EMERGENCY PREPAREDNESS IN THE ELECTRIC POWER INDUSTRY

AND

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HEARINGS

BEFORE THE

JOINT COMMITTEE ON DEFENSE PRODUCTION

CONGRESS OF THE UNITED STATES

NINETY-FIFTH CONGRESS

FIRST SESSION

AUGUST 10 AND 11, 1977

Printed for the use of the
Joint Committee on Defense Production

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WEDNESDAY, AUGUST 10, 1977

U.S. CONGRESS,
JOINT COMMITTEE ON DEFENSE PRODUCTION,
Washington, D.C.

The Joint Committee met, pursuant to notice, in room 5302, Dirksen Senate Office Building, Hon. William Proxmire (chairman of the committee) presiding.

Present: Senator Proxmire.

The CHAIRMAN. The committee will come to order.

Today, the Joint Committee opens 2 days of hearings on emergency preparedness in the utility industry. To most Americans, who take their electricity for granted, this question seems remote until the lights go out. Last month's blackout in New York City dramatically demonstrates the effect even a short-term loss of power can have on a major urban area.

It shows us that electric current is the life blood of our economy and of our standard of living. The United States has 5.5 percent of the world's population, yet it consumes between 30 and 37 percent of the world's energy resources. That is another good measure of just how dependent we are on reliable power production for everything in our economy.

Thus, electric power is the heart of our economic potential during a military crisis and the vitality of our economic potential is the prime reason for this committee's work. The Joint Committee is interested in looking beyond the immediate economic and other damage caused by the 25-hour electricity outage in New York City. In 1976, we made a comprehensive review of our national preparedness for all kinds of contingencies: national disasters, sabotage, terrorism, industrial accidents, nuclear attack, and economic crises. We also looked at Soviet measures in this area.

The committee found that the electric power industry is the mainspring of any advanced industrial economy, whether it is a market economy, such as our own, or a centrally managed economy, such as the Soviet Union has. If power is not supplied reliably in large volume, everything else naturally grinds to a halt. Even our water reaches us by electric pumps.

Although there are some 3,500 companies involved in generating and distributing electricity, about half of our total electrical capacity comes from fewer than 300 generating stations. Most of these are located in or near our major urban-industrial areas. The electric utilities therefore present a relatively compact and especially inviting set

of targets for a saboteur, a terrorist or an attacker, as well as a lightning bolt.

We are concerned to know what measures the industry and the executive branch have taken to protect our power stations, transmission lines, and control centers against a variety of threats. We want to learn whether these measures are adequate. If not, we want to find out what remedies are needed. We want to focus on the security or vulnerability of the national power system, on emergency procedures and training, on the availability of backup equipment and alternative fuel supplies, and on Federal emergency coordinating efforts.

The committee has called witnesses from both the utilities and from several Federal agencies to testify and provide their perspectives on the state of emergency preparedness in the power industry. At present there are a variety of Federal organizations playing some role with respect to preparedness in the utility field. We have counted at least six agencies with some responsibility for this field.

Mr. Dunn, your written statement will be published in full in the record. It is a concise statement. It seems you can deliver it in about 10 minutes or less, so go right ahead. We will be happy to have you present it in any way you wish.

STATEMENT OF LT. GEN. CARROLL DUNN, U.S. ARMY (RET.), SENIOR VICE PRESIDENT, CONSOLIDATED EDISON CO.

Mr. Dunn. Thank you, Mr. Chairman.

The Consolidated Edison system has a net electrical generating capacity of approximately 10,000 megawatts and supplies electrical service to over 8 million people in the five boroughs of New York City and Westchester County.

My purpose today is to respond to the invitation of the committee chairman to present the views of the Consolidated Edison Co. concerning emergency preparedness in the electric power industry and the implications of the New York blackout for emergency planning.

Emergencies arise on electric systems from a number of different causes, the most common of which are natural phenomena. We have no experience in our company with sabotage, terrorism or nuclear attack, but they have similar effects. The degree of the emergency varies, but within the territorial area of the individual company and its associated power pool, irrespective of the cause of the emergency, the effects may be the same, differing only in the degree of disruption or damage.

Basically, the planning process begins with a load forecast. Based on this forecast a generation and transmission expansion program is developed. Knowing the location and capacities of the planned generating units, the basic objective of Con Edison electric transmission planning is to provide adequate transmission capacity between generation sources and the load center to maintain a reliable supply of electric power at reasonable cost. The continuity of power supply must be assured under normal and contingency criteria which are sufficiently stringent to reflect practical operating needs but not so severe as to be economically and environmentally impractical.

Con Edison is a member of the New York Power Pool, and carries out its long-range planning jointly and in coordination with the other

six companies which make up the power pool and the power authority of the State of New York. This integrated long-range plan includes both generation and transmission plans for all members of the pool. A report including the member companies' individual plans for the next 15 years is made each year by the power pool to the State Public Service Commission in compliance with article VIII, section 149b of New York State public service law.

Con Edison is also a member of the Northeast Power Coordinating Council, one of the regional reliability councils under the National Electric Reliability Council, established in 1968 to promote maximum reliability and efficiency of their interconnected systems in planning, design, operation, protection, and emergency procedures.

Con Edison planning actions have been within the guidelines established by this council. The current design, construction and operation of the Con Ed system has met all FPC and regulatory agency criteria for such a system.

However, we know, and recent events have certainly forcefully shown, that all disturbances to a system cannot be prevented. We must then review our planning and our design to maximize our ability to isolate any adverse effects from whatever source, to minimize damage and insure the ability to restart and reenergize the system in the shortest feasible time.

