally cannot obtain the power from the nuclear plants or other generating resources except through the transmission system of the Applicants. Second, transmission access is a prerequisite for access to the needed supplemental power supply sources. Third, transmission access is a prerequisite to the obtaining of emergency power and maintenance power.

208. Q. Why is the full-requirement firm power option needed?

A. To supply the bulk power requirements of entities which do not find it advantageous to have any electrical generating facilities of their own.

209. Q. Why is the partial-requirement firm power option needed?

A. To supply a portion of the load cycle not served from an entity's own generation and other power resources. This supplemental power is often used to supply the nonbaseload portions of the load cycle. Without such supplemental power

it would not be possible for many small entities to take advantage of the nuclear option.

210. Q. Why is the "specified amount firm power" option needed?

A. To obtain financing for a portion of a nuclear unit or other power supply resource an electric entity would need to have an economically feasible long term development plan. The lumpiness of generator additions during a power supply development sequence tends to result in temporary excesses of capacity and energy on some systems and temporary shortages of capacity and energy on other systems. Temporary purchases and sales of specific amounts of firm power between systems permit the smoothing out of the effect of the lumpiness of the generator additions and thereby enhance the economic feasibility of entering into a power supply development program. An electric entity is foreclosed from taking advantage of the nuclear power option unless the long-term feasibility of this course of action can be shown.

211. Q. Why is the coordinated planning and development option needed?

A. In my opinion, coordinated planning and development with neighboring utilities is fundamental to an entiry's power supply program. Without such coordination an electric entity would likely have higher costs and lower reliability. As I testified in the answer to Question 210, an electric entity must demonstrate an economically feasible long-term development program to take advantage of nuclear power option or

other power supply resources.

212. Q. Why are economy power and coordinated operations needed power supply options?

A. Each of these power supply and coordination services is also related to the economics of a long-term power supply development program. An electrical entity must be able to plan its power supply program knowing it has access to these options if it is to be able to develop the best power supply program for serving its electrical loads.

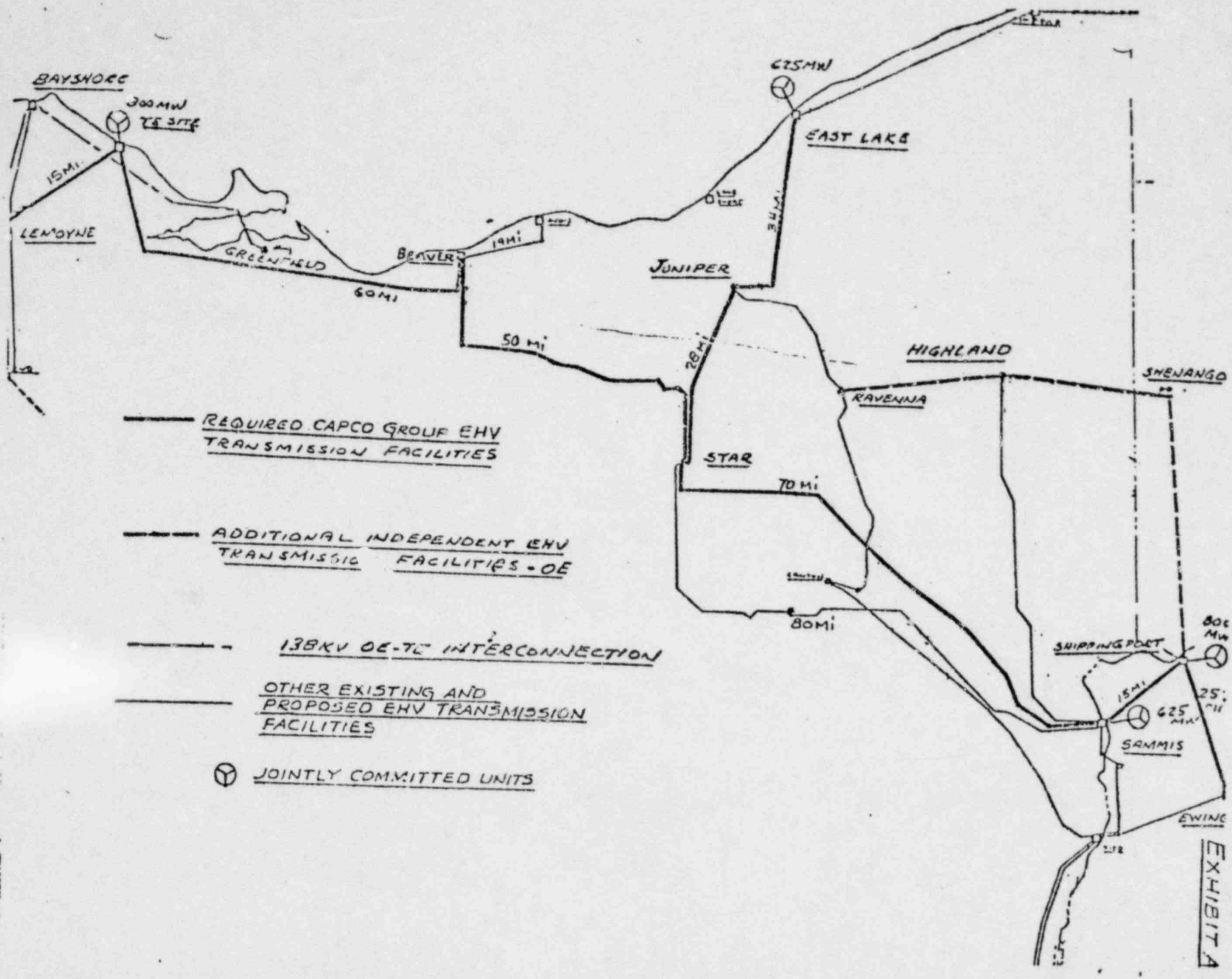


EXHIBIT A

EXHIBIT HHH - 1

IV. CAPABILITY ADDITIONS AND REMOVALS 1975-1984

CAPCO

SERVICE DATE	UNIT DESIGNATION	CAPABILITY MW	PRIMARY TYPE	FUEL(1) STORAGE	ALTERNATE FUEL
1975					
JANUARY	SHIPPINGPORT (SHUTDOWN)	-90(2)	NUCLEAR	--	--
FEBRUARY	W. LORAIN CC (UPRATE)	45(3)	OIL	55	NONE
APRIL	W. LORAIN CC (UPRATE)	51(3)	OIL	55	NONE
DECEMBER	BEAVER VALLEY 1	856(4)	NUCLEAR	--	--
DECEMBER	MANSFIELD 1	825(4)	COAL	75-90	NONE
	TOTAL	1687			
1976					
FEBRUARY	SHIPPINGPORT (NEW CORE)	60(2)	NUCLEAR	--	--
JUNE	DAVIS-BESSE 1	906(4)	NUCLEAR	--	--
	TOTAL	966			
1977					
APRIL	MANSFIELD 2	825(4)	COAL	75-90	NONE
NOVEMBER	BEAVER VALLEY 1 (UPRATE)	29(4)	NUCLEAR	--	--
	TOTAL	854			
1978	(NO ADDITIONS OR REMOVALS)				
1979					
OCTOBER	MANSFIELD 3	825(4)	COAL	75-90	NONE
	TOTAL	825			
1980					
JUNE	PERRY 1	1205(4)	NUCLEAR	--	--
	TOTAL	1205			
1981					
APRIL	BEAVER VALLEY 2	856(4)	NUCLEAR	--	--
	TOTAL	856			
1982					
APRIL	PERRY 2	1205(4)	NUCLEAR	--	--
	TOTAL	1205			

IV. CAPABILITY ADDITIONS AND REMOVALS 1975-1984

CAPCO

SERVICE DATE	UNIT DESIGNATION	CAPABILITY MW	PRIMARY TYPE	FUEL(1) STORAGE	ALTERNATE FUEL
1983					
MARCH	BEAVER VALLEY 2 (UPRATE)	29(4)	NUCLEAR	--	--
APRIL	DAVIS-BESSE 2	906(4)	NUCLEAR	--	--
	TOTAL	935			
1984					
APRIL	ERIE NUCLEAR 1	1200(4)	NUCLEAR	--	--
	TOTAL	1200			

NOTES-

1. NORMAL OR EXPECTED STORAGE CAPACITY IN NUMBER OF DAYS SUPPLY AT NORMAL BURN RATE UNLESS OTHERWISE NOTED..
2. UNIT OWNED BY DUQUESNE LIGHT COMPANY.
3. UNIT OWNED BY OHIO EDISON COMPANY.
4. UNIT JOINTLY OWNED BY TWO OR MORE OF THE CAPCO POOL PARTIES.

EXHIBIT HMH - 3

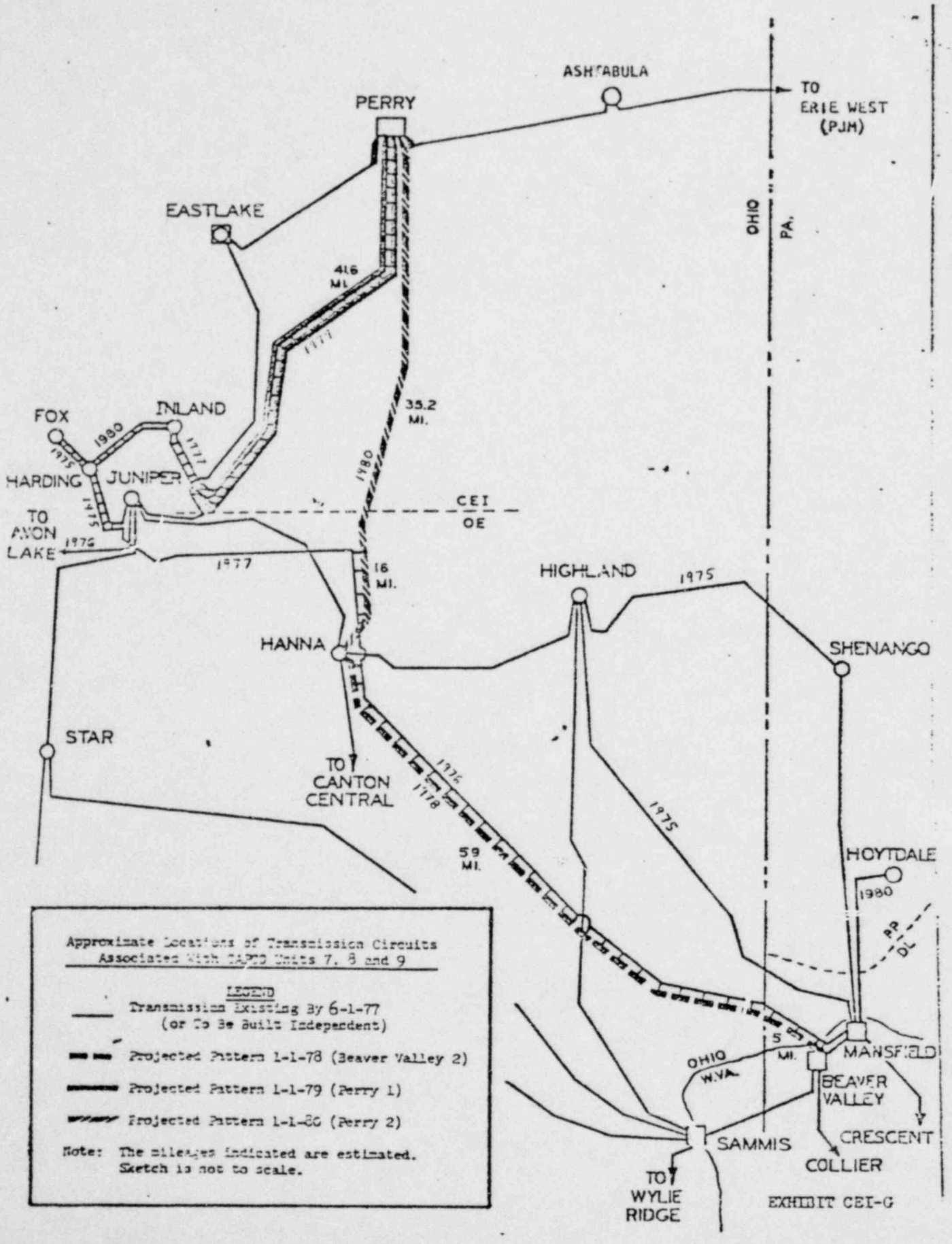


EXHIBIT CEI-G

APPLICANTS' CONTRACTS AND AGREEMENTS

1. 1 January 1952 Interconnection Agreement between the Ohio Power Company and the Ohio Edison Company (NRC - 201)
   a. Supplemental Letter Agreement, 1 May 1967

The agreement provides for the following:

Operating Committee (P. 13)	*Coordinated Operation*
Diversity Capacity and Energy (P. 16)	*Diversity Exchange*
Operating Reserve Capacity (P. 16)	*Economy Power (Capacity) and Reserve Capacity*
Energy Transfer (P. 17)	*Uncontrollable Power Flows* and *Wheeling*
Interchange Power (Sched. A)	*Economy Power (Energy)* and *Non-displacement Power (Energy)*
Short-Term Power (Suppl. 5/1/67)	*Short-Term Power*

2. 16 September 1952 Contract between Pennsylvania Power Company and the Ohio Edison Company (NRC -202)
   a. Amendatory Contract, 29 March 1955
   b. Second Amendatory Contract, 5 November 1959

The Agreement provides for the following:

Economy Energy (P. 3)	*Economy Power*
Emergency Service (P. 6)	*Emergency Power*
Firm Capacity (P. 2)	*Firm Power*
Nonfirm Energy (P. 3)	*Nonfirm Power (Energy)* and *Non-displacement Power (Energy)*
Nonfirm Surplus Capacity (P. 3)	*Nonfirm Power (Capacity)* and *Non-displacement Power (Energy)*
Standby Capacity (P. 2)	*Standby Power* and *Maintenance Power*
Use of Transmission Facilities (P. 3)	*Transmission Service (Wheeling)*

3. 29 November 1957 Agreement between Columbus and Southern Ohio Electric Company and the Ohio Edison Company (NRC -203)
   a. Amendatory Letter Agreement, 6 July 1959
   b. Amendatory Letter Agreement, 15 August 1959
   c. Amendatory Letter Agreement, 1 November 1961
   d. Amendatory Letter Agreement, 16 April 1963

The agreement provides for the following:

Economy Interchange Power (P. 3)	*Economy Power*
Firm Power (P. 3)	*Firm Power*
Offpeak and Onpeak Interchange Power (P. 3)	*Emergency Power* and *Maintenance Power*

4. 14 June 1962 Facilities Agreement between the Cleveland Electric Illuminating Company and the Ohio Power Company (NRC -204)

The agreement provides for the following:

Transmission Facilities (all)	*Joint Planning and Development*

Note: Left side column lists services set forth in the agreement. Right side column shows Mozer characterization of the contract service using terminology of Exhibit HMM-6.

