THE NEW YORK CITY BLACKOUT OF JULY 13, 1977

HEARING
BEFORE THE

SUBCOMMITTEE ON ENERGY AND POWER
OF THE

COMMITTEE ON
INTERSTATE AND FOREIGN COMMERCE
HOUSE OF REPRESENTATIVES
NINTEY-FIFTH CONGRESS
FIRST SESSION
OF

THE BLACKOUT OF THE ELECTRIC SYSTEM OF THE CONSOLIDATED EDISON COMPANY OF NEW YORK ON JULY 13 AND 14, 1977 AND THE ADEQUACY OF VOLUNTARY, STATE, AND FEDERAL REGULATORY MECHANISMS TO ASSURE RELIABILITY IS THE NATION'S ELECTRIC POWER SYSTEMS

OCTOBER 13, 1977

Serial No. 95-88

Printed for the use of the Committee on Interstate and Foreign Commerce

U.S. Government Printing Office
Washington : 1978
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THE NEW YORK CITY BLACKOUT OF JULY 13, 1977

THURSDAY, OCTOBER 13, 1977

U.S. HOUSE OF REPRESENTATIVES,
SUBCOMMITTEE ON ENERGY AND POWER,
COMMITTEE ON INTERSTATE AND FOREIGN COMMERCE,
Washington, D.C.

The subcommittee met, pursuant to notice, at 10 a.m., in room 2322, Rayburn House Office Building, Hon. John D. Dingell, chairman, presiding.

Mr. DINGELL. The subcommittee will come to order.

This is the first of the hearings to be held by the Energy and Power Subcommittee into the blackout of the electric system of the Consolidated Edison Co. of New York that occurred on July 13 and 14 of this year. This is the second of major blackouts in recent times involving that company and that geographic area of the United States which has taken place in recent times.

The blackout raised a number of issues of grave importance to this subcommittee and to the Congress as a whole. Because of the importance of New York City as a hub of national and international banking, commerce, communications and transportation, the events that occurred on the evening of July 13 in Westchester County, N.Y. and New York City had a serious national and perhaps even international impact.

The subcommittee has had its staff inquire into this matter and the subcommittee is now preparing a detailed study of that impact.

The blackout also raised very important questions about the adequacy of voluntary and State and Federal regulatory mechanisms for resolving problems vital to assuring reliability in the Nation's electric power systems.

Parenthetically, the Chair will observe that a number of things which occurred in the first blackout were supposed to have been corrected by actions taken. The Chair observes that some of those corrective measures appear not to have gone into effect, and other things which might have headed off the blackout were not attended to by the company involved.

There have already been extensive investigations into the facts and, from the point of 20-20 hindsight, it appears clear that the blackout of July 13 never should have occurred; the lessons of the last great blackout of 1965 were simply not fully learned or acted upon. Emergency procedures designed to avert a collapse of the system—and which would have averted it—were not followed. Poorly designed parts of the system which increased its vulnerability were not corrected in a number of cases. Reserve generation
capability which was designed to avert the collapse—and which would have done so—turned out to be paper transactions not available when needed. Longstanding weaknesses involving interconnections had not been corrected.

Today's hearing will deal with one relatively narrow aspect of this broad problem: The adequacy of regulatory and voluntary mechanisms for assuring the interconnections necessary for system reliability.

The subcommittee believes that this particular investigation is timely because, at this very moment, the House and the Senate have before them legislation in the National Energy Act which would provide a new authority regarding interconnections and system reliability.

We will try to weigh what happened in the matter before us against the legislation and vice versa to ascertain how the legislation would work to prevent repetitions of the unfortunate recent blackouts.

I am pleased to welcome our witnesses today.

The Chair advises that our first witness will be Mr. Norman Clapp, special consultant in charge of investigation, New York State Public Service Commission, Empire State Plaza, Albany, N.Y. 12233. Mr. Clapp, we are pleased you are with us. Do you have any associates you would like to have with you?

STATEMENT OF NORMAN M. CLAPP, SPECIAL CONSULTANT IN CHARGE OF INVESTIGATION, NEW YORK STATE PUBLIC SERVICE COMMISSION, ACCOMPANIED BY EVAN DAVIS, SPECIAL COUNSEL

Mr. CLAPP. Yes, Mr. Chairman, I would like to have Mr. Davis, our special counsel, join me at the witness table.

Mr. DINGELL. Gentlemen, if you will each identify yourself for purposes of the record to our reporter, we will receive your statements.

Mr. CLAPP. Mr. Chairman, I am Norman Clapp. I am the special consultant of Gov. Hugh L. Carey, in charge of the investigation of the power failure in New York City on July 13. Mr. Evans is here at the table with me, and he can identify himself.

Mr. DAVIS. My name is Evan Davis. I am associated with Cleary, Gottlieb, Steen & Hamilton in New York City, which is special counsel to Mr. Clapp's investigation.

Mr. DINGELL. Mr. Davis, we are pleased you are with us.

Gentlemen, you are recognized.

Mr. CLAPP. Mr. Chairman and members of the subcommittee, I am very pleased to accept the invitation to appear before you here today. Although the investigation I am conducting for the Governor of New York is still incomplete, it has gone far enough to identify the inadequacy of Consolidated Edison Co.'s extra high voltage interconnections with neighboring electrical systems as one of the crucial elements of the July 13 New York City blackout.

It is true there were a number of other factors, but certainly this was one. It is one that definitely warrants the attention of this subcommittee, and through it, the Congress. The public must ultimately look to the powers of the Federal Government over inter-

state commerce for its protection against deficiencies in regional bulk power grids upon which local utility distribution systems, even one as large as Con Edison, must depend for efficient and reliable service.

For your information and background, let me summarize very briefly the status of our investigation.

On the night of July 13, as the Con Edison system collapsed in New York City and its adjacent service territory, Gov. Hugh Carey requested the New York Public Service Commission to undertake at once an investigation into the causes of the failure and to develop recommendations for corrective action which would prevent any future major power failures in the State of New York.

To avoid any possible suspicion that such an investigation might be self-serving, he sought to place the investigation in the charge of an outsider who had no previous role in or connection with past policies or decisions of either the company involved or the Public Service Commission as the public regulator of the company.

Governor Carey asked me to undertake the direction of the investigation on those terms and requested the Public Service Commission to retain me as a special consultant in charge of the investigation with full responsibility for the investigation and such corrective recommendations as I am able to make to both the Governor and the commission.

On July 25 the then acting chairman of the commission, the Hon. Edward Berlin, so designated me, and for this purpose I was delegated the investigative powers of the commission to take sworn testimony, subpoena witnesses, and perform related functions.

As special counsel, I am assisted by the law firm of Cleary, Gottlieb, Steen & Hamilton of New York City and Washington, D.C., represented by Messrs. Alan Applebaum, Evan Davis, and Lee Mittau. Mr. Davis is here at the witness table with me today. I have also the assistance of a special engineering consultant, Mr. Charles F. Almon, Jr., a former director of systems operations for the Tennessee Valley Authority. He has previously served as vice chairman of the Advisory Committee on Reliability of Bulk Power Supply to the Federal Power Commission in its investigation of the Northeast blackout of 1965.

In our investigation we have worked closely with and have had the invaluable assistance of the technical task force of the New York Public Service Commission's Power Division. This task force was set up by the commission to investigate the New York blackout for the very right it happened.

In view of the number of separate investigations of this catastrophe, we are endeavoring in our own efforts to bring together in our record the results of the various inquiries, probe more deeply where critical questions seem to remain, and apply our independent analysis in formulating whatever recommendations I will have to make to the Governor and to the Public Service Commission.

Mr. Chairman. I view the investigation we have undertaken as consisting, really, of three phases. Phase 1 is the process of determining what happened in the collapse of the Con Edison system between 8:37 p.m. and 9:36 p.m. on July 13, and why. We have received all the various reports made by the Public Service Com-
mission's task force, the Federal Power Commission, New York City's Special Commission of Inquiry, and the Consolidated Edison Co. itself on these questions and have reviewed them in some depth in 2 days of public hearings on September 20 and 21.

We have made further inquiries of the company and the New York Power Pool, looking toward another set of hearings to be held on October 25 and 26 relating to phase 2 of the investigation. This is directed toward the examination of ways and means of increasing the reliability of the Con Edison system by improvement of the Con Ed system itself and its operation.

Phase 3 will be addressed to the examination of ways and means of increasing the reliability, not only of Con Ed's service, but also of other utilities in the State of New York as well, by improvement of the bulk power system, particularly the transmission grid outside the Con Ed service area.

We expect to be going into the questions of phase 3 in November. When we have completed that phase of our investigation, I am confident we will have more to discuss with this subcommittee at that time.

At this time, however, it can be said without any reservation that the inadequacy of Con Ed's interconnections to the south and east was the final fault that brought the system down. There were other equally important contributing factors, deficiencies in system design, inadequate response in bringing on reserve generation, confused communications, errors of human judgment, and mechanical failures which set the stage; but it was the opening of the Long Island interconnection and the failure of the Linden Goethals tie at 9:22 and 9:23, both because of overload conditions, that brought on the shutdown of the system.

If other things had not happened earlier, or if some things had happened which did not, the final showdown on the interconnections to the south and east would not have occurred and the deficiency could have been moot in this instance.

But the fact is, the crisis did come and the interconnections were found wanting. The obvious question is, Why? That is a question of proper concern to this subcommittee, the Congress, and the Federal agencies to which the Congress has delegated certain powers and responsibilities for regulating bulk electric power supply.

This particular instance not only poses the problem of dealing with an inadequate bulk power interconnection between New York and the neighboring utilities. In the case of the Linden Goethals tie, it also raises questions as to the adequacy of the machinery for decisionmaking and protection of the public interest in interconnections between the voluntary power pools of the utilities, between the systems of the various regional reliability councils, and across State lines.

The Linden Goethals interconnection is between the Consolidated Edison Co. of New York and the New Jersey Public Service Electric & Gas Co. Each is in a different power pool. Con Ed is in the New Jersey Power Pool. New Jersey Public Service is in the Pennsylmania, New Jersey, Maryland Power Pool, PJM. Each is under a different regional reliability council set up under the National Electric Reliability Council structure and the auspices of the Federal Power Commission, and each is in a different State.

Let me review for you the critical significance of the Linden Goethals interconnection with New Jersey Public Service Electric & Gas Co.

The Con Ed service territory includes practically all of the city of New York and portions of Westchester County. Altogether it serves more than 8 million people. Its peak load is approximately 2,532,000 kilowatts, or 2,532 megawatts, a peak that was hit this summer during the July heat wave. It was carrying a load of 5,993 megawatts at 5:30 p.m. July 13, just before the thunderstorm struck the first blow in the events leading to the total blackout an hour later. Of this amount, 1,930 megawatts of power were being imported over the company's transmission interconnections.

The backbone of the company's service network is a north-south transmission axis of 345 kV circuits running from substations at Buena Vista and Millwood north of the city to Staten Island on the south, a distance of approximately 35 miles. At the northern end the Con Ed system interconnects with four 345 kV circuits in the New York Power Pool having a total normal transfer capacity of 2,500 megawatts.

At the southern end of the axis where the heavy load concentrations are, there are interconnections with the New Jersey Public Service Electric & Gas System to the west, the 345 kV Hudson Fagravut tie which was out of service on July 13, and a 138 kV Valley Stream Jamaica tie with Long Island Lighting Co. to the east.

At the very south end of the tie is the Linden Goethals tie with New Jersey Public Service Electric & Gas which operates at only 230 kV because of the transmission design of the FJM system. This gives the Con Ed system a normal transfer potential of only 1,100 megawatts at the southern end of the system for importation of power, compared to 2,500 megawatts at its northern extremities. I might add that at 1,100 megawatts it includes the transfer capability of the Hudson Fagravut tie which was not in service on July 13.

On the face of it, this is an obvious lack of balance affecting the reliability of the Con Ed system. An elementary hedge against localized storm hazards is dispersal of potential power sources and interconnections. The Con Ed system as it now stands puts too many of its eggs in one basket at the north end of the system and Con Ed testified at our hearing last month that they were aware of this problem and had been trying to negotiate with New Jersey Public Service Electric & Gas for an arrangement which would make the strengthening of the southern interconnections possible, but the negotiations had been fruitless because the companies could not agree on an equitable apportionment of the cost.

Counsel advises me that under present law the Department of Energy has a broad mandate to promote and encourage interconnections among utilities. The Department's mandate is set out in section 202(d) of the Federal Power Act, 16 U.S.C. paragraph 824(a)(a), where:

For the purpose of assuring an abundant supply of electric energy throughout the United States with the greatest possible economy and with regard to the proper utilization and conservation of natural resources,
the Department is charged with designing and promoting regional and national interconnected systems. The law describes such interconnections as voluntary, and under most circumstances the Department appears to have no power to order interconnection on its own initiative.

The Department's independent regulatory body, the Federal Energy Regulatory Commission, does have such power, however, upon the petition of a State regulatory commission or an electric utility. After an appropriate proceeding, the Department may, under section 203(b), 16 U.S.C. paragraph 824(a)(b), order an interconnection, but only if the interconnection places no undue burden on the opposing utility, does not compel it to enlarge its generating facilities and does not impair its ability to render adequate service to its customers. Presumably, the Department could order the construction or reinforcement of transmission facilities which supply bulk power to an interconnected utility.

In its interconnection order, the Department may prescribe the terms and conditions and the compensation or reimbursement reasonably due the interconnected parties.

When we asked the ConEd officials why they had not sought Federal intervention in their negotiations with New Jersey Public Service Electric & Gas, Mr. Joseph Block, the company's executive vice president for administration, replied that they feared the delay of a long-drawn-out proceeding and litigation.

Mr. Chairman and members of the subcommittee, here is a dramatic case history attesting to the critical importance of adequate bulk electric power transmission interconnections, regional and interregional, intrastate and interstate. It is underscored by the tragic events the city of New York suffered in the wake of ConEd's power failure that night of July 13.

Although we do not yet know the full story of the ConEd-New Jersey Public Service Electric & Gas negotiations, what we do know certainly raises the question of whether or not there is any interest in the adequacy and reliability of major bulk power interconnections can be left safely to the mercy of voluntary negotiations between individual utilities preoccupied primarily, if not solely, by their own self-interests.

It raises too, the question of whether the authority of the Department of Energy and the Federal Energy Regulatory Commission to deal with such problems, is explicit enough in the law to avoid prolonged litigation.

It may also raise the question of whether the Department itself has the institutional capability and the procedural framework to deal with these problems without excessive delay in view of their importance and urgency.

Mr. Chairman, until early this year I served as the chairman of a State Public Service Commission in the State of Wisconsin and I can attest from my own personal experience to the problems that are raised by all of the procedural impediments that regulatory commissions have to carry in dealing with questions of vital urgency of energy supply that are presented to them, and the regulatory delay and lag that is encountered in this field is a source of grave concern not only to the industry but also to the people who have the responsibility for regulating that industry.

I hope the subcommittee's action in convening these hearings on the New York blackout is an indication that it intends to deal with these questions and provide some constructive answers from the wealth of its wisdom and experience.

That concludes my prepared statement, Mr. Chairman.

Mr. Dingell. Mr. Clapp, the Chair would like to thank you for a very helpful presentation. You have given us a very careful and well-thought-out statement.

The Chair observes that you have been of particular help, both you and your associates, in connection with the inquiries that have been made by the staff, and I would like to express to you our thanks at this time for that.

I would also like to assure you that it is not our intention to conduct these hearings simply for purposes of the pleasure of conducting hearings. We intend to try and see if it is that the necessary and appropriate corrective measures are taken and that the problems which brought about this set of circumstances are redressed with some vigor and forthwith.

You could help the interconnected--and I don't ask you to do it now—if you would take a look at parts 541 through 545 of the House bill on this matter, copies of which will be made available to you by the staff.

We will shortly be going to conference on that and your comments as to the adequacy of this proposal to help redress some of the evils about which you have properly complained would be of immense value to us, because we are going to be discussing this with the Senate, which does not view this matter with the same enthusiasm that our committee does.

Mr. Clapp, I would be very happy, Mr. Chairman, to respond to this request. If I may have the time to do it in writing, I would prefer that.

Mr. Dingell. I think it would be unfair for you to do so now, except insofar as you might choose to do so. We will let you do it now, but I think you would be of more help to us if you give us your comments in writing.

[The following letter was received for the record:]
Chairman John D. Elmore - page two

[Incorporating critical or operator costs) incurred by the electric utility that is required to make physical connection to a wheel area. I ensure that the requirement is not intended to undervalue the transmission's subcircuit to direct the reposition of costs between the affected utilities (see Section 916(6)(i)). To make this point clear, I assert that the words "in state or" are intended after "reasonably due for" at line 5 of page 11 of the proposed bill.

b. Section 916(6)(i) requires the Commission issues direction to the direct the reposition of costs between the affected utilities. In the case of interconnection, it appears that somewhere out and reliability considerations should be weighed before the reposition before basing an order direction as increasing in transmission necessity. Thus, as presently drafted, 916(6)(i) contains an order reason for 916(6)(i) receiving consideration of these factors. I request addend "upon the findings specified in research (a)," after "any" is the fifth line of Section 916(6)(i).

2. Section 916(6)(i) provides that the Commission may determine the reposition of costs and the procedure or reimbursement reasonably due to the person to go in the order and one of the conditions of interconnection is not directed by agreement among the parties. I would request deletion of the conditional phrase quoted above.

3. In amending respect to the provisions of Section 916(i) as an order to assess Federal jurisdiction over what would currently be thought of as local distribution or retail sales. For example, Section 916(i) includes the Commission to direct interconnection with a qualified interconnection facility without necessary any minimum operator for such facility. And Section 916(i) contains entity under Sections 916(i) and 916(i) from the provisions of Section 916(i) leaving Federal jurisdiction over "facilitating distribution in a transition". Direct Federal responsibility for matters of distribution and retail sales at the local level relates to an equal consistent with the needs of sufficient and cost-effectively to monitor the several matters through Federal administrative machinery. Indeed, some mechanisms of a scale for Federal control, it would, in my view, be wise to offer the administrative effectiveness of the Commission to examine its regulatory area beyond the minimal area of both power supply between electric utilities. I therefore recommend addition of a statutory status for a multi-public cooperation facility and certain revision of Section 916(i).