Those steps taken to improve reliability for continuation of service following natural disaster events will in most cases also serve to minimize the effects of other types of disruptions. There is a truth which must be realized, however, in this regard. Briefly, it is that increasing reliability beyond a certain point becomes increasingly more expensive for each increment gained. Therefore, the question: How much can we afford to pay for? Obviously, it cannot be for zero outages. Efforts to review current criteria at national, regional, and individual utility levels, I believe, must keep these relationships in mind.

We have one area of concern which should be addressed at the national level. This involves utility system security against willful acts of sabotage, terrorism, or vandalism. There should be assurance that the appropriate Federal agency or agencies do have the authority to investigate and prosecute for such disruptions which do affect national defense and interstate commerce.

In our view of the events of July 13 and 14, Con Edison has identified 10 areas of study to be continued by the Con Edison board of review to determine the necessity or desirability of possible changes in our own criteria of design and operating procedures. While continuing its investigations as to cause of the interruption of services, Con Ed has announced and taken action to institute a total of 13 interim actions to minimize the possibility of future major power disruptions.

Thank you, Mr. Chairman. That concludes my opening statement.

[The complete statement of Mr. Dunn follows:]

STATEMENT OF CARROLL H. DUNN, CONSOLIDATED EDISON COMPANY OF NEW YORK, INC.

My name is Carroll H. Dunn. I am a Senior Vice President of the Consolidated Edison Company of New York, Inc. My office address is 4 Irving Place, New York, New York, 10003.

The Con Edison system has a net electrical generating capacity of approximately 10,000 megawatts and supplies electrical service to over eight million people in the five boroughs of New York City and Westchester County.

My purpose today is to respond to the invitation of the Chairman to present the views of the Consolidated Edison Company concerning emergency preparedness in the electric power industry and the implications of the New York blackout for emergency planning.

Emergencies arise on electric systems from a number of different causes the most common of which are natural phenomena. We have no experience with sabotage, terrorism or nuclear attack but they can have similar effects. The degree of the emergency varies but within the territorial area of the individual power company and its associated power pool, irrespective of the cause of the emergency the effects may be the same, differing only in the degree of disruption or damage.

The planning process begins with a load forecast. Based on this forecast a generation and transmission expansion program is developed. Knowing the location and capacities of the planned generating units, the basic objective of Con Edison electric transmission planning is to provide adequate transmission capacity between generation sources and the load center to maintain a reliable supply of electric power at reasonable cost with minimum environmental impact. The continuity of power supply must be assured under normal and contingency criteria which are sufficiently stringent to reflect practical operating needs but not so severe as to be economically and environmentally impractical.

Con Edison as a member of the New York Power Pool carries out its long range planning jointly and in coordination with the other six companies which make up the power pool and the Power Authority of the State of New York. This integrated long range plan includes both generation and transmission plans for all members of the pool. A report including the member companies plans for the next fifteen years is made each year by the Power Pool to the State Public Service Commission in compliance with Article VIII, Section 149b of New York State Public Service law.

Con Edison is also a member of the Northeast Power Coordinating Council, one of the regional reliability councils under the National Electric Reliability Council, established in 1968 to promote maximum reliability and efficiency of their interconnected systems in planning, design, operation, protection and emergency procedures.

Con Edison planning actions have been within the guidelines established by this council. The current design, construction and operation of its system has met all FPC and other regulatory agency criteria for such a system.

We know, and recent events have forcefully shown, that all disturbances to a system cannot be prevented. We must then review our planning and design to maximize our ability to isolate the adverse effects, minimize damage and insure the ability to restart and reenergize the system in the shortest feasible time.

Those steps taken to improve reliability for continuation of service following natural disaster events will in most cases also serve to minimize the effects of other types of disruptions. There is a truth which must be realized in this regard. Briefly it is that increasing reliability beyond a certain point becomes increasingly more expensive for each increment gained. How much can we afford to pay for? Obviously it cannot be for zero outages! Efforts to review current criteria at national, regional, and individual utility level must keep these relationships in mind.

One area of concern which should be addressed at the National level involves utility system security against willful acts of sabotage, terrorism or vandalism. There should be assurance that the appropriate Federal agency or agencies have the authority to investigate and prosecute for such disruptions which affect national defense as well as interstate commerce.

Con Edison has identified ten areas of study to be continued by the Con Edison Board of Review to determine the necessity or desirability of possible changes in criteria, design, or operating procedures. While continuing its investigations as to causes of the interruption of services, Con Ed has announced and taken action to institute a total of thirteen interim actions to minimize the possibility of future major power disruptions.