5. 14 June 1962 Operating Agreement between the Cleveland Electric Illuminating Company and the Ohio Power Company (NRC -205)

a. Modification No. 1, 30 April 1965
b. Modification No. 2, 16 September 1970
c. Modification No. 3, 1 November 1972
d. Modification No. 4, 1 March 1972
e. Modification No. 6, 24 June 1974

The agreement provides for the following:

Coordinated Operation and Development (P. 1)	*Coordinated Planning and Development and Coordinated Operation*
Emergency Service (Sch. A)	*Emergency Power*
Coordination of Scheduled Maintenance (Sch. B)	*Maintenance Power*
Energy Transfer (Sch. C)	*Uncontrollable Power Flows*
Interchange Power (Sch. D)	*Economy Power and Nondisplacement Power*
Short-Term Power (Sch. E)	*Short-Term Power*
Interim Power to Cleveland Electric (Sch. F) (Mod 1, 4/30/65)	*Short-Term Power*
Limited Term Power (Sch. F) (Mod 4, 3/1/72)	*Short-Term Power*

6. 6 September 1962 Facilities and Operating Agreement between Duquesne Light Company and Ohio Power Company (NRC -206)

a. Modification No. 1, 25 July 1967
b. Modification No. 2, 9 April 1970
   (1) Amendment, 1 December 1970
   (2) Amendment, 1 December 1971
   (3) Amendment, 1 December 1972
c. Modification No. 3, 22 May 1972

The agreement provides for the following:

Interconnected Operation (P. 3)	*Coordinated Operation*
Interim Power to Duquesne (Sch. A)	*Short-Term Power*
Emergency Service (Sch. B)	*Emergency Power*
Coordination of Scheduled Maintenance (Sch. C)	*Maintenance Power*
Intercharge Power (Sch. D)	*Economy Power and Nondisplacement Power*
Short-Term Power (Sch. E)	*Short-Term Power*
Energy Transfer (Sch. F)	*Uncontrollable Power Flows*
Transmission Facilities (P. 1-3)	*Joint Planning and Development*

7. 15 July 1964 Interconnection Contract between Cleveland Electric Illuminating Company and Ohio Edison Company (NRC -207)

a. Supplemental Letter Agreement, 21 March 1967
b. Interim Supplement, 16 September 1971
c. Interim Supplement, 1 January 1973

Note: Left side column lists services set forth in the agreement. Right side column shows Mozer characterization of the contract service using terminology of Exhibit HMM-6.

The agreement provides for the following:

Economy Interchange Power (P. 3 & 8)	*Economy Power*
Firm Power (P. 2)	*Firm Power*
Onpeak and Offpeak Interchange Power (P. 2 & 9)	*Emergency Power* and *Maintenance Power*
Short-Term Power (Suppl. 3/21/67)	*Short-Term Power*
Unit Power Entitlement (Suppl. 9/16/71)	*Unit Power, Baseload Power*
Short Lead Time Capacity (Suppl. 1/1/73)	*Unit Power, Peaking Power*

8. 23 February 1965 Agreement between Ohio Edison Company and Cleveland Electric Illuminating Company (NRC -208)
   a. Letter Agreement, 3 December 1968
   b. Letter Agreement, 8 May 1972

The agreement provides for the following:

Mutual Support (P. 13)	*Maintenance Power* and *Emergency Power*
Generation and Transmission Facilities (all)	*Joint Planning and Development*
Operations (P. 15)	*Coordinated Operation*
Unit Power Entitlement (P. 4)	*Unit Power, Baseload Power*

9. 23 July 1965 Facilities Agreement between the Cleveland Electric Illuminating and Pennsylvania Electric Company (NRC -209)

The agreement provides for the following:

Transmission Facilities (all)	*Joint Planning and Development*

10. 23 July 1965 Firm Power Agreement between the Cleveland Electric Illuminating and Pennsylvania Electric Company (NRC -210)

The agreement provides for the following:

Firm Power and Energy (P. 2)	*Firm Power*

11. 30 September 1965 Interconnection Agreement between the Cleveland Electric Illuminating Company and Pennsylvania - New Jersey - Maryland (PJM) Group (NRC -211)
   a. Service Schedule 7.01, 4 May 1967

The agreement provides for the following:

Operation (P. 6)	*Coordinated Operation*
Advisory Planning Committee (P. 5)	*Coordinated Planning and Development*
Operating Capacity Transactions (Sch. 4.01)	*Economy Power* and *Emergency Power (Capacity)*
Energy Transactions (Sch. 5.01)	*Economy Power* and *Emergency Power (Energy)*
Short-Term Power and Energy (Sch. 7.01)	*Short-Term Power*

12. 1 December 1965 Operating Agreement between Toledo Edison and Ohio Power Company (NRC -212)

The agreement provides for the following:

Operating Committee (P. 7)	*Coordinated Operation*
Firm Power to Toledo (Sch. A)	*Firm Power*

Note: Left side column lists services set forth in the agreement. Right side column shows Mozer characterization of the contract service using terminology of Exhibit HMM-6.

Interim Power to Toledo (Sch. B)	*Short-Term Power*
Emergency Service (Sch. C)	*Emergency Power*
Coordination of Scheduled Maintenance (Sch. D)	*Maintenance Power*
Interchange Power (Sch. E)	*Economy Power* and *Nondisplacement Power*
Short-Term Power (Sch. F)	*Short-Term Power*

13. 1 March 1966 Operating Agreement among Consumer Power Company, the Detroit Edison Company and the Toledo Edison Company (NRC -213)

The agreement provides for the following:

Operating Committee (P. 8)	*Coordinated Operation*
Emergency Service (Sch. A)	*Emergency Power*
Coordination of Scheduled Maintenance (Sch. B)	*Maintenance Power*
Interchange Power (Sch. C)	*Economy Power* and *Nondisplacement Power*
Short-Term Power (Sch. D)	*Short-Term Power*

14. 17 October 1966 Letter Agreement between Ohio Edison Company and Pennsylvania Power Company (NRC -214)

The agreement provides for the following:

Short-Term Power (all)	*Short-Term Power*

15. 14 September 1967 CAPCO Group Memorandum of Understanding (NRC -215)

The agreement provides for the following:

Operation Principles (P. 10)	*Coordinated Operation*
Economy Energy (P. 14)	*Economy Power*
Emergency Energy (P. 14)	*Emergency Power*
Jointly Committed Generating Capacity (P. 3)	*Coordinated Planning and Development*
Maintenance Energy Exchange (P. 11 & 14)	*Maintenance Power*
Mutual Support (P. 10)	*Emergency Power*
Payment of Fixed Charges	*Unit Power*

16. 14 September 1967 CAPCO Transmission Facilities Agreement (NRC -216)

The agreement provides for the following:

Transmission Facilities (all)	*Coordinated Planning and Development*

17. 14 September 1967 CAPCO Administration Agreement (NRC -217)

a. Amendment No. 1, 4 January 1974

The agreement provides for the following:

Executive and Standing Committees	*Coordinated Planning and Development* and *Coordinated Operation*

Note: Left side column lists services set forth in the agreement. Right side column shows Mozer characterization of the contract service using terminology of Exhibit HMM-6.

18. 15 September 1967 Agreement between the Dayton Power and Light Company and Ohio Edison Company (NRC -218)

The agreement provides for the following:	
Interconnection Facilities (Art. I)	*Joint Planning and Development*
Economy Interchange Power (Sch. A)	*Economy Power*
Onpeak and Offpeak Interchange Power (Sch. A)	*Emergency Power* and *Maintenance Power*
Short-Term Power (Sch. B)	*Short-Term Power*

19. 1 January 1968 Agreement among Buckeye Power and Cincinatti Gas & Electric, Columbus and Southern Ohio Electric, Dayton Power and Light, Monongahela Power, Toledo Edison and Ohio Power Companies (NRC -219)

The agreement provides for the following:	
Transmission Services (all; esp. P. 10)	*Transmission Service (Wheeling)*
Planning Committee (P. 31)	*Joint Planning and Development*

20. 1 February 1968 Interchange Agreement between West Penn Power Company and Duquesne Light Company (NRC -220)

a. Amendment No. 1, 23 May 1972
b. Addendum, 31 May 1973

The agreement provides for the following:	
Operating Committee (P. 9)	*Coordinated Operation*
Emergency Service (Sch. A)	*Emergency Power*
Interchange Power and Energy (Sch. B)	*Economy Power* and *Nondisplacement Power*
Short-Term Power and Energy (Sch. C)	*Short-Term Power*
Coordination of Scheduled Maintenance (Sch. D)	*Maintenance Power*

21. 20 June 1968 Agreement between Ohio Power Company and Ohio Edison Company (NRC -221)

The agreement provides for the following:	
Nondisplacement Energy (P. 4)	*Nondisplacement Power*
Facilities Use Charge (P. 5)	*Transmission Service (Wheeling)*

22. 1 August 1968 Agreement between Ohio Edison Company and Toledo Edison Company (NRC -222)

a. Interim Supplement, 26 September 1971
b. Second Interim Supplement, 1 August 1972
c. Interim Supplement, 1 January 1973

The agreement provides the following:	
Transmission of Electric Power (P. 4)	*Joint Planning and Development*

Note: Left side columns lists services set forth in the agreement. Right side column shows Mozer characterization of the contract service using terminology of Exhibit HMM-6.

Economy Interchange Power (P. 3)	*Economy Por*
Firm Power and Energy (P. 12)	*Firm Power*
Onpeak and Offpeak Interchange Power (P. 3)	*Emergency Power* and *Maintenance Power*
Short-Term Power and Energy (P. 2)	*Short-Term Power*
Unit Power Entitlement (Inter. Supp. 9/26/71)	*Unit Power, Baseload Power*
Unit Power Entitlement (Inter. Supp. 8/1/72)	*Unit Power, Baseload Power*
Unit Power Entitlement (Inter. Supp. 1/1/73)	*Unit Power, Peaking Power*

23. 17 October 1968 Agreement between West Penn Power Company, Monongahela Power Company, Ohio Edison Company and Pennsylvania Power Company (NRC -223)

a. Amendment No. 1, 1 February 1972
b. Amendment No. 2, 1 June 1973

The agreement provides for the following:

Operating Committee (P. 9)	*Coordinated Operations*
Emergency Service (Sch. A)	*Emergency Power*
Interchange Power and Energy (Sch. B)	*Economy Power* and *Nondisplacement Power*
Short-Term Power and Energy (Sch. C)	*Short-Term Power*

24. 7% May 1969 Power Agreement among the Toledo Edison Company, The Cleveland Electric Illuminating Company, the Duquesne Light Company, Ohio Edison Company, and Pennsylvania Power Company (NRC -224)

a. Amendment No. 1, 26 May 1971

The agreement provides for the following:

Short-Term Power and Energy (P. 3)	*Short-Term Power*
Delivery of Electric Energy (P. 6)	*Transmission Service (Wheeling)*

25. 1 January 1970 Interchange Agreement among Ohio Edison Company, Pennsylvania Power Company and Duquesne Light Company (NRC -225)

a. Interim Supplement, 8 September 1972
b. Interim Supplement, 1 January 1973
c. Two Interim Supplements, 10 July 1973

The agreement provides for the following:

Operating Committee (P. 10)	*Coordinated Operation*
Emergency Service (Sch. A)	*Emergency Power*
Interchange Power and Energy (Sch. B)	*Economy Power* and *Nondisplacement Power*
Short-Term Power and Energy (Sch. C)	*Short-Term Power*
Unit Power Entitlement (Inter. Supp. 9/3/72)	*Unit Power, Peaking Power*
Unit Power Entitlement (Inter. Supp. 1/1/73)	*Unit Power, Peaking Power*
Unit Power Entitlement (Inter. Supp. 7/10/73)	*Unit Power, Peaking Power*

Note: Left side column lists services set forth in the agreement. Right side columns shows Mozer characterization of the contract service using terminology of Exhibit HMM-6.

26. 20 January 1970, 17 March 1970, and 9 June 1970 Letter Agreements between Cleveland Electric Illuminating Company and the Department of Public Utilities, City of Cleveland (NRC -226)

The agreement provides for the following:	
Load Transfer (all)	*Standby Power, Emergency Power and Maintenance Power*

27. 25 July 1972 Interim Agreement between the Cleveland Electric Illuminating Company and the Toledo Edison Company (NRC -227)

The agreement provides for the following:	
Unit Power Entitlement (P. 2)	*Unit Power, Baseload Power*

28. 7 May 1973 Surplus Power Agreement, East Lake Unit #5 between the Cleveland Electric Illuminating Company and the Duquesne Light Company (NRC -228)

The agreement provides for the following:	
Unit Capacity and/or Energy Sales (P. 1)	*Economy Power*

29. 28 August 1973 CAPCO Unit Ownership Agreement (NRC -229)

The agreement provides for the following:	
Jointly Committed Baseload Fossil Generation (all)	*Coordinated Planning and Development*
Jointly Committed Nuclear Generation (all)	*Coordinated Planning and Development*

30. 1 October 1973 Agreement between Ohio Edison Company and Duquesne Light Company (NRC -230)

The agreement provides for the following:	
Unit Power Entitlement (P. 2)	*Unit Power, Peaking Power*

31. 3 October 1973 Agreement between Cleveland Electric Illuminating Company and Ohio Edison Company (NRC -231)

The agreement provides for the following:	
Unit Power Entitlement (P.2)	*Unit Power, Short-Term Power*

32. 10 June 1974 Surplus Power Agreement, East Lake Unit #5 between Cleveland Electric Illuminating Company and Toledo Edison Company (NRC -232)

The agreement provides for the following:	
Unit Capacity and/or Energy Sales (P. 1)	*Economy Power*

Note: Left side column lists services set forth in the agreement. Right side column shows Mozer characterization of the contract service using terminology of Exhibit MMM-6.

33. 1 January 1975 CAPCO Basic Operating Agreement (NRC -233)

The agreement provides for the following:	
Coordinated Operations (all)	*Coordinated Operation*
Replacement Capacity and Replacement Energy (P. 19 & Sch. A)	*Maintenance Power or Emergency Power*
Short-Term Power and Energy (Sch. B)	*Short-Term Power*
Interchange Capacity and Energy (Sch. C)	*Nondisplacement Power*
Economy Interchange of Operating Capacity and/or Energy (Sch. D)	*Economy Power*
Specific Unit Capacity and Energy (Sch. E)	*Unit Power, Baseload Power*

34. 13 January 1975 Interconnection Agreement between Painesville, Ohio, and Cleveland Electric Illuminating Company (NRC -234)

The agreement provides for the following:	
Facilities (P. 2)	*Joint Planning and Development*
Coordination of Operations (P. 3)	*Coordinated Operations*
Emergency Service (Sch. A)	*Emergency Power*
Short-Term Service (Sch. B)	*Short-Term Power*
Limited Term Service (Sch. C)	*Short-Term Power*
Economy Interchange (Sch. D)	*Economy Power*
Coordination of Scheduled Maintenance (Sch. E)	*Maintenance Power*

35. 17 April 1975 CEI - Cleveland Agreement for Installation and Operation of a 138 kV Synchronous Interconnection (NRC -235)

The agreement provides for the following:	
Facilities	*Joint Planning and Development*
Emergency Services (Sch. A)	*Emergency Power*

Note: Left side column lists services set forth in the agreement. Right side column shows Mozer characterization of the contract service using terminology of Exhibit HMM-6.

SUMMARY OF COORDINATION ARRANGEMENTS
Provided for in the Agreements shown on Exhibit HMM-4
(Using Terminology from Exhibit HMM-6)

Baseload Power
Coordinated Operation
Coordinated Planning and Development
Diversity Exchange
Economy Power
Emergency Power
Firm Power
Joint Planning and Development
Maintenance Power
Nondisplacement Power
Nonfirm Power
Reserve Capacity
Short-Term Power
Standby Power
Transmission Services (Wheeling)
Uncontrollable Power Flows
Unit Power

BULK POWER SUPPLY TERMINOLOGY

Baseload Power or Baseload Generation - Those generating resources used to supply power and energy for the lower part of the load cycle, generally up to or slightly above the minimum load demand.

Capacity or Capability - The load for which a generating unit, generating station, or other electrical apparatus is rated either by the user or by the manufacturer.

Coordinated Operation - The cooperative action by two or more electric utilities to operate their electrical systems in a manner intended to achieve mutually the optimum economies and reliability of overall system power supply.

Coordinated Planning and Development - The cooperative action by two or more electric utilities to plan their generation and transmission facilities additions and thenceforth implement those planned additions in a manner intended to achieve mutually the optimum economies and reliability of overall system power supply.

Demand or Load - The rate at which electric energy is delivered or required, usually expressed in kilowatts (kW) or megawatts (MW). Unless otherwise indicated, it is generally understood to mean the average rate over a 1-hour period.