4. Section 916(i) states that Commission issues order by an evidentiary hearing, but this traditional evidentiary hearing is a wasteful and unnecessary burden in industry where it could be resolved through a non-hearing evidentiary hearing. I suggest that
Mr. DINGELL: The Chair recognizes Mr. Kitzmiller.
Mr. KITZMILLER. Thank you very much, Mr. Clapp.
I also want to thank you for all the help you have given us. We would be absolutely nowhere in our investigation without the cooperation you and others have given us.
I would like to go back to the problem of getting interconnections that are necessary established.
In your view, an extended interconnection with the PJM is, if not vital, at least terribly important to the Con Ed system?
Mr. CLAPP. Indeed it is.
Mr. KITZMILLER. Would your view change if you knew that there was another interconnection coming down from the north along that same northern corridor?
Mr. CLAPP. Very frankly, the point I made in my statement that ConEd is placing so much of its reliance upon those northern interconnections is one of major concern to me. Those interconnections are geographically vulnerable as well as electrically vulnerable.
Mr. KITZMILLER. So in effect the location of an intertie is almost as important, or in some cases as important, as the existence of the intertie?
Mr. CLAPP. Indeed if a storm strikes where you have all of your key interconnections, you wish you had one off at the edge where the storm doesn't strike.
Mr. KITZMILLER. Let me then move to another area. You said that Con Edison had indicated that it didn't want to go to the FPC to ask for help in the Linden-Goethals tie because it was afraid of the delay that would be encountered in litigation, first in the process before FPC and then the delay that might result in litigation if the decision was contested. We have had a lot of experience with delays in actions before the FPC, so that is an understandable fear.
On the other hand, we have another question which raises an issue of delay, the institutional delay of the utility industry itself, and that seems to me to be the phase angle regulator. We just received from the FPC, much too soon to give it to you, a chronological history of the phase angle regulatory problem at Hudson-Farragut, so I am not going to ask you to comment specifically on that; but do you know of any reason that it should take over 1 year to replace a phase angle regulator? Are you looking into that?
Mr. CLAPP. We are looking into that and we have in fact asked that question of Con Edison officials. I think I should let them speak for themselves. They have told us that they had proceeded and were proceeding as rapidly as they could to get a new regulator put in, rather than repairing the one that they had there before which had had previous trouble.
Mr. KITZMILLER. The phase angle regulator had failed four times before, the particular phase angle regulator that we are talking about now, and as I remember the testimony before your commission it was indicated that such repeated failure is highly unusual. Mr. CLAPP. It is certainly very unfortunate and it is hardly satisfactory. Mr. KITZMILLER. But each time it failed before ConEd repaired it and put it back on line?
Mr. CLAPP. Yes.
Mr. Clapp. Do you know how long that took to design? And I don't know that information with this recall exactly.

Mr. Kitzmiller. The reason that I am asking is that Con Edison has now ordered two phase angle regulators in order to have a spare phase angle regulator in case of malfunction.

Mr. Clapp. That is correct.

Mr. Kitzmiller. Do you know why they decided on one phase angle regulator? Have they said why?

Mr. Clapp. They testified before us that they felt a design that had proved itself unreliable, so they designed a new design.

Mr. Kitzmiller. Have you inquired of them about this one so they would have the working stock ordered another one, which would seem to me to be the option of a new one in place and a repaired one?

Mr. Clapp. I believe that question was not asked.

Mr. Kitzmiller. Will you be asking? What I am trying to get at is the regulatory delay any worse than the one that they have to have to throw good money after bad in order to have a new design regulator.

As to what their answer would be to the question, I just asked, I have no idea. I suppose they hesitate to answer because, you know, that was a question that they have to answer.

Mr. Dingell. How were they throwing good money after bad in trying to get this Hudson-Farragut tie into good working order?

Mr. Clapp. Again, I shouldn't testify for the company, because they are able to speak for the better informed on their own thought processes, but they did testify that they regarded the history of the tie as completely unsatisfactory, and that they had not tried to repair it again.

Mr. Dingell. Can you give us any idea of how long the Farragut tie was out of effective functioning?

Mr. Clapp. I think it was out since September 1967.


Mr. Clapp. Yes.

Mr. Dingell. Approximately 1 year prior to unfortunate events in question?

Mr. Clapp. Yes, sir.

Mr. Dingell. Did this have a significant effect on the system?

Mr. Clapp. It certainly had a critical effect on the system on July 18th. Up until that time it all seemed no serious problem.

Mr. Dingell. It was unimportant as long as everything went smoothly.

Mr. Clapp. It was a factor that should not be ignored.

Mr. Dingell. Exactly.

Mr. Dingell. Is the particular scenario that occurred on the night of the blackout the only scenario in which this particular tie would have any importance?

Mr. Clapp. This is a technical question which I presume some system engineer should answer, but generally speaking, I believe that the scenario in which a given intertie can become critical, is a question of the total reliability of the system and the circumstances in which that intertie is a critical factor, so I say that the answer to your question is no, it is not the only conceivable combination of circumstances in which that intertie would be a critical factor.

Mr. Dingell. It was an important source of electrical energy and part of the system which happened to have a shortage.

Mr. Clapp. It has a transfer capability, normal rating, of 400 megawatts, which is a sizable piece of power.

Mr. Dingell. Very good.

Mr. Kitzmiller. In fact, illustrative of that point, it was critical just like over 2 weeks later when a similar event occurred. I understand, a more serious event occurred which ConEd survived. I believe that event was the one that would not have occurred otherwise.

Mr. Clapp. Kitzmiller, before we leave this question, we have heard Con Edison for its files on the history of their attempts to get that intertie back into service, and the decision that the intertie was right; and that we need to go to a new number on how they repair the old regulator or get a new one. We have not had a chance to examine those files, but we have requested them of the Con Edison Company.

Mr. Kitzmiller. I appreciate that. I guess we probably should not belabor a decision which you don't have enough information to make, but we certainly would want to look forward to hearing from you at a subsequent stage when you do. Thank you.

Let me go back to the Linden-Goethals tie and I think to the related tie that is to come into Farragut from the north and west.

Con Edison says that it was afraid to go to the FPC because of the delay in litigation but ConEd was not the only party who could have gone to the FPC to ask that that be resolved.

As I read the law—I don't have it here in front of me—the Public Service Commission also has standing to go into the FPC to ask for action. I guess you are in a delicate position regarding the Public Service Commission?

Mr. Clapp. No, not really. My responsibility is to the Governor and I am free to examine the Public Service Commission's actions just as well as the company's actions.

Mr. Kitzmiller. Then let me ask you, do you have any idea why the Public Service Commission failed to take this action? And if you don't have any idea, will that be a part of your inquiry?

Mr. Clapp. I think definitely we will be inquiring as to that come November when we get into this grid problem.

Mr. Dingell. When you get the answer to that question, I think we would like to have it from you, and if our staff could remain in
Mr. Clapp. I think—at least I have always considered when I was on a State commission—that the jurisdiction of a State commission over the utilities within its jurisdiction could be stretched to cover its contractual relationships with other utilities affecting the reliability of service.

Mr. Dingell. I would hope so, but I must confess in the case of ConEd we have some small curiosity. To go further, membership in the power pools is not enforced by any State or Federal agency, is it?

Mr. Clapp. Not to my knowledge.

Mr. Dingell. And the content of the agreements among the participating members of the several power pools is not subject either to review or taxation or mandate by any State or Federal agency, is it?

Mr. Clapp. So far as the State agency is concerned, again I say that the State agency has to reach the contents of any such agreement through its jurisdiction over the contracting utility and I think if a jurisdictional utility were to make an agreement with another utility as a part of a pool arrangement that the State commission felt would jeopardize the reliability and otherwise its functioning in the public interest, it would have some recourse against that kind of a contractual relationship.

Mr. Dingell. Are you aware of any instance where that recourse has been exercised?

Mr. Clapp. I don't recall offhand, but I would think that even if it has been exercised it would be something that the individual utility would be very much aware of and would certainly have a precautionary effect.

Mr. Dingell. But in terms of affirmative action to require either jurisdiction or utilities or the establishment have been reversed terms to assure reliability within those pools, I believe you are unaware of any action by a State agency or a Federal agency to take the necessary steps to assure that result?

Mr. Clapp. Mr. Chairman, I hesitate to answer that categorically, but it is my impression that there have been instances in which the Federal Power Commission has ordered interconnected.

Mr. Dingell. If any come to mind and you would like to suggest them to us, we would find it useful for the record.

Mr. Clapp. One that comes to mind which I am not sure of but I think might bear investigating is the Gainsville case.

Mr. Dingell. I have to go and vote. I am going to ask my good friend, Mr. Ottinger, to preside.

Mr. Kitzmiller. I think we are coming to the end of this line of inquiry. I want to pursue this just a little further. Are you aware of the agreement between the PJM system and the New York Power Pool system, I think, modified as of June 17, 1974?

I will tell you what it is. It is this most recent agreement governing the interchange of power.

In 1974, would you have described the Goethals interconnection or in fact any other interconnection with PJM, new interconnection, as being important to the ConEd郭?

Mr. Clapp. Based upon my evaluation of the situation today, I would say that 3 years ago it couldn't have been much different.
and 30-minute reserve capability, had been possible.

The load on the system, as I indicated in my statement at the 2 aircraft time, was 6,800, 000 of that being generated in one system.

I can't say—I would be glad to supply the load was. Before the final break-up, that 5,000 megawatts at the outset 200 or 300 megawatts less

Mr. Ottinger. The thing I would like you to submit the figures it will establish power, of production equipment in the available to the ConEd system it was probably even if the interties hadn't the generation had been available, and if it had been planned. It could have come in and the suplied had in the same, and the ConEd system could have been with it in mind it was to establish, and I think if there was no shortage of ConEd system, and it was not that had been adequate, should have been saved with that alone.

Whatever the problems nationwide we may or may not be, that wasn't the problem, July 13. Do you agree to that?

Mr. Clapp. You start by saying it was not regulatory lag that was at the heart of it.

Mr. Ottinger. With respect to the supply of power, what it was here on the night of the storm, we want to make clear that it was not in the inadequacy—the lack of power, or the system, and I agree limited either the Linden-they were out of service. But in the reliability of the system are not only important, and that they prove.

Now you mentioned the fact that the interties would have been more than the failure of those things had happened that didn't happen. I was the delay and failure of the intertie and to the full extent that the interties were down.

Mr. Ottinger. The thing—I may have run out of your statement—is that you express my appreciation to the ConEd officials that they have been a most cooperative group and that the ConEd officials have been a most cooperative group and that the system is a number of years ago. And one of the problems that we had was the reservation of fast power, and the fast power was not available.

Mr. Clapp. My reference, of course, to the ConEd officials involved assistance from the Federal Power Commission, and the Federal Power Commission relates in this instance strictly to trans to additional generation. But I do think the length of time that it takes to get just a feeling of this particular utility country.

Mr. Kitzmiller. There was another very important role in the events that transpired in the Jamaica intertie. It involves the use of power, which was not a great deal less than the previous day, and that was the story. Do you happen

to know why the power pool thought that it went earlier than it did?

In the transcript it is quite clear that Mr. Kennedy is under the impression that the Jamaica intertie was out at about 8:58—8:57 or 8:55—when in fact it didn't go out until 9:18. Do you know why he thought that?

Mr. Clapp. My recollection of the facts is that this was a point on the power line, when the flow was reversing, and the gate hit zero on the next, and he thought that he should have opened.

Mr. Kitzmiller. So it was a decision of the ConEd system operator made in regard to 93.

Mr. Clapp. I was a misreading of the situation.

Mr. Kitzmiller. Misreading the event, because, but I really wasn't addressing that. It was an interesting point.

What troubles me is there appear to be very serious problems on the Northfield line, and the Northfield Northport Under whose regulatory authority was that line built?

Mr. Clapp. I can't answer that question.

Mr. Kitzmiller. The reason I asked is that it is apparent, as the system is going down, that both the pool operator and the Lisko system operator are vastly more concerned with preserving the Norwalk-Northport intertie than they are with the ConEd intertie, to the extent that they didn't even tell the ConEd operator they were going to cut it out. He found it out when the power stopped and this is an interstate connection. It is a connection that seems to fall somewhere between the cracks, and I wondered why was responsible for approving the design that had it tie across a barge, that had it dragged over by a 4-ton anchor. There would seem to be no trouble to elements that we ought to have some review of some sort. It is not put in any to be reviewed.

Mr. Clapp. The recounting of the difficulties that had been experienced in putting that line back into service is a tale of horrors. I can say I would imagine that both the Connecticut Electric and the New York Commissions had jurisdiction over pieces of that line. So there was probably double jurisdiction so far as the States are concerned.

Mr. Kitzmiller. Under the proposed legislation that is now before the House, the Senate, there would be such jurisdiction. It would be vested in the Federal Regulatory Commission.

I misunderstood you at the House, the Senate, the committee, there would be such jurisdiction. It would be vested in the Federal Regulatory Commission.

Mr. Clapp. I want to express my appreciation to the committee. We want to cooperate with this committee in every way that we can, and we appreciate the cooperation we have had from the committee and its staff.

Mr. Ottinger. I want to thank you very much for being here with us, and I trust that you will supply the committee with any further findings as you make them so that we may have the
benefit of any additional information that you may discover in the course of your investigation.

Mr. Clapp. I would say in response, we certainly would be happy to do that, Mr. Ottinger. As a means of seeing that that gets done, I would suggest that the staff keep in touch with us, and as our record unfolds, if there is anything in it that they feel would be of interest and of help to this committee, that they simply make the request and we will be happy to respond.

Mr. Kitzmiller. Mr. Chairman, I would like to make one other observation.

We are indebted to the commission for the visual display here, which is the only diagram we have of what actually happened.

Mr. Ottinger. It is almost as easy to read as what the system operator has to deal with when he is trying to figure out what is happening. We went down to the ConEd board room, and it is just a Rube Goldberg operation. I trust that is one of the things which might not be within the Federal jurisdiction is something the State will take a look into, because that has got to be a very difficult situation for a system operator in any kind of an emergency to be able to tell what really is going on, even with the corrections that have been made since the blackout.

Mr. Clapp. We have been giving a good deal of attention to this, Mr. Ottinger, and a number of recommendations have been made by a number of interested agencies.

Mr. Ottinger. ConEd had a study made in 1973, which we have not been able to get hold of. I believe it was done by Boeing.

Have you been able to get your hands on that?

Mr. Clapp. Is this the management audit?

Mr. Kitzmiller. No, this was specifically a study of the control center, which was made available to Arthur Little as a part of their management study in 1975, and apparently from what we have heard, it recognized many of the weaknesses of the ConEd control center, and made very strong recommendations regarding it, and we are trying to get a copy of it, to see how strong and what they were, and to what extent they were implemented.

Mr. Clapp. That is one of the documents we requested.

Mr. Kitzmiller. You haven't gotten it yet? Let us know.

Mr. Clapp. The deadline hasn't arrived.

Mr. Ottinger. We are quite anxious to see that. We had rather hoped that ConEd would supply that to us voluntarily. I assume the chairman, if it is not supplied voluntarily, will take action to get it. It would be easier and simpler if we could just have it supplied to the committee.

Thank you very much again.

Mr. Clapp. Thank you.

Mr. Ottinger. The committee will now hear from Mr. Ira M. Millstein, chairman of the special commission of inquiry into energy failures. I take it that is New York City, 2 Lafayette Street, New York, NY.

Mr. Millstein, it is very good to have you before us indeed. I know you have been conducting very exhaustive inquiries into this same matter and we are very pleased indeed that you could be with us this morning and we will be glad to hear from you.

You may read your statement in full or summarize from it as you prefer. The statement will appear in full in the record.

STATEMENT OF IRA M. MILLSTEIN, CHAIRMAN, SPECIAL COMMISSION OF INQUIRY INTO ENERGY FAILURES, NEW YORK, N.Y., ACCOMPANYING CAROLYN K. BRANCATO, PH. D., STAFF DIRECTOR

Mr. Millstein. I appreciate the opportunity of being here. Rather than reading my statement in full, I would like to submit it for the record, and I would like to use whatever time we have available, to summarize where we are in the hearings.

I think, based on what I heard of the questioning this morning, we have a number of answers for you, if you care to pursue them. And in addition to that, I think we are in the middle of our hearings, and I didn't have a chance to bring up to date what happened yesterday in our hearings. I think that too is relevant.

I am accompanied today by Dr. Carolyn Brancato, who is the staff director of our commission, and is familiar with the work of our committee based on years and years of experience in the utility and energy field. I am sure whatever I can't answer, Dr. Brancato can.

Mr. Ottinger. We are pleased to have Dr. Brancato with us as well.

Mr. Millstein. As you know, our commission was formed, almost immediately after the blackout, by the mayor and city council, and our charge was a dual one. It was not only to find out what ConEd did or didn't do during the course of the evening of July 13, but it was to pursue the question of the regulators, to what extent did the Federal Power Commission and the Public Service Commission have any responsibility for the black out area, and to what extent were those responsibilities discharged.

We have been collecting a massive amount of information, and we decided to have our first public hearing last month, on August 5th, and the hearing was concerned the night of July 13. At that public hearing, we developed a record of the events which were highly publicized, and that transcript we have made available to your staff. I hope it becomes part of this record. I think it will do a good deal of information concerning the night of July 13.

I would like to talk about that night a little bit in context with the regulators, which to a bears heavily on the question of reliability and what the Federal Power Commission had to do with all of that.

As you recall, at those hearings we demonstrated quite clearly that the system operator did not perform as effectively as he should have. I want to make it very clear that at no time were we interested in looking for or finding scapegoats for those events. We are simply trying to find out what the facts are; what the mistakes were and to do with it; and the regulators had to do with it. The system operator did not function very well that night and did not promptly shut load. You all know the story of the New York Power Pool heatedly insisting that load be shed; it wasn't shed and we explored the reasons.

The principal thing we found out about the system operator, however, was that he hadn't been trained, and this concerned us a good deal.
Yesterday at our hearing, our general counsel prepared a searching analysis of the reports by the Federal Power Commission in 1965 and 1967. I would like to hand it up to you and make it part of this record.

Mr. DINGELL. I think it would be most useful, and without objection, we will insert it in the record. I think it is most helpful.

Mr. MILLSTEIN. With respect to the training of the control center personnel, I would direct your attention to the very first page of this study. This exhibit demonstrates what the Federal Power Commission recommended in 1965 and 1967.

Mr. OPTINGER. Do you have an extra copy?

Mr. MILLSTEIN. There are lots of them.

Mr. DINGELL. While we address ourselves to that, I think that the transcript that you have offered for the purposes of the record would be most valuable.

Without objection, it will appear in the record at the appropriate point, and we thank you for that cooperation.

Mr. MILLSTEIN. Thank you, Mr. Chairman.

If you take a look at the very first page of this exhibit you will find a statement by the Federal Power Commission in December 1965 and again in July 1967 commenting upon and making a recommendation concerning the training of system personnel, and as you will see, they said: "Thorough programs and schedules for operator training and retraining should be vigorously administered."

That was in 1965 and 1967.

Now take a look at what the Public Service Commission says in 1977, which is right on top of it. It says "ConEd should institute a formal training program for system operators." This is 12 years later.

Mr. DINGELL. And it had not been done in the interim period?

Mr. MILLSTEIN. No.

Now look at what the Federal Power Commission says in August 1977 after studying the blackout. "It is essential that all utilities upgrade their training programs for operating personnel."

And look at what ConEd says in August 1977, right at the bottom of the page when it starts talking about itself: "Expanded the training of system operators," and so on.

Mr. DINGELL. Religion came late in that instance, did it not?

Mr. MILLSTEIN. It came late. And the question I have is: Where was there the Federal Power Commission, and where was the Public Service Commission for the 12 years intervening between the blackout of 1965 and the blackout of 1977?

This is not an esoteric question, because to us in New York it was the key. Had that operator been trained in shedding load, we would not have had a total system collapse. That apparently was demonstrated a couple of weeks ago.

Mr. DINGELL. Isn't that subject to a couple of other caveats, provided that, A, he had had the training; B, he had had the authority; C, he had had the equipment; and, D, he had had other equipment which made the equipment that he was immediately relying upon work to carry out the necessary changes in systems structure?

Mr. MILLSTEIN. There is a lot of truth to that, Mr. Chairman. I am emphasizing here only one point. I can emphasize every other point that you made as being part of the recommendations which the Federal Power Commission made in 1965.

Mr. DINGELL. All of these were points made in 1965.

Mr. MILLSTEIN. Yes.

Mr. MURPHY. Mr. Chairman, would you yield at this point?

Mr. DINGELL. I don't have the floor, but I will yield briefly.