LIST OF INTERIM ACTIONS INITIATED BY CON EDISON

1. We are expanding the training of our system operators. For the short-range, this involves a review of training procedures with emphasis on manual load-shedding criteria and procedures; for the long-range, it involves determining the feasibility of constructing a device for simulating the Con Edison system to train system operators. (This would be similar to the simulator Con Edison already has for the training of its nuclear reactor operators).
2. We are taking immediate steps to accelerate the further strengthening of interconnections with other utilities. For example, we are ordering now—pending a final PSC permit—those items that have long delivery lead times that are needed for the rebuilding of the Millwood-Pleasant Valley double circuit lines from 138 kv to 345 kv. And we are reinitiating discussions with Public Service Electric & Gas of New Jersey to develop the best plan for strengthening the interconnections between PSE&G and Con Edison.
3. We are reviewing the present settings of circuit breaker relays at Buchanan, Ladentown, Millwood, Pleasant Valley, Sprain Brook, and Dunwoodie to permit automatic and manual reclosure under less restrictive conditions.
4. We are providing additional system indicators to the system operator on changes in transmission line status.
5. We have improved our storm-watch capability. As soon as it appears a storm may threaten any of our major installations, we begin operating our system as though a first contingency already exists. Among other steps, this means increasing the amount of in-city generating capacity in operation; reducing the amount of power being imported into our service territory; staffing normally unmanned substations; and increasing the staff at our Energy Control Center.
6. We are staffing our gas turbine installations around the clock. (Heretofore some had not been staffed on a 24 hour basis because they are not needed to meet offpeak load):
7. We have increased our staff at the Energy Control Center on a full-time basis. (The increase in the storm-watch procedure is an additional increase on top of this one).
8. We are investigating whether we can go to 75 percent automatic load-shedding.
9. We are conferring with the New York Power Pool about improving voltage regulation in the State at night.
10. We are improving the black-start capability of our gas turbines.
11. We are increasing the number of periodic simulations of black-starts at our major generating units.
12. We are improving telephone and radio communication within our system.
13. We are installing auxiliary generators at our major substations to provide stand-by light and power.

In addition the Company is observing the following "interim" precautions outlined by the New York Public Service Commission on July 19, 1977.

1. The major 345 KV substations referred to in the Company's storm-weather procedures are being manned around the clock.
2. Gas turbines are being tested weekly.
3. Each week, report to the Public Service Commission the status of the high voltage transmission system and forecasted load and capability for the coming week.

TEN STUDY AREAS BEING COVERED BY CON EDISON BOARD OF REVIEW

1. The design of the present system to determine its adequacy with relation to state, regional and national design criteria.
2. The adequacy of transmission planning criteria relative to the geography and weather conditions in the system.
3. Individual transmission line designs to determine whether improvements in lightning protection are required or feasible.
4. The automatic reclosing actions during the storm to determine why some lines did not reclose and whether changes can be made to increase the probability of reclosing lines without other adverse effects.
5. The failure of the system to remain stable after it was separated from neighboring utility systems and after the automatic load shedding had operated.
6. The performance of the system's reserve generation capacity.

7. The implementation and effectiveness of manual voltage reduction and load shedding to relieve the emergency conditions on the tie lines.
8. The accuracy and adequacy of electric system information as presented to the system operators and the actions taken by them to meet the developing emergency.
9. The responsibilities and interrelationships of the system operators of the New York Power Pool, Con Edison and other interconnected pools and utilities in emergency situations.
10. The problems associated with restoration of service, identifying ways to reduce the time to restart the electric system while protecting the safety of employees and the public, and not damaging equipment.

The CHAIRMAN. Thank you, Mr. Dunn, very much. Do you prefer to be called General Dunn or Mr. Dunn?

Mr. DUNN. Sir, that is your preference. When I left the Army, I went into industry. I do not normally use that title since it bears no relationship to my present duties. In day to day operations I have been called Mister.

The CHAIRMAN. Well, it indicates your excellent qualifications and your great service to the country, and I know you are proud of it, but I will call you Mr. Dunn then.

Mr. Dunn, this is a very helpful, concise statement. I notice that several times in your statement, in page 2 and again on page 3, [see p. 4] you emphasize the cost of providing redundancy, the cost of providing the kind of protection that many people have called for. You say, for instance, on page 2, [see page 4] "The continuity of power supply must be assured, but not so severe an assurance in effect as to be economically and environmentally impractical," and then over on page 3 [see p. 4] you say, "it is that increasing reliability beyond a certain point becomes increasingly more expensive for each increment gained. How much can we afford to pay?"

Now, this is not the first time that a blackout has occurred in the Con Ed system. It occurred also in 1965. Is that correct?

Mr. DUNN. As a part of a much broader area, not because of anything on the Con Ed system, but it was through its ties to other systems. That is correct.

The CHAIRMAN. That was the blackout that covered much of the east coast.

Mr. DUNN. Much of the east coast from Washington north.

The CHAIRMAN. Can you give us some notion, some clearer picture of what you are talking about when you talk about reducing it? Nobody would, of course, expect you to reduce the chances of an outage to zero, and I think you are dead right, we wouldn't want to spend billions of dollars for something as remote as one chance in a million or one chance in 10 million, but can you give us some notion of the cost of, say, increasing reliability by a factor of 2 or 3 or 10 or something of that kind?

Mr. DUNN. I do not believe at this time, Mr. Chairman, I could give you that in any specific terms. My references had to do with the fact that we must keep in mind what it costs as we move further in this regard without trying at this time to quantify exactly what that cost is. What I am referring to here is that after the 1965 blackout, through the Federal Power Commission, through the establishment of the national and regional reliability councils, and through individual actions of various power companies, a series of criteria were established.

For instance, one of the witnesses before the committee later will be Mr. Bleiweis, who is the executive director of the Northeastern Power Coordinating Council, the council to which we belong and from which we get the most detailed criteria against which we design our system. Now, those were accepted and, I believe, properly so, and designed to meet what were seen as the principal problems of the day. I think out of this experience that we had, it shows that some of those things were met. For instance, the fact that the disruption was confined to the Con Ed system. Even though that obviously is not a small system in terms of people affected, it nevertheless did not have the cascading effect that occurred in the 1965 blackout. So, at least some of the provisions and the criteria and the operating and emergency procedures established as a result of 1965 were successful.