Diversity Exchange - Capacity and/or energy exchange which is possibly due to the difference between coincident and noncoincident demands of two or more systems.

Economy Power - Capacity and/or energy available from source(s) in one system used as a substitute for a less economical source(s) on another system.

Emergency Power - Capacity and energy supplied to a system experiencing breakdown of equipment, unusual load demands, or abnormal conditions resulting in a need for power in excess of that available from its normal power sources.

Energy (Electrical) - The integrated LOAD or DEMAND over a period of time, generally expressed in kilowatt-hours (kWh) or megawatt-hours (MWh).

Firm Power - Capacity and energy intended to have assured availability to the customer to meet all or any agreed-upon portion of its load requirements.

Inadvertent Energy - The difference between net actual energy flow and net scheduled energy flow to or from a system.

Intermediate Load Power or Intermediate Generation - Those generation resources used to supply power and energy for that portion of the load cycle between that supplied by the Base-load and the Peaking Generation.

Joint Planning and Development - The cooperative action by two or more electric utilities to plan specified facility additions and thenceforth to implement those planned additions in a manner intended to achieve mutually certain economic and operational benefits.

Load - See Demand.

Load Cycle - The plotted values of the variation in hourly demands over a period of time.

Maintenance Power - Capacity and/or energy supplied to a system to supplement its power sources during periods of planned outages of generating equipment.

Minimum Load - The minimum demand during a given time period.

Nondisplacement Power - Capacity and/or energy available from surplus capacity in one system supplied to another system which lacks the capacity to supply the energy from its own resources. Supplied for short intervals on an if-and-when-available basis. (Unlike short-term power, the supplying party has no reserve responsibility.)

Nonfirm Power - Capacity and/or energy which does not have assured availability to the customer. Nonfirm power is only as dependable as the source(s) form which it is derived, i.e., it is power without reserve backup.

Offpeak Power - Capacity and/or energy supplied during periods of relatively low sytem demands as specified by the supplier.

Onpeak Power - Capacity and/or energy supplied during periods of relatively high system demands as specified by the supplier.

Peaking Power or *Peaking Generation* - Those generation resources used to supply power and energy for the upper part of the load cycle, generally the upper 15 to 20 percent of the load demand.

Peakload - The maximum demand during a given time period.

Power (Electric) - The time rate of generating, transferring, or using electric energy, usually expressed in kilowatts (kW) or megawatts (MW). Sometimes used broadly to refer to both capacity and energy.

Reserves or *Reserve Capacity* - That portion of generating capacity which is in excess of the load.

Short-Term Power - Firm power, limited in duration according to the terms of individual contracts.

Standby Power - Reserve capacity and energy which is available from one system to replace or supplement another system's normally available power sources.

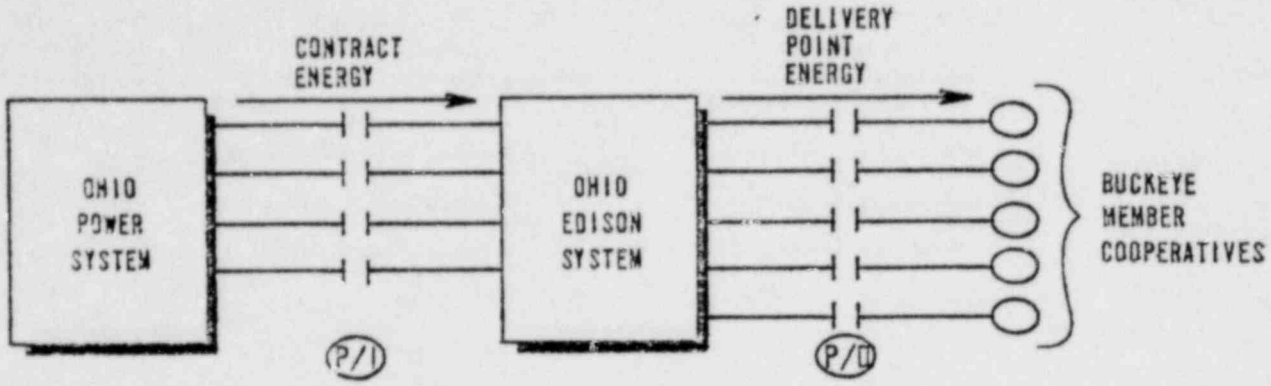
Transmission Service (Wheeling) - An electric operation wherein transmission facilities of one sytem are utilized to transmit power of another system. The term is usually applied to scheduled transactions and not to uncontrollable power flows.

Uncontrollable Power Flows - Unscheduled energy of one system which flows over the transmission facilities of one or more other systems as a natural result of the physical and electrical characteristics of the interconnected network of transmission lines of these systems.

Unit Power - That portion of the output of a particular generating unit to which a system has a contractual right without ownership interest.

Wheeling - See *Transmission Service.*

DIAGRAM OF RELATIONSHIPS IN 20 JUNE 1968 AGREEMENT BETWEEN OHIO POWER COMPANY AND OHIO EDISON COMPANY



⊣⊢ = PHYSICAL INTERCONNECTION BETWEEN ENTITIES

P/I = POINTS OF INTERCONNECTION - INITIALLY 4

P/D = OE DELIVERY POINTS - INITIALLY 25

CONTRACT ENERGY = DELIVERY POINT ENERGY x LOSS CORRECTION FACTOR

NOTES:

1) THE ABOVE DIAGRAM ILLUSTRATES PHYSICAL RELATIONSHIPS.

2) UNDER THE INTERRELATED CONTRACTUAL RELATIONSHIPS, DELIVERY POINT ENERGY IS DELIVERED AT EACH OE DELIVERY POINT BY OE TO OP, OP DELIVERS THIS SAME ENERGY AT THE SAME POINT TO BUCKEYE, AND BUCKEYE SELLS THE ENERGY TO THE ONE OF ITS MEMBERS PHYSICALLY CONNECTED TO OE AT THAT SAME POINT.

Power System Statement of The Cleveland Electric Illuminating Company. for the Year Ended December 31, 1973

Schedule 8

ITEMIZED ACCOUNTING OF ENERGY TRANSFERS WITH OTHER ELECTRIC UTILITY SYSTEMS AND INDUSTRIAL COMPANIES DURING THE YEAR

GENERAL INSTRUCTIONS

1. In this schedule, give an itemized accounting of all energy transfers to and from the facilities of other systems during the year, including gross sales, purchases, interchanges and transfers for resale, whether on a firm, interchange, or any other basis, and all energy received from industrial companies. Group the entries and show subtotals of energy transfers with (a) private systems; (b) municipal and other publicly owned systems; (c) rural cooperatives; and (d) industrial companies (energy received only). Part A is for recording of "In-Load" and borderline energy transfers as found described in the instructions for Part A on Page 20, and Part B on Page 21 is for the recording of all other energy transfers.

2. In column 1, give the name of the system to which the respondent's system is connected at the transfer point. Where the connecting system merely acts as a carrier for energy intended for other systems, state in footnote the names of the other systems involved.

3. In columns 2 and 3, give the location of transfer points in such a manner that they can be identified on the system maps furnished according to schedule 18. By "transfer point" is meant the point at which the reported amounts of energy were transferred to and from the respondent's system.

4. Energy delivered by respondent's system to customers of another system (sometimes known as "border-line customers"), or vice versa (energy delivered to respondent's customers by another system), should be reported in Part "A" and identified by inserting "border-line" in column 2. Border-line deliveries or receipts, except at individual points where the transfer exceeds 5,000,000 kilowatt-hours, may be shown as a total for each other system instead of by each individual delivery point.

5. In column 4, show the symbol "F" for firm power transfers and the symbol "NF" for transfers other than firm.

6. In columns 5 and 6, report total amounts of energy flow in each direction at each transfer point, i. e., the total amounts "delivered" and the total amounts "received" at each transfer point including energy transferred or distributed through the respondent's facilities for delivery to other systems. Do not report the amounts of energy billed, or net transfers, if they differ from total transfers.

7. Firm power for purposes of this schedule is power which is intended to be continuously available for delivery to the purchaser. Other than firm power is power delivered or received on a "when, as, and if, available" basis.

8. Where there are several points of interconnection with another system, and there is no distinction between firm and other than firm energy at individual transfer points, show the total energy received and delivered at each transfer point in columns 5 and 6, and also show a subtotal of the firm transfers and the other than firm transfers with the other system involved.

9. Subtotals and totals of the combined parts A and B should be carried over to section B of schedule 9.

Power System Statement of The Cleveland Electric Illuminating Company for the Year Ended December 31, 1973

Schedule 8—Continued

PART A—ENERGY DELIVERIES TO SPECIFIED SYSTEMS AND ENERGY TRANSACTIONS WITH BORDER-LINE CUSTOMERS

(See Page 19 for General Instructions)

1. Show in column 6 the amounts of energy delivered for resale to each class III and class V system.
2. If the respondent's system delivered energy to customers of another system (sometimes known as "border-line customers") such deliveries also should be included in column 6.
3. If customers of respondent received energy directly from another system for the account of the respondent (border-line receipts), such transfers shall be entered in column 5. If part of the energy deliveries to systems specified in instruction 1 and reported in column 6 are received back into the reporting system through another interconnection, such receipts also should be entered in column 5. All other receipts should be entered in column 5, part B, of schedule 8.
4. Energy delivered by respondent's system to "border-line customers," or vice versa (energy delivered to respondent's customers by another system), should be identified by inserting "border-line" in column 2.
5. Indicate by appropriate notes those systems whose full requirements were supplied by respondent.
6. The totals shown on line 40, column 5 and 6, should be carried over to line 13, columns 5 and 6, respectively, of schedule 14.

Name of Other Company or System (1)	Transfer Point (2)	Coordinate Location or Symbol on Map (3)	Firm (F) or Nonfirm (NF) Transfer (4)	Energy Received (Instruction 3) (Kilowatt-hours) (5)	Energy Delivered (Instructions 1 and 2) (Kilowatt-hours) (6)	
City of Cleveland Department of Public Utilities (Municipal Electric Light & Power)	Various		NF	- 0 -	81,368,346	1
						2
						3
						4
						5
						6
						7
						8
						9
						10
						11
						12
						13
						14
						15
						16
						17
						18
						19
						20
						21
						22
						23
						24
						25
						26
						27
						28
						29
						30
						31
						32
						33
						34
						35
						36
						37
						38
						39
Total				- 0 -	81,368,346	40

Power System Statement of The Cleveland Electric Illuminating Company for the Year Ended December 31, 1973

Schedule 8—Continued

PART B.—OTHER ENERGY TRANSFERS WITH ELECTRIC UTILITY SYSTEMS AND RECEIPTS FROM INDUSTRIAL COMPANIES

(See Page 19 for General Instructions)

1. Report in column 5 all energy (except that reported in Schedule 8, Part A, column 5) received from other electric utility systems and industrial companies.
2. Report in column 6 the amounts of energy delivered for resale to class I and class II systems which obtained a part of their power supply during the year from their own generating plants. Energy delivered to industrial establishments should be reported in Schedule 10 and not in this schedule.
3. Show all points of interconnection through which energy transfers (which would properly be included in Part B) could have been made, whether there were any transfers during the year or not. Where no transfers were made the entries in columns 5 and 6 should be zero.
4. The totals shown on line 40, columns 5 and 6, should be carried over to line 13, columns 3 and 4, respectively, of schedule 14.

Name of Other Company or System (1)	Transfer Point (2)	Coordinate Location or Symbol on Map (3)	Firm (F) or Nonfirm (NF) Transfer (4)	Energy Received (Instruct ion 3) (Kilowatt-Hours) (5)	Energy Delivered (Instruction 3) (Kilowatt-Hours) (6)
PRIVATE SYSTEMS					
Ohio Edison Company	Sheffield Twp., Ohio	AV	F&NF	168,039,000	1,065,401,000
		LR	F&NF	147,000	728,699,000
	Summit Co. Line, Ohio	PV	F&NF	128,303,000	58,948,000
	Richfield Twp. &Rootstown Twp. Ohio	JR	F&NF	1,017,174,000	434,514,000
Ohio Power Company	Osnaburg Twp. Ohio	JR	NF	1,225,483,000	361,000
Pennsylvania-New Jersey Maryland Group	Ohio - Pa. State Line	JS	NF	564,681,000	462,542,000 (1)
					(1,117,453,000)
Total				3,103,[illegible],000	2,[illegible],000 (2)

(1) Energy delivered to Duquesne Light Co. as their share of the generation of the jointly owned Eastlake #5 Unit which is operated by CEI and located in the respondent's service area. The energy to Duquesne, which flows through various transfer points, is excluded from the total energy delivered to interconnections by the respondent (line 40).

(2) Total energy delivered (line 40) includes firm transfers for Toledo Edison Co., Duquesne Light Co., and Ohio Edison Co. delivered to various transfer points with Ohio Edison.

P System Statement of The Cleveland Electric Illuminating Company for the Year Ended December 31, 1973

Schedule 9

SYSTEM ENERGY ACCOUNTING FOR THE YEAR

(1)	Kilowatt-hours Generated and received (2)	Kilowatt-hours Delivered (3)	
A. Net Generation of System Plants (from column 8, line 36, schedule 1)	17,326,640,000	x x x x x x	1
B. Summary of Energy Transfers With Other Systems: (from schedule 8, part A plus part B) -			
(1) Private systems	3,103,827,000	2,173,312,000	2
(2) Municipal and other publicly owned systems		81,368,346	3
(3) Rural cooperatives			4
(4) Industrial companies		x x x x x x	5
Total (lines 2 to 5, inclusive)	3,103,827,000	2,254,680,346	6
C. Net Energy for System (generation plus energy received, less energy delivered)	18,175,726,654	x x x x x x	7
D. Total Energy Delivered to Ultimate Consumers[1] (Should agree with line 9, Schedule 10)	17,072,461,061	x x x x x x	8
E. Transmission and Distribution Losses and Energy Unaccounted for (line 7 minus line 8)[2]	1,103,325,593	x x x x x x	9

[1] Exclusive of "border line" deliveries to customers of other utilities and inclusive of "border line" receipts from other utilities.
[2] Exclude company and interdepartmental deliveries. Such deliveries should be included in Schedule 10.

Schedule 10

ENERGY DELIVERED TO ULTIMATE CONSUMERS

(Exclusive of "border line" deliveries to customers of other utilities)

INSTRUCTIONS

The energy use classifications employed in this schedule are defined or clarified below for those classifications which may not be self-explanatory.

FARM, EXCLUDING IRRIGATION AND DRAINAGE PUMPING.—In order to facilitate reporting this classification of energy, farm may be defined in accordance with respondent's own interpretation. For guidance, the Bureau of the Census' definition of a farm may for the purposes herein be redefined briefly as a tract of land of ten acres or more (less than three acres if value of products sold is $250 or more for the year) on which agricultural operations are performed; the land operated by each tenant, renter, cropper, or manager is considered a separate farm. Respondent should report farms served rather than farm dwellings served in the column for number of customers. Estimates should be furnished for this classification if exact information is not available.

IRRIGATION AND DRAINAGE PUMPING.—Estimates should be furnished for this classification if exact information is not available.

NONFARM-RESIDENTIAL.—Energy supplied for nonfarm-residential and domestic purposes, including cooking and water heating. Where electric energy was supplied through a single meter for both residential and commercial purposes include it in the one or the other according to its principal use. Exclude energy supplied to farm customers.

ELECTRIFIED TRANSPORTATION.—Energy supplied for the propulsion of cars, locomotives, or coaches. Energy for office buildings, depots, shops, signal lights, etc., should be reported under "Commercial" or "Industrial," as appropriate.

ALL OTHER.—Energy delivered for consumption that does not fall within any of the specific classifications listed in this schedule. Included in this group should be deliveries for municipal water pumping, oil and gas pipe line pumping, military camps and bases, and public buildings such as schools, police stations, and post offices.