Mr. MURPHY. Here we have a public service commission, the Federal Power Commission, Federal Power Commission, and ConEd all pointing fingers at each other. We are going back to 1965 when this committee had some strong recommendations on interconnections and interties, and then we are supposed to train certain people in certain areas. I don't think we can put our finger on ConEd alone, because at the time of this blackout, I think about 95 percent of ConEd's system was spinning at the time, and that the power moving through and in New York City was not in the hands of ConEd. It is in the hands of the central power dispatcher that is purchasing power theoretically from the most efficient costwise source that feeds that area.

Here we are only spinning 38 percent. We don't have the reserve spinning or operating in case of a blackout, and from our investigations of this committee, you can train people to shed power from now until doomsday, but unless the instrumentation that sheds it is properly operating, and is properly being utilized, not just by ConEd, but by people in this entire system, I think we had better start drawing together what the problem is and not pointing a finger at ConEd. I don't absolve them.

Mr. DINGELL. The Chair thanks the gentleman.

We are not pointing a finger at anybody. We are just trying to find out what happened, and we intend to go into the whole of this matter fairly, find out where the facts lie, and whether new legislation is needed, whether the energy legislation passed by the House recently is a vehicle to accomplish our end, or whether there need to be changes made in conference, or whether we need to make changes elsewhere at a time later to see to it that these things go on.

Mr. MURPHY. I recommended changes to the gentleman during those hearings which were rejected.

Mr. DINGELL. I will be delighted to receive the gentleman's recommendations at any time as he well knows and I reserve to myself the right to accept or reject and I am sure the gentleman understands the committee is a strong-willed group of men who reject recommendations even of its chairman, despite their great worth.

I don't think that the gentleman can anticipate that the regulators who appear before us are always right either.

We thank the gentleman.

Mr. Millstein, if you will go forward, we would appreciate it.

Mr. MILLSTEIN. I certainly don't want to be construed as pointing the finger at anybody.

But I think it is very important for the committee, Mr. Congressman, to try to take this problem in pieces, because if you try to deal with it all at once, it gets confused. The principal thing I have
learned since I began these investigations is that I had better deal with one problem at a time or I am not going to understand any of it.

My own efforts have been to try to take the things that happened on the night of July 13 individually and see whether anybody ever said anything about them.

The first thing I pointed to was the question of training people in the control room. Nothing was exclusively the cause of what happened, and human only knows, plenty of other utilities make the same mistakes, but we have to try to focus on one problem at a time.

Now in the area of training people in the control room, my point was that the Federal Power Commission recommended in 1965 that they be trained. They were not. And now it is 1977, and the Federal Power Commission is again recommending that people be trained. My question is: Is that enough? Don't we want to backlog a little bit with something that could compel training if a utility doesn't do it voluntarily, because the public service commission, State of New York, didn't do anything either.

I just point this out.

Next step, the control center with which you are all familiar. It was not a clearly displayed control center. I haven't seen anybody else's so I can only talk about ConEd. But in 1965 the Federal Power Commission wrote a paragraph or two of recommendations saying clear up the control center. It is a peculiar place, and it has got to be cleared up.

In 1977 the Public Service Commission comes forward and says this control center has got to be cleared up. It is confusing.

My question is: Where were the two regulatory agencies that were supposed to see that this got done? There is no mystery about it. Everybody seems to concede that the man wasn't properly trained, and the control center wasn't properly displayed.

Now we have two regulators, not one. One claims that it doesn't have the power to do anything about it. That is the FPC, and that is why nothing happened for 12 years; and then we will have the Public Service Commission before us tomorrow. We are going to ask them those very questions, namely, what happened to this recommendation, and what happened to the control recommendations?

This exhibit speaks for itself. It deals with almost every question that was involved in the failure: Improved performance of operating reserve; improved relay and switching equipment, etcetera.

Recommendations were made but not followed.

You have all heard about circuit breakers that didn't close and so on. Again our question was: Where were the regulators during that period of time?

SYSTEM CONTINGENCY PLANNING

Recommendations were made, and again the Public Service Commission speaks in 1977 as if it had never heard of the earlier recommendations. Where were they during this entire period of time?

You can go on.

Lightning protection, the original cause of the blackout according to ConEd. Recommendations made by the FPC in 1965 and 1967 about added protection. Again the Public Service Commission in 1977 saying it should analyze performance of the overhead transmission lines.

Load shedding, the very event that occurred that night or didn't occur that night—again in 1965 and 1967 definitive recommendations and load shedding, and again in 1977, an indication by the Public Service Commission that they didn't hear the first one.

I think the point is made, and I think you will find this exhibit extremely useful in considering what you really haven't asked me to talk about today, about the reliability provision, 545.

Mr. Dingell. Excuse me. You are also suggesting, though, that we inquire of the two regulatory bodies in question what they have done.

Mr. Millestein. Yes, sir.

Mr. Dingell. You are going to be making that inquiry, and we will try to make a like inquiry at the appropriate time to find out what they have done.

Just for the benefit of my good friend from New York, we intend to inquire of everybody until we find out what the facts are. I want him to do that. We are not going to be lighthanded in dealing with the New York State Regulatory Board.

Mr. Ottinger. Or the Consolidated Edison Co. I don't think you have to absoleve them of failure to appease my friend from New York. Where blame belongs to them, it seems to me, they have got to shoulder that; as well.

Mr. Millestein. Of course. In my own view, in running this investigation, I am interested in all three, because together they make up the unit that supplies the consumers of the State of New York. Where blame belongs to them, it seems to me, they have got to shoulder that; as well.

Mr. Ottinger. There is another concern, if I may, and that is the power pool, and the powers which it may or may not have, and the actions that it took or failed to take.

Mr. Dingell. Mr. Ottinger makes a good point and that is one of our concerns too. That is, what can the power pool do and what does it fact do and what authorities does it have, what authorities does it exercise and how?

Mr. Millestein. I think these are all terribly relevant and, if my experience is any guide, the way to do it is a little bit at a time. Study each piece or you won't get anywhere. As far as I am concerned, it is the report of the first series of hearings that we had, because each of the points in there is a point that was involved in the blackout. Each of the points was discussed somehow by the Federal Power Commission in 1965. My answer yesterday from the Federal people I think was interesting. I had the former General Counsel, Mr. Journey, of the Federal Power Commission, and Mr. Curtis, kindly come up and testify and help us. Both agreed that the Federal Power Commission did not have the authority to carry through on the 1965 and 1967 recommendations, and that was it in a nutshell.

Sections 203(a), 202(b), and 207 were inadequate for those purposes, and they both, I believe, referred to the Federal authority's
Mr. KITZMILLER. I thought that would be the answer.

The reason I raised that is that I noticed that in the covering letter filing the contract, filing the agreement with the Federal Power Commission, the pool agrees "No new facilities will be installed or modified in connection with instituting this agreement."

In other words, it seems to me you have the pool not taking any kind of an aggressive action would help to develop this interconnection, but in fact acquiescing to the potentially unsolvable situation between the companies that are members of the two pools.

Mr. CLAPP. Yes; I would read that language as indicating that this is up to the companies involved.

Mr. KITZMILLER. Pursuing this now to the end, it would seem that in terms of interties, interconnections between systems, the power pools play no positive role. The State commissions have not chosen to utilize existing legal mechanisms under the Federal Power Act, and the power companies for their own reasons have not.

Mr. CLAPP. I think your description is accurate so far as this particular situation is concerned. I would have some hesitancy in extending that to all power pools. I think there is some variety of behavior among power pools and some of the power pools may be more active and aggressive in terms of developing interconnections than others.

Mr. KITZMILLER. One final thing. The Federal Power Commission submitted to the chairman of the committee late yesterday afternoon a list of all of the recommendations that were made after the 1965 blackout with a brief explanation of the extent to which they have been complied with.

Would you be willing to review those recommendations, and comment on the extent to which your commission finds that they have been complied with, at such time as your record is sufficient to support that?

Mr. CLAPP. We would be happy to. My only hesitancy in responding at this particular time is that these involve technical questions, and some of which we have gone into, some of which we are going into, and until our report is put together, I think it would be better to go into, and until our report is put together, I think it would be better to do.

Mr. KITZMILLER. That is all that I have.

Mr. OTTINGER [presiding]. I would like, at the outset, to thank our committee chairman in absentia for having these hearings. I think they are very important, not only to our area, but also to the country and the overall arrangements that are made to assure the reliability of power anywhere.

You conclude in your statement, Mr. Clapp, on page 8:

Although we do not yet know the full story of the ConEdNew Jersey Public Service Electric & Gas negotiations, what we do know certainly raises the question

As I indicated, with your next question, which raises too, the question of whether the power of the Federal Power Commission, now the Federal Energy Regulatory Commission, can deal with this sufficiently in the law.

You think there ought to be additional legal authorities as to connections at least between States.

Mr. CLAPP. I certainly do. I think there needs to be a mechanism by which situations of this kind can be addressed firmly and quickly and effectively. I think it is not entirely to be left to the Federal authority, but State authorities have definite limitations upon them, which means that someone has to step in and back up the line.

Mr. OTTINGER. Do you want to follow that up?

Mr. KITZMILLER. May I, just a second?

That raises another question. The legislation that is proposed now by the House would give the Federal Power Commission authority to require the establishment of power pools, regional pools. I presume that interconnection cannot be really effective without the creation of power pools to manage the interconnections. That, therefore, would seem to me to lead to the next observation, that power pools themselves will be regulated if the FPC requires their regulation. In your view, is that a desirable feature?

Mr. CLAPP. Oh, yes.

Mr. KITZMILLER. Do you feel that it is not possible in many cases for the State regulatory agencies to regulate power pools, even if they wanted to, even if they had the authority? It would be extremely difficult for a three-State power pool to be regulated by anyone.

Mr. CLAPP. It would be—

Mr. KITZMILLER. An impossibility.

Mr. CLAPP [continuing]. A jigsaw puzzle.

Mr. KITZMILLER. Thank you.

Mr. OTTINGER. I was a little concerned by the ad lib at the end of your statement that isn't contained in your written statement, and that is your expression of concern about new power supply, the lengthy regulatory process in permitting new supplies, to be on line, and whereas that may be a concern in the abstract, I would like to establish very clearly that it didn't affect the current situation with respect to the ConEd blackout.

I would like to get on the record, if I could, the situation as it did occur on July 13.

Do you have, are you able to give us here now, or would you want to verify the amount of power which would have been available to the ConEd system had the interconnections been adequate?

Mr. CLAPP. If the Hudson-Farragut tie had been in service, that has a normal transfer capacity of 409 megawatts, and if the Linden-Gothals tie were operating at 345, it would have had a similar capacity. That, I thought would have made a small difference in the world in the final minutes of that hour on July 13.

Mr. OTTINGER. What in fact was the supply and demand situation on the ConEd system, and the shortage before the lightning struck?

Mr. CLAPP. I can't give you those figures from memory. Of course ConEd attempted to bring on some reserve generation beginning about 8:45. The response was slow. They did not get it all up to the standards that their reserve ratings, 10-minute reserve capacity...
ability as "jawboning," but not backed up a whole lot in the area of reliability.

The second part of the hearing was devoted to restoration, to the question of once the system went down, why didn't it come back? What took so long to come back?

Obviously we couldn't spend a good deal of time on every single event that occurred.

We had some lovely charts with explosions on them, and so on, and I won't bore you with the details, because there was one thing that did happen in attempting restoration, which again comes back to the point in which I am primarily interested, namely, the regulators, and where were they?

That has to do with the fact that one needs to pump oil into cables in order to have electricity to flow in those cables when they go underground, and of course most of the New York City system is underground. When it hits Yonkers and comes south, it goes underground promptly for a whole variety of reasons, and I don't question the wisdom of that at all.

However, once it goes underground, those pipes have to be cooled with oil, and there must be pumps to put oil through those pipes. Now unfortunately, when the system went down, it was discovered that the pumps, to pump the oil to get those cables cooled, were hooked up to the system. When the system was down, the pumps wouldn't run. And one of the principal problems that the ConEd people had was taking portable equipment around from point to point to get the pumps going so that the oil would flow so that they could get reenergized. And to us it was amazing that these auxiliary, these inexpensive auxiliary pumps, were not powered by anything which was outside the system, but were powered by electricity from inside the system. So if you couldn't energize the system, you couldn't energize the pumps, and it was sort of like a self-defeating mechanism. It just wouldn't go.

Mr. Kitzmiller. Mr. Millstein, may I ask one question there?

Mr. Millstein. Surely.

Mr. Kitzmiller. This was one single isolated occurrence of something they hadn't thought of. Are you familiar with any previous experience that Con Edison might have had with the situation of having a vital oil system hooked up to its own system?

Mr. Millstein. Yes, that was on the generators. They learned that experience in 1965. You also need oil to go into the generators in order to get them going, and also to slow them down.

Now in 1965 they discovered that that too was hooked up to the system, and they promptly moved to put auxiliary equipment for the generators so that with a slowdown, the auxiliary equipment goes on immediately and keeps the oil flowing in the generators. But they didn't do that in the pipes. It wasn't that experience which impressed us so much, because someone can fail to add one and one and come up with two. That is a human failing.

What did occur to us, however, was did the Federal Power Commission say anything in 1965 and 1967 about these oil systems? And, yes, they did. I quote from the report of the Federal Power Commission back in 1966:

Individual systems have specific emergency power needs that may be peculiar to these systems, but which are just as important in providing for emergency situa-

tions. For example, the Commonwealth Edison Co. has provided small emergency generators to supply the cooling oil pumps required for circulation of oil in underground pipe type cable system in Chicago.

When I asked the witnesses from ConEd yesterday whether he had ever seen this, he said no. I asked him whether he was aware of it. He said no. He was aware of other recommendations or observations, but not aware of what the Federal Power Commission said.

When I asked Mr. Millstein and asked them about it, they said yes, this had been installed years ago. At today's prices, it is about $25,000 per unit installed. We thought they needed about 10 of them. ConEd has now put in 18 of them. It was a very modest investment, but both our expert and the expert from ConEd agreed that probably 5 hours could have been saved had these units been on line.

We did not get into the question of how much damage could have been avoided. I just don't know the answer to that. Anybody in New York who lived through that day knew that those hours, each one was precious.

As the day moved on and there was uncertainty about what to do the following right, and discussion led to the National Guard, etc., you knew that if at 9 or 10 in the morning we had the power on rather than 6 the next afternoon, it might have made a significant difference.

In any event, they all agreed that had these pumps been hooked up to auxiliary units, as the Federal Power Commission suggested they should in 1965, we would have saved at least 5 hours. That is a conservative estimate.

Now again it is a little thing, but it is an important point in the whole restoration process and the one we focused on. My question is: If the Federal Power Commission knew that auxiliaries ought to be in existence, and ConEd didn't do it, why didn't the FPC say something? If the Public Service Commission were aware that these auxiliary units were significant, and the investment was minimal, why didn't the PSC do something? I mean $500,000, assuming that is what it is, is really not a whole lot in the life of Consolidated Edison, considering the public relations programs and ads they have.

My view is that I am as upset with the regulators as I am with anybody else. There was a 12-year interval when everybody knew about this.

I would say that the results of our hearings have placed whatever blame there should be quite equally on everybody—ConEd, its management, the Public Service Commission, the Federal Power Commission. This was an event which did not have to occur.

One other point, and then I will move on to the specific matters in which you are interested, and that is, make no mistake about it, we are not dreamers on our commission in New York. We do not say there is any such thing as a 100-percent service. Nobody can afford that. We are not urging the expenditure of billions of dollars to avoid any possibility of a blackout at any time. We are not, and nobody is silly enough to do that, nor do we believe that things will never break down. They always will. Things are always going to break down.
However, what we do believe is that with a little more care and foresight on the part of the regulators and the company, some events can be avoided. And when you learn about the July 13 blackout, you have got to conclude that it didn’t have to happen. It didn’t have to happen, and when 8 to 12 million people are inconvenienced, and that word is an obvious joke, an understatement, to the extent they were on the night of July 13 by things that didn’t have to happen, then our commission, this committee, your committee, really have to dig in and find answers.

This event shouldn’t happen again, and I don’t yet know where the answer is. But when agencies who are dedicated to regulate utilities don’t pay attention to reliability and don’t pay attention to their own recommendations, and don’t do anything about their own recommendations, then something is wrong with the system.

I would like to leave that aspect of reliability of section 545 in your hands. I just don’t know enough about whether it is possible to have a section 545 without getting into the public-private power fight and into pooling and wheeling, all of which things I do not want to get into. But if there were a way to have a modest section 545, with some authority at the Federal level to back up the “jawboning,” if necessary, my guess would be that it would never have to be used.

My guess would be that the utilities and State commissions would move, just because there was a Federal presence, but I repeat, I don’t know enough about it. I don’t know whether it is feasible, and I can’t make a recommendation.

I point out to you only the history, and the history is that Federal recommendations standing by themselves were not observed.

Moving along on the question of interconnects, I really don’t have a whole lot to add to what Commissioner Clapp spelled out. He quite carefully pointed out the interconnects that could have been or should be considered.

I would like to make a point, and that is, as I said in my statement, I don’t have a good deal of faith in the current interconnect authority which the Federal Power Commission has. The reason being that I don’t believe that a utility wants to come to the Federal Power Commission and ask for help in coercing another utility into an interconnect. That just sounds like something that isn’t going to happen.

I don’t have data. I don’t have statistics. I don’t have vignetted for you. All I know is that it hasn’t happened. Utilities, private utilities, have not come to the Federal Power Commission and asked for coercive authority. I have got to believe that it just isn’t what one would anticipate a private utility would do.

Also, as far as power commissions, utility commissions coming to the Federal Power Commission and asking for authority to interconnect, I don’t have a lot of confidence in that happening, because again there is a “turf” question. Public utility commissions have their own jurisdiction in their States, and my belief is that if a public service commission in a State had to come to the Federal Government for help, it would be an admission of weakness. I don’t think they are going to do it. You ought to know, too, that we mailed questionnaires to all the State utility commissions in the United States, and 24 out of 25 responses so far have answered that they have never initiated such an FPC action.

Dr. Brancato tells me that the 25th was action on behalf of a municipal, not a private utility.

Mr. Diamond, that is the Outer Tail case.

Mr. Millstein. So we just don’t have either private utilities coming to the Federal Government or utility commissions coming to the Federal Government about private utility interconnects. It has not happened.

Our limited suggestion for added legislation would concern those cases where the pattern of cooperation between two private utilities does not resolve a particularly intractable dispute about an interstate connection impacting on system reliability. What our commission is concerned about is system reliability, and what we have focused upon is interconnects to assure system reliability.

Will two systems can’t get together, that is where we think there ought to be a Federal presence. In those cases we don’t believe the welfare of a service area should be left exclusively in the hands of voluntary application for Federal help by one utility or a State commission.

If a utility or a State commission for policy or political reasons doesn’t want a Federal presence, this should not prejudice by delay of interstate connections the welfare of the service area. Therefore we think it is reasonable for a Federal agency to be given the ability to act on its own regarding interstate interconnects impacting on system reliability. There is such a potentially difficult situation developing which affects New York City, and that is, as Mr. Clapp pointed out this morning, the proposed 345 kV transmission line from Ramapo in Rockland County in New York to Hudson in New Jersey.

I have a very simplified map attached to my testimony which shows how a hookup from Ramapo down to Hudson could provide an alternative route south for energy from anywhere.

In other words, if Ramapo is hooked up to Hudson, we not only open up an alternative for the west, to PJM, but we open up an alternative for the route south from the north. If Millwood closed down again, and that entire track down from Millwood to Yonkers closes, there ought to be another way down to the city.