Now, obviously, something happened in our system. We are quite convinced that we know what initiated the action in terms of the loss of a double circuit tie from lightning strike, and then later events at about 20-minute intervals, other things which added to the problem, but there are many things in what we have identified in our initial report as nine specific items which we have to get deeper into and explain and understand.

When we finish that, and our second report will be out toward the end of next week or shortly thereafter, in other words, before the end of this month, it will go into what we have been able to determine as not only what happened, but what caused it to happen, and what did or did not operate correctly.

The CHAIRMAN. Whatever did cause it to happen, however, you say at the bottom of page 2 [see p. 4] that Con Ed had met all of the requirements of the Federal Power Commission as well as your regional organization with respect to design, construction, and operation.

Mr. DUNN. The existing criteria.

The CHAIRMAN. Now, this would imply to me that if you have met those requirements, and this has happened, that this kind of incident could occur in many other cities throughout the country.

Mr. DUNN. In my opinion, it can. Now, there are differences in the systems. Ours is a very compact, very heavily loaded system with a very heavy concentration of people, and within the city it is largely underground, which means its reaction is extremely closely connected and interrelated. A system which is more above ground has different electric characteristics, it might not respond exactly the same.

The CHAIRMAN. Not exactly the same, but would it seem likely that if an incident of this kind occurred with two lightning bolts in key places in Chicago or Los Angeles or any other very large city in this country, that the situation might be the same?

Mr. DUNN. In my opinion, it could happen. I think the likelihood is less, because I think that the outside service, for instance, from which they draw power, may well be, say, from all directions, where ours in this case is primarily limited to a fairly narrow corridor coming in from the north.

The CHAIRMAN. Do you know of any other major city in our country such as Boston, Philadelphia, Washington, Cleveland, Detroit, or Chicago, that has the same or a similar concentration that New York has?

Mr. DUNN. I do not. I would say the one area that may come closest to it would be the Florida situation, where——

The CHAIRMAN. Miami?

Mr. DUNN. Well, south Florida, basically, where they must bring their power in from essentially one direction, and this is what has made the situation in New York worse, because six of our major feeders bringing in power were in a relatively narrow corridor, and that was the corridor affected by the lightning storm. If there had been in all areas the ability to bring in power, then other areas would not have been affected by the same storm is the position that I am trying to portray here.

The CHAIRMAN. Now, this kind of a devastating interruption of service, with all of its serious consequences, could result because of two lightning bolts. I take it those were the two outside elements other than the failure which caused it.

Mr. DUNN. Initially, it was. Yes.

The CHAIRMAN. Yes. Couldn't the same kind of paralysis have occurred if there had been sabotage—in other words, if somebody, instead of a lightning bolt, had exploded bombs at a critical place?

Mr. DUNN. As I have indicated, Mr. Chairman, I think in general the answer is yes. It is only a matter of degree and the number of bombs involved. In other words, if they were able to be at certain critical areas to set off something simultaneously or very close together, the answer is, it could have that same type of effect.

The CHAIRMAN. I want to get into that a little later with you. What kind of cost would there be to prevent this kind of incident that occurred or that might occur with a relatively limited sabotage effort? By limited sabotage effort, I mean one or two people could have done what those lightning bolts did. You wouldn't have to have a concerted effort even by a terrorist group, let alone another nation, to give us the kind of disaster that confronted New York.

Mr. DUNN. I am not sure I would agree with the one or two, but certainly a matter of relatively few in the terms—in other words, it does not take an invasion to make this. It would have to be in key spots by something more than one or two people, in my opinion, but a relatively small number.

The CHAIRMAN. My question relates to what kind of cost would be involved, in your judgment, to sharply reduce the likelihood that either lightning or some sabotage or something of the kind could cause this sort of outage.

Mr. DUNN. The major cost in meeting that specific problem, of course, is the additional cost of additional interties to other systems which would be available if existing ones in use were eliminated.

The CHAIRMAN. What kind of cost are we talking about?

Mr. DUNN. We are talking in our case, where underground, costs are on the order of $1.5 million a mile for heavy transmission.

The CHAIRMAN. And how many miles would be involved here?

Mr. DUNN. Well, this would depend, of course, on how far it would have to go. There are major transmission lines being built now by the New York Power Authority, for instance, for importation of hydroelectric power from Canada, which will provide additional facilities. We will tie to those. Essentially, our lines are 50 miles or less because of the relatively small and concentrated area which we serve, but to

be effective, those must tie to lines that crisscross the entire service area, and of course, that becomes hundreds of miles.

Now, the point here, if I may expand, is that we first developed what would appear to be the reliable system on as economic a base as we can determine to be sure that bulk power is available. If as a matter of national defense or national preparedness we are going over and beyond that amount that an individual company or an individual group of companies in a power pool feel that they can afford and defend in their rate bases, then that is an over and above requirement imposed for national needs, and therefore has to be looked at, in my opinion, from a different point of view.

The CHAIRMAN. At any rate, what you are talking about when you say $1.5 million a mile to give you this kind of protection, you are talking about hundreds of millions of dollars if many miles are involved.

Mr. DUNN. That is correct.

The CHAIRMAN. So it would be at minimum, say, half a billion dollars, and if that kind of capital expenditure were required by Consolidated Edison, I take it it would mean a very sharp increase in rates for consumers.

Mr. DUNN. If that were going to be charged to the current rate payers.

The CHAIRMAN. What other alternative would there be?

Mr. DUNN. Well, the only other alternative I know is some type of national means to meet national needs. Obviously, what is required to meet, you might say, the normal needs of the area are going to have to be paid for by the way that we normally raise capital, some internally generated, some by sale of stock to investors, and other by sale of bonds.