Classification of Energy Delivered to Ultimate Consumers[1] (1)	Number of Customers at End of Year[2] (2)	Kilowatt-hours (3)	
Farm, excluding irrigation and drainage pumping	Not Available *		1
Irrigation and drainage pumping	-	-	2
Nonfarm-residential	618,266	3,910,018,237	3
Commercial	52,291	3,569,688,899	4
Industrial	7,415	9,103,172,391	5
Street and highway lighting	265	135,303,169	6
Electrified transportation	1	29,366,386	7
All Other (give details, if relatively large) Including Company Use	184	324,910,879	8
Total Energy Delivered to Ultimate Consumers (should agree with line 8, schedule 9)	678,422	17,072,461,061	9

[1] Exclude company and interdepartmental deliveries in proper use classification.
[2] Not to sum for number of farms, residences, commercial establishments, etc., and not to sum for number of meters where different.

* Respondent serves farms under regular rate schedules of the company and maintains no summary of farm data. Farms represent an insignificant part of the

Rev. 12-64)

Annual report of THE CLEVELAND ELECTRIC ILLUMINATING COMPANY Year ended December 31, 1973

TRANSMISSION OF ELECTRICITY FOR OR BY OTHERS (Accounts 456 and 565)
(Including transactions sometimes referred to as "wheeling")

1. Describe below and give particulars of any transactions by respondent during the year for transmission of electricity for or by others during year, including transactions sometimes referred to as wheeling.

2. Provide separate subheadings for: (a) Transmission of Electricity for Others (included in Account 456) and (b) Transmission of Electricity by Others (Account 565).

3. Furnish the following information in the space below concerning each transaction:

(a) Name of company and description of service rendered or received. Designate associated companies.

(b) Points of origin and termination of service specifying also any transformation service involved.

(c) Kwh received and Kwh delivered.

(d) Monetary settlement received or paid and basis of settlement, included in Account 456 or 565.

(e) Nonmonetary settlement, if any, specifying the Kwh representing compensation for the service, specifying whether such power was firm power, dump or other power, and state basis of settlement. If nonmonetary settlement was other than Kwh describe the nature of such settlement and basis of determination.

(f) Other explanations which may be necessary to indicate the nature of the reported transactions. Include in such explanations a statement of any material services remaining to be received or furnished at end of year and the accounting recorded to avoid a possible material distortion of reported operating income for the year.

None

Schedule 8

ITEMIZED ACCOUNTING OF ENERGY TRANSFERS WITH OTHER ELECTRIC UTILITY SYSTEMS AND INDUSTRIAL COMPANIES DURING THE YEAR

GENERAL INSTRUCTIONS

1. In this schedule, give an itemized accounting of all energy transfers to and from the facilities of other systems during the year, including gross sales, purchases, interchanges and transfers for resale, whether on a firm, interchange, or any other basis, and all energy received from industrial companies. Group the entries and show subtotals of energy transfers with (a) private systems; (b) municipal and other publicly owned systems; (c) rural cooperatives; and (d) industrial companies (energy received only). Part A is for recording of "In-Load" and borderline energy transfers as found described in the instructions for Part A on Page 20, and Part B on Page 21 is for the recording of all other energy transfers.

2. In column 1, give the name of the system to which the respondent's system is connected at the transfer point. Where the connecting system merely acts as a carrier for energy intended for other systems, state in footnote the names of the other systems involved.

3. In columns 2 and 3, give the location of transfer points in such a manner that they can be identified on the system maps furnished according to schedule 18. By "transfer point" is meant the point at which the reported amounts of energy were transferred to and from the respondent's system.

4. Energy delivered by respondent's system to customers of another system (sometimes known as "border-line customers"), or vice versa (energy delivered to respondent's customers by another system), should be reported in Part "A" and identified by inserting "border-line" in column 2. Border-line deliveries or receipts, except at individual points where the transfer exceeds 5,000,000 kilowatt-hours, may be shown as a total for each other system instead of by each individual delivery point.

5. In column 4, show the symbol "F" for firm power transfers and the symbol "NF" for transfers other than firm.

6. In columns 5 and 6, report total amounts of energy flow in each direction at each transfer point, i. e., the total amounts "delivered" and the total amounts "received" at each transfer point including energy transferred or displaced through the respondent's facilities for delivery to other systems. Do not report the amounts of energy billed, or net transfers, if they differ from total transfers.

7. Firm power for purposes of this schedule is power which is intended to be continuously available for delivery to the purchaser. Other than firm power is power delivered or received on a "when, as, and if, available" basis.

8. Where there are several points of interconnection with another system, and there is no distinction between firm and other than firm energy at individual transfer points, show the total energy received and delivered at each transfer point in columns 5 and 6, and also show a subtotal of the firm transfers and the other than firm transfers with the other system involved.

9. Subtotals and totals of the combined parts A and B should be carried over to section B of schedule 9.

NOTES - SCHEDULE 8 - PART B

Column (2) Transfer Point

1. Mitchell Power Station, Courtney, Washington County, Pa.
2. West Virginia-Pennsylvania State Line, approximately 8 miles from Tidd Station
3. Daugherty-North Sewickley Township Line, Beaver County, Pa.
4. Shippingport Boro, Pa., approximately 2 miles from Beaver Valley Substation
5. Sammis Power Station, Stratton, Ohio
6. St. Joe Minerals Corp. plant at Josephtown, Beaver County, Pa.

Power System Statement of..... Duquesne Light Company .....for the Year Ended December 31, 1973

Schedule 8—Continued

PART A.—ENERGY DELIVERIES TO SPECIFIED SYSTEMS AND ENERGY TRANSACTIONS WITH BORDER-LINE CUSTOMERS.

(See Page 19 for General Instructions)

1. Show in column 6 the amounts of energy delivered for resale to each class III and class V system.
2. If the respondent's system delivered energy to customers of another system (sometimes known as "border-line customers") such deliveries also should be included in column 6.
3. If customers of respondent received energy directly from another system for the account of the respondent (border-line receipts), such transfers shall be entered in column 5. If part of the energy deliveries to systems specified in instruction 1 and reported in column 6 are received back into the reporting system through another interconnection, such receipts also should be entered in column 5. All other receipts should be entered in column 5, part B, of schedule 8.
4. Energy delivered by respondent's system to "border-line customers," or vice versa (energy delivered to respondent's customers by another system), should be identified by inserting "border-line" in column 2.
5. Indicate by appropriate notes those systems whose full requirements were supplied by respondent.
6. The totals shown on line 40, column 5 and 6, should be carried over to line 13, columns 5 and 6, respectively, of schedule 14.

Name of Other Company or System (1)	Transfer Point (2)	Coordinate Location or Symbol on Map (3)	Firm (F) or Nonfirm (NF) Transfer (4)	Energy Received (Instruction 3) (Kilowatt-hours) (5)	Energy Delivered (Instructions 1 and 2) (Kilowatt-hours) (6)	
(a) Private Systems						1
						2
						3
West Penn Power Co.	Borderline		F			4
Aloe Coal Company		H-5		35,084	None	5
						6
Crystal Springs		F-15		30,240	None	7
						8
Darling Company		H-5		739,040	None	9
						10
Scott Brothers		H-5		5,664	None	11
						12
(b) Municipal Systems	Borough of Pitcairn	J-14		None	9,239,200	13
						14
(c) Rural Cooperatives				None	None	15
						16
(d) Industrial Companies				None	None	17
						18
						19
						20
						21
						22
						23
						24
						25
						26
						27
						28
						29
						30
						31
						32
						33
						34
						35
						36
						37
						38
						39
Total.....				810,028	9,239,200	40

Power System Statement of Duquesne Light Company for the Year Ended December 31, 1973

Schedule 8—Continued

PART B.—OTHER ENERGY TRANSFERS WITH ELECTRIC UTILITY SYSTEMS AND RECEIPTS FROM INDUSTRIAL COMPANIES.

(See Page 19 for General Instructions)

1. Report in column 5 all energy (except that reported in Schedule 8, Part A, column 5) received from other electric utility systems and industrial companies.
2. Report in column 6 the amounts of energy delivered for resale to class I and class II systems which obtained a part of their power supply during the year from their own generating plants. Energy delivered to industrial establishments should be reported in Schedule 10 and not in this schedule.
3. Show all points of interconnection through which energy transfers (which would properly be included in Part B) could have been made, whether there were any transfers during the year or not. Where no transfers were made the entries in columns 5 and 6 should be zero.
4. The totals shown on line 40, columns 5 and 6, should be carried over to line 13, columns 3 and 4, respectively, of schedule 14.

Name of Other Company or System (1)	Transfer Point (2)	Coordinate, Location or Symbol on Map (3)	Firm (F) Nonfirm (NF) Transfer (4)	Energy Received (Instruction 1) (Kilowatt-hours) (5)	Energy Delivered (Instruction 2) (Kilowatt-hours) (6)	
(a) Private Systems	(See Notes-p.19)					1
West Penn Power Co.	1	M-11	F	69,538,000	4,450,000	2
D.L. Share-Ft. Mart #1	1		F	1,759,013,000	-	3
	1		NF	102,393,000	60,961,000	4
Inadvertent	1		NF	(913,358,000)	(57,076,000)	5
Total Energy Transfer	1		✓	1,017,566,000	8,335,000	6
						7
Ohio Power Company	2	M-1	F	41,983,000	-	8
	2		NF	29,736,000	9,481,000	9
Inadvertent	2		NF	1,623,342,000	(9,481,000)	10
Total Energy Transfer	2		✓	1,695,061,000	-	11
						12
Ohio Ed.-Pa.Pwr.Sys.	3,4,5		F	50,055,000	-	13
D.L. Share-Samms #7	3,4,5		F	790,849,000	-	14
	3,4,5		NF	46,723,000	51,157,000	15
Inadvertent	3,4,5		NF	1,942,229,000	1,560,179,000	16
Total Energy Transfer	3,4,5		✓	2,829,856,000	1,611,336,000	17
						18
						19
Ohio Ed.-Pa. Pwr. Sys.						20
Energy Transfer	3	A-5		15,877,000	12,034,000	21
Energy Transfer	4	D-2		-	1,599,302,000	22
Energy Transfer	5	E-1		2,813,979,000	-	23
Total Energy Transfer	3,4,5		✓	2,829,856,000	1,611,336,000	24
						25
Cleveland Elec.Ill. Co.			NF	-	775,000	26
D.L. Share-Eastlake #5			F	1,117,453,000	-	27
D.L. Share-Eastlake #6			F	90,000	-	28
			NF	171,000	-	29
Inadvertent				(1,117,714,000)	(775,000)	30
Total Energy Transfer *				0	0	31
						32
Toledo Edison Co.			F	41,692,000	-	33
Inadvertent				(41,692,000	0	34
Total Energy Transfer *				0	0	35
						36
						37
	(Continued)					38
						39
Total						40

Power System Statement of Duquesne Light Company for the Year Ended December 31, 1973

Schedule 8—Continued

PART B—OTHER ENERGY TRANSFERS WITH ELECTRIC UTILITY SYSTEMS AND RECEIPTS FROM INDUSTRIAL COMPANIES.

(See Page 19 for General Instructions)

1. Report in column 5 all energy (except that reported in Schedule 8, Part A, column 5) received from other electric utility systems and industrial companies.
2. Report in column 6 the amounts of energy delivered for resale to class I and class II systems which obtained a part of their power supply during the year from their own generating plants. Energy delivered to industrial establishments should be reported in Schedule 10 and not in this schedule.
3. Show all points of interconnection through which energy transfers (which would properly be included in Part B) could have been made, whether there were any transfers during the year or not. Where no transfers were made the entries in columns 5 and 6 should be zero.
4. The totals shown on line 40, columns 5 and 6, should be carried over to line 13, columns 3 and 4, respectively, of schedule 14.

Name of Other Company or System (1)	Transfer Point (2)	Coordinate Location or Symbol on Map (3)	Firm (F) or Nonfirm (NF) Transfer (4)	Energy Received (Instruction 1) (Kilowatt-hours) (5)	Energy Delivered (Instruction 2) (Kilowatt-hours) (6)
Other					
** Duquesne Light Co.	BI Comb. Turb. 2A,2B, 3		NF	9,698,000	-
23KV Inadvertent			NF	25,000	71,000
Subtotal-Private Systems				5,552,226,000	1,619,742,000
Less D.L. Share of Ft. Mart. #1 Sammis #7, Eastlake #5 & Eastlake #6				3,667,405,000	0
Total Private Systems				1,884,821,000	1,619,742,000
(b) Municipal Systems				None	None
(c) Rural Cooperatives				None	None
(d) Industrial Companies					
St. Joe Minerals Corp.	6			85,936,000	None
Total				1,970,757,000	1,619,742,000

* Duquesne Light Company interconnects indirectly through CAFCO Ties
** Generation during preliminary operation recorded as purchase power

Power System Statement of.....Duquesne Light Company.....for the Year Ended December 31, 1973

Schedule 9
SYSTEM ENERGY ACCOUNTING FOR THE YEAR

(1)	Kilowatt-hours Generated and received (2)	Kilowatt-hours Delivered (3)	
A. Net Generation of System Plants (from column 8, line 36, schedule 1)	12,978,538,001	xxxxxx	1
B. Summary of Energy Transfers With Other Systems: (from schedule 8, part A plus part B):			
(1) Private systems	1,885,631,028	1,619,742,000	2
(2) Municipal and other publicly owned systems	-	9,239,200	3
(3) Rural cooperatives			4
(4) Industrial companies	85,936,000	xxxxxx	5
Total (lines 2 to 5, inclusive)	1,971,567,028	1,628,981,200	6
C. Net Energy for System (generation, plus energy received, less energy delivered)	13,321,123,829	xxxxxx	7
D. Total Energy Delivered to Ultimate Consumers[1] (Should agree with line 9, Schedule 10)	12,576,671,911	xxxxxx	8
E. Transmission and Distribution Losses and Energy Unaccounted for (line 7 minus line 8)[2]	744,451,918	xxxxxx	9

[1] Exclusive of "border line" deliveries to customers of other utilities and inclusive of "border line" receipts from other utilities.
[2] Exclude company and interdepartmental deliveries, such deliveries should be included in Schedule 10.

Schedule 10
ENERGY DELIVERED TO ULTIMATE CONSUMERS
(Exclusive of "border line" deliveries to customers of other utilities)

INSTRUCTIONS

The energy use classifications employed in this schedule are defined or clarified below for those classifications which may not be self-explanatory

FARM, EXCLUDING IRRIGATION AND DRAINAGE PUMPING.—In order to facilitate reporting this classification of energy, farm may be defined in accordance with respondent's own interpretation. For guidance, the Bureau of the Census' definition of a farm may for the purposes herein be redefined briefly as a tract of land of ten acres or more (less than three acres if value of products sold is $250 or more for the year) on which agricultural operations are performed; the land operated by each tenant, renter, cropper, or manager is considered a separate farm. Respondent should report farms served rather than farm dwellings served in the column for number of customers. Estimates should be furnished for this classification if exact information is not available.

IRRIGATION AND DRAINAGE PUMPING.—Estimates should be furnished for this classification if exact information is not available

NONFARM-RESIDENTIAL.—Energy supplied for nonfarm-residential and domestic purposes, including cooking and water heating. Where electric energy was supplied through a single meter for both residential and commercial purposes include it in the one or the other, according to its principal use. Exclude energy supplied to farm customers.