The Ramapo, the 345 kV line from Ramapo down to Hudson is an alternative, and it opens up alternate possibilities for reliability, north and west.

That line, as you were told, is under discussion between P.S.E. & G. and ConEd. What we have learned in interviewing the parties involved is that the engineers for both the elected early on in December 1975 that such a line was essential. They jointly recommended that work on the tie be initiated immediately in order that it be in service by 1980.

They were not only public service company engineers. Those are the engineers for both P.S.E. & G. and ConEd. They took a look at it and said yes, that line should be in place by 1980.

ConEd would have needed this tie-in in 1980 in order to cover the contingency of loss of the Buchanan-Millwood right of way in terms of 1980 loads and inputs. The engineering recommendations for the Ramapo-Farragut line were required by the reliability criteria es-
established by the Northeast Power Coordinating Council, the voluntary regional council with oversight responsibility.

Mr. Dingell. Which, by the way, has no power to enforce its recommendations.

Mr. Millstein. Precisely. But all I was saying is that all the working people, the knowledgeable working people, from the reliability council to the engineers for both companies said do it now, and start building.

Mr. Ottenger. If the Ramapo-Farragut line was the same as what we have described as the Hudson-Farragut line?

Mr. Millstein. No, one goes across the Hudson. Look up on the map up there. You see Ramapo all the way to the left. Ramapo is off there all the way to the left. Drop a 345 kV line down to where that red area says Hudson. That is the 345 kV line we are talking about.

Mr. Ottenger. If the Hudson-Farragut line had been in operation—

Mr. Millstein. That night?

Mr. Ottenger. That night.

Mr. Millstein. The situation would have been very much improved.

Mr. Ottenger. Or the Linden?

Mr. Millstein. Or the Linden tie, it would have been very much improved. You asked appropriate questions of Mr. Clapp, why wasn’t it, and I have nothing much to add to that. What I am talking about is why we might need a Federal presence for that line. What happened was the management and the lawyers took over from the engineers, and at that point negotiations began, and since December 1975, no agreement has been reached on that line. We understand that negotiations are proceeding. However, we talk to both groups, the finger is being pointed one to the other as to why progress isn’t being made. There seems to be a question of who will benefit most from the proposed tie, and obviously who pays for it.

ConEd and P.S.E. & G. do not seem to be in agreement as to who pays for the tie. Now that argument could go on for a long time because it is going to cost $120 million.

Mr. Millstein. That is the same problem that is holding up the Hudson-Farragut and Linden-Goethals line.

Mr. Millstein. No; I think the other line is not a question of who pays for it.

Ms. Brancato. The Hudson-Farragut line is in place. There is one in place and one proposed. The one in place has been out of service since September 1976 due to a failure of the phase angle regulator.

Mr. Ottenger. Right.

Ms. Brancato. And that was the 400 megawatt line that Mr. Clapp referred to. The second one is proposed in order to meet reliability criteria, and construction should have begun on that, but it has been delayed.

Mr. Ottenger. The same kind of a failure in negotiations between the parties as I understand it.

Mr. Kitzmiller. I think I can clarify that. I think what you are referring to is the original proposal to upgrade the Linden-Goethals line which is now apparently inactive as a result of the inability of the two parties to agree on the price, the same problem that now persists with the Ramapo-Farragut line. He is speaking of the Linden-Goethals originally proposed to upgraded some time around 1967, I think.

Ms. Brancato. Right.

Mr. Kitzmiller. And that went on just as your Ramapo-Farragut discussion has gone on.

Ms. Brancato. Yes.

Mr. Kitzmiller. And the fact is now, we were informed by one ConEd official, that the proposal is effectively dead because they didn’t arrive at a decision, and because they had no way of having the Federal Government referee.

Mr. Millstein. That is where we are, and based on certainly the Ramapo situation, which we do know pretty well, we are concerned that, down the road if there isn’t somebody around to push, we may never get that 345 kV line in. Therefore it is our view that the simple existence of a Federal power to initiate interconnects on its own will speed up voluntary negotiations between utilities on reliability interconnects.

It has been my experience in private practice as an antitrust lawyer that there is a Federal presence that can do something, people move along a little better. I would suspect that if there were a Federal presence in the interconnect area, it would not have to be used a whole lot.

My feeling is, and it is only a feeling, that as a power, a residual power, it would lie there. I think the utilities would move along in reaching agreements where they had to, rather than submit themselves to these terribly long hearings, et cetera.

Mr. Dingell. Sort of like a shotgun behind the door.

Mr. Millstein. It doesn’t hurt when the Indians are around.

Mr. Murphy. In 1965 P.J.M. would provide 15 seconds of power to the New York grid, and then cut it loose. One of the recommendations of this committee in 1967 was to improve that situation, and obviously there has been no coordination between the two, but Millstein says you didn’t need P.J.M. and you didn’t need Long Island Lighting because you had enough capacity in New York to handle its problem.

Now if we are only spinning 58 percent, why didn’t more capacity be brought on line immediately?

Mr. Millstein. Congressman, if the committee wants the explanation, Dr. Brancato is going to be our first witness tomorrow, and I hate to give away all the exciting testimony that he has, she is prepared to answer that question in some detail.

Mr. Murphy. I think it is—

Mr. Dingell. Why don’t you comfort my good friend from New York, Mr. Murphy, by answering the question?

Ms. Brancato. I think there are two valid points to be made here.

One is that Con Edision clearly had sufficient capacity in isolation to meet the demand on the system. The load at the time was 5,856 megawatts, and the installed city capacity was close to 7,896 megawatts. So should Con Edision have been able to get on line 74 percent of the capacity that it had in the city, we would have been
fine. There would have been no blackout. That would have been all that was needed to sustain the system.

I think, however, the point is that the system should not be really looked at in isolation as such, because it is not economic to run many of these facilities in the city during offpeak periods, and you do expect a fair measure of coordination interstate in this case as well as from the north, to bring power in for economy reasons. So the fact that they had sufficient power to meet the demand was significant that they were not able to.

In that case then, you must rely on interconnections, and particularly in a geographically vulnerable spot, losing the five northern lines put then significant pressure to the west. That would be the principal reason for looking to the west as a measure of backup reliability.

The first Hudson-Farragut line was built in order to meet the NPP criteria for a contingency loss, of the right of way from Buchanan to Millwood, which is exactly what happened. So that the system was built to provide for that loss. The interconnect, however, was out of service because of the phase angle problem, these are management problems of a complex nature. Nevertheless it is necessary to then provide backup.

Mr. Murphy. What about startup time for this nonspinning? Mr. Millstein. It should have been within 10 minutes.

Ms. Brancato. They claim, Con Edison reported sufficient startup capacity to meet power pool requirements and so on, but it clearly did not have it.

Mr. Millstein. You have heard the stories about the men being sent home at 8 o'clock at night, so that the gas turbines just couldn't get started. Also there was an impression in some quarters that you could start all of those gas turbines from the headquarters of ConEd, and you couldn't. You could only start them in the field, and the people weren't in the field.

Mr. Kitzmiller. That raises a very interesting question. I was going to ask anyway because it does affect how the two system operators, both the pool and ConEd, reacted in their treatment of interties. Apparently both system operators believed that this was a adequate generating capacity available. Neither of them had been informed that there wasn't. That speaks then to a regulatory issue that really goes beyond ConEd. Let me trace it, and then I would like to ask you some questions about it.

When ConEd put in the turbines, they were, in part for peaking power. They were also in part for emergency power.

At the time they put them in, they connected them up automatically. The turbines to Gowanus were connected automatically to the ConEd energy control center, and the 252 megawatt capacity of the satellites was, in effect, also manned 24 hours a day because it was located at existing generating stations.

At some point Con Edison elected to disconnect those automatic starting devices, but they also at the same time put in a management schedule, a supervisory schedule, that meant that, I think, all but 600 megawatts of the 2,000 megawatts was effectively off-line after 8 o'clock every night in the week, and on Saturday and Sunday, and that all of it but the satellite stations was off after 11 p.m., so that you were left with only 252 megawatts for emergency purposes after 11 p.m.

As a part of its agreement with the power pool, Con Edison is required to tell them of any major changes in their generating capacity. Now, the first that the power pool knew of the change in that operation, apparently, was that night at about 8:45; is that correct, as far as you know?

Mr. Millstein. I believe that is the subject matter of tomorrow's examination at the Public Service Commission. We have already had private hearings on that subject and this is what we are going to discuss with Mr. Stavin and Mr. Schiff tomorrow. We have to ask them what they did about the fact, or why they didn't know that these units had been disconnected. We don't understand that.

Mr. Dingell. Would you see it to it that that transcript is made available to us?

Mr. Millstein. Yes. I don't know why they didn't act.

Mr. Kitzmiller. To keep the power pool advised?

Mr. Kitzmiller. Yes.

Mr. Millstein. Yes.

Mr. Dingell. Are you going to have the power pool before you tomorrow?

Mr. Millstein. We have had and we can have further private examination of the power pool. Tomorrow we are really focusing on the Public Service Commission.

Mr. Ottenger. But you didn't ask this of the power pool?

Mr. Millstein. At that time, no.

Mr. Kitzmiller. Then it would appear that the ConEd violated that agreement?

Mr. Millstein. I must say it does, but I don't have the answer.

Mr. Kitzmiller. What sanctions are there for a company that violates the agreement?

Mr. Millstein. I have been told that the sanctions are breach of contract.

Mr. Kitzmiller. Has that been raised, do you know?

Mr. Millstein. No.

Mr. Kitzmiller. What would be the force of the agreement be?

Mr. Millstein. I don't know.

Mr. Dingell. Each would then have to go to court, litigate the question, establish the contract had been breached, and then secure either damages or, given the particular set of circumstances, some kind of injunctive relief and Gowanus was connected to an office building nearby. All of the rest of the non satellite turbines were connected automatically to the ConEd energy control center, and the 252 megawatt capacity of the satellites was, in effect, also manned 24 hours a day because it was located at existing generating stations.

At some point Con Edison elected to disconnect those automatic starting devices, but they also at the same time put in a management schedule, a supervisory schedule, that meant that, I think, all but 600 megawatts of the 2,000 megawatts was effectively off-line after 8 o'clock every night in the week, and on Saturday and Sunday, and that all of it but the satellite stations was off after 11 p.m., so that you were left with only 252 megawatts for emergency purposes after 11 p.m.

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I have another question for the Public Service Commission, if you want to top yours. What about the phase angle regulator that was out for 1 year and was critical to performance? That out was found by the coordinating council to be critical to New York City.

Mr. Dingell. Which one do you refer to?

Mr. Millstein. The Hudson-Farragut line which was totally down, because the phase angle regulator went out in September 1976 and stayed out. That is no little thing. That is an interconnect that the company itself acknowledged was critical to the company in the event of an emergency situation and which the coordinating council had said was critical.

Ms. Brancato. The NPPC, Northern Power Coordinating Council, sets up contingency standards for various loss of rail and the Hudson-Farragut line, the first one that has been installed—which was down because of failure of the phase angle regulator—was out. However, it had been built, we understand, to meet the contingency criteria established by the reliability councils in order to safely operate the system.

With importing so much power from the north, the system had to be safely operated only with the knowledge that you could import power from the east, and you couldn’t.

Mr. Millstein. We asked that question of the Public Service Commission people at a private hearing and the indication we had as to what our answer will be tomorrow is that this was a management prerogative, namely, dealing with the manufacturer and deciding whether to order a new unit. Incidentally, the question which I believe you asked, Congressman, was they were having a lot of trouble with that phase angle regulator for quite a period of time preceding September 1976, and why did they put it up with it for such a long time? I don’t know.

To call that a management prerogative, to me—again, I may not understand the regulatory process—but it seems to me that the Public Service Commission of the State has some answers to give as well.

Mr. Kitzmiller. Have you asked about the impact of the absence of that phase angle regulator on the contingency arrangements with the pool?

Mr. Millstein. That is what Dr. Brancato was talking about.

Mr. Kitzmiller. You are talking about contingency?

Mr. Millstein. Yes.

Ms. Brancato. The reliability criteria by and large would be established by the coordinating council and those were not being met. Once the phase angle regulator was out, then the system was not, we understand, being operated in conformance with the reliability criteria established by the regional council.

Mr. Dingell. What is, again, the effect of the reliability criteria which is established by regional council?

Ms. Brancato. The criteria are established so that one will not operate a system in a certain configuration unless you are sure you have backup power from somewhere else.

Mr. Dingell. And legally it is a recommendation.

Mr. Dingell. Recommendation, but without force and effect of law?

Mr. Millstein. That is my understanding.
system. Granted it may be very useful to have another intertie, but the interties that they have are... 

Mr. MULLESTEIN. This is not functioning well.

Mr. OTTINGER. So that they don't function properly in the event there is an outage? 

Mr. MULLESTEIN. That appears to be correct. That is what our engineers tell us.

Mr. MURPHY. Mr. Millestein, I am happy we started this colloquy around the question of reserve. Mr. Clapp very clearly brought it out on page 4 of his statement the inadequate response that bringing on reserve generation and, of course, you do on pages 6 and 7, but I understand that ConEd for decades has been trying to plan a system so that they could bring on reserve at very short periods of time, that they tried for about 15 years to build a pump hydro plant at Cornwall, were never able to do that, that could have met a reserve of contingency in much less than the 10-minute period, perhaps a gas start-up on existing facilities would have happened.

Would you address yourself to their long-range planning where they were thwarted and how that type of opposition created the conditions of that blackout? 

Mr. MULLESTEIN. Well, first of all, I am not really expert enough to do that. Dr. Brancato has lived through all of that, but I would like to give you my very uninformed observations.

When I discovered that they did have operating reserves with gas turbines but couldn't get them on, at that point I was no longer terribly concerned with history. Our job was to investigate the July 13 blackout. ConEd had operating reserves which should have been able to get on line within a short enough period to save the situation.

Mr. DINGELL. Can you give us some appreciation of what was the level? I believe it was 5,000 megawatts were used, and there is a total capacity of 8 million?

Mr. MULLESTEIN. We have the exact numbers here.

Ms. BRANCA TIO. The system demand immediately prior to the first lighting disturbance was 5,868 megawatts. The demand is off peak. The total on that evening of installed capacity within the city, not outside the city, not at Indian Point, but solely within the city, was 7,896 megawatts. So had they been able to raise only 74 percent of all they had in the city that night, that would have been sufficient to cover the load.

In fact, all they could raise was 43 percent.

Mr. MULLESTEIN. So they couldn't meet the demand, but not because they didn't have it. They couldn't get it turned on.

Mr. DINGELL. Can you give us some reason why?

Mr. MULLESTEIN. The stations were unmanned in some cases. These gas turbines are located at various locations all around the city. They did not start automatically from the control room, although at one time apparently they did start automatically from the control room. At some point in history they were all disconnected, and that is what Mr. Kitzmiller and I were talking about, trying to find out why.

We will find out, I hope, tomorrow.

Ms. BRANCA TIO. Those that were manned had a phenomenal outage record, as they came on line, we obtained the logs of this particular group of equipment. Those that were called for that were manned had an extremely poor performance record. Sometimes, some order of between 80 and 90 percent of those that were manned that were called did not respond because of equipment failure, and that, it seems to us, to clearly go back to ConEd's own preventive maintenance programs and the testing that it does, presumably to assure that equipment actually functions when it is called to function. So the argument of building new plants, whatever they are upstate, Cornwall—

Mr. MURPHY. Staten Island.

Ms. BRANCA TIO. Staten Island is not really relevant here, because they had every bit that they needed. They simply just couldn't get it to work.

Mr. MURPHY. That FPC report clearly indicates that an 800 megawatt unit, 775 unit and a 601 megawatt unit, were out of service during that period.

Mr. DINGELL. Can the gentleman tell me why they were out of service?

Mr. MURPHY. It is undoubtedly in the report, but this was not a one night event.

Mr. DINGELL. We have all that power and it is out of service, won't come on, and unmanned. I am not sure the gentleman wishes to defend this company with his statements. It strikes me that he is denouncing them more vigorously than anybody else at the table here.

Mr. MURPHY. We are not in the process of denouncing or defending anyone. I am in the process of trying to find out how to stop blackouts, but then you had a 1,000 megawatt unit which was the largest but was never returned to the line?

Mr. MULLESTEIN. That is Indian Point 8, that is because of the design problem up there. Is that what they are talking about?

Ms. BRANCA TIO. Let's get the FPC and go over their report.

Mr. DINGELL. We are going to have them up. I appreciate the gentleman wanting to help because I am sure he wants to get this situation rectified as much as the rest of us do, and also see to it when we finally finish this hearing we have extracted from it the basis for further perfections, as required, to the legislation on which we are going to conference with the Senate very shortly.

Mr. MURPHY. I will give you an amendment for that conference, if you would like.

Mr. DINGELL. I am always interested in the gentleman's counsel. We are going to ask for just about everybody in sight to give us help.

Mr. OTTINGER. I would like to point out, if I could, if we had had Storm King during this period, two things: one hit presumably would have been on the line that was out, transmitting power, but, second, at that time of night they would have been pumping water up the mountain. That is what the equipment was designed to do, pump up and use the existing capacity during the night and use the power for peak periods.

Mr. MURPHY. Their operation would have been a function of the power pool. You don't know what situation would exist there.
Mr. Ottinger. Even if it had been connected separately, it would have been available to be useful.

Mr. Dingell. The Chair does observe we are going to have some testimony precisely on this point, so I think rather than our discussing it with limited information and knowledge, we would be better served to wait until we get some experts here.

Mr. Kitzmiller?

Mr. Kitzmiller. I am now dealing with the intertie question only. It is the finding of your study that the southern and western connections, interconnections, whether they be Goethals or Farra- gut, are vitally important to the security of the Con Edison system?

Mr. Brancato. Yes.

Mr. Kitzmiller. It is also the finding of your study that another north-south connection running through Westchester, running through the Westchester corridor, is less valuable because it is more vulnerable, because it is in that narrow corridor area?

Mr. Milleuin. Yes, sir. I think everybody would agree that putting another line in the same corridor is not going to improve things a whole lot. It is a very vulnerable corridor. That is why we are looking over toward Ramapo.

[Testimony resumes on p. 66.]

[Mr. Millstein's prepared statement and the summary of recommendations follow]
UP TO ALMOST DEATH OF THE FOLLOWING EVENING, AND ALL OF THIS WITH NATIONAL MEDIA COVERAGE. IF YOU INVESTIGATED THE RESIDENTS OF THE CITY, HOW MANY DECIDED NOT TO LOCATE IN THE CITY? AND HOW ABOUT THE EFFECT ON THE MORTALITY OF A CITY STRUGGLING TO EMERGE FROM A FISCAL CRISIS? THESE ARE REAL, BUT INCONCEIVABLE, COSTS. TO USE AN OLD SAY: YOU HAD TO BE THERE!

OUR MISSION, AFTER OUR COMMISSION'S CREATION BY MAYOR BROWN AND THE CITY COUNCIL, WAS TO INVESTIGATE THE RECENT INCIDENT NOT ONLY FROM THE PERSPECTIVE OF OUR EDISON SYSTEM OPERATIONS THAT EVENING, BUT ALSO IN TERMS OF EVALUATING THE LONG TERM SYSTEM PLANNING AND RELIABILITY. WE REALIZED THE LOGICAL FRAMEWORK WERE WHICH OUR EDISON OPERATIONS WOULD HAVE TO BE EXTENDED TO ASSESS WHETHER IT TOO INCLUDED A MEASURE OF ADEQUATE PLANNING AND COORDINATION SUFFICIENT TO IMPROVE RELIABILITY.