The CHAIRMAN. Well, as chairman of this committee, I have been through a long trauma a couple of years ago in providing a seasonal loan to New York City, and I can tell you the likelihood that the Congress would be anxious to provide hundreds of millions of dollars or maybe a billion or two to New York City to insure the protection of its electrical supply I think is very small. It would have to be borne probably by the users, in other words.

So, would this be an increase of 50 percent, 100 percent? What would be the cost of providing this kind of pretty firm assurance that you would not have similar interruption?

Mr. DUNN. Let me answer that, if I may, this way. Con Ed has spent a little over $2 billion in 1972 through 1976 to improve its system. It has now in its forecast over the next 5 years $1½ billion, which will include additional transmission and things that we feel will improve the reliability. That is already in the plan. Now, when we complete our study of the blackout, why and what happened, and our opinion, at least, of what should be done to improve this, only then will we really be able to come up with an answer as to what ought to be added to that $1½ billion.

The CHAIRMAN. Much of the expenditure you are talking about is because obviously in this area you have a technology which is demanding more and more electricity, and you have to have more and more capacity, and also you have to improve, update, renovate your equipment, and that would all be included in this large sum you are talking about.

Mr. DUNN. That is included, but this also includes, for instance, at least three major additional interties already included in this $1½ billion.

The CHAIRMAN. Now, on page 3 [see p. 4], you made a provocative statement. You were obviously asking us to consider Federal legislation. You say, "One area of concern which should be addressed at the national level involves utility system security against willful acts of sabotage, terrorism or vandalism." Then you go on to say, "There should be assurance that the appropriate Federal agency or agencies have the authority to investigate and prosecute for such disruptions which affect national defense as well as interstate commerce."

You have obviously done some thinking about this, and are asking for some kind of Federal action in this area. Can you be a little more precise and detailed as to what you have in mind?

Mr. DUNN. What we are concerned with, and I guess my request for Federal action is, to insure that it is being investigated and the answer is available. I am not sure we as a company have that answer, but with the activity on the west coast, where there were several bombings, for instance, of power company facilities, an experience that fortunately we have not had, we began to wonder, what are the penalties for people who deliberately disrupt a system?

The CHAIRMAN. Now, at the present time, if anything like this should occur, obviously you would have clear local jurisdiction.

Mr. DUNN. That is correct.

The CHAIRMAN. In other words, the New York Police would be able to move in. The State authorities, I take it, would have a degree of authority and responsibility, would they not?

Mr. DUNN. As they would for any other.

The CHAIRMAN. Under present law.

Mr. DUNN. Under present law, as they would for bombing of anything else.

The CHAIRMAN. Now, do you know whether or not, say, the FBI or whatever agency the Federal Power Commission might have to call on would have the authority to move in under these circumstances?

Mr. DUNN. My understanding is that the FBI could move in if it were directly involved in interstate or defense-related items. What we were thinking about is the fact that——

The CHAIRMAN. But how specific would that "defense-related" have to be? It is clear, as I pointed out, that the defense of this country depends upon its technology and its industry and so forth, and clearly when you have the kind of interruption you have with 8 million people and the enormous amount of industry around New York, there is at least a very serious potential defense impact.

In your view, would that be enough?

Mr. DUNN. It may not be interstate commerce, and this is the reason we are raising the question. For instance, there was a change in the Criminal Code concerning violent acts against aircraft and aircraft facilities passed some time ago. This is the type of thing. We are really raising the question only, is this something that should be looked at again because of, as you say, the criticality to both national defense and national economic gain? Have we looked into this area sufficiently? Frankly, I am not prepared to say in exactly what detail this should be changed, but since you were looking into this question of

disruptions, we were simply raising the question that we feel this is an area in which it might be well to extend your investigation, if that is appropriate for this committee.

The CHAIRMAN. Well, if you have any more specific recommendations as to the kind of legislation you think would be helpful, we would appreciate it very much.

Mr. DUNN. We would be glad to do that.

The CHAIRMAN. Now, you append to your statement a list of interim actions initiated by Con Edison, and you have a series that you spell out of 13 plus an additional 3.

Mr. DUNN. From the State public service commission.

Carroll H. Dunn
Senior Vice President

Consolidated Edison Company of New York, Inc.
4 Irving Place, New York, N Y 10003
Telephone (212) 460-4696

1977 AUG 15 AM 11:40

August 12, 1977

Honorable William Proxmire, USS
Chairman, Joint Committee on Defense
Production
Congress of the United States
Room A-421, Senate Annex III
Washington, D C 20510

RE: Emergency Preparedness in the
Electric Power Industry

Dear Chairman Proxmire

During my testimony on August 10, I touched upon the subject of federal prohibition of sabotage directed at electric utility facilities. At that time, in response to your request, I agreed to forward to you some material on that subject prepared by Con Edison's attorneys. Annexed is a memorandum describing the present state of federal statutory law in this area, as well as some suggested legislation that provides for a general prohibition of all acts of sabotage against utility facilities.

Thank you for giving me the opportunity to express Con Edison's position on emergency preparedness. If you need any further information, please let me know.

Sincerely

memorandum

August 11, 1977

Re: Federal Prohibition of Sabotage of Public Utilities

Acts of sabotage against public utilities are violative of state law. There is, moreover, adequate jurisdiction for a federal prohibition, because sabotage directed against a utility system that is integrated with systems in other states is likely to be held to be an obstruction of interstate commerce. United States v. Enmons, 335 F. Supp. 641, 644-45 (E.D. La. 1971) aff'd, 410 U.S. 396 (1973).