ELECTRIFIED TRANSPORTATION.—Energy supplied for the propulsion of cars, locomotives, or coaches. Energy for office buildings, depots, shops, signal lights, etc., should be reported under "Commercial" or "Industrial," as appropriate

ALL OTHER.—Energy delivered for ultimate consumption that does not fall within any of the specific classifications listed in this schedule. Included in this group should be deliveries for municipal water pumping, oil and gas pipe line pumping, military camps and bases; and public buildings such as schools, police stations, and post offices

Classification of Energy Delivered to Ultimate Consumers[1] (1)	Number of Customers at End of Year[2] (2)	Kilowatt-hours (3)	
Farm, excluding irrigation and drainage pumping	500	2,462,556	1
Irrigation and drainage pumping	None	None	2
Nonfarm-residential	471,141	2,607,846,554	3
Commercial	45,971	3,623,483,894	4
Industrial	1,766	6,196,075,345	5
Street and highway lighting	1,851	108,691,682	6
Electrified transportation	5	14,469,800	7
All Other (give details, if relatively large)	-	23,642,080	8
Total Energy Delivered to Ultimate Consumers (should agree with line 8, schedule 9)	521,234	12,576,671,911	9

[1] Include company and interdepartmental deliveries in proper use classification.
[2] Report number of farms, residences, commercial establishments, etc., and not the number of meters where different.

EXHIBIT HHH - 8J1

Annual report of Duquesne Light Company Year ended December 31 19 73

TRANSMISSION OF ELECTRICITY FOR OR BY OTHERS (Accounts 456 and 565)
(Including transactions sometimes referred to as "wheeling")

1. Describe below and give particulars of any transactions by respondent during the year for transmission of electricity for or by others during year, including transactions sometimes referred to as wheeling.

2. Provide separate subheadings for: (a) Transmission of Electricity for Others (included in Account 456) and (b) Transmission of Electricity by Others (Account 565).

3. Furnish the following information in the space below concerning each transaction:

(a) Name of company and description of service rendered or received. Designate associated companies.

(b) Points of origin and termination of service specifying also any transformation service involved.

(c) Kwh received and Kwh delivered.

(d) Monetary settlement received or paid and basis of settlement, included in Account 456 or 565.

(e) Nonmonetary settlement, if any, specifying the Kwh representing compensation for the service, specifying whether such power was firm power, dump or other power, and state basis of settlement. If nonmonetary settlement was other than Kwh describe the nature of such settlement and basis of determination.

(f) Other explanations which may be necessary to indicate the nature of the reported transactions. Include in such explanations a statement of any material services remaining to be received or furnished at end of year and the accounting recorded to avoid a possible material distortion of reported operating income for the year.

1. (a) Transmission of Respondent's electric power and energy by Monongahela Power Company and West Penn Power Company (charged to Account 565 - Transmission of Electricity by Others).

(b) Point of origin: Ft. Martin Power Station Unit No. 1, located at Maidsville, Monongalia County, West Virginia, owned by Duquesne Light Company (50%), Monongahela Power Company (25%) and The Potomac Edison Company (25%), as tenants in common.

Point of termination: - Firoma-Mitchell interconnection between Respondent and West Penn Power Company and/or the systems of other electric utilities directly interconnected with Respondent or to such other point or points as may from time to time be agreed upon.

(c) 1,759,013,000 Kwhr received by Respondent.

(d) Paid to West Penn Power Company	$550,806
Paid to Monongahela Power Company	100,182
Total	$650,988

(e) None

(f) Transmission of Respondent's share of power and energy from Ft. Martin Power Station Unit No. 1 pursuant to Agreement dated March 15, 1967 among Respondent, Monongahela Power Company and West Penn Power Company. West Penn Power Company Rate Schedule FPC No. 23; Monongahela Power Company Rate Schedule FPC No. 26.

EXHIBIT HMM - 8J2

2. Respondent, The Cleveland Electric Illuminating Company, Ohio Edison Company, Pennsylvania Power Company and The Toledo Edison Company are parties to the CAPCO Transmission Facilities Agreement dated as of September 24, 1967 which provides for construction, operation and maintenance of an adequate transmission network to permit the five companies that are parties to the agreement to utilize their respective capacity entitlements in various jointly committed generating units, for effective coordination of the operations of the CAPCO companies among themselves and with other systems, power pools and coordination groups, and for the equitable sharing by the parties of the resulting benefits and responsibilities.

The Agreement provides that each party will own all the transmission facilities located in its service area, and each party will bear an agreed equitable share of the total cost of CAPCO transmission facilities. A party's share will be borne, as appropriate, by ownership and operation of CAPCO Lines, and by the net effect of payments made by such party to others with respect to Investment Responsibility for lines owned by such others and receipt of payments from other parties having Investment Responsibility in lines owned by such party.

During 1973 respondent made the following payments pursuant to the CAPCO Transmission Facilities Agreement (charged to Account 565 - Transmission of Electricity by Others):

To Ohio Edison Company	$ 36,618
To The Cleveland Electric Illuminating Company	$484,716

During 1973 respondent received the following payments pursuant to the CAPCO Transmission Facilities Agreement (credited to Account 454 - Rent from Electric Property):

From The Cleveland Electric Illuminating Company	$926,130
From The Toledo Edison Company	$305,892
From Pennsylvania Power Company	$328,053

The CAPCO Transmission Facilities Agreement was accepted for filing with the Federal Power Commission on September 7, 1972.

EXHIBIT HHM - 8k1

Power System Statement of Ohio Edison Company for the Year Ended December 31, 1973

Schedule 6—Continued

PART A—ENERGY DELIVERED TO UNITED SYSTEMS AND ENERGY TRANSACTIONS WITH BORDER-LINE CUSTOMERS

(See Page 19 for General Instructions)

1. Show in column 6 the amounts of energy delivered for resale to each class III and class V system.
2. If the respondent's system delivered energy to customers of another system (sometimes known as "border-line customers") such deliveries should be reported as indicated in column 6.
3. If customers of the respondent received energy directly from another system for the account of the respondent (border-line receipts), such receipts should be reported in column 5. If any of the energy delivered to systems reported in column 6 was received from the reporting system through one or more interconnection, such receipts should be entered in column 5 and the energy delivered as entered in column 3, part B, of schedule 6.
4. Energy delivered by respondent's system to "border-line customers," or vice versa (energy delivered to respondent's customers by another system), should be identified by including "Border-line" in column 2.
5. Indicate by appropriate notes those systems where full requirements were supplied by respondent.
6. The totals shown on line 40, column 5 and 6, should be carried over to line 13, columns 5 and 6, respectively, of schedule 16.

Name of Other Company or System (1)	Transfer Point (2)	Contract Firm (F) or Dump (D) Energy (3)	Transfer (4)	Energy Received (In Kilowatt-hours) (5)	Energy Delivered (In Kilowatt-hours) (6)	
City of Amherst		12H	F		34,530,000	1
Village of Beach City		12H	F		5,389,200	2
Village of Brewster		12H	F		9,352,000	3
Village of Columbiana		12H	F		22,842,000	4
City of Cuyahoga Falls		12H	F		220,512,000	5
City of Galion		12H	F		88,800,000	6
Village of Grafton		12H	F		6,193,600	7
City of Hubbard		12H	F		30,144,000	8
Village of Hudson		12H	F		56,856,000	9
Village of Lodi		12H	F		15,969,000	10
Village of Lucas		12H	F		2,499,730	11
Village of Milan		12H	F		22,540,000	12
Village of Monroeville		12H	F		11,200,800	13
City of Niles		12H	F		151,536,000	14
City of Oberlin		12H	F		17,412,000	15
Village of Prospect		12H	F		5,730,400	16
Village of Seville		12H	F		12,484,800	17
Village of South Vienna		12H	F		2,543,400	18
City of Wadsworth		12H	F		81,954,000	19
City of Wellington		12H	F		34,810,000	20
					833,308,950	21
						22
						23
						24
						25
						26
						27
						28
						29
						30
						31
						32
						33
						34
						35
						36
						37
						38
						39
Total						40

Note: Each of the above municipal systems except the City of Oberlin receives its entire electrical requirement from the reppondent.

Rev. (12-65)

Power System Statement of Ohio Edison Company for the Year Ended December 31, 1973

Schedule 8—Continued

PART A.—ENERGY DELIVERIES TO SPECIFIED SYSTEMS AND ENERGY TRANSACTIONS WITH BORDER-LINE CUSTOMERS

(See Page 19 for General Instructions)

1. Show in column 6 the amounts of energy delivered for resale to each [illegible] and class V system.
2. If the respondent's system delivered energy to customers of another system (sometimes known as "border-line customers"), such deliveries also should be included in column 6.
3. If customers of respondent received energy directly from another system for the account of the respondent (border-line receipts), such transfers shall be entered in column 5. If part of the energy deliveries to systems specified in instruction 1 and reported in column 6 are received back into the respondent system through another interconnection, such receipts also should be entered in column 5. All other receipts should be entered in column 5, part B, of schedule 8.
4. Energy delivered by respondent's system to "border-line customers," or vice versa (energy delivered to respondent's customers by another systems), should be identified by inserting "B.L." before "Sub." in column 2.
5. Indicate by appropriate notes those systems whose full requirements were supplied by respondent.
6. The totals shown on line 40, column 5 and 6, should be carried over to line 13, columns 5 and 6, respectively, of schedule 14.

Name of Other Company or System (1)	Transfer Point (2)	Contractual Reference (Rate Schedule or Tariff Number) on File (3)	Firm (F) or Interruptible (I) Transfer (4)	Energy Received (Instruction 3) (Kilowatt-Hours) (5)	Energy Delivered (Instructions 1 and 2) (Kilowatt-Hours) (6)	
Ohio Power (Buckeye Metering Points)						1
	Hartford Sub.	14F	F		9,801,600	2
	Oxford Sub.	14F	F		11,745,600	3
	Scioto Sub.	14F	F		9,578,400	4
	Ashland Sub.	10F	F		14,088,000	5
	Coulter Sub.	12F	F		5,721,600	6
	Jeromaville Sub.	12F	F		5,334,000	7
	Fitchville Sub.	9F	F		9,738,000	8
	Steuben Sub.	9F	F		9,936,400	9
	Lakeside Sub.	6F	F		2,670,000	10
	W. Salem Sub.	12F	F		16,617,600	11
	Baird Road Sub.	9F	F		10,983,600	12
	Durbank Sub.	12F	F		4,201,200	13
	Central Sub.	9F	F		23,728,800	14
	Nova Sub.	9F	F		7,830,000	15
	Repp Sub.	12F	F		13,596,000	16
	Robson Rd. Sub.	9F	F		13,838,400	17
	Sullivan Sub.	12F	F		12,902,400	18
	Brownstown Sub.	14F	F		3,978,000	19
	Edison Sub.	14F	F		11,659,200	20
	Harvey Sub.	14F	F		8,932,800	21
	Meeker Sub.	14F	F		6,134,400	22
	Uncapher Sub.	14F	F		6,236,400	23
	Debolt Sub.	14F	F		7,645,200	24
	Harmony Sub.	14F	F		18,304,800	25
	Snyder Sub.	14F	F		21,780,000	26
	Yankee Sub.	14F	F		14,402,400	27
	New London Sub.	9F	F		15,714,000	28
	Mifflin Sub.	12F	F		2,630,400	29
	Total Metered				299,779,200	30
	Suspense Balance as of 12-31-73				* 9,034,800	31
	Schedule deliveries in 1973				308,814,000	32
						33
						34
						35
						36
						37
						38
						39
Total					1,140,122,950	40

Note: Under a contract between Respondent and Ohio Power Company dated June 20, 1968, which became effective August 1, 1970, with respect to electric energy for ultimate use by rural electric cooperatives (RECs), who are members of Buckeye Power, Inc., Ohio Edison Company purchases energy from Ohio Power Company for delivery to Ohio Power Company at the above listed points.

Power System Statement of Ohio Edison Company for the Year Ended December 31, 1973

Schedule 8—Continued

PART B—OTHER ENERGY TRANSFERS WITH ELECTRIC UTILITY SYSTEMS AND RECEIPTS FROM INDUSTRIAL COMPANIES

(See Page 19 for General Instructions)

1. Report in column 5 all energy (except that reported in Schedule 8, Part A, column 5) received from other electric utility systems and industrial companies.
2. Report in column 6 the amounts of energy delivered for resale to class I and class II systems which obtained a part of their power supply during the year from their own generating plants. Energy delivered to industrial establishments should be reported in Schedule 10 and not in this schedule.
3. Show all points of interconnection through which energy transfers (which would properly be included in Part B) could have been made, whether there were any transfers during the year or not. Where no transfers were made the entries in columns 5 and 6 should be zero.
4. The totals shown on line 40, columns 5 and 6, should be carried over to line 13, columns 3 and 4, respectively, of schedule 14.

Name of Other Company or System (1)	Transfer Point (2)	Coordinate Location or Symbol on Map (3)	Firm (F) or Non-firm (NF) Transfer (4)	Energy Received (See Footnote 1) (Kilowatt-hours) (5)	Energy Delivered (See Footnote 2) (Kilowatt-hours) (6)	
The Cleveland Elect. Illum. Co.	345KV Juniper Sub.	1F	F-NF	10,305,000	983,827,000	1
	345KV Avon-Beaver	9F	F-NF	1,605,401,000	168,039,000	2
	345KV Hanna-Juniper	1F	F-NF	25,471,000	859,731,000	3
	345KV Hanna-Canton Cent.	1F	F-NF	1,225,483,000	361,000	4
	138KV Summit-Cuyahoga	County Line (W) 1F	F-NF	46,011,000	33,776,000	5
	138KV Summit-Cuyahoga	County Line (E) 1F	F-NF	12,137,000	94,527,000	6
	138KV Johnson Sub.	9F	F-NF	720,000,000	147,000	7
Total Cleveland Electric Illum. Co.				3,634,607,000	2,140,408,000	8
Columbus&S.Ohio Elec.Co.	138KV London-Beatty	18F	F-NF	247,000,000	196,000	9
	138KV Delaware-Tangy	14F	F-NF	555,933,000	-	10
	40KV W. Jefferson	18F	F	4,301,000	-	11
Total Columbus & S. Ohio Elec. Co.				808,070,000	196,000	12
The Dayton Power & Light Co.						13
	138KV E.Spfld-Greene	18F	F-NF	357,826,000	260,000	14
	69KV Enon	18F	NF	-	-	15
Total Dayton Power & Light Co.				357,826,000	260,000	16
Ohio Power Co.	345KV Tidd-Wylie Ridge	12H	F-NF	329,560,000	38,593,000	17
	345KV South Canton	16F	F-NF	2,000	1,367,538,000	18
	138KV Canton Central	4F	F-NF	78,584,000	141,412,000	19
	138KV W.Canton-S.Akron	1F	F-NF	225,943,000	278,000	20
	138KV Torrey-Massillon	16F	F-NF	126,247,000	74,135,000	21
	138KV Howard-Ashland	12F	F-NF	100,000	412,299,000	22
	69KV Howard-Longview	12F	F-NF	7,192,000	-	23
	34.5KV Wooster Jct.	16F	NF	673,000	3,000	24
	12.5KV Galion	14F	F	2,497,800	-	25
	34.5KV Meeker-Brownstown	14F	F	9,886,000	-	26
	23KV Ross Sub.	16F	NF	-	-	27
	Myers Lake	16F	F	1,231,200	-	28
	345KV Galion Sub.	14F	NF	683,502,000	1,156,000	29
Total Ohio Power Co.				1,465,415,000	2,035,460,000	30
Toledo Edison Co.	138KV Ottawa Sub.	6F	F-NF	60,929,000	229,670,000	31
	34.5KV Clyde-Bellevue	6F	NF	3,051,000	19,000	32
	34.5KV Brugger-Castalia	6F	NF	66,000	42,000	33
Total Toledo Edison Co.				64,046,000	229,731,000	34
Total Ohio Utilities				6,349,957,000	4,405,015,000	35
Monongahela Pwr.Co.	345KV Sammis-Wylie Ridge	12H	F-NF	346,000,000	576,314,000	36
Pennsylvania Power Co.	(For details see (21)b		F-NF	1,123,579,114	377,462,000	37
Duquesne Light Co.	345KV Sammis-Beaver Valley	12H	F-NF	-	2,313,000,000	38
Total	Total Public Utilities Metered			7,820,531,114	7,673,791,000	39
						40

Continued on Page (21)a

Power System Statement of Ohio Edison Company for the Year Ended December 31, 1973

Schedule 8—Continued

PART B.—OTHER ENERGY TRANSFERS WITH ELECTRIC UTILITY SYSTEMS AND RECEIPTS FROM INDUSTRIAL COMPANIES

(See Page 19 for General Instructions)

1. Report in column 5 all energy (except that reported in Schedule 8, Part A, column 5) received from other electric utility systems and industrial companies.
2. Report in column 6 the amounts of energy delivered for resale to class I and class II systems which obtained a part of their power supply during the year from their own generating plants. Energy delivered to industrial establishments should be reported in Schedule 10 and not in this schedule.
3. Show all points of interconnection through which energy transfers (which would properly be included in Part B) could have been made, whether there were any transfers during the year or not. Where no transfers were made the entries in columns 5 and 6 should be zero.
4. The totals shown on line 40, columns 5 and 6, should be carried over to line 13, columns 3 and 4, respectively, of schedule 14.