OUR INITIAL SET OF PUBLIC HEARINGS WERE HELD ON AUGUST 30 - 31 AND CONCLUDED THE ACTIONS TAKEN BY OUR ED AND NEW YORK POWER POOL SYSTEM OPERATIONS PERSONNEL IMMEDIATELY PRIOR TO THE SYSTEM FAILURES AND THE INDIVIDUAL OR CORPORATE RESPONSIBILITY FOR THOSE ACTIONS. WE OFFER A TRANSCRIPT OF THOSE HEARINGS FOR YOUR RECORD.

WE ARE PRESENTLY QUITE LITERALLY IN THE MINDS OF OUR SECOND AND FINAL HEARINGS WHICH DELAY TO TEST RESTORATION

-3-

REPORTS, JURISDICTION OF THE FEDERAL ENERGY REGULATORY COMMISSION AND THE NEW YORK PUBLIC SERVICE COMMISSION TO PREVENT SYSTEM FAILURES, AND THE FINANCIAL IMPACT OF ALTERNATIVES OF SYSTEM FAILURES. WHEN TRANSCRIPTS ARE AVAILABLE, THEY TOO WILL BE FORWARDED TO YOUR CONGRESS.

YOUR CHAIRMAN HAS SPECIFICALLY REQUESTED THAT I ADDRESS HIMSELF TO THE ROLE PLAYED BY INTERCONNECTIONS BETWEEN SYSTEMS IN HELPING TO MAINTAIN RELIABLE ELECTRIC SERVICE. CONSIDERING THAT OUR CONSIDERATION HAS YET TO COMPLETE ITS INVESTIGATION AND MAKE ITS FINAL REPORT AND RECOMMENDATIONS, WE OFFER A NUMBER OF PRELIMINARY OBSERVATIONS DRAWN FROM OUR OWN HEARINGS AND RESEARCH TO DATE WHICH MIGHT BE RELEVANT TO YOUR CONSIDERATION OF PROPOSED LEGISLATION SECTION 511 OF H.R. 9444.

THERE WAS NO SUBSTANTIAL DISRUPTION AT OUR AUGUST HEARINGS THAT A LOCAL SYSTEM COLLAPSE COULD HAVE BEEN AVOIDED IF, SOMETHING BETWEEN THE FIRST DISRUPTION AND SHORTLY AFTER 9:00 P.M., THE OUR EDISON SYSTEM OPERATOR HAD DISCONNECTED CUSTOMER'S ON "RED LOAD". THE SURFACE BETWEEN OUR ED AND THE POWER POOL OVER THE LANGUAGE OF COORDINATION BY THE POWER POOL DISPATCHER IS NOW VISIBLE OF BASELINES LAZERS THAT OF PRACTICAL OPERATORS WORKING AGAINST THIS WITH THE RISK OF MILLIONS OF PEOPLE AT STAKE. WHETHER THE POWER POOL OPERATOR "GAVE UP" OR "HOURIZED" OUR ED TO SHED LOAD - THE FACT IS THAT THE POWER POOL'S STATEMENT WAS QUITE CLEAR - "YOU WANT TO SHED LOAD IMMEDIATELY"
OR YOU'RE GONNA GO RIGHT DOWN THE FIFE WITH EVERYTHING*. COS 60'S OX OPERATING PROCEDURE # 60-6 STATES THAT IT SHALL DISCONNECT LOAD IN LESS DEEMED POPULATION AREAS "AS NECESSARY AND/OR AS REQUISITED" BY THE NEW YORK POWER POOL DISPATCHER.

QUESTIONS OF MISCONCEIVED COMMUNICATIONS CANNEVER OBLITERATE THE FACT THAT THE OPERATORS DID NOT FUNCTION EFFECTIVELY DURING THE EMERGENCY. AMONG OTHER THINGS: WHEN THE COS ED SYSTEM OPERATOR FINALLY ATTEMPTED TO SHED LOAD, HE EITHER OPERATED THE EQUIPMENT IMPROPERLY OR IT MALFUNCTIONED; THE POWER DISPATCHER SIGNALLED FOR LOAD NOT ALL Volt IN-CITY GAS TURBINE EQUIPMENT AND ONLY A FRACTION OF THE GENERATION HE ASKED FOR (Cf 470 MW BEFORE SYSTEM COLLAPSE) WAS ACTUALLY INFORMATION FROWN WHERE SUCH IT WAS TO NOTIFY THE POLICE AND OTHER EMERGENCY SERVICE PERSONNEL MADE HER FIRST PHONE ALERT SIX MINUTES AFTER THE SYSTEM WENT DOWN.

DESPITE THIS CLEARLY CREDIBLE HISTORY OF JULY 17TH, WE HAVE REPEATEDLY STATED THAT WE ARE NOT LOOKING FOR INDIVIDUAL SCRAPPAPTS. IT APPEARS THAT THE COS ED MANAGEMENT HAS NEVER PROVIDED THESE MEN WHO OCCUPY CRITICAL POSITIONS WITH ADEQUATE PREPARATION TO DEAL WITH EMERGENCIES. IN ADDITION, IT APPEARS THAT MANAGEMENT HAS NOT TAKEN SUFFICIENT STEPS TO UPGRADE THE FACILITIES IN THE EMERGENCY CONTROL ROOM - THE HEART OF SYSTEM OPERATIONS. DESPITE ITS OWN CONSULTING STUDY IN 1973 AND A CRITICAL MANAGEMENT AUDIT IN 1975 WARNED OF THESE VITAL DEFICIENCIES, THE GENERATING EQUIPMENT WITH WHICH THE MEN WERE PROVIDED APPEARS TO HAVE SERIOUS MALFUNCTIONS WHEN CALLED UPON TO SAVE THE SYSTEM.

FINALLY, AN IMPORTANT INTERCONNECTION WHICH HAD BEEN BUILT TO THE WEST - THE HUDSON/PARRISH INTERCONNECT TO THE PENNSYLVANIA-NEW JERSEY- MARYLAND SYSTEM - HAD BEEN OUT OF SERVICE SINCE SEPTEMBER 1976.

OUR NOISE THEN BEGAN AROUND JULY 17TH AS BEING THE RESULT OF LIGHTNING, POWER FUNCTIONING INDEED, EQUIPMENT FAILURES, ETC. AND CLOSE THE BOOK WITH AN EXHORTATION TO COS ED TO UPGRADE ITS OPERATIONS. WE WOULD BE THE FIRST TO ADMIT THAT OUR STUDIES PUT ONUS ON OURSELVES IN ORDER BEFORE REQUESTING HELP FROM OTHERS - OR MORE REGULATION. OUR COMMISSION WILL HAVE "SELF-HELP" RECOMMENDATIONS. ULTIMATELY COS ED ITSELF MUST BE RESPONSIBLE FOR PART OF THE IMPROVEMENTS AND CHANGES WHICH SEEM TO US SO CLEARLY REQUIRED. REGULATION CANNOT SUBSTITUTE FOR ALERT AND EFFICIENT MANAGEMENT.

HOWEVAR, IN THE CASE OF OUR NATION'S POWER SYSTEM AS IT EXISTS TODAY, THE NEIGHBORS ARE INCREASED IMPORTANT AND THERE OUGHT TO BE SOMEONE AROUND TO RESOLVE DISPUTES OVER THE HEIGHT OF THE FENCE.

PUTTING TO ONE SIDE THE DEBATE OVER A "NATIONAL GRID" - ABOUT WHICH WE DO NOT HAVE THE EXPERTISE TO ENTER - THERE SEEMS TO BE NO ARGUMENT OVER THE VISION OF STRONG INTERCONNECTIONS BETWEEN NEIGHBORING UTILITIES FOR BUSINESS REASONS AND FOR
SYSTEM RELIABILITY FOR LONGER PERIODS AND IN EMERGENCIES.

INCREASING THE DEGREE OF TRANSMISSION CAPABILITY AND EXCHANGE AMONG NEIGHBORING UTILITIES CAN PRODUCE SAVINGS IN SEVERAL CATEGORIES. OPERATING COSTS MAY BE HELD TO A MINIMUM THROUGH A PROGRAM TO ENSURE FOR DISPATCH THE POWERS FROM OTHER GENERATING CAPABLE OF PRODUCING IT MOST CHEAPLY, ASSURING THE REQUISITE TRANSMISSION CAPACITY FOR ALL INTENDED PURPOSES.

VARIATIONS IN DEMAND ACCORDING TO THE TIME OF DAY AND SEASON OF THE YEAR MAY BE UTILIZED TO MAXIMIZE CAPACITY EXPANSION BY USING THE PEAK CAPACITY IN ONE AREA TO SUPPLY SOME PART OF THE PEAK DEMAND IN ANOTHER. RESERVE CAPACITY MUST OF COURSE BE MAINTAINED IN CASE PEAK DEMAND HAS BEEN UNDERESTIMATED, AS PERIODS OF MAINTENANCE AND IN THE EVENT OF GENERATOR OR SYSTEM OUTAGE. BUT RESERVE CAPACITY COSTS TO MEET A GIVEN STANDARD OF RELIABILITY ARE ALSO REDUCED BY COORDINATION. EVEN WITHOUT DIVERSITY OF SEASONAL PEAKS, INTERCONNECTIONS CAN REDUCE CAPITAL INVESTMENT AND INCREASE RELIABILITY BECAUSE THERE IS DIVERSITY OF GENERATOR OUTPUTS AND MAINTENANCE ON VARIOUS SYSTEMS.

BEYOND THESE POTENTIAL OVERALL ECONOMIC BENEFITS, INTERCONNECTIONS SHOULDN'T BE AVAILABLE TO ASSIST IN A SYSTEM OUTAGE. IT IS ON THIS TYPE OF INTERCONNECTION DESIGNED TO ASSURE RELIABILITY OF SERVICE THAT MOST CONCERNS OUR CONCERN.

OUR ECONOMY HAD IN-CITY CAPACITY MORE THAN SUFFICIENT TO MEET THE JULY 13TH EVENING LOAD OF 5,866 MEGAWATTS. THEREFORE,

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EVEN AFTER IT LOST ALL FIVE LINES FROM THE NORTH, IT WOULD HAVE NO NEED TO IMPORT POWER FROM THE NORTH OR PENNSYLVANIA. IT HAS BEEN ABLE TO BE IN THE POOL A REASONABLE PERCENTAGE OF THE TIMES GENERATING PLANT. THIS WOULD, HOWEVER, NOT HAVE BEEN THE CASE HAD THE OUTAGE AND LOSS OF MULTIPLE LINES OCCURRED DURING A CON ED PEAK PERIOD. TO THEM MAINTAIN THE SYSTEM IN ISOLATION WOULD REQUIRE THE AVAILABILITY OF EVERY OUTAGE OF GENERATION - WHICH EXIST AVAILABILITY IS NOT LIKELY IN ANY SYSTEM. GIVEN THE ADVANCES IN SYSTEM INTERCONNECTIONS MADE DURING THE LAST 10 YEARS, THERE SHOULD REALLY BE NO REASON TO DESIRE HOW THE SYSTEM MIGHT OPERATE IN ISOLATION - THE INTERCONNECTIONS FOR BACKUP AND RELIABILITY REASONS SHOULD HAVE BEEN STOPTIONS AND IN PLACE. THEY WERE NOT.

THE FEDERAL POWER COMMISSION HAS IN THE PAST PULLED A POLICY OF ENCOURAGING VOLUNTARY ACTION ON THE ISSUE OF TRANSMISSION INTERCONNECTIONS. THE LIMITED MAINTENANT POWERS WHICH THE FEDERAL ENERGY REGULATORY COMMISSION DOES POSSESS TO REQUIRE INTERCONNECTIONS ARE FOUND IN SECTIONS 202 AND 207 OF THE FEDERAL POWER ACT. FIRST, SECTION 202 (C) PERMITS THE FPC TO ORDER INTERCONNECTIONS TO BE MADE WHEN AN EMERGENCY EXISTS. SECON, UNDER SECTIONS 202 (A) AND 207, THE FPC CAN ORDER AN INTERCONNECTION TO BE MADE AND CAN ALLOCATE THE COST OF THE CONSTRUCTION IF ITS INTERVENTION IS REQUESTED BY AN ELECTRIC UTILITY OR BY A STATE PUBLIC UTILITY COMMISSION.

AS MANDATED, THE FPC - AND ITS SUCCESSOR AGENCY - IS LIMITED
IN DOING ALL THAT CAN BE DONE TO ENSURE RELIABLE ELECTRIC SUPPLY FOR CRITICAL POPULATION CENTERS SUCH AS NEW YORK CITY, SECTION 202 (a)’S EMERGENCY AUTHORITY DOES NOT EXPLICITLY GRANT THE FPC THE CAPABILITY TO PREVENT FRAUDULENTLY. A STRICT INTERPRETATION OF THE STATUTE LIMITS THE FPC TO REACTING TO EMERGENCIES AFTER THEY HAVE OCCURRED. THE ABILITY TO RESOLVE A DISPUTE CONCERNING AN INTERCONNECTION WHICH MIGHT BE INSTALLED TO PREVENT AN EMERGENCY IN THE FUTURE IS NOT EXPLICITLY GRANTED. UP TO NOW THE FPC HAS NOT BEEN EXPANDED IN INTERPRETING ITS OWN POWERS.

NOW IN SECTION 202 (a)’S RELATIVE TOOL TO PROVIDE INTERCONNECTIONS. WE WOULD ARGUE THAT A UTILITY WOULD NOT VOLUNTARILY REQUEST THE FPC TO INTRUDE AGAINST ANOTHER UTILITY VIE WHO WANTS TO INTERCONNECT. LET US CONSIDER THE HYPOTHETICAL CASE OF TWO UTILITIES, THE FIRST OF WHICH WANTS TO CONSTRUCT A NEW TRANSMISSION LINE TO THE SECOND. THE SECOND CONTRAST SAVES A PRICE HIGHER THAN THAT WHICH THE FIRST SELECTED AS FERTILE AND BOOMING. EVEN SO, THE PRICE OF THE INTERCONNECTION WILL BE LESS THAN ALTERNATIVE TRANSMISSION ROUTE AVAILABLE TO THE FIRST UTILITY. SUBSTANTIATION DUE TO INEXPERIENCE.

FOR THE FIRST UTILITY, IT IS A NO-WIN SITUATION. IF IT DOES NOT WANT THE BURDEN OF THE SECOND CONTRACT, THE CUSTOMERS WILL NOT GET THE POWER THEY NEED. IF IT DOES PAY THE PRICE, THE COST OF THE SECOND POWER WILL BE HIGHER THAN IT CALCULATES IS JUSTIFIED. ON THE UTILITY CAN GO TO COURT, BUT ALSO AT AN

INEFFICIENT COST, IN TERMS OF ECONOMY AND RELIABILITY.

WHILE THE SECTION 202 (a) EMERGENCY IS OPEN TO THE UTILITY PACKING THIS DISEASE, IN FACT WE DO NOT BELIEVE THE UTILITY WOULD FORMALLY SEEK THE HELP OF THE FPC, EXCEPT IN THE MOST AGGRAVATED CASES. WE BELIEVE THE REASON FOR THE UTILITY’S RESISTANCE TO THE SECTION 202 (a) ROUTE IS THAT A CONTINUING BUSINESS RELATIONSHIP MIGHT BE PREJUDICED FOR THE FUTURE, ONCE ONE UTILITY TURNS TO THE FPC AS AN OUTSIDE THIRD PARTY TO FORCE A SettLEMENT ON ANOTHER UTILITY. I MUST CONFESSION NOT TO HAVE CIVILIZATION OF STATISTICS ON THIS POINT; THEY ARE HARD TO OBTAIN. NOT WHILE THIS DISCUSSION IS BASED ON OPINION, WE BELIEVE THE REASONS IS SOUND.

SECTION 202 (a) HELD, OF COURSE, WOULD USEFUL IN THE FUTURE TO CITIES WHO HAVE ASKED THE FPC TO INTERVENE IN INTRUSION DISPUTES. THE OUTER TAIL POWER COMPANY SITUATION A FEW YEARS AGO ILLUSTRATES THIS.

E11ATION. E11ATION. FORCED ITS OUT MUNICIPAL POWER SUPPLY COMPANY AND PULLED OUT OF THE OUTER TAIL TRANSMISSION SYSTEM. WHEN ELRON LACK WAS TOLD TO RECONNECT OUTER TAIL, OUTER TAIL REFUSED. ELRON LACK APPEALED TO THE FPC FOR HELP AND UNDER 5 202 (a) THE FPC ORDERED OUTER TAIL TO LET ELRON LACK TAP INTO THEIR TRANSMISSION LINES.

ELRON LACK IS A MUNICIPAL, NOT A PRIVATELY OWNED UTILITY, AND THIS WE BELIEVE EXPLANES ITS WILLINGNESS TO USE SECTION 202 (a). OTHER SECTIONS 202 (a) AND 201 OF THE FEDERAL POWER
AND A STATE UTILITY COMMISSION COULD, ON ITS OWN VOLITION, PROPOSE THE SPC TO RESOLVE A DISPUTE AND ORDER AN INTERCONNECTION BETWEEN TWO UTILITIES WAS "IN THE PUBLIC INTEREST" AND PROVIDED THAT TO DO SO WOULD NOT IMPAIR A PUBLIC UTILITY'S ABILITY TO RENDER ADEQUATE SERVICE TO ITS CUSTOMERS. HOWEVER, TO DATE, THE NEW YORK COMMISSION HAS NEVER INTERVENED IN SUCH A CASE. FURTHERMORE, WE HAVE MAILED QUESTIONNAIRES TO ALL THE STATE UTILITY COMMISSIONS IN THE U.S. AND EVENTUALLY OUT OF TWENTY-FIVE RESIDENTS SO FAR HAVE AGREED TO PROVIDE IN THEIR INITIATED SUCH AS SPC ACTION. WE BELIEVE THAT THIS EVIDENCE IS INDICATIVE OF THE FACT THAT A STATE COMMISSION MAY BE SUSCITED TO CALL FOR FEDERAL HELP BOTH FOR POLICY AND POLITICAL REASONS. THE STATE COMMISSION MAY SEE SUCH A CALL FOR HELP AS AN EMBRACE ON ITS RESPONSIBILITIES AND A SIGN OF WEAKNESS.

I SHOULD NOTE THAT IN OUR OPINION, FOR MOST UTILITIES AROUND THE NATION, THE EXPERIENCE HAS BEEN THAT ADJACENT UTILITIES DO COOPERATE REASONABLY.

HENCE OUR LIMITED SUGGESTION FOR ADDITIONAL LEGISLATION WOULD CONSIDER THOSE SITUATIONS WHERE THE PATTERNS OF COOPERATION DOES NOT RESOLVE A PARTICULARLY INTRACTABLE DISPUTE ABOUT AN INTERSTATE INTERCONNECTION OR IMPACT ON SYSTEM RELIABILITY. IN THESE CASES WE RECOMMEND THAT THE VOLUNTARY AREA SHOULD BE LEFT EXCLUSIVELY IN THE HANDS OF VOLUNTARY
HARMONIZATION AND LAYOVER TOOK OVER, NEGOTIATIONS BEGAN, AND
TO DATE NO AGREEMENT BETWEEN THE UTILITIES FOR THE LINE
HAS BEEN REACHED.