At the present time, however, an act of sabotage directed against a public utility would only be cognizable under federal law if it involved,

a) obstruction of, or attempt or conspiracy to obstruct, interstate commerce by means of extortion or robbery or related physical violence in furtherance of such extortion or robberty; Hobbs Act, 18 U.S.C., Sec. 1951;

b) travelling in interstate commerce or using any facility of interstate commerce, including the mail, to commit or attempt to commit extortion or arson; Interstate Travel in Aid of Racketeering Act, 18 U.S.C.,

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Sec. 1952; or

c) wilfully injuring or destroying, or attempting to injure or destroy, "national defense utilities." 18 U.S.C., Sec. 2155.

"National defense utilities" includes electric lines, gas mains and pipes, and all electric light and power, steam or pneumatic power poles, wires and fixtures and the buildings connected with the maintenance and operation of the supply of light, heat and power used to supply national defense premises or forces. 18 U.S.C., Sec. 2151. The value of this statute is limited by the need to prove intent to "injure, interfere with, or obstruct the national defense."

In the case of every one of the statutes discussed above, simple acts of violence against a utility system are outside the prohibitions of the statute. The act must be in furtherance of the illegal end proscribed by the statute.

A suggested means of coping with the sabotage of utilities is suggested by the Criminal Code provision prohibiting violent acts against aircraft or aircraft facilities used in interstate and foreign commerce, 18 U.S.C., Sec. 32. This statute is direct and comprehensive, and the penalties for violation are severe: up to $10,000 fine, or 20-years imprisonment, or both.

Using these provisions as a model, a comprehensive, effective, and constitutional statute prohibiting violence against electric power and other utility facilities can be drafted. The annexed suggested statute covers all significant violent acts that might be committed against electric or gas utilities.

Re: Sabotage of Public Utilities:
Suggested Legislation

Addition to Title 18, U.S.C.A.,
as Chapter 94, §1941:

Prohibition of Certain Acts
Against a Utility Facility

(a) Whoever willfully sets fire to, damages, destroys, or disables any utility facility employed in or affecting interstate commerce, or attempts or conspires so to do, shall be fined not more than $10,000 or imprisoned not more than twenty years, or both.

(b) Whoever willfully enters or remains unlawfully in a building or other structure or upon real property of a utility facility employed in or affecting interstate commerce which is fenced or otherwise enclosed or posted with notices in a manner or with a purpose to exclude persons from entering thereon without the consent of the owner or operator of such facility shall be fined not more than $1,000 or imprisoned not more than one year, or both.

(c) For the purposes of this section a utility facility shall mean all electric and steam generating stations; all associated structures, equipment, devices or machinery necessary to generate or produce electricity and steam; all structures, equipment, devices or machinery necessary to produce gas; all transmission and distribution systems and equipment used in the transmission and distribution of electricity, steam and gas; all associated storage facilities for gas, liquefied gas and fuel; and all real property on which such stations, structures, equipment, devices, machinery, systems or facilities are located.

The CHAIRMAN. Yes. I would like to just ask you if you could tell us briefly how this kind of action compares to what utilities, other utilities around the country are doing in other areas. You are talking about training and strengthening interconnections and staffing your gas turbine installations, increasing your staff at the energy control center, investigating whether you can go to 75-percent automatic load shedding and so forth.

Is this kind of recommendation, is this something that is already being done in other jurisdictions by the utilities that would bring you into line with them, or is it something that would put you out ahead?

What I am trying to get at is the vulnerability in these other areas, in these other cities.

Mr. DUNN. I am really not prepared to answer that question based on any detailed knowledge. It is our belief that what we have been doing is generally what the industry has been doing, but we are saying that out of this experience we want to look at this more carefully. We obviously will make these known throughout the industry so that others can review to see whether these affect them.

The CHAIRMAN. So what you are saying, then, is that Consolidated Edison now is doing about the same kind of job they are doing elsewhere. If you proceed with these, you will be doing more than other utilities are doing.

Mr. DUNN. As far as we know, that is the answer, but I do not have that in detail. The only one I can answer specifically, we are looking very carefully into setting up a simulator system to train our operators in actual—under actual circumstances. We have such a simulator for operation of our nuclear plant. So far as we have been able to tell, nobody has one for operating of pool-type operations. We have not finally decided, but we think we ought to look to see, isn't that something that we ought to consider, so there can be hands on training of the type that goes into the operation of a nuclear plant. As I understand it, there is a small such simulator in Colorado under the Bureau of Reclamation that has to do with one of the interties that they have in that area.

The CHAIRMAN. Now, I would like to get at the vulnerability of other electric power systems in catastrophes similar to last month's New York blackout this way. First, let's take a look at the problem of interconnections with other systems. Do you agree with the characterization by the Federal Power Commission that Con Edison's interconnections were inadequate?

Mr. DUNN. I think I have to agree, because of the circumstances or what happened under the circumstances at that instant in time or those instances made up in that hour, that in reality whatever was there was not sufficient to take care of the problem. I do not disagree with that at all. In general, whether we had reasonably developed what we should, I think that is something that we still have to determine. We agree that one of the things we need to do is to look at that, and we are already looking at changing our already planned construction schedule to add two additional ties that were in our program but planned for further in the future. We are looking at what we might do to bring those into reality at least a year sooner.

The CHAIRMAN. How long would it take, then, to bring that kind of additional interconnection in?