Name of Other Company or System (1)	Transfer Point (2)	Coordinate, Firm (F) Location (or Nonfirm (NF) on Map Transfer (3)	(4)	Energy Received (Instruction 1) (Kilowatt-hours) (5)	Energy Delivered (Instruction 2) (Kilowatt-hours) (6)	
Brought Forward				7,820,521,116	8,173,460,019	1
Losses not included in metering on page (21)						2
Akron Parties losses to Canton-Windsor				7,963,601		3
Exclude transfer for schedule amounts of energy from						4
Duquesne Light Co. share of W. H. Sammis Unit No. 7					(790,849,000)	5
Ohio Edison portion of New Castle Diesels				(1,421,000)		6
Penn. Power Co. portion of W. H. Sammis Unit No. 7					(571,079,800)	7
" " " " " CAPCO Short lead time Units					(23,301,800)	8
				*7,827,063,717	8,787,231,419	9
Industrial Plants						10
Republic Steel	Massillon			-	-	11
" "	Warren			-	-	12
" "	Youngstown			5,707,000	-	13
Youngstown Sheet and Tube				-	-	14
				5,707,000	-	15
Respondent operated in a closed loop with other utilities and the energy that flows is not necessarily classified at the various individual's interconnection points as having been received or delivered from or to the other party to the interconnection, but may include receipts and deliveries of utilities not directly interconnected with respondent.						16 17 18 19 20
* Column 5 on line 40 on page (21) and line 9 and 40 on page (21)a includes the following receipts:						21 22
Akron Parties						23
For Ohio Edison Co.		65,287,288				24
For B. F. Goodrich Co.		180,464,513				25
		245,751,801				26
Ohio Valley Electric Corp.		1,554,165,000				27
Purchase and Sale of capacity and energy for ultimate use by rural electric cooperatives (REC's)		308,814,000				28 29 30
		2,108,703,801				31
# Column 6 on line 40 on page (21) and line 9 and 40 on page (21)a includes sales to utility systems having their own generating facilities						32 33
Ohio Valley Electric Corp.		1,951,000				34
						35 36 37 38
Total				*7,832,776,717	8,788,137,419	39 40

Supplement to Schedule 8

Report of Movement of Electric Energy Across State Lines

Line No.	Name of Company or System in Adjoining State	State of	Map 21 & 22-F	Line Designation From	Line Designation To	Kilowatt Hours Received	Kilowatt Hours Delivered
1	Pennsylvania Power Co.	Pennsylvania					
2	Cedar Street (138 Kv)		19	Petersburg, O.*	New Castle, Pa.	-	-
3	Masury (138 kV)		31	Masury, O.*	Sharon, Pa.	10,611,000	147,122,000
4	Darlington (69 Kv)		20	Negley, O.*	Darlington, Pa.	116,373,000	92,000
5	Lowellville (23 Kv)		12-16	Lowellville,O.*	New Castle, Pa.	131,000	24,607,000
6	Lowellville (69 Kv)		13-14-15	Lowellville,O.*	New Castle, Pa.	315,477,000	1,734,000
7	Masury (23 Kv)		607-29	Masury, O.*	Sharon, Pa.	-	162,121,000
8	Masury (69 Kv)		4-8	Masury, O.*	Sharon, Pa.	3,080,000	38,420,000
9	State Line (Kinsman)		2	Pennsylvania	Kinsman, O.*	-	-
10	Ohio Customers (Sharon Sub.)		5	Sharon, Pa.	Sharon, O.*	511,305	-
11	Ohio Customers (Pessemer Sub.)		18	Bessemer, Pa.*	Ohio	113,000	-
12	Ohio Customers (Darlington Sub.)		28	Darlington, Pa.	Negley, O.*	68,791	-
13	Pa. Customers (Hartford Sub.)		3	Hartford, O.*	Pennsylvania	-	1,223,471
14	Pa. Customers (Hubbard Sub.)		9	Hubbard, O.*	Pennsylvania	-	58,546
15	Pa. Customers (Coitsville Sub. D-130)		11	Coitsville, O.*	New Bedford, Pa.	-	245,202
17	Pa. Customers (Poland Sub.)		17	Poland, O.	Bessemer, Pa.*	-	39,378
18	Pa. Customers (Negley Sub.)		21	Negley, O.*	Darlington, Pa.	-	420
19	Shenango - Youngstown Sheet & Tube		11-10	W. Middlesex,Pa.*	Youngstown, O.	267,680,000	1,410,000
20	Masury - Shenango		9	Masury	W. Middlesex,Pa.*	408,550,000	-
21	Total Metering					1,123,595,116	377,152,009

(21)b

* Ohio - Pennsylvania State Line near town designated.

Power System Statement of Ohio Edison Company for the Year Ended December 31, 1973

Schedule 9

SYSTEM ENERGY ACCOUNTING FOR THE YEAR

(1)	Kilowatt-hours: Generated and received (2)	Kilowatt-hours: Delivered (3)	
A. Net Generation of System Plants (from column 8, line 36, schedule 1)	18,285,054,000	xxxxxx	1
B. Summary of Energy Transfers With Other Systems: (from schedule 8, part A plus part B):		308,814,000	
(1) Private systems	7,827,063,717	6,788,137,419	2
(2) Municipal and other publicly owned systems		833,308,950	3
(3) Rural cooperatives			4
(4) Industrial companies	5,707,000	xxxxxx	5
Total (lines 2 to 5, as applicable)	7,832,770,717	7,930,260,369	6
C. Net Energy for System (generation, plus energy received, less energy delivered)	18,187,564,348	xxxxxx	7
D. Total Energy Delivered to Ultimate Consumers[1] (Should agree with line 9, Schedule 10)	16,660,584,963	xxxxxx	8
E. Transmission and Distribution Losses and Energy Unaccounted for (line 7 minus line 8)[2]	1,526,979,385	xxxxxx	9

[1] Exclusive of "border line" deliveries to customers of other utilities and inclusive of "border line" receipts from other utilities.
[2] Exclude company and interdepartmental deliveries; such deliveries should be included in Schedule 10.

Schedule 10

ENERGY DELIVERED TO ULTIMATE CONSUMERS

(Exclusive of "border line" deliveries to customers of other utilities)

INSTRUCTIONS

The energy use classifications employed in this schedule are defined or clarified below for those classifications which may not be self-explanatory.

FARM, EXCLUDING IRRIGATION AND DRAINAGE PUMPING —In order to facilitate reporting this classification of energy, farm may be defined in accordance with respondent's own interpretation. For guidance, the Bureau of the Census' definition of a farm may for the purposes herein be re-defined briefly as a tract of land of ten acres or more (less than three acres if value of products sold is $250 or more for the year) on which agricultural operations are performed; the land operated by each tenant, renter, cropper, or manager is considered a separate farm. Respondent should report farms served rather than farm dwellings served in the column for number of customers. Estimates should be furnished for this classification if exact information is not available.

IRRIGATION AND DRAINAGE PUMPING —Estimates should be furnished for this classification if exact information is not available.

NONFARM-RESIDENTIAL —Energy supplied for nonfarm-residential and domestic purposes, including cooking and water heating. Where electric energy was supplied through a single meter for both residential and commercial purposes include it in the one or the other, according to its principal use. Exclude energy supplied to farm customers.

ELECTRIFIED TRANSPORTATION —Energy supplied for the propulsion of cars, locomotives, or coaches. Energy for office buildings, depots, shops, signal lights, etc., should be reported under "Commercial" or "Industrial," as appropriate.

ALL OTHER —Energy delivered for ultimate consumption that does not fall within any of the specific classifications listed in this schedule. Include in this group should be deliveries for municipal water pumping, oil and gas pipe line pumping, military camps and bases; and public buildings such as schools, police stations, and post offices.

Classification of Energy Delivered to Ultimate Consumers[1] (1)	Number of Customers at End of Year[2] (2)	Kilowatt-hours (3)	
Farm, excluding irrigation and drainage pumping	19,310	261,703,422	1
Irrigation and drainage pumping		-	2
Nonfarm-residential	669,073	4,453,305,647	3
Commercial	69,723	3,611,961,737	4
Industrial	989	7,983,856,028	5
Street and highway lighting	443	129,765,222	6
B. F. Goodrich Co. (See Note)		180,494,513	7
All Other (give details, if relatively large)		39,498,398	8
Total Energy Delivered to Ultimate Consumers (should agree with line 8, schedule 9)	759,538	16,660,584,963	9

[1] Include company and interdepartmental deliveries in proper use classification.
[2] Report number of farms, residences, commercial establishments, etc., and not the number of meters where different.

Note: Figures in this report include energy supplied The B. F. Goodrich Company, under an agreement to which Ohio Edison is also a party. Such energy is included in Ohio Edison receipts and deliveries at the request of Federal Power Commission by letter dated 11/7/4

Rev. (12-65)

EXHIBIT HHH - 80

Annual report of Ohio Edison Company Year ended December 31, 19 73

TRANSMISSION OF ELECTRICITY FOR OR BY OTHERS (Accounts 456 and 565)
(Including transactions sometimes referred to as "wheeling")

1. Describe below and give particulars of any transactions by respondent during the year for transmission of electricity for or by others during year, including transactions sometimes referred to as wheeling.

2. Provide separate subheadings for: (a) Transmission of Electricity for Others (included in Account 456) and (b) Transmission of Electricity by Others (Account 565).

3. Furnish the following information in the space below concerning each transaction:

(a) Name of company and description of service rendered or received. Designate associated companies.

(b) Points of origin and termination of service specifying also any transformation service involved.

(c) Kwh received and Kwh delivered.

(d) Monetary settlement received or paid and basis of settlement, included in Account 456 or 565.

(e) Nonmonetary settlement, if any, specifying the Kwh representing compensation for the service, specifying whether such power was firm power, dump or other power, and state basis of settlement. If nonmonetary settlement was other than Kwh describe the nature of such settlement and basis of determination.

(f) Other explanations which may be necessary to indicate the nature of the reported transactions. Include in such explanations a statement of any material services remaining to be received or furnished at end of year and the accounting recorded to avoid a possible material distortion of reported operating income for the year.

None

Power System Statement of Pennsylvania Power Company for the Year Ended December 31, 1973

Schedule 8—Continued

PART A.—ENERGY DELIVERIES TO SPECIFIED SYSTEMS AND ENERGY TRANSACTIONS WITH BORDER-LINE CUSTOMERS:

(See Page 19 for General Instructions)

1. Show in column 6 the amounts of energy delivered for resale to each class III and class V system.
2. If the respondent's system delivered energy to customers of another system (sometimes known as "border-line customers") such deliveries also should be included in column 6.
3. If customers of respondent received energy directly from another system for the account of the respondent (border-line receipts), such transfers shall be entered in column 5. If part of the energy deliveries to systems specified in instruction 1 and reported in column 6 are received back into the reporting system through another interconnection, such receipts also should be entered in column 5. All other receipts should be entered in column 5, part B, of schedule 8.
4. Energy delivered by respondent's system to "border-line customers," or vice versa (energy delivered to respondent's customers by another system), should be identified by inserting "border-line" in column 2.
5. Indicate by appropriate notes those systems whose full requirements were supplied by respondent.
6. The totals shown on line 40, column 5 and 6, should be carried over to line 13, columns 5 and 6, respectively, of schedule 14.

Name of Oth. Company or System (1)	Transfer Point (2)	Coordinate Location or Symbol on Map (3)	Firm (F) or Nonfirm (NF) Transfer (4)	Energy Received (Instruction 3) (Kilowatt-hours) (5)	Energy Delivered (Instructions 1 and 2) (Kilowatt-hours) (6)	
Municipal System*						1
Ellwood City Borough		25	F	N	35,243,541	2
Grove City Borough		32	F	O	32,702,400	3
New Wilmington Borough		22	F	N	9,686,400	4
Wampum Borough		24	F	E	2,52[illegible],200	5
Zelienople Borough		26	F		13,835,200	6
						7
						8
						9
						10
						11
						12
						13
						14
* Full requirements supplied by respondent.						15
						16
						17
						18
						19
						20
						21
						22
						23
						24
						25
						26
						27
						28
						29
						30
						31
						32
						33
						34
						35
						36
						37
						38
						39
Total					93,990,741	40

EXHIBIT HMH - 8q1

Power System Statement of Pennsylvania Power Company for the Year Ended December 31, 1973

Schedule 8—Continued

PART B.—OTHER ENERGY TRANSFERS WITH ELECTRIC UTILITY SYSTEMS AND RECEIPTS FROM INDUSTRIAL COMPANIES.

(See Page 19 for General Instructions)

1. Report in column 5 all energy (except that reported in Schedule 8, Part A, column 5) received from other electric utility systems and industrial companies.
2. Report in column 6 the amounts of energy delivered for resale to class I and class II systems which obtained a part of their power supply during the year from their own generating plants. Energy delivered to industrial establishments should be reported in Schedule 10 and not in this schedule.
3. Show all points of interconnection through which energy transfers (which would properly be included in Part B) could have been made, whether there were any transfers during the year or not. Where no transfers were made the entries in columns 5 and 6 should be zero.
4. The totals shown on line 40, columns 5 and 6, should be carried over to line 13, columns 3 and 4, respectively, of schedule 14.