WE UNDERSTAND THAT NEGOTIATIONS ARE PROCEEDING; HOWEVER,
THREE APPEARS TO BE SOME CONTRADICTORY EVIDENCE AS TO WHO
WILL BECOME HOST FROM THE PROPOSED VIE - CON EDISON OR
WEUGL. THEN THE DELAY SEEMS TO BE BASED ON QUESTIONS OF
WHO PAYS. RECENT DISCUSSIONS WITH CON EDISON ENGINEERS
INDICATE THAT BECAUSE OF SLOWDOWN IN LOAD GROWTH FORECASTS,
THE TIE RIGHT MAY BE DUELED UNTIL 1985. NOTWITHSTANDING,
THE SITUATION IS ONE WHERE POINTS DIRECTLY TO THE NEED TO
HAVE SOME AGREEMENT FOR ELECTRICAL INTERCONNECTION UNTIL THE UTILITIES
DON'T SEEM TO BE ABLE TO REACH AGREEMENT.

Indeed, it is my view that the simple existence of a
FEDERAL POWER TO EXIST, or one's INITIATIVES WILL
SPREAD UP TO VOLUNTARY NEGOTIATIONS BETWEEN UTILITIES ON RELIABILITY
INTERCONNECTION. I WOULD GUESS THAT THE POWER WILL NOT HAVE
FREQUENT TO BE USED.
RECOMMENDATIONS CONCERNING RELIABILITY - P. 2

Consolidated Edison Company of New York, Inc. - August 28, 1974

"Based on the investigations made to date, it is recommended that the following actions be initiated:

1. Review the procurement specifications for the system operating computer control system of achieving performance and system design to remove any obsolescent features or source of future trouble points for the transmission system facilities."

Empowerment of the Control Center

Public Service Commission - November 15, 1977

"The Con Edison Survey Control Center is not equipped to permit the System Operator a clear picture of the power generation and transmission status. The ability to view the entire system and its components at a glance is a necessity. The system operator should be able to monitor equipment failures, as well as system conditions by looking at one screen. The Con Edison documentation states, in the Con Edison recommendations, that the Control center should have access to the complete (or near complete) data base of the entire Con Edison System. All locations should have access to facility, including data on short time performance, generator and transformer status, and transmission system status."

Federal Power Commission - September 2, 1965 and July 1964

"The System control center should be equipped with display and operating equipment which provide the operator of the time with a clear picture of a system's condition as to capacity, load, load flow, etc. Volume I, P 2, 37."

RECOMMENDATIONS CONCERNING RELIABILITY - P. 1

Empowerment of Operating Reserves

Public Service Commission - September 14, 1977

"Con Edison did not correctly report the unavailability of a large part of its gas turbine capacity... and the steam generating plants did not respond as expected... The performance of the gas turbines was disappointing. They showed little of the flexibility, quick start characteristics and load pickup that is expected... This recommendation... refers to Con Edison's plans for major expansion of the generating facilities in the area served by Con Edison's electric facilities."

Federal Power Commission - September 6, 1965 and July 1964

"We note the recommendations set out below in the scope of our study to date... P 8. Our preliminary investigation notes clear that the type and distribution of generating resources available may be as important as the amount, itself, as concerns us in concerned. The utilities... must adapt a near-simultaneous evaluation of the time factor involved in the utilization of existing resources in order to determine the systems' condition and status... To recommend that the factors of rapidness in the event of generation surplus be given due consideration to the evaluation of system backup generating resources."

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determination, therefore, deserves most careful and comprehensive study and analysis. In this regard, it should be emphasized that the measure of adequacy in protective relay requirements among systems should not be evaluated as a per se adequacy of individual units. Protective requirements will differ among systems depending on the potential characteristics of their loads and their ability to carry temporary generation unit outages during periods of reduced demand. (July 1967 report, pp. 21-22).

The economic advantage of using automatic generating sets is an important factor in determining the size of generating units and the size of generating capacity required. Automatic generation starts are essential for the proper and economic operation of systems. (February 1968 report, pp. 21-22).

**General Power Commission - August 4, 1970**

"Other indications of Con Edison's inability to provide reliable service are apparent from the fact that... Con Edison failed to put into operation all of its new condenser turbine units as scheduled. As a result, Con Edison's reserve was reduced to less than 50 per cent. It is evident that Con Edison's reserve was reduced to less than 50 per cent as a result of..." (February 1968 report, pp. 21-22).

**Consolidated Edison Company of New York, Inc. - August 29, 1970**

"[The Board of Directors] now recommends that the following measures be initiated promptly: 1. Upgrade existing load serving units on all base load generating units to ensure 24-hour rated availability. (February 1968 report, pp. 21-22). 2. Understand and evaluate the potential for improvements in the existing generation system by identifying areas where..." (February 1968 report, pp. 21-22).

**Public Service Commission - September 11, 1970**

"We recommend that Con Edison make new studies of the relative advantages of a breaker and a self-contained..." (February 1968 report, pp. 21-22).

**Recommendations Concerning Reliability - P. 5**

The approach at Buchanan and Rivington at Pleasant Valley, which is currently separated into two different generating systems..." (February 1968 report, pp. 21-22).

**Federal Power Commission - December 1, 1961; April 30, 1962**

"* The power failure of November 9, 1961 demonstrated the importance of close and frequent checks of all protective means to ensure adequate coordination. The preventive measures... (February 1968 report, pp. 21-22).

"* Special attention should be paid to transmission line rating and to protective arrangements for generating stations and at points of connection in the transmission network to ensure adequate capacity for emergencies. ... (February 1968 report, pp. 21-22).

**Federal Power Commission - August 4, 1970**

"* Because of the apparent failure of equipment protecting major facilities, Con Edison must re-assess the adequacy of such protective equipment and revise its procedures to test them. (February 1968 report, pp. 21-22)."
RECOMMENDATIONS CONCERNING RELIABILITY - P. 7

Consolidated Edison Company of New York, Inc. - August 24, 1974

"(It is recommended that the following measures be initiated promptly: 1. Expand the scope of testing protective relay equipment to include that which is installed in or of interest to the New York Power Pool system, with special emphasis on the New York Power Pool areas. 2. System operating personnel should be required to attend periodic instruction in protective relay operation and maintenance. 3. The New York Power Pool and Consolidated Edison should undertake a joint study of protective relay installation and operation to assure that the existing protective relay systems are adequate to protect the New York Power Pool system. 4. In view of the recent experience in the New York Power Pool area, it is recommended that the New York Power Pool and Consolidated Edison establish a joint group to be called the "New York Power Pool Protective Relay Study Committee.""

Public Service Commission - September 14, 1974

"Since the New York Power Pool is utilized for the dual purpose of transferring its own power generation, as well as firm, economic and emergency power interchange, it is clear that disturbance of July 23, 1974, revealed in jumpers upon the New York Power Pool system in excess of that deemed as the New York Power Pool - Electric System Operating Criteria. 1. A study should be conducted by the New York Power Pool and Consolidated Edison in cooperation with the New York Power Pool system to establish criteria for emergency system operation. 2. The study should be published in New York Power Pool planning criteria."

Expedited Power Commission - June 3, 1975

"The study should be conducted on-line to determine the effectiveness of the current power transfer capability based on New York Power Pool planning criteria."

Federal Power Commission - August 6, 1974

"The Commissions should initiate a review of recent reliability studies of the New York Power Pool with particular emphasis on transmission facilities currently under investigation. The coordination of New York Power Pool area transmission facilities should be considered to determine whether the existing protection and operation systems are adequate to protect the New York Power Pool system."

Consolidated Edison Company of New York, Inc. - August 24, 1974

"The Board of Service's Third Phase Report will include ... appropriate recommendations concerning ... The study of the present system to determine its adequacy with relation to static, normal, and transient overload ... 2. The adequacy of transmission planning criteria relative to the occurrence and weather conditions on the system."

Footnote: [Report # 74-75-70]
RECOMMENDATIONS CONCERNING RELIABILITY - P. 9

PUBLIC SERVICE COMMISSION - SEPTEMBER 12, 1959

"(a) Provide Lightning Protection

Federal Power Commission - December 6, 1955 & July 1957

"In order that a later term review could be made of the nature and magnitude of interruptions which have occurred in power systems in the United States, information was obtained from various sources on interruptions which have occurred since 1941. The information included:

1. Interruptions occurred in areas of abnormal cloud conditions where lightning was the cause of interruption.
2. Interruptions occurred in areas of abnormal cloud conditions where lightning was the cause of interruption.
3. Interruptions occurred in areas of abnormal cloud conditions where lightning was the cause of interruption.
4. Interruptions occurred in areas of abnormal cloud conditions where lightning was the cause of interruption.

Federal Power Commission - April 8, 1957

"In order that a later term review could be made of the nature and magnitude of interruptions which have occurred in power systems in the United States, information was obtained from various sources on interruptions which have occurred since 1941. The information included:

1. Interruptions occurred in areas of abnormal cloud conditions where lightning was the cause of interruption.
2. Interruptions occurred in areas of abnormal cloud conditions where lightning was the cause of interruption.
3. Interruptions occurred in areas of abnormal cloud conditions where lightning was the cause of interruption.
4. Interruptions occurred in areas of abnormal cloud conditions where lightning was the cause of interruption.

Consolidated Edison Company of New York, Inc. - August 24, 1957

"The Board of Directors' Third Phase Report will include . . . appropriate recommendations concerning:

1. The desirability of individual transmission lines in determining whether improvements in lightning protection are desirable. This will include a study of past lightning performance and a determination of what measures could be taken to improve lightning protection on the system. The new system will permit faster operation and better selection.

Federal Power Commission - December 6, 1955 & July 1957

"The Company (Consolidated Edison) has placed in effect a system of load shedding through automatic voltage reduction which will be applied in the event of an interruption of supply. The system is designed to shed load in a manner that will be as unnoticeable as possible.

Load shedding may not be selective, and in fact can be hazardous, if not coordinated by systems which are closely interconnected . . .
change in frequency followed by a disturbance of nearly immediate and large [upset] arrangements are provided for automatic control, there is little likelihood of satisfactorily load reductions. Such systems, area and region should carefully study its load shedding program to avoid the possibility of overloading its system, and all potential arrangements. brochure [upset] should be acceptable, such as preliminary load shedding considerations during a general power disturbances. [p. 71-F 4] load shedding event in these events, some amount. In either case, the amount and location of load to be interrupted must be sprayed on the availability of system, and in order to judge its effectiveness, and assess its impact on transmission line loading. [July 1967 Report, Vol. 1: 4 p. 15]

Federal Power Commission - August 4, 1977

"(1) Since the existing load shedding procedures and the related equipment failed to fulfill their intended mission, Con Edison must reexamine and revise its emergency procedures and improve the reliability of its system to allow for analysis and to the Service's capability to maintain the integrity of its system. (2) Con Edison's internal emergency procedures and training of personnel to assess emergency situations are not likely to be completed. Second question, revised description of the adequacy of emergency management analysis, and the effectiveness of load shedding arrangements and the adequacy of load shedding arrangements to maintain the initial disturbance. [Stand Report P 9, R]."

Con Edison Company of New York, Inc., August 24, 1977

"(2) Load shedding is a technique used by System Operators, in the short range, to the anticipated large disturbances to the neighboring systems and offer the automatic load shedding equipment and potential improvements and effectiveness of load shedding, and load shedding to reduce system disturbances on the system. [October 23, 1977]

Providing Emergency Information to Public Authorities
Public Service Commission - September 10, 1978

"The Control Information Group is responsible for the acquisition of pertinent information relating to system conditions and disseminating this information... where appropriate to Federal, State and local authorities." [Document dated the States of load shedding and other similar areas were not always present. [Second Phase Report P 3, J].]


"Utilities should work closely with State agencies, other appropriate government authorities, in setting up their program of load shedding, and in establishing various procedures for the inspection of utilities, and efforts made to ensure the effectiveness of load shedding, and the effectiveness of the load shedding arrangements to maintain the initial disturbance. [Con Edison P 17, R]."

Con Edison Company of New York, Inc. - August 24, 1977

"[The board of review] now recommends that the following measures be instituted promptly. 10. All systems [upset] are responsible for ensuring that proper notifications are made by the Control Information Group to the newly established switch position of the System Controller. [Second Phase Report P 21-22]."

Relatives With New York Power Pool
Public Service Commission - September 15, 1978

"The New York Power Pool ordered the Con Edison System Operator to load the pool. We did not. The procedures already exist that require a member company to assist more than the New York Power Pool. We recommended that Con Edison operate their load shedding program to the extent this is necessary and find a way to do it, if necessary to do so, in order to the New York Power Pool. [Recommendation [4]]."

[Note]: The Public Service Commission Second Report dated September 15, 1978 observed, inter alia, "is clear from the system operator's testimony on July 19, 1978, that not enough time was spent in discussion that the power not be used. [Recommendation [5]]."

"Discussion with the New York Power Pool indicates that the Pool operators have been informed that the Pool has been used to the extent that the operators believe may be necessary for the purposes of this review. The Pool operators were concerned about the effects of these procedures. The Pool ratings were exceeded for the purposes of this review. The Pool operators believe that the Pool ratings are not subject to be exceeded, Con Edison as they are by the New York Power Pool. [October 13, 1978]."
RECOMMENDATIONS CONCERNING RELIABILITY - P. 32

Recommend that this present interconnection be eliminated. [Recommendation (11)].

(Notes: The Public Service Commission Report dated September 15, 1967 observed that all attempts to meet the criteria stated in this item and the preceding item failed. The normal power system, no doubt, would have operated within its normal ratio to the present interconnection. The facility would have preserved more nearly the same load as a separate entity. The operated power system, on the other hand, would have experienced more serious problems than observed here in that the summer peak of 1967 was not the same as the peak load in the post-interconnection condition.)


"The principal requisites for an area or regional coordination effort designed to assure maximum reliability may be summarized as follows: the establishment of an effective and comprehensive organization having adequate recreation and operating capabilities within the area or system. The organization and procedures should be designed to achieve the necessary coordination among planning, engineering and operating activities. The ultimate goal of the coordination effort should be to design and operate a network of interconnected generating plants and transmission lines that will maintain and effective utility plans and practices within the area affecting bulk power system reliability. [July 1967 Report, Vol. II, p. 4]."

Consolidated Edison Company of New York, Inc. - August 24, 1977

"[The Board of Review] now recommends that the following measures be initiated promptly: . . .

9. Increase communications with NYPSS decision, system and the NYPSS Central Control, especially at times of system emergencies. [Second Phase Report, pp. 49-51]."

References marked with an asterisk (*) are to the following sources:

- Public Service Commission - September 15, 1967
- Consolidated Edison Company of New York, Inc. - August 24, 1977

** References with asterisks (*) on Page 1 are to "Consolidated Edison Company of New York, Inc. Energy Control Center Long Range Plan" prepared by Boeing Electronic Division of The Boeing Company. Final Report dated September 4, 1976. This Report was reviewed and commented upon by the New York State Public Service Commission in "Consolidated Management and Operations Study for the New York State Public Service Commission" prepared by Arthur D. Little, Inc., as a management audit (see Public Service Law 1966/9) and submitted in January 1976. In that report to the Public Service Commission it was observed: "In essence, they [Arthur D. Little, Inc.] reported that the Energy Control Center..." signalling apparatus is old, and some of it is obsolete. . . . Con Edison's consultant reported that the state-of-the-art in communications, display and control, had advanced considerably beyond that known in Con Edison when it was built in 1962. . . . Con Edison management has also acknowledged that these problems have brought about a few control system operators to respond to the extreme wide range of control situations which can arise in steady-state conditions. However, by now no customer service interruptions have been traceable to problems of the kind being discussed here. Con Edison Management and Operations Study, Report to P. U. C, 10/15/75, p. 2.


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Mr. DINGELL. The Chair will recognize my colleagues for questions, the Chair will recognize, first, for 5 minutes, the gentleman from New York, Mr. Ottinger, since he was first on the scene. After that we will recognize my good friend, Mr. Murphy.

Mr. Ottinger. Thank you, Mr. Chairman. I would just like to say, I think you have made a very valuable contribution to us, and that this report that you handed up today, the summary of recommendations that compare the announcement of the Federal Power Commission and Public Service Commission in 1965 and 1977, is available, and your action in that interim is going to be of interest to us in pursuing this.

I would just hope that your investigation unfolds because we will have to deal with the Federal Power questions that concern us, the power of the Federal Power Commission or its successor now, the Federal Energy Regulatory Commission, to be able to step in and do something about these reliability systems.

Now, you indicated in your statement a little bit earlier that you were inclined to restrict the Federal authority to situations in which the private companies in two different States could not reach an agreement.

Mr. MILLSTEIN. Right.

Mr. Ottinger. And to be able to step in and require that action be taken, I assume, set a fair price if the companies do not—

Mr. MILLSTEIN. Cannot do it.

Mr. Ottinger. [continuing] Arrive at such an agreement, I wonder whether that doesn't have to go further because in making that kind of a determination you may affect the customers in one of the other systems. Let's say you have the ability to supply power from the New Jersey system and then the event that was called upon, you might create a shortage in some of the New Jersey communities. I wonder if we don't have to, in that kind of situation, be able to require additional either interties or generating facilities within the State systems to be able to back up the interconnection that we are ordering?

Mr. MILLSTEIN. Yes, I understand very well your question. My problem is this: I understand, first of all, that any intertie would have to be in the public interest. There has to be a standard. I don't obviously mean that the Federal Government could come in and just say, "Do it." There has to be a public interest standard. There has to be a cost of service standard. There would have to be hearings, clearly, and they will be quite complicated hearings.

Now, the reason I restricted my suggestion to reliability interties is that I did not want to enter into the economic intertie debate. I recognize that if you go into the economic intertie debate you end up arguing about a national grid; and I don't want to do that, because that is not the area that our Commission is interested in.

So I was trying to shrink back the power to intertie to just what concerns us, and it seems to be minimal, namely, an intertie for reliability purposes, not for the purposes of buying power cheaper from New Jersey. If it should be decided that strengthening the Ramapo connection, for example, is really necessary from the public interest of the city of New York to keep it alive in an emergency situation, that is the kind of situation I am talking about, not necessarily to buy power cheaper.

It seems to me, Congressman, that if we limit it to a reliability standard you will have less of the problems of determining about new generating plant for reliability reasons where the announcement of the Federal Power Commission and Public Service Commission in 1965 and 1977, is available, and your action in that interim is going to be of interest to us in pursuing this.

I would just hope that your investigation unfolds because we will have to deal with the Federal Power questions that concern us, the power of the Federal Power Commission or its successor now, the Federal Energy Regulatory Commission, to be able to step in and do something about these reliability systems.

Now, you indicated in your statement a little bit earlier that you were inclined to restrict the Federal authority to situations in which the private companies in two different States could not reach an agreement.

Mr. Ottinger. While I favor the economic interties, I think the two are separable.

Mr. MILLSTEIN. Yes.

Mr. Ottinger. What was I addressing myself to was the reliability interties and the need to go beyond the mere requirement of the intertie in order to be able to make the reliability standard effective.

Mr. MILLSTEIN. Congressman, I understand you. I think you are right.

Dr. Brancato, do you agree? It may be necessary in determining—I don't want to be simplistic, but it may be necessary, Congressman, in order to make a reliability intertie to require some building someplace. That is why hearings have to be provided for and there has to be a standard. Although I do think if you limit the intertie to reliability you less into the need for a major building program in a neighboring State.

Mr. Brancato. I think that is probably true. From our point of view, the issue is that for reliability. The idea is that these ties are so critical, so the overall economic argument does diffuse, I think, the argument for reliability.

Mr. DINGELL. Don't we have a twofold question? One is the question of intertie for reliability, but we also have the problem which goes to, really, the reliability of the system itself?