Mr. DUNN. They are normally things that require at least 4 years——

The CHAIRMAN. Four years?

Mr. DUNN [continuing]. To design, to procure the necessary equipment to actually build and put in operation.

The CHAIRMAN. Do you think that Con Edison is more vulnerable to power failures because of the requirement that it purchase electricity from other systems at times when it would be capable of producing its own?

Mr. DUNN. There is no question about it. It does have that negative effect.

The CHAIRMAN. Are there other major electric utility systems in other parts of the country and other cities that operate under similar requirements to buy electricity from outside their system?

Mr. DUNN. I can't speak to the country as a whole. Within the New York area and the New York Power Pool, we do operate under control of the power pool operator and all of the companies tend to buy whatever power they use at the least incremental cost. In other words, if the next generating plant on their system has a certain cost to produce and something is available somewhere else at less cost, they automatically take the power.

The CHAIRMAN. Well, my question was whether other cities do the same thing. I take it they do it but not quite to the same extent New York does.

Mr. DUNN. Within New York they do, though as the largest company in New York, the quantities that we take are much larger than anyone else takes.

The CHAIRMAN. Chicago might do the same, Los Angeles might do the same? Detroit?

Mr. DUNN. I assume, but I am not familiar enough with them to answer that question.

The CHAIRMAN. What can electric utilities do to minimize the vulnerability of regional interconnections?

Mr. DUNN. Basically, insure that they have sufficient capacity to meet various—in the military term—scenarios that might be developed for various things to happen; look again at the criteria at which a line must remain available to meet emergency needs, in other words, how many lines or how much additional capacity on a given line; insure that the operators are adequately trained so that they can make decisions quickly; insure that the information to make those decisions is available to meet the instantaneous requirements against which they operate.

The CHAIRMAN. You do a lot of that through redundant——

Mr. DUNN. Redundancy is one way; yes.

The CHAIRMAN. Of course, that is costly, is it not?

Mr. DUNN. Very costly. Automatic operation through computer operation is also costly, but may be——

The CHAIRMAN. Can you suggest any kind of Federal programs that could help to minimize the vulnerability of interconnective systems?

Mr. DUNN. In my opinion the proposa'ls that were included in the FPC's report that indicated that other utilities, all utilities should as a result of this take a look at various things which they listed, is justified and is a desirable thing. They included in chapter 6 of their report a list of 11 areas in which they felt that all utilities ought to take a look. We have no disagreement with these. We think it is appropriate

that this be looked at and determination be made, and we think that the FPC is a good agency or its successor to monitor the program.

The CHAIRMAN. How long would it take you to come in line with those 11 recommendations at Con Ed?

Mr. DUNN. Well, I think the answers to those 11 recommendations can be developed in about a year. What has to be done as a result of those answers I don't believe we are prepared to say yet, but it is several years.

The CHAIRMAN. That might be several years.

Mr. DUNN. Yes.

The CHAIRMAN. And it might be so costly that in some cases you would not choose to do it.

Mr. DUNN. We would have to reassess our ability to do them.

The CHAIRMAN. Now, as I pointed out, it seems that the blackout was precipitated when lightning bolts knocked out several transmission lines, and you agreed that well-placed bombs could do the same kind of thing. What specifically can be done to protect against that particular kind of an incident, either lightning bolts or this kind of sabotage?

Mr. DUNN. Lines are protected to a certain degree against strokes of lightning. The indications are in this case the severity, the electrical potential was greater than the design called for. The lines were not broken. They did not fall down. They were simply tripped out, and in some cases the automatic devices already installed to automatically put them back on in short time did not work, and we have got to find out why.

We have also got to find out, were they the right devices? Is there some other design that can go in those devices that can assure that they can work? So, I think we have to come up with more alternate means, better design of the equipment or newer design of equipment.

The CHAIRMAN. When you install that kind of equipment that is supposed to minimize the damage when a lightning bolt strikes or bomb or whatever, isn't it tested? I should think it would be tested, retested, so you would be sure of its reliability. Can't that be done by testing?

Mr. DUNN. It is tested. We are looking to see whether we should add tests that we have not already done. That is one of the study areas that we are looking at. We have a test. Any time we put in a new installation we have a detailed written test procedure that is gone through.

The CHAIRMAN. How often are they tested?

Mr. DUNN. Well, when it is initially run; other things are tested anywhere from once a day to once a week to once a year, depending upon where these particular things may be, what they are, what their purpose is. Sometimes it is not possible to test them without taking the system out of service, and obviously, we try to—not to do that unless it is essential, but our whole test program is one of the things that we feel we need to take another look at.

The CHAIRMAN. Well, the reason I raise that is because Con Edison seems to have suffered extensive equipment failures immediately before it shut down. For instance, in several instances open circuits could not be reclosed. What caused these problems, faulty equipment, lack of maintenance, improper setting, or has that not been determined yet?

Mr. DUNN. The exact cause is just being determined. I talked to our people doing the investigation yesterday. For instance, why one of the relays did not close, we still do not know. We, together with the manufacturer, are trying to see if we can reproduce the circumstances and determine what the cause is.

We feel that within the next few weeks we will know what the cause is and determine whether it was improper operation, improper setting, something that went wrong. Even though these things may be tested today is no assurance that tomorrow something may happen that becomes the proverbial straw, and it does not operate, but we do feel there is a place for a more extensive testing program, and that is what we are trying to determine.

The CHAIRMAN. Now, Mr. Dunn, I am going to ask you a have you stopped beating your wife question, and I want you to be prepared for that kind of approach, because I am sure that what I am going to ask can be criticized on that ground. I do not know how else I can bring it out, though.