Name of Other Company or System (1)	Transfer Point (2)	Coordinate Location or Symbol on Map (3)	Firm (F) or Nonfirm (NF) Transfer (4)	Energy Received (Instruction 1) (Kilowatt-hours) (5)	Energy Delivered (Instruction 2) (Kilowatt-hours) (6)	
Ohio Edison Company (Details Attached)			F-NF	(217,321,581)	1,122,174,116	1
						2
Duquesne Light Company	North Sewickley and Daugherty Township Lines, Beaver County, Pennsylvania	27	F-NF	12,034,000	15,877,000	3 4 5 6 7 8
Duquesne Light Company	Shippingport, Beaver County, Pennsylvania	30	F-NF	1,599,302,000	-	9 10 11 12
West Penn Power Company	Connoquenessing and Butler Township Lines, Butler County, Pennsylvania	23	F-NF	230,838,000	16,616,000	13 14 15 16 17 18
West Penn Power Company	Mercer and Butler County Lines South of Grove City, Pennsylvania	33	F-NF	46,000	40,321,000	19 20 21 22 23 24
Respondent operates in a closed loop with other utilities and the energy that flows is not necessarily classified at the various individual interconnection points as having been received or delivered from or to the other party to the interconnection, but may include receipts and deliveries of utilities not directly interconnected with respondent.						25 26 27 28 29 30 31
Column 5, Line 40 includes the following purchases: Ohio Valley Electric Corporation 221,380,000 KWH						32 33 34
Column 6, Line 40 includes the following sales: Ohio Valley Electric Corporation 576,000 KWH						35 36 37 38
Total				1,624,898,419	1,194,988,116	39 40

Rev. (12-65)

PENNSYLVANIA POWER COMPANY

Schedule 8 - Part B

Energy Transferred With Other Electric Utility Systems

Name of Other Company or System	State	Pennsylvania Power Company	Line Designation From	Line Designation To	Coordinate Location or Symbol	Class of Transfer	Kilowatt Hours Received	Kilowatt Hours Delivered
Ohio Edison Company	Ohio	Shenango - Youngstown Sheet & Tube 138 Kv	West Middlesex, Pa. *	Youngstown, Ohio	1		1,410,000	267,680,000
		Cedar Street - 138 Kv	Petersburg, Ohio *	New Castle, Pa.	19		-	-
		Masury - Shenango - 138 Kv	Masury, Ohio	West Middlesex, Pa. *	10		-	408,550,000
		Masury - 138 Kv	Masury, Ohio *	Sharon, Pa.	31		147,122,000	10,611,000
		Darlington - 69 Kv	Darlington, Pa.	Negley, Ohio *	20		91,000	116,373,000
		Lowellville - 69 Kv	Lowellville, Ohio *	New Castle, Pa.	13-14-15		1,734,000	316,477,000
		Masury - 69 Kv	Masury, Ohio *	Sharon, Pa.	4-8		38,420,000	3,080,000
		Lowellville - 23 Kv	Lowellville, Ohio *	New Castle, Pa.	12-16		24,687,000	131,000
		Masury - 23 Kv	Masury, Ohio *	Sharon, Pa.	6-7-29		162,121,000	-
		State Line (Kinsman, Ohio)	Pennsylvania	Kinsman, Ohio *	2		-	-
		Ohio Customers (Sharon Sub.)	Sharon, Pa.	Sharon, Ohio *	5		-	511,305
		Ohio Customers (Bessemer Sub.)	Bessemer, Pa. *	Ohio	18		-	113,020
		Ohio Customers (Darlington Sub.)	Darlington, Pa.	Negley, Ohio *	28		-	68,791
		Pa. Customers (Hartford Sub.)	Hartford, Ohio *	Pennsylvania	3		1,223,471	-
		Pa. Customers (Hubbard Sub.)	Hubbard, Ohio *	Pennsylvania	9		58,548	-
		Pa. Customers (Coitsville Sub. D-130)	Coitsville, Ohio *	New Bedford, Pa.	11		245,202	-
		Pa. Customers (Negley Substation)	Negley, Ohio *	Darlington, Pa.	21		420	-
		Pa. Customers (Poland Substation)	Poland, Ohio	Bessemer, Pa. *	17		39,378	-
		New Castle Diesel Generation - Ohio Edison Company Portion	Ohio	Pennsylvania				(1,421,000)
		Pa. Power Co. - Share of W. H. Sammis Unit No. 7	Ohio	Pennsylvania			(571,078,800)	
		Ohio Edison Peaking Units - Pennsylvania Power Company Share	Ohio	Pennsylvania			(23,394,800)	
					Total	F-NF	(217,321,581)	1,122,174,116

* Pennsylvania-Ohio State Line near town designated.

EXHIBIT HHH - 892

EXHIBIT HWH - 8r

Power System Statement of Pennsylvania Power Company for the Year Ended December 31, 1973

Schedule 9

SYSTEM ENERGY ACCOUNTING FOR THE YEAR

(1)	Kilowatt-hours Generated and received (2)	Kilowatt-hours Delivered (3)	
A. Net Generation of System Plants (from column 8, line 36, schedule 1)	2,830,946,600	xxxxxx	1
B. Summary of Energy Transfers With Other Systems: (from schedule 8, part A plus part B):			
(1) Private systems	1,624,898,419	1,194,988,116	2
(2) Municipal and other publicly owned systems		93,990,741	3
(3) Rural cooperatives			4
(4) Industrial companies		xxxxxx	5
Total (lines 2 to 5, inclusive)	1,624,898,419	1,288,978,857	6
C. Net Energy for System (generation, plus energy received, less energy delivered)	3,166,866,162	xxxxxx	7
D. Total Energy Delivered to Ultimate Consumers[1] (Should agree with line 9, Schedule 10)	2,988,956,094	xxxxxx	8
E. Transmission and Distribution Losses and Energy Unaccounted for (line 7 minus line 8)[2]	177,910,068	xxxxxx	9

[1] Exclusive of "border line" deliveries to customers of other utilities and inclusive of "border line" receipts from other utilities.
[2] Exclude company and interdepartmental deliveries; such deliveries should be included in Schedule 10.

Schedule 10

ENERGY DELIVERED TO ULTIMATE CONSUMERS

(Exclusive of "border line" deliveries to customers of other utilities)

INSTRUCTIONS

The energy use classifications employed in this schedule are defined or clarified below for those classifications which may not be self-explanatory.

FARM, EXCLUDING IRRIGATION AND DRAINAGE PUMPING —In order to facilitate reporting this classification of energy, farm may be defined in accordance with respondent's own interpretation. For guidance, the Bureau of the Census' definition of a farm may for the purposes herein be redefined briefly as a tract of land of ten acres or more (less than three acres if value of products sold is $250 or more for the year) on which agricultural operations are performed; the land operated by each tenant, renter, cropper, or manager is considered a separate farm. Respondent should report farms served rather than farm dwellings served in the column for number of customers. Estimates should be furnished for this classification if exact information is not available.

IRRIGATION AND DRAINAGE PUMPING —Estimates should be furnished for this classification if exact information is not available.

NONFARM-RESIDENTIAL —Energy supplied for nonfarm-residential and domestic purposes, including cooking and water heating. Where electric energy was supplied through a single meter for both residential and commercial purposes include it in the one or the other, according to its principal use. Exclude energy supplied to farm customers.

ELECTRIFIED TRANSPORTATION —Energy supplied for the propulsion of cars, locomotives, or coaches. Energy for office buildings, depots, shops, signal lights, etc., should be reported under "Commercial" or "Industrial," as appropriate.

ALL OTHER —Energy delivered for ultimate consumption that does not fall within any of the specific classifications listed in this schedule. Included in this group should be deliveries for municipal water pumping, oil and gas pipe line pumping, military camps and bases, and public buildings such as schools, police stations, and post offices.

Classification of Energy Delivered to Ultimate Consumers[1] (1)	Number of Customers at End of Year[2] (2)	Kilowatt-hours (3)	
Farm, excluding irrigation and drainage pumping	4,139	59,466,572	1
Irrigation and drainage pumping		–	2
Nonfarm-residential	94,862	621,537,724	3
Commercial	11,414	417,551,891	4
Industrial	139	1,879,541,559	5
Street and highway lighting	108	10,858,348	6
Electrified transportation		–	7
All Other (give details, if relatively large)		–	8
Total Energy Delivered to Ultimate Consumers (should agree with line 8, schedule 9)	110,662	2,988,956,094	9

[1] Include company and interdepartmental deliveries in proper use classification.
[2] Report number of farms, residences, commercial establishments, etc., and not the number of meters where different.

TRANSMISSION OF ELECTRICITY FOR OR BY OTHERS (Accounts 456 and 565)
(Including transactions sometimes referred to as "wheeling")

1. Describe below and give particulars of any transactions by respondent during the year for transmission of electricity for or by others during year, including transactions sometimes referred to as wheeling.
2. Provide separate subheadings for: (a) Transmission of Electricity for Others (included in Account 456) and (b) Transmission of Electricity by Others (Account 565).
3. Furnish the following information in the space below concerning each transaction:
   (a) Name of company and description of service rendered or received. Designate associated companies.
   (b) Points of origin and termination of service specify also any transformation service involved.
   (c) Kwh received and Kwh delivered
   (d) Monetary settlement received or paid and basis of settlement, included in Account 456 or 565
   (e) Nonmonetary settlement, if any, specifying the Kwh representing compensation for the service, specifying whether such power was firm power, dump or other power, and state basis of settlement. If nonmonetary settlement was other than Kwh describe the nature of such settlement and basis of determination.
   (f) Other explanations which may be necessary to indicate the nature of the reported transactions. Include in such explanations a statement of any material services remaining to be received or furnished at end of year and the accounting recorded to avoid a possible material distortion of reported operating income for the year.

Account 456 - None

Account 565

(a) Ohio Edison Company (associated company). The Transmission Facilities Agreement provides for construction, operation and maintenance of an adequate transmission network to permit the five CAPCO Companies that are parties to the agreement to utilize their respective capacity entitlements in various jointly committed generating units for effective coordination of the operations of the CAPCO Companies among themselves and with other systems, power pools and coordination groups, and for the equitable sharing by the parties of the resulting benefits and responsibilities.

(b) Lines do not originate or terminate in the Pennsylvania Power Company System.

(c) Does not depend on kwh received or delivered.

(d) $435,861.00 paid to Ohio Edison Company based on average peak load ratios for the years 1964-1965-1966. Pennsylvania Power Company Share of Investment Responsibility is 14.5%. The charges are based on Gross Book Plant at 12-31-70, with adjustments for book depreciation to 5-31-71, investment credit where applicable and income tax credit on payroll taxes and pensions capitalized. Return and fixed charge factors used are in accordance with CAPCO Transmission Facilities Agreement filed with Federal Power Commission on 11-29-71.

(e) None

(f) The above amount paid represents Pennsylvania Power Company's Investment Responsibility for the period January 1973 through December 1973.

Continued on Page 425A

TRANSMISSION OF ELECTRICITY FOR OR BY OTHERS (Accounts 456 and 565)
(Including transactions sometimes referred to as "wheeling")

1. Describe below and give particulars of any transactions by respondent during the year for transmission of electricity for or by others during year, including transactions sometimes referred to as wheeling.

2. Provide separate subheadings for: (a) Transmission of Electricity for Others (included in Account 456) and (b) Transmission of Electricity by Others (Account 565).

3. Furnish the following information in the space below concerning each transaction:

(a) Name of company and description of service rendered or received. Designate associated companies.

(b) Points of origin and termination of service specifying also any transformation service involved.

(c) Kwh received and Kwh delivered.

(d) Monetary settlement received or paid and basis of settlement, included in Account 456 or 565.

(e) Nonmonetary settlement, if any, specifying the Kwh representing compensation for the service, specifying whether such power was firm power, dump or other power, and state basis of settlement. If nonmonetary settlement was other than Kwh describe the nature of such settlement and basis of determination.

(f) Other explanations which may be necessary to indicate the nature of the reported transactions. Include in such explanations a statement of any material services remaining to be received or furnished at end of year and the accounting recorded to avoid a possible material distortion of reported operating income for the year.

Account 565 (Continued)

(a) Duquesne Light Company. The Transmission Facilities Agreement provides for construction, operation and maintenance of an adequate transmission network to permit the five CAPCO Companies that are parties to the agreement to utilize their respective capacity entitlements in various jointly committed generating units for effective coordination of the operations of CAPCO Companies among themselves and with other systems, power pools and coordination groups and for the equitable sharing by the parties of the resulting benefits and responsibilities.

(b) Line originates at Beaver Valley Power Station Substation and terminates at Bruce Mansfield Generating Station Substation site.

(c) Does not depend on kwh received or delivered.

(d) $328,971.00 paid to Duquesne Light Company. The charges are based on gross additions to plant with adjustments for amortization, investment credit and income tax credit on payroll taxes and pensions capitalized where applicable. Return and fixed charge factors used are in accordance with CAPCO Transmission Facilities Agreement filed with Federal Power Commission on 11-29-71.

(e) None

(f) The above amount paid represents Pennsylvania Power Company's Investment Responsibility for the period January 1973 through December 1973.

Power System Statement of THE TOLEDO EDISON COMPANY for the Year Ended December 31, 1973

Schedule 8—Continued

PART A.—ENERGY DELIVERIES TO SPECIFIED SYSTEMS AND ENERGY TRANSACTIONS WITH BORDER-LINE CUSTOMERS:

(See Page 19 for General Instructions)

1. Show in column 6 the amounts of energy delivered for resale to each class III and class V system.
2. If the respondent's system delivered energy to customers of another system (sometimes known as "border-line customers") such deliveries also should be included in column 6.
3. If customers of respondent received energy directly from another system for the account of the respondent (border-line receipts), such transfers shall be entered in column 5. If part of the energy deliveries to systems specified in instruction 1 and reported in column 6 are received back into the reporting system through another interconnection, such receipts also should be entered in column 5. All other receipts should be entered in column 5, part B, of schedule 8.
4. Energy delivered by respondent's system to "border-line customers," or vice versa (energy delivered to respondent's customers by another system), should be identified by inserting "border-line" in column 2.
5. Indicate by appropriate notes those systems whose full requirements were supplied by respondent.
6. The totals shown on line 40, column 5 and 6, should be carried over to line 13, columns 5 and 6, respectively, of schedule 14.

Name of Other Company or System (1)	Transfer Point (2)	Coordinates Location or Symbol on Map (3)	Firm (F) or Non-firm (NF) Transfer (4)	Energy Received (Instruction 3) (Kilowatt-hours) (5)	Energy Delivered (Instructions 1 thru 2) (Kilowatt-hours) (6)	
Municipal Systems						1
City of Bowling Green			F		176,473,000	2
Village of Bradner			F		4,411,000	3
Village of Custar			F		1,376,000	4
						5
Village of Edgerton			F		12,149,000	6
Village of Elmore			F		5,336,000	7
Village of Genoa			F		9,189,000	8
						9
Village of Haskins			F		1,558,000	10
Village of Liberty Center			F		4,778,000	11
Village of Montpelier			F		27,570,000	12
						13
Village of Oak Harbor			F		11,596,000	14
Village of Pemberville			F		6,928,000	15
Village of Pioneer			F		5,434,000	16
Village of Woodville			F		7,168,000	17
						18
						19
						20
						21
						22
						23
						24
						25
						26
						27
						28
						29
						30
						31
						32
						33
						34
						35
						36
						37
						38
						39
Total				-	273,9[illegible],000	40

Rev. (12-65)

Power System Statement of THE TOLEDO EDISON COMPANY for the Year Ended December 31, 1973

Schedule 8—Continued

PART B.—OTHER ENERGY TRANSFERS WITH ELECTRIC UTILITY SYSTEMS AND RECEIPTS FROM INDUSTRIAL COMPANIES:

(See Page 19 for General Instructions)

1. Report in column 5 all energy (except that reported in Schedule 8, Part A, column 5) received from other electric utility systems and industrial companies.
2. Report in column 6 the amounts of energy delivered for resale to class I and class II systems which obtained a part of their power supply during the year from their own generating plants. Energy delivered to industrial establishments should be reported in Schedule 10 and not in this schedule.
3. Show all points of interconnection through which energy transfers (which would properly be included in Part B) could have been made, whether there were any transfers during the year or not. Where no transfers were made the entries in columns 5 and 6 should be zero.
4. The totals shown on line 40, columns 5 and 6, should be carried over to line 13, columns 3 and 4, respectively, of schedule 14.