Mr. MILLSTEIN. Right. Do other hand, you have the reliability of the system because the system is really the sum of all of the equipment plus the electrical current that it generates, that flows through it, right?

Mr. MILLSTEIN. Yes.

Mr. DINGELL. So we have to have some mechanism of assuring here in the case we are getting both, one, reliability of the system as a whole, but two, component reliability of the sundry parts of the system. Is that right?

Mr. MILLSTEIN. Congressman, that is why I gave you my exhibit 6, because I believe that where the Federal Power Commission had made recommendations but could only "jawbone" in the very area that you are talking about, namely, reliability of the components of the system itself, which is like training people, the control room,
As you know—and I think as you have expressed—when we get into the private power picture we are dealing in a very delicate private enterprise area. Our State has traditionally had public power as well as private power competing systems. It worked well through the 1930’s, 1940’s, 1950’s, 1960’s, to 1965 anyway, and then we ran into problems.

We know that today it is not just loss of power that causes such serious problems but it is the problem within the society that generates that loss of power; so that we cannot in down tolerating an outage of any period of time in certain areas of our city.

I am going to be listening to you and Dr. Brancato and the other experts here in the short time ahead. I thought that this situation where I never want to make a recommendation that gets off into another imbroglio. I have read the testimony of the utilities and I don’t know the answer to it, which is that you have all these hundreds of utilities around the country with different problems and systems with different problems. Do you really want to inject a Federal presence into all these problems reliability questions which vary all over the country?

Now, that generates a lot of heat and debate and it seemed to me—and, again, I am being parochial; I am talking about my city—but that is what you invited me to come down and talk about parochially, what we are interested in is reliability interconnects.

Mr. Ortinger. In the city situation, it would have been very useful if the Federal Power Commission could not only resolve disputes with respect to the intertie but also could establish standards of reliability with respect to the control room, the pumps and so forth.

Mr. Millstein. My only question is, to do that without setting up a cumbersome Federal administration looking into everything all over the country, it is a big question.

Mr. Dingell. The time of the gentleman has expired. The Chair recognizes the gentleman from New York, Mr. Murphy.

Mr. Murphy. Thank you, Mr. Chairman.

I certainly appreciate the opportunity to welcome my fellow New Yorker and to congratulate him on the work he has done. Dr. Brancato, I assume is also a New Yorker?

Ms. Brancato. Yes, indeed.

Mr. Murphy. This is not the first time we have been down this trail. I was on the 1966 committee with the then chairman, Walter Rogers, and we went through the system pretty carefully and closely, made some very strong recommendations.

Obviously, we lost about 12 hours somewhere over the years. We were able to get the system back in 15 hours in 1965. When did it take? About 26 hours this time? Somewhere thereabouts. Probably the vast difference between the two blackouts was that the interconnection broke at Green Point and kept Staten Island on line and this time the system worked like it should have, and the Linden interconnection actually was in proper working order.

Perhaps we should have left that connection alone for the benefit of those people. We have proposed in our energy legislation, or I have—unfortunately, it was rejected by the committee—a proposal that we permit a region or State to have more power in the charting of its energy destiny, particularly in these fields.
Mr. Vogel, we are delighted you are with us. If you will come forward, identify yourself and any associates you wish to have at the witness table with you, we will be delighted to receive your testimony.

STATEMENT OF JOHN R. VOGEL, JR., EXECUTIVE DIRECTOR, NEW YORK POWER POOL, ACCOMPANIED BY LEON A. ALLEN, JR., COUNSEL; ROLLAND A. MERRILL, JR., OPERATING MANAGER; AND WILLIAM J. BAILEY, PLANNING MANAGER.

Mr. Dingell. You may have any of your associates with you at the table, if it be your wish.

Mr. Ottinger. Mr. Chairman, may I ask one question?

Mr. Dingell. You don't feel any conflict between your responsibility in appearing here as counsel? I assume you are appearing here as attorney for the New York Power Pool; is that correct? Mr. Allen. I am, sir.

Mr. Dingell. You don't feel any conflict between your responsibilities? Mr. Allen. I do not represent Consolidated Edison in this proceeding.

Mr. Dingell. I am sorry; you can carry forward with that responsibility. Mr. Vogel, you may consider yourself recognized for your statement.

Mr. Vogel. At your pleasure I will be happy to read my statement into the record.

Mr. Dingell. Would you like to summarize your statement? That may be the best way for us to proceed, and we will insert, without objection, your full statement into the record.

Mr. Vogel. Thank you, sir.

My statement outlines the organization of the New York Power Pool. Again, the pool was formed to operate the integrated bulk power supply system within New York as well as to provide detailed planning, and, of course, currently, environmental matters, and coordinate these activities among all of the pool member systems. The organization of the pool consists of an executive committee, which is represented by a member from each of our eight member systems, the chief executive officer with an alternate and other principal officers of the company, substantially all of the standing committees are represented at pretty much the vice president level within the eight-member systems.

During this time, several minutes prior to the disturbance, the members, the pool member systems, were collectively importing approximately 632 megawatts of power from New England, 708 megawatts from Ontario, and collectively delivering 210 megawatts to PJM interconnection. It was designed to permit the import of up to 1,200 megawatts from New England, 960 from Ontario, and the export of 2,256 megawatts to the New York-Pennsylvania companies. Thus, the system, and this is just immediately prior to the blackout, was operating well within the prescribed limits, and these transfers would be expected under the load and weather conditions that we had in effect at that point in time.

A small transient disturbance, which initiated at 8:27 p.m., progressed. The pool's interconnection with Ontario and the New England Pool remained in normal service. However, the ability to import power through the interconnections with New Jersey became affected, although this effect was not recognized until after the second lightning stroke. Following the second lightning stroke at 8:56 p.m., the interconnection between Public Service Electric & Gas Company, Bricktown, N.J., to Con Edison via Ramapo and Millwood, was effectively interrupted by the loss of all circuits between Ramapo and Millwood.

This coupled with the loss of generation in the Con Edison system and the opening of a Millwood-Pleasant Valley 345-kV line, resulted in excessive power flows on the New England/Long Island interconnection, a submarine cable between Norwalk Harbor, Connecticut, and Northport, Long Island, as well as the New Jersey/Con Edison interconnection via Staten Island known as Linden-Goethals.

This situation was aggravated by the interruption of the high capacity 345-kV overhead line between Con Edison and Niagara Mohawk at 9:19 p.m. The Long Island Lighting Co. operator opened the Long Island-Con Edison tie known as Jamaica-Valley Stream at 9:29 p.m. to prevent damage to both that circuit and the New England/Long Island interconnection, which at that point in time were overloaded.

The interconnection between Consolidated Edison and New Jersey via Staten Island remained in an overloaded condition until 9:29 p.m., when it opened because of damage to a phase angle regulator in the circuit. This left the Con Edison system isolated.

With the exception of the Linden-Goethals interconnection, which had been damaged and tripped out of service, and the Jamaica-Valley Stream interconnection, which was opened manually, the Con Edison substations which formed the point of interconnection with neighboring systems and pools remained in service. During this period the other members of the New York Power Pools as well as neighbor organization systems in New England-Pennsylvania-New Jersey stood ready to provide service as required by Con Edison to begin the restoration of power. The Jamaica-Valley Stream tie was energized from Valley Stream at 11:26 p.m.

I would like to point out that committees have been formed by the New York Power to investigate the details associated with the activities of the night of July 10, and these investigations have been under way for some time, but they have not been completed.

Leaving the events of July 10, I will now discuss the methods by which the members of the New York Power Pool plan and operate the New York State bulk power system on an integrated and coordinated basis with the other systems in the North American
The member systems of the New York Power Pool are required by New York State law to file annually with the New York State Public Service Commission (PSC) a report on their bulk power system expansion plans for a 15-year period.

The bulk power system plan is set forth in a document approximately 680 pages in length, which discusses such issues as rate of load growth, economics of various levels of installed generating reserve, fuels for future generation facilities, and the adequacy of the bulk power transmission system, including interconnections with neighboring systems. This plan is then subject to public hearings, which typically consist of 1 day of hearings with the Commission present followed by extended hearings before an administrative law judge.

Following the close of the hearing the Public Service Commission issues an opinion in which the plan is reviewed and the Commission approves any necessary modifications in subsequent annual reports. These modifications range from changes in assumptions used in load forecasting, to request for presentation of additional data, to estimates as to the level of installed reserve which is appropriate to use for planning purposes.

New York State also has laws relating to the certification of generation and bulk power transmission facilities. In order to construct thermal generation rated at 50 MW or larger within the State, a certificate of environmental compatibility and public need must be obtained from the New York State Siting Board under article VII of the Public Service Law.

To obtain such a certificate it is necessary to present a case establishing the need for the proposed generating facility, examining alternative sites for the proposed facility, and minimizing any adverse environmental impact. Hearings are conducted before two administrative law judges; one representing the Public Service Commission and the other representing the New York State Department of Environmental Conservation. There is participation in the hearing by various State agencies including the Department of environmental conservation, county and local government, and various intervenor groups.

Article VIII became effective in 1972. To date, there have been no certificates issued under this procedure. However, hearings on one application have been commenced, a preliminary decision has been made, and the sitting board is presently considering the application. It is hoped that certification will be approved at an early date.

The certification of bulk power transmission facilities including interconnections is subject to the jurisdiction of the Public Service Commission under article VII of the Public Service Law. In order to construct a transmission line of 125 kV or more extending 1 mile or more, or of 100-125 kV extending more than 10 miles, other than underground lines in a city, a utility must obtain a certificate of environmental compatibility and public need.

The utility submits an application to the PSC, which then schedules public hearings before an administrative law judge in which various agencies of Government and intervenor groups participate. During the hearings, need for the facility must be demonstrated and the environmental impact of various routes are analyzed. Fol-
lowing the public hearings the Commission may certify a specific route and type of construction which then permits the utility to construct the facility. A number of transmission facilities have been certified under article VII, which became effective in 1970.

In addition, nuclear generating capacity construction is subject to Nuclear Regulatory Commission jurisdiction, while hydro and pumped storage construction and the associated primary transmission facilities are subject to licensing by the Federal Energy Regulatory Commission.

If I may summarize the major points concerning planning of facilities: 1. The member systems of the New York Power Pool participate through the regional reliability council programs in an extensive coordinating effort designed to assure the maintenance of adequate interconnection capability.

2. New York State regulatory agencies are deeply involved in the planning process in New York State. They provide mechanisms for public input and regulatory review of the system long-range plan.

3. Statutory certification procedure exists for the siting of generation and transmission facilities, including interconnections. These proceedings examine the need for any major facility and its various environmental impacts.

I thank you. I will be very happy to respond to any questions that you have.

[Mr. Vogel's prepared statement follows:]
The objectives of the New York Power Pool are best stated in the following quotation from the currently effective Agreement, which states:

"The parties desire to achieve optimum coordination in the planning and operation of their electrical systems and to provide a means whereby all parties may realize and share in the mutual benefits which can be obtained thereby."

All activities engaged in by the members under the Agreement are coordinated and directed through the committee structure. The Agreement provides for an Executive Committee, an Operating Committee, a Planning Committee, an Environmental Committee, and a Public Relations Committee. Additional committees and task forces are set up on an ad hoc basis as necessary to implement particular projects or areas of responsibility.

The Executive Committee is comprised of a senior officer of each party to the Agreement and, as an alternate, a second officer authorized to act on his behalf. The Executive Committee reviews and directs the activities of the other committees. As Executive Director I act as liaison between the Executive Committee and the other committees, have administrative responsibility for personnel assignment to the Control Center, and am subject to the direct supervision of the Executive Committee.
The Operating Committee is comprised of a senior executive responsible for electric system operations, plus an alternate, from each party to the Agreement. The Operating Committee directs the activities of the Operating Manager of the Pool and establishes rules and practices required to coordinate the operations of the bulk power supply systems of the parties so as to insure reliability of service and economic operation. The Operating Committee is also responsible for modifications to, maintenance, and operation of the physical facilities at the Control Center. The Operating Manager, under the direction of the Operating Committee, has direct supervision of the Operating functions performed at the Control Center. The Operating Manager is Holland A. Merrill, Jr.

The Planning Committee is comprised of a senior executive responsible for electric system planning, and an alternate, from each party. It studies the need for additional generating and transmission facilities to best implement the purposes of the Agreement. In consultation with the Operating Committee, the Planning Committee reviews required system capability and recommends changes to the Executive Committee. The Planning Manager of the Pool, under the direction of the Planning Committee, supervises the electrical system planning work undertaken by the planning staff at the Control Center. The Planning Manager is William J. Balet.

The New York-Power Pool Agreement also establishes an Environmental Committee and a Public Relations Committee which are comprised of senior executives and which direct Pool-wide activities in their respective areas of responsibility.

I will now turn to the events of July 13, 1977. At 8:30 PM on July 13, 1977, several minutes before the system disturbance started, the New York Power Pool members collectively were importing 632 megawatts (MW) from New England and 798 MW from Ontario, and were collectively delivering 210 MW to PJM. The transmission system is designed to permit the import of up to 1,200 MW from New England, 960 MW from Ontario, the export of 2,225 MW to New Jersey and Pennsylvania and thus was operating well within prescribed limits. Power flows of this magnitude and direction would be expected during hot, humid weather when the winter peaking utilities of Ontario and New England send power to the summer peaking areas of New York, New Jersey and Pennsylvania.

As the system disturbance which initiated at 8:37 PM progressed, the Pool's interconnections with Ontario and NEPOOL remained in normal service; however, the ability to import power through interconnections with New Jersey became affected, although not until after the second lightning stroke. Following the second lightning stroke at 8:55 PM
the interconnection between Public Service Electric & Gas from Branchburg, New Jersey to Con Edison via Ramapo and Millwood was effectively interrupted by the loss of all circuits between Ramapo and Millwood. This, coupled with the loss of generation in the Con Edison system and the opening of a Millwood-Pleasant Valley 135 kv line, resulted in excessive power flows on the New England/Long Island interconnection (a submarine cable between Norwalk Harbor, Connecticut, and Northport, Long Island), as well as the New Jersey/Con Edison interconnection via Staten Island known as Linden-Goethals. This situation was exacerbated by the interruption of the high capacity 345-kv overhead line between Con Edison and Niagara Mohawk at 9:19 PM. The Long Island Lighting Company operator with the consent of the New York Power Pool operator opened the Long Island - Con Edison tie known as Jamaica - Valley Stream at 9:22 PM to prevent damage to both that circuit and the New England/Long Island interconnection. The interconnection between Consolidated Edison and New Jersey via Staten Island remained in an overloaded condition until 9:29 PM, when it opened because of damage to a phase angle regulator in the circuit. This left the Con Edison system isolated.

With the exception of the Linden-Goethals interconnection, which had been damaged and tripped out of service, and the Jamaica-Valley Stream interconnection, which was opened manually, the Con Edison substations which formed the points of interconnection with neighboring systems and Pools remained in service. During this period, the NYPP members stood ready to supply power to Con Edison to facilitate restoration of service. The Jamaica - Valley Stream tie was energized from Valley Stream at 11:26 PM.

As I have previously noted, the Operating Committee is responsible under the Agreement for modifications to, maintenance, and operation of the physical facilities at the Control Center. It is also responsible for the promulgation of rules and practices required to coordinate the operation of the members' bulk power supply systems.

In that capacity the Operating Committee was requested by Mr. T. J. Carlson, Chairman of the Executive Committee, to review the events of July 13-14, 1977, as they relate to Power Pool operations and procedures. The Chairman of the Operating Committee, Mr. John R. Gummere, Jr., of Long Island Lighting Company, named David F. Lanniak, of Rochester Gas and Electric Corporation, Vice Chairman of the Operating Committee, to chair a task force to undertake such a review. In addition to Mr. Lanniak, the task force consists of Mr. J. F. Aldrich of Niagara Mohawk, Mr. A. N. Turner of Consolidated Edison, Mr. W. H. Underwood of Long Island
Lighting, and Mr. Merrill, the Pool Operating Manager. Each
of the individuals on the Task Force has many years of
experience in the operation of bulk power supply systems.
The Task Force has begun its review of the events of July 13-14
and has made an initial determination of the subjects for
review. A scope of the review of each subject is in the process
of preparation. Briefly, the areas of review by the Task Force
include the following:

1. Review the communications among NYPP
member systems and the NYPP Control Center, especially
at times of system emergencies, including the definition
of appropriate terminology.

2. Review the adequacy of electric system
information available to the NYPP system dispatcher, those
of NYPP member systems, and those of adjacent pools.

3. Review the training of NYPP system
dispatchers.

4. Review NYPP operating procedures, including
the interrelationships between NYPP system dispatchers and
member systems.

5. Review NYPP transmission voltage control
actions and procedures during the restoration period following
the July 13, 1977 outage.

(6) Review the actions of the NYPP
dispatchers during the emergency.

Leaving the events of July 13, I will now
discuss the methods by which the members of the New York
Power Pool plan and operate the New York State bulk power
system on an integrated and coordinated basis with the other
systems in the North American power grid. As I have stated,
the member systems of the New York Power Pool are all members
of the Northeast Power Coordinating Council ("NPCC"). NPCC
is one of the nine regional reliability councils in the
nation; it includes the utilities in New York, New England,
and the neighboring Canadian provinces of Ontario and New
Brunswick.

The New York Power Pool has numerous interconnections
at various voltage levels, including three to Ontario, eight
to New England and ten to the Mid-Atlantic Area Council, the
regional reliability council to the south. In addition, the
Power Authority of the State of New York is constructing a 765
kv interconnection to Hydro Quebec to transmit hydroelectric
power to New York. The members of NPCC, including the New York
Power Pool members, design their systems according to the "NPCC
"Basic Criteria for the Design and Operation of Interconnected
Power Systems." This set of criteria is on file with the
Federal Energy Regulatory Commission and the New York State
Public Service Commission.
The member systems of the New York Power Pool, as members of the Northeast Power Coordinating Council, are participants in an agreement between NPCC and the Mid Atlantic Area Council ("MAAC") dated December 15, 1968, and an agreement between NPCC and the East Central Area Reliability Coordination Agreement ("ECAR") dated August 1, 1969, both filed with the Federal Energy Regulatory Commission under Order 445. In addition ECAR has a similar agreement with the utilities in Virginia and the Carolinas.

These agreements provide for constant review of bulk power system reliability. Technical studies are prepared regularly, in which the NYPP members participate through NPCC, which discuss the reliability of the existing system and planned systems as they are projected to be up to ten years in the future. When system limitations are discovered these are referred to the pools and utilities involved for review. Through this mechanism a review of the integration and adequacy of the bulk power systems of 19 states and two Canadian provinces regularly takes place.

In addition to their participation in planning through NPCC, the member systems of the New York Power Pool have pool-to-pool agreements with NERPOOL, the PJM systems, and Ontario Hydro. These agreements provide for regular review of the operating procedures and bulk power system planning through committee structure and in somewhat more detail than the interregional agreements. Through these channels the New York Power Pool insures that its present interconnection capability is adequate and that future increases in interconnection capability will be timely, reliable, and economical.

Federal and State regulatory authorities have played and continue to play an active role in reviewing the plans of the member systems of the New York Power Pool. As a part of NPCC the NYPP bulk power system expansion plans are filed annually with the Federal Energy Regulatory Commission in accordance with Docket R-362, Order 383-4.