Name of Other Company or System (1)	Transfer Point (2)	Coordinates, Location or Symbol on Map (3)	Firm (F) or Nonfirm (NF) Transfer (4)	Energy Received (Instruction 1) (Kilowatt-hours) (5)	Energy Delivered (Instruction 2) (Kilowatt-hours) (6)	
Municipal Systems						1
Village of Bryan	Bryan, Ohio		F	-	62,904,000	2
City of Napoleon	Napoleon, Ohio		F	-	18,774,000	3
						4
Private Systems						5
Michigan Power Pool	Lemoyne			2,094,567,000	1,512,015,000	6
Ohio Edison Company	Richland			739,536,000	936,000	7
Ohio Valley Elec. Corp.	Ottawa			229,670,000	60,929,000	8
Ohio Power Co.	Clyde			61,000	3,117,000	9
Cleveland Electric	Bay Shore			946,150,000	781,568,000	10
Illuminating Company	W. Fremont			173,000	-	11
	Fostoria			50,000	37,000	12
Total Private Systems			F	2,195,484,000	-	13
			NF	1,814,723,000	2,358,602,000	14
						15
						16
						17
						18
						19
						20
						21
						22
						23
						24
						25
						26
						27
						28
						29
						30
						31
						32
						33
						34
						35
						36
						37
						38
Total				4,010,107,000	4,440,280,000	39 40

Power System Statement of ..... THE TOLEDO EDISON COMPANY ..... for the Year Ended December 31, 1973

Schedule 9

SYSTEM ENERGY ACCOUNTING FOR THE YEAR

(1)	M— Kilowatt-hours Generated and received (2)	Delivered (3)	
A. Net Generation of System Plants (from column 8, line 36, schedule 1)	5,376,325	xxxxxx	1
B. Summary of Energy Transfers With Other Systems: (from schedule 8, part A plus part B):			
(1) Private systems	4,010,207	2,440,280	2
(2) Municipal and other publicly owned systems	-	273,966	3
(3) Rural cooperatives	-	-	4
(4) Industrial companies	-	xxxxxx	5
Total (lines 2 to 5, inclusive)	4,010,207	2,714,246	6
C. Net Energy for System (generation, plus energy received, less energy delivered)	6,672,286	xxxxxx	7
D. Total Energy Delivered to Ultimate Consumers[1] (Should agree with line 9, Schedule 10)	6,250,608	xxxxxx	8
E. Transmission and Distribution Losses and Energy Unaccounted for (line 7 minus line 8)[2]	421,678	xxxxxx	9

[1] Exclusive of "border line" deliveries to customers of other utilities and inclusive of "border line" receipts from other utilities.
[2] Exclude company and interdepartmental deliveries; such deliveries should be included in Schedule 10.

Schedule 10

ENERGY DELIVERED TO ULTIMATE CONSUMERS

(Exclusive of "border line" deliveries to customers of other utilities)

INSTRUCTIONS

The energy use classifications employed in this schedule are defined or clarified below for those classifications which may not be self-explanatory.

FARM, EXCLUDING IRRIGATION AND DRAINAGE PUMPING.—In order to facilitate reporting this classification of energy, farm may be defined in accordance with respondent's own interpretation. For guidance, the Bureau of the Census' definition of a farm may for the purposes herein be redefined briefly as a tract of land of ten acres or more (less than three acres if value of products sold is $250 or more for the year) on which agricultural operations are performed; the land operated by each tenant, renter, cropper, or manager is considered a separate farm. Respondent should report farms served rather than farm dwellings served in the column for number of customers. Estimates should be furnished for this classification if exact information is not available.

IRRIGATION AND DRAINAGE PUMPING.—Estimates should be furnished for this classification if exact information is not available.

NONFARM-RESIDENTIAL.—Energy supplied for nonfarm-residential and domestic purposes, including cooking and water heating. Where electric energy was supplied through a single meter for both residential and commercial purposes include it in the one or the other, according to its principal use. Exclude energy supplied to farm customers.

ELECTRIFIED TRANSPORTATION.—Energy supplied for the propulsion of cars, locomotives, or coaches. Energy for office buildings, depots, shops, signal lights, etc., should be reported under "Commercial" or "Industrial," as appropriate.

ALL OTHER.—Energy delivered for ultimate consumption that does not fall within any of the specific classifications listed in this schedule. Included in this group should be deliveries for municipal water pumping, oil and gas pipe line pumping, military camps and bases; and public buildings such as schools, police stations, and post offices.

Classification of Energy Delivered to Ultimate Consumers[1] (1)	Number of Customers at End of Year[2] (2)	M— Kilowatt-hours (3)	
	Est.		
Farm, excluding irrigation and drainage pumping	7,425	158,000	1
Irrigation and drainage pumping	-	-	2
Nonfarm-residential	210,680	1,393,862	3
Commercial	21,399	1,085,298	4
Industrial	2,397	3,248,746	5
Street and highway lighting	126	54,258	6
Electrified transportation	-	-	7
All Other (give details, if relatively large)	1,581	310,444	8
Total Energy Delivered to Ultimate Consumers (should agree with line 8, schedule 9)	243,608	6,250,608	9

[1] Include company and interdepartmental deliveries in proper use classification.
[2] Report number of farms, residences, commercial establishments, etc., and not the number of meters where different.

TRANSMISSION OF ELECTRICITY FOR OR BY OTHERS (Accounts 456 and 565)
(Including transactions sometimes referred to as "wheeling")

1. Describe below and give particulars of any transactions by respondent during the year for transmission of electricity for or by others during year, including transactions sometimes referred to as wheeling.
2. Provide separate subheadings for: (a) Transmission of Electricity for Others (included in Account 456) and (b) Transmission of Electricity by Others (Account 565).
3. Furnish the following information in the space below concerning each transaction:
   (a) Name of company and description of service rendered or received. D signate associated companies.
   (b) Points of origin and termination of service specifying also any transformation service involved.
   (c) Kwh received and Kwh delivered.
   (d) Monetary settlement received or paid and basis of settlement, included in Account 456 or 565.
   (e) Nonmonetary settlement, if any, specifying the Kwh representing compensation for the service, specifying whether such power was firm power, dump or other power, and state basis of settlement. If nonmonetary settlement was other than Kwh describe the nature of such settlement and basis of determination.
   (f) Other explanations which may be necessary to indicate the nature of the reported transactions. Include in such explanations a statement of any material services remaining to be received or furnished at end of year and the accounting recorded to avoid a possible material distortion of reported operating income for the year.

Account 456 - Other Electric Revenues

(a) Buckeye Power, Inc. - delivery of energy to member delivery points.

(b) Points of origin:
Lemoyne, Ottawa, Richland

Termination of Services:

Bradner, Ohio	No transformation service
Maroe, Ohio	No transformation service
McClure, Ohio	No transformation service
Fayette, Ohio	No transformation service
New Liberty, Ohio	No transformation service
Lyons, Ohio	No transformation service
Burlington, Ohio	7.2 to 12 KV transformation service involved
Delta, Ohio	7.2 to 12 KV transformation service involved
Okolona, Ohio	7.2 to 12 KV transformation service involved

(c) KWH Received 47,579,000
KWH Delivered 47,579,000

(d) Delivery charge $56,338 (based on demand)

Account 565 - Transmission of Electricity by Others

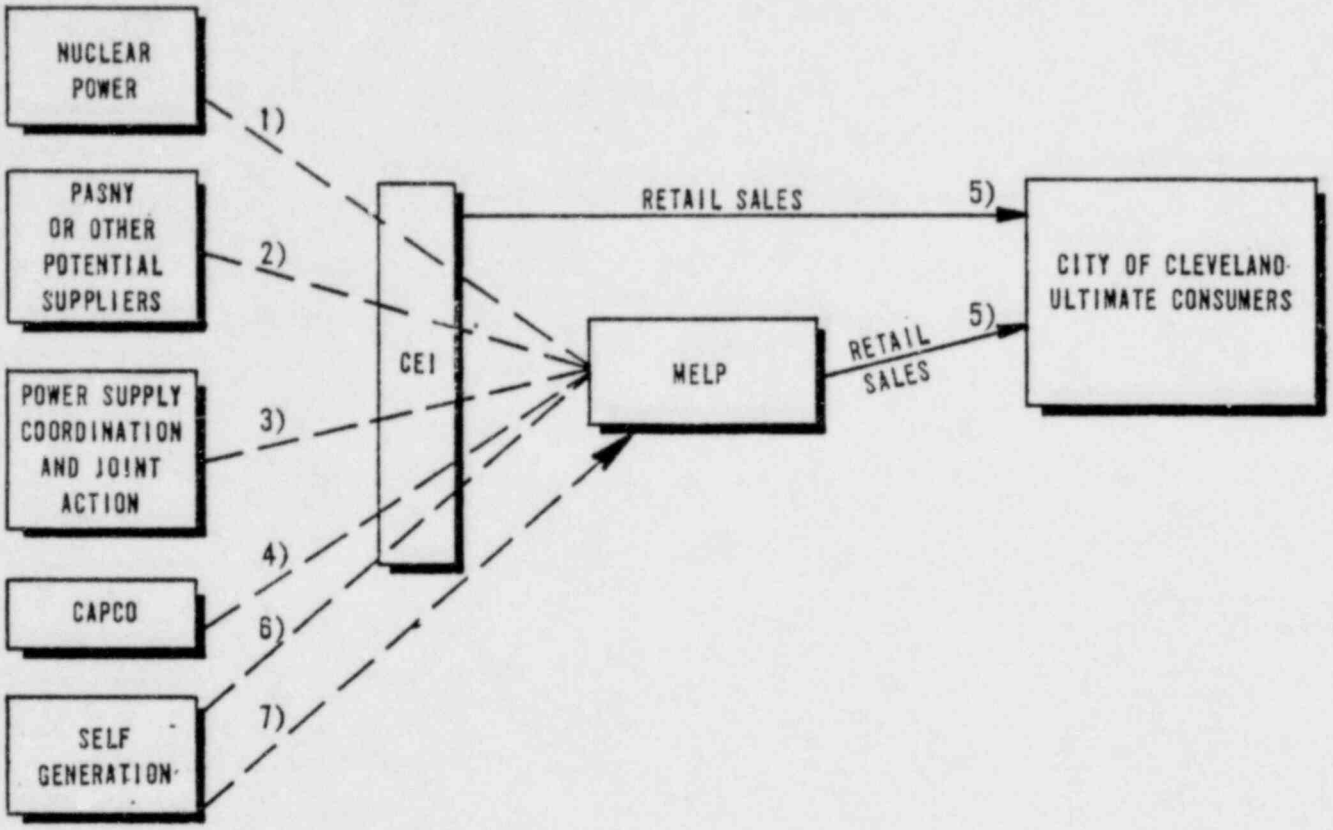
The Company, The Cleveland Electric Illuminating Company, Ohio Edison Company, Pennsylvania Power Company and Duquesne Light Company are participants of the CAPCO Transmission Facilities Agreement dated September 14, 1967 which provides for the construction, operation and maintenance of an adequate transmission network to permit the CAPCO member companies to fully utilize their capacity entitlements from jointly owned generating units.

The CAPCO Transmission Facilities Agreement provides for each member company to own all the transmission facilities located in its service area, and each member will bear an agreed equitable share of the cost of ownership and operation of these facilities.

During 1973, the Company made the following payments pursuant to the CAPCO Transmission Facilities Agreement:

Ohio Edison Company	$196,947
Duquesne Light Company	385,419
The Cleveland Electric Illuminating Company	92,603
Total - Account 565	$674,969

DIAGRAM OF RELATIONSHIP BETWEEN CEI & MELP AS OF 1 JULY 1975



1) MELP CAN OBTAIN ACCESS TO NUCLEAR POWER ONLY THROUGH CEI

2) MELP CAN OBTAIN ACCESS TO PASNY POWER OR OTHER POTENTIAL POWER SUPPLIERS ONLY THROUGH CEI

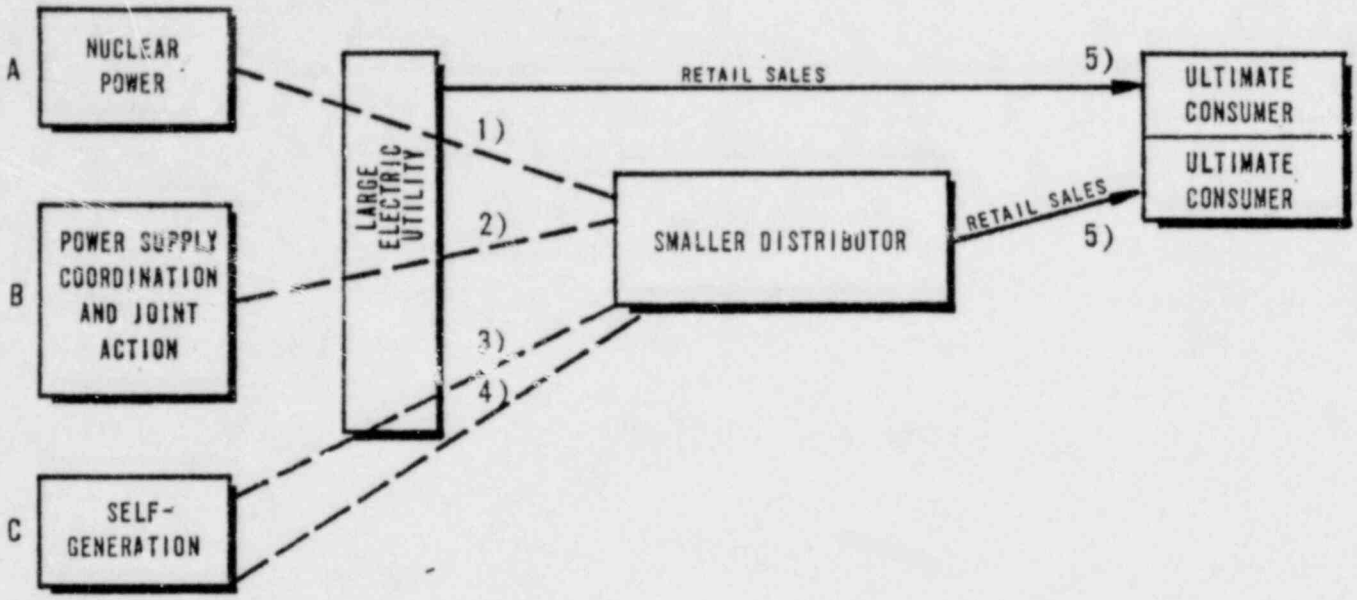
3) MELP CAN OBTAIN ACCESS TO POWER SUPPLY COORDINATION SERVICES AND JOINT ACTION ARRANGEMENTS ONLY THROUGH CEI

4) MELP CAN OBTAIN ACCESS TO CAPCO JOINT PLANNING AND COORDINATION ONLY THROUGH CEI

5) CEI SERVES ULTIMATE CONSUMERS IN THE SAME AREA AS MELP

6 & 7) LARGE SCALE SELF-GENERATION IS USUALLY NOT PRACTICAL WITHOUT COORDINATION WITH NEIGHBORING UTILITIES

GENERALIZED DIAGRAM OF ELECTRIC UTILITY POWER SUPPLY RELATIONSHIPS



1) LARGE ELECTRIC UTILITY HAS CONTROL OVER NUCLEAR POWER OPTION BECAUSE IT IS IMPRACTICAL FOR SMALL DISTRIBUTOR TO CONSTRUCT MODERN LARGE NUCLEAR PLANTS ALONE.

1,2) & 3 LARGE ELECTRIC UTILITIES MAY EXCERCISE SOME CONTROL BY REFUSING TO PROVIDE TRANSMISSION AND/OR TO SHARE RESERVES AND OTHER BENEFITS OF COORDINATED PLANNING AND OPERATION.

3 & 4) LARGE SCALE SELF-GENERATION IS USUALLY NOT PRACTICAL WITHOUT COORDINATION WITH NEIGHBORING UTILITIES.

5) LARGE ELECTRIC UTILITY AND SMALLER DISTRIBUTOR MAY SERVE ULTIMATE CONSUMERS IN THE SAME OR ADJACENT AREAS.

POWER SUPPLY OPTIONS A, B, & C ARE ALL NEEDED TO ALLOW SMALLER DISTRIBUTOR MAXIMUM PLANNING FLEXIBILITY. CONTROL OF ANY OPTION BY LARGE ELECTRIC UTILITY, ITEMS 1, 2 & 3, RESTRICTS THE PLANNING FLEXIBILITY OF THE SMALL DISTRIBUTOR AND MAY PREVENT ACCESS TO THE MOST ECONOMICAL AND RELIABLE POWER SUPPLY.