The member systems of the New York Power Pool are required by New York State law to file annually with the New York State Public Service Commission ("PSC") a report on their bulk power system expansion plans for a 15-year period. The bulk power system plan is set forth in a document approximately 680 pages in length which discusses such issues as rate of load growth, economics of various levels of installed generating reserve, fuels for future generation facilities, and the adequacy of the bulk power transmission system, including interconnections with neighboring systems. This plan is then the subject of public hearings, which typically consist of one or more days of hearings with the full Commission present followed by extended hearings before an Administrative Law Judge. Following the close of the
hearing the Public Service Commission issues an Opinion in which the plan is reviewed and the Commission may order modifications in subsequent annual reports. These modifications range from changes in assumptions used in load forecasting, to requests for presentation of additional data, to suggestions as to the level of installed reserve which is appropriate to use for planning purposes.

New York State also has laws relating to the certification of generation and bulk power transmission facilities. In order to construct thermal generation rated at 50 MW or larger within the State, a certificate of environmental compatibility and public need must be obtained from the New York State Siting Board under Article VIII of the Public Service Law. To obtain such a certificate it is necessary to present a case establishing the need for the proposed generating facility, examining alternate sites for the proposed facility, and minimizing any adverse environmental impact. Hearings are conducted before two administrative law judges—one representing the Public Service Commission and the other representing the New York State Department of Environmental Conservation. There is participation in the hearing by various state agencies including the Department of Environmental Conservation, county and local governments and various intervenor groups.

Article VIII became effective in 1972. To date, there have been no certificates issued under this procedure. However, hearings on one application have been completed, a preliminary decision has been issued, and the Siting Board is presently considering the application. It is hoped that certification will be approved at an early date.

The certification of bulk power transmission facilities including interconnections is subject to the jurisdiction of the Public Service Commission under Article VII of the Public Service Law. In order to construct a transmission line of 125 kv or more extending one mile or more, or of 100-125 kv extending more than ten miles other than underground lines in a city), a utility must obtain a certificate of environmental compatibility and public need. The utility submits an application to the PSC, which then schedules public hearings before an administrative law judge in which various agencies of government and intervenor groups participate. During the hearings, need for the facility must be demonstrated and the environmental impact of various routes are analyzed. Following the public hearings the Commission may certify a specific route and type of construction which then permits the utility to construct the facility. A number of transmission facilities have been certified under Article VII, which became effective in 1970.

In addition, nuclear generating capacity construction is subject to Nuclear Regulatory Commission
jurisdiction, while hydro and pumped storage construction and the associated primary transmission facilities are subject to licensing by the Federal Energy Regulatory Commission.

If I may summarize the major points concerning planning of facilities:

1) The member systems of the New York Power Pool participate through the regional reliability council programs in an extensive coordinating effort designed to assure the maintenance of adequate interconnection capability.

2) The New York State regulatory agencies are deeply involved in the planning process in New York State. They provide mechanisms for public input and regulatory review of the system long-range plan.

3) Statutory certification procedure exists for the siting of generation and transmission facilities, including interconnections. These proceedings examine the need for any major facility and its various environmental impacts.

Mr. Dingell. Thank you, sir. The Chair will recognize counsel for purposes of questions.

Mr. Kitzmiller. Thank you, Mr. Vogel. You indicated in your statement that the New York Power Pool undertakes to study and evaluate the need for interconnections with other pools.

Mr. Vogel. That is correct.

Mr. Kitzmiller. Does the power pool assume that it has an affirmative responsibility to help develop interconnections with other pools, where their studies show that such interconnections are necessary or desirable for the reliable operation either of the pool or of a member of the pool?

Mr. Vogel. The power pool coordinates continuing studies of interconnections with all of the neighboring systems in the broader area up through the MAAC-ECAR systems on pretty near a continuing basis, looking at both the short term and the long term picture on the need for interconnections develops, and the recommendations to proceed further is then passed to the utility companies involved.

Mr. Kitzmiller. You do not then have an affirmative responsibility to help carry through to get these lines approved, an intertie approved?

Mr. Vogel. I think we have a continuing responsibility to make certain that the system that we are planning and operating is meeting the reliability requirements, including analyzing whether or not the required transmission and adequate transmission does exist, or whether required new interconnections are constructed.

Mr. Dingell. On that point, let me go back a little bit, if I may, please.

Your organization is a corporation or is it a creature of the State or Federal Government or is it a creature of multi-state compact or what?

Mr. Vogel. It is a contractual arrangement among seven private utility corporations and the Power Authority of the State of New York.

Mr. Dingell. Is it an association, a corporation, a partnership, or what?

Mr. Vogel. None of those, I believe. I would defer that to counsel.

Mr. Dingell. What is its legal entity?

Mr. Allen. I don’t believe it has a separate legal entity apart from its constituent members, Mr. Chairman.

Mr. Dingell. If I were going to sue you, how would I sue you? I haven’t got any intention of this, but if I am going to sue you, would I sue you as a corporation, a partnership or would I sue your members?

Mr. Allen. I think that you would serve process on the eight individual members. There are no pool assets. The control center facility is owned by Niagara-Mohawk Power Corp. in whose service territory the facility exists. The employees of the organization are employees of the various member systems who are placed either on permanent basis or on loan to the control center operation, thus enabling them to retain seniority and opportunity for advancement within their own systems.
Mr. Dingell. I think given the character of your organization that is probably humane. I am curious. Whose owns the property that you folks use in carrying forward—

Mr. Allen. Niagara Mohawk Power Corp.

Mr. Dingell. Do any of the other corporations or electric utilities own any facilities that you folks have?

Mr. Allen. The only facilities that you can describe as New York Power Pool facilities are those at the control center in Guildersland, N.Y., just outside of Albany.

Mr. Dingell. What is this control center, buildings?

Mr. Allen. It is, sir. Mr. Kitzmiller advises it had the control center.

Mr. Dingell. Large or small building? I did not sue, so you will have to help me.

Mr. Vogel. It cost approximately $3 million to build, and has approximately a $2 million computer system installed. We are housing 94 people there at the present time.

Mr. Dingell. You are working for your constituent members?

Mr. Vogel. That is correct.

Mr. Ottinger. Do you work for one of the utilities?

Mr. Vogel. Yes, sir. I am on the payroll and have been of Central Hudson Gas & Electric Corp.

Mr. Ottinger. Do you have offices outside of this computer control center?

Mr. Vogel. The offices are in the building at the power control center which houses our planning staff, our environmental staff, our PR staff, in addition to our operating staff.

Mr. Dingell. How is the functioning of the organization financed; by assessments upon the members?

Mr. Vogel. That is correct; as executive director, I call for funds against a budget that is approved by the executive committee, and I call for funds quarterly, which are deposited in the New York Power Pool bank account in Syracuse, administered by the treasurer of Niagara Mohawk Power Corp. We approve invoices and invoices are paid by the treasurer's office of the treasurer's office of the Niagara Mohawk with Power Pool funds.

Mr. Dingell. What regulatory powers do you have to assure, for example, that reliability of systems or reliability of equipment is carried forward by your constituent members?

Mr. Vogel. I think regulatory powers, per se, we do not have. We work pretty much under group conditions in which we police the activities of the member systems, and I think it has proved to their mutual benefit to perform all of the operating policies, for example, and our operating policies, and our major procedures are signed and agreed to by an officer of each of our pool member systems, so they become somewhat of a document in themselves.

Mr. Ottinger. Would the chairman yield?

Mr. Dingell. I will be glad to.

Mr. Ottinger. On July 18 you issued an order, as I understand it, to Consolidated Edison to shed load. Under what authority can you do that?

Mr. Vogel. Our authority for this was initiated back in the early 1970's, following the periods of a large number of voltage reductions in New York, at which time our dispatcher was given the binding authority to declare that a major emergency did exist, and then proceed to direct load relief measures starting with a call for voltage reduction for general appeals to the public via radio, TV, appeals to industry by the member systems, and, of course, as far as the member systems are concerned, it may be required in order to correct the imbalance between load and generation.

Mr. Dingell. Was this done in writing or was it done by telephone or how was this particular instruction given?

Mr. Vogel. It was initiated initially with respect to granting the binding authority, was directed by the Public Service Commission to all of the members.

Mr. Dingell. Finding authority? What binding authority? Binding authority to do what?

Mr. Vogel. This is the terminology that appears in our operating policy that our dispatcher has the binding authority to declare that a major emergency exists, and to order, has the authority to order, the dispatchers of the eight member systems to proceed with those emergency actions required to correct the condition of energy and load balance.

Mr. Dingell. In whose name does he act?

Mr. Vogel. He acts as a senior pool dispatcher of the New York Power Pool.

Mr. Dingell. Let's assume that the person that he issues these binding instructions to disregards them. What happens?

Mr. Vogel. I think we have that situation now, through a misunderstanding, on whether or not the senior pool dispatcher's order was an official order or whether it was a suggestion at this particular point.

Mr. Dingell. Referring to the situation on July 18?

Mr. Vogel. That is correct.

Mr. Dingell. Well, what was it?

Mr. Allen. Mr. Chairman—

Mr. Dingell. What was it? Was it a binding order or what was it?

Mr. Vogel. In the mind of the pool dispatcher we feel it was a binding order, whereas the accounting in the evening I believe the first discussion approximately at 8:55 was more of a suggestion.

Mr. Dingell. Wait a minute. There was a first discussion at 8:55, and between who and who?

Mr. Vogel. This is between the senior pool dispatcher and the system operator of the Consolidated Edison system.

Mr. Dingell. And what about the suggestion?

Mr. Vogel. That was a suggestion by the senior pool dispatcher to the Consolidation system operator that he should start to take load relief measures.

Mr. Dingell. And what did the ConsEdison dispatcher do with that?

Mr. Vogel. The ConsEdison dispatcher at that point in time took no action.

Mr. Dingell. "took no action? He disregarded the suggestion; is that right?

Mr. Vogel. Disregarded to the extent that he did not proceed to disconnect load.
Mr. Dingell. He did not, so, in effect, I guess he disregarded it, didn’t he?
Mr. Vogel. Yes.
Mr. Dingell. So late that same evening your senior dispatcher—what was his name?
Mr. Vogel. Senior pool dispatcher, William Kennedy.
Mr. Dingell. What is his name?
Mr. Vogel. William Kennedy.
Mr. Dingell. So Mr. Kennedy then contacted ConEdison again, did he?
Mr. Vogel. That is right.
Mr. Dingell. A second time. What time did that transpose?
Mr. Vogel. Excuse me while I refer.
Mr. Dingell. Let me observe I have got a copy of the second phase report system blackout and system restoration analysis of system separation which comes from ConEdison border review on August 24, 1977? I guess is the document from which we are both working, isn’t it, Mr. Vogel?
Mr. Vogel. Yes; I guess this is a transcript.
Mr. Dingell. I just wanted to be sure we were looking at the same document. We will have a hell of a time holding a conversation if you are talking from one and I am talking from another. So there was a second transaction which transpired between these two good gentlemen?
Mr. Vogel. It is at 20:59.
Mr. Dingell. At 20:59. The first one was at 20:56:54 according to the document.
Mr. Vogel. Yes.
Mr. Dingell. And this language appears. It says:

"Bill, you had better shed some load until you can get down below this thing because I can’t pick up anything except from the north, see. CSEO. Yeah, NYPSSPD. So you had better do something to get rid of that unless you get yourselves straightened out.

“CSEO.” I guess that means?
Mr. Vogel. ConEdison system operator.
Mr. Dingell. NYPSSPD means New York Power Pool special?
Mr. Vogel. Senior pool dispatcher.
Mr. Dingell. Senior pool dispatcher. So the CSEO then says: “I am trying, I am trying.” And NYPSSPD says, “OK, fine.”
Mr. Dingell. Then, the second discussion between those two good gentlemen occurred here at 20:59:15.

CSEO. Yeah, Bill.
NYPSSPD. Bill, I hate to bother you, but you had better shed about 400 MW load or you are going to lose everything there.
CSEO. Bill, I am trying to.
NYPSSPD. You are trying to. All you have to do is hit the button to shed it, and then we will worry about it afterward, but you got to do something or they are going to open that Linden tie on you.
CSEO. Yes, right, yeah, fine.

Now, what happened after that? There were obviously some other discussions between these gentlemen.
Mr. Vogel. That is correct. The discussions continued, except, I believe, the senior pool dispatcher in following discussions spoke with the power dispatcher at Consolidated Edison.

Mr. Kitzmiller. I think there is one more conversation between the two of them. It occurs at 21:05:08. I think that is the last one. The last time he speaks to him is 21:05.
Mr. Dingell: A: 21:05 CSEO says, “Bill, I’m going to cut feeder 80—no way of reloading.” What is that feeder?
Mr. Vogel. Feeder 80 is a line from Millwood to Pleasant Valley, 345 kV line.
Mr. Dingell. At this point they just lose 345 kV; right?
Mr. Vogel. At this point in time there are two lines, 80 and 81 lines, that run from Millwood to Pleasant Valley, 345 kV.
Mr. Dingell. 345 kV for the two?
Mr. Vogel. This is the operating voltage of the line at 345 kV. One of the lines had tripped out. Line 81 had tripped, leaving one single line connection, and this was the sole connection between the ConEdison system and the north, being the Pleasant Valley substation, excluding the two underlying 138 kV lines.
Mr. Dingell. The Chair is going to yield to counsel.
Mr. Kitzmiller. At this point, however, it is a misunderstanding, isn’t it? The Con Edison system operator doesn’t know that he has lost all the northern ties but one. He thinks still that he has 937 Mr. Vogel. Yes.
Mr. Kitzmiller. So his reactions are based at this point on the belief that although 51 is overloaded, if he can somehow juggle the generation up there he can force it to come down 93 and take it off line?
Mr. Vogel. Yes.
Mr. Kitzmiller. But he does not find out to the contrary until about 9:30?
Mr. Vogel. Right.
Mr. Kitzmiller. So at 21:05:08, “Bill, I’m going to cut feeder 80 to— I’ve no way of reloading it right now.” The New York Power Pool senior dispatcher says, “Can’t you shed load and relieve it—if you cut Feeder 80 or, then you are really going to be in trouble.” “CSEO: I’ll see what I can do.”

The New York Power Pool senior dispatcher then says, “All right.”
Mr. Murphy. Why did they cut the 345? Why did the Pleasant Valley sub cut?
Mr. Kitzmiller. It wasn’t cut, Mr. Murphy. It failed. It folded. It was struck by lightning, and the relay told the breaker to open.
Mr. Murphy. Mr. Murphyn, Mr. Kitzmiller. No. They should ask this.

Mr. Dingell. I think I am getting into matters that really counsel me to handle, but when these folks don’t handle these matters rightly and properly, what recourse does the New York have? Can you sue them? Can the other members sue them? Do you all accept suits? It is pretty obvious to me you have a lot of angry New Yorkers that are going to sue somebody. Are they going to sue you or all of your constituent members, or are they going to sue ConEd, or are you going to sue ConEd? How do you make ConEd keep from drawing you good folks into this kind of a morass?
You had two shots at it. Back in the 1960’s it happened. All kinds of recommendations were made. Either you folks didn’t come forth with any recommendations or you did come forth with recom-
mendations and they were disregarded, or you made the wrong recommendations.

Now it has happened again and everybody is running around in this town, and I guess up there, too, pointing fingers back and forth, but what do you do when you get yourself in this kind of a box and how do you prevent yourself from getting in there? What authorities do you have?

Mr. Vogel. We prevent getting into this kind of a box, I think, by training. We have no authority to sue. The pool couldn't sue one of its members. At least I don't believe so.

Mr. Dingell. No; but the others in the pool could do so?

Mr. Vogel. You have a situation here where the failure of this operator to act was affecting the Consolidated Edison system aside from overloads placed on neighboring systems in New Jersey and on Long Island and Connecticut. The main consequence of inaction at this point in time was related strictly to the Consolidated Edison system.

Mr. Dingell. I am gathering Consolidated Edison or anybody else can snap their fingers under your nose and your only remedy is to shut them off. Am I correct, or incorrect? And then go to court later on.

Mr. Vogel. We have no way from our control center of disconnecting load anywhere in the State.

Mr. Dingell. You don't? You mean you say ConEd could have taken you all down? With a big enough overload you could have had a cascading blackout that would have been like the great northeast blackout a few years ago that shut everybody down from, I guess, New York up into God knows where, Canada, western New York, and Pennsylvania?

Mr. Vogel. The action that we as a power pool can take is to direct the operation of other systems that might be affected, and this is exactly what happened in connection with the Long Island tie in order to prevent damage to the Valley Stream tie and the ties to Connecticut. The Long Island system operator, pretty much in accord with our view, was the pool dispatcher, of opening the tie to protect the interconnections, and this action is available to any of the member systems, and appears in our operating procedures, requires action by another member system.

Mr. Dingell. I am a great believer in power preparedness, but it strikes me that what you do here when you get in these binds is, you call them up and talk with them and nothing else happens. Then everybody prays. I am not sure that is the kind of a reliability you want.

I have great faith in the Lord but he apparently wasn't very much interested or else was occupied elsewhere when this took place last summer.

I am trying to figure out what do we do when we get into this situation. It appears you function on good will, but not much authority, and the Power Commission doesn't seem to do much, New York folks don't seem to do much, and ConEd doesn't seem to pay any heed to anybody's recommendation. We wind up with a bell of a mess here, with everybody wondering who is supposed to have seen that something got done.

The Chair will recognize first the gentleman from New York.

Mr. Ottinger. Two points I think we are getting at: Do you have any authority at all to enforce your orders? Maybe you want your counsel to answer that.

Mr. Vogel. We have authority which is related to our operating procedures which are signed by an officer of all the member systems.

Mr. Ottinger. So it is an agreement by the companies, is that right, to observe the orders and it is not an enforceable agreement?

Mr. Allen. The question of enforcement, I don't think, has ever arisen, Mr. Ottinger. The theory as far as I understand it, and I haven't been in it since the inception of the power pool, was that the mutual cooperation was in the interest, the positive intent, of all members and that the instantaneous problems of system operation which must be dealt with lend themselves to cooperative answers, and yes, indeed, there is a measure, and I believe in all pools in the United States, to my knowledge, of relying on the good faith and the willingness to act on the part of the participants.

Mr. Ottinger. Suppose one of the pool operators made a mistake—it can happen with anybody—and he issued an order to shed load that caused a considerable amount of damage? The pool is in no way liable for that error?

Mr. Allen. I can only say there are no pool assets; however, there are the assets of seven major electric utilities plus the Power Authority of the State of New York, and I am unable to project where plaintiff's action of that nature might follow.

Mr. Ottinger. Do you think the only recourse would be to the individual who received the order?

Mr. Allen. I don't know, sir. The individual would be an employee of a major corporation. To what extent the laws of negligence or of contract would permit recovery, it is impossible to determine.

Mr. Ottinger. I have no further questions.

Mr. Dingell. The Chair thanks the gentleman.

The Chair now recognizes the gentleman from New York, Mr. Murphy.

Mr. Murphy. Thank you much, Mr. Chairman.

Of course, we had the recommendations from the 1967 committee. Stronger interconnections, I think, was tops on the list, and I think we had a little follow up and a lot of those recommendations were not implemented by the utilities and probably because there was an expense involved.

Did the New York Power Pool in effect incorporate the recommendations of the 1967 experiences and correct interconnections that were weak or otherwise not substantial?

Mr. Vogel. The New York Power Pool was formed in July of 1966. Following the 1965 blackout, and we at that point in time commenced studies of the interconnections, and I think there were substantial interconnections added within New York during this period since 1966.

Mr. Murphy. Why did that Pleasant Valley sub go out? Would any interconnection, regardless of its quality or size, have been affected that way?