Many of the interim changes made by your company are geared toward improving operating procedures. For instance, the company states that it intends to improve its storm watch capability. Gas turbines are now being staffed around the clock, for a change. The staff at the Energy Control Center has been increased. Now, the question is, does this suggest that some of Con Edison's previous operating procedures have been inadequate? You deserve credit for moving in now, but doesn't the implication arise that you yourself recognize that what you did in the past was not enough?

Mr. DUNN. As you obviously recognize, there are many pressures that are on you that go into management decisions as to how you organize, how do you operate, how many people are needed to do certain things. We are very much aware of the cost of electricity in the New York area, and one of the ways in which we obviously try to minimize that is to not pay for people whom we do not feel may be necessary to meet the circumstances as we view them at the time. An event has happened. We obviously agree, too, that we have to take another look. Have we in our attempts to minimize our costs in some cases gone too far, for instance, in the gas turbines?

Gas turbines were installed in New York City in the early seventies because we were deficient in generation. Since that time we have put in additional generation, and in terms of normal load requirements, we do not need to operate those except a very small percentage of the time. For instance, 5 years ago those gas turbines might be operating 2,500 to 3,000 hours a year. Now they are operating around 300 hours a year.

Well, how much should you pay to have full-time manning of something that under at least normal circumstances you would not appear to need? Our peaks always come in the daytime, so we are always manned to meet peakloads that may come through the middle of the day. At night, we do not have those peakloads, and therefore under any normal circumstances they are not needed.

Now, what we have said here is, in view of what has been shown to be our vulnerability from outside power, one of the things that we are going to do whenever we get notice of a likely lightning storm is to begin by saying, first, we have already lost two of the lines that come in, we are going to reduce those so that we will set those aside

and they now become available as alternates to meet an emergency. By cutting them out, that means we have got to increase the amount of generation that we already have inside the city and tie it to our system. That means that we have got to have people available there to run those plants, because we are setting up a new operating procedure which is different from that under which we operated prior to the blackout.

I see the point that you are making. I think if you say, had we done everything we could to meet this particular situation, if we had known it were coming, I have to say no. We would have done things differently if we had planned against this specific thing. We cannot ignore it having happened, however, so we hope we are smart enough to take advantage of the knowledge that is available and say it can happen again.

The CHAIRMAN. Con Edison also expanded the training of its system operators since the blackout. Does that imply that your operators performed poorly during the July disturbance?

Mr. DUNN. In my opinion, the answer is "No." On the other hand, we think that we can better equip them to meet this type of emergency. In other words, we think that he operated within the guidelines that he was given, but we feel that maybe we have got to take another look at what those guidelines are, and here again, it is the test. We want to set up something by which we can test him.

The CHAIRMAN. So you are not criticizing them, but you are saying the procedures and the training in the past may not have been adequate?

Mr. DUNN. May not have been all it should to meet this circumstance.

The CHAIRMAN. Now, have you consulted with other electric utilities around the country to determine whether they have more effective training programs or operating procedures than Con Edison, and that you can learn from them?

Mr. DUNN. We are in the process of trying to gain knowledge that might be useful in that regard, and in the makeup of our investigative board in addition to Mr. Swidler, who was the previous chairman of the FPC and the State public service commission and has broad experience in that area, we have two very highly qualified technical people, one of them an ex-employee of Los Angeles Light & Power. So we get his expertise in these areas. We have Professor Wilson from MIT who has served as a consultant to many utilities.

The CHAIRMAN. Well, that sounds very impressive. All these people are excellent people. I know Mr. Swidler and these others that you mention, they have fine reputations. What you appear to be saying is that if Con Ed failed because of inadequate training and inadequacy in these other areas, it is probably true that other utilities around the country have been doing no better. In other words, you have not been lagging. I cannot imagine an organization with the kind of personnel you have just described lagging behind the rest of the country. So it suggests that the rest of the country is not doing a good job.

Mr. DUNN. We have not intentionally lagged, but I am really not qualified to give you testimony about what other people have done.

The CHAIRMAN. Before the system shut down, what measures were taken to guarantee power to key facilities such as hospitals, communication facilities, police and fire stations, and so forth?

Mr. DUNN. Following the 1965 blackout, it is my understanding that hospitals put in emergency generation. Certainly the telephone company put in emergency generation. The police and other agencies had some emergency generation. The railway had some capability, too—for emergency, and actually one small element of our supply to the railroad continued to operate most of the time.

Other than the preplanning by providing standby generation, there was nothing at the time of this emergency that could be done—except in our load shedding.

Now, our load shedding operation, both manual, starting about 9:22, and automatic in the last 5 minutes, did not take out circuits that would affect these key facilities, and these key items were affected only when the total system collapse took place, but here again there may be needs for additional standby that is isolated from the rest of the system.

The CHAIRMAN. And you think this can be done? This is practical. You would be able to provide power to hospitals if they do not have generating equipment of their own, and that police and fire stations, communications facilities, and so forth, would be able to have power?

Mr. DUNN. In facilities of that criticality, I think they must have their own standby power.

The CHAIRMAN. I see.

Mr. DUNN. All did. One hospital, and I don't remember which one, apparently had trouble with the standby generation. We did supply them with one of our trailer mounted standby generating plants.

The CHAIRMAN. Now, another of your interim actions is to improve communications within the Con Ed system. Were there communication problems within your system immediately before and during the blackout?

Mr. DUNN. There weren't any communication problems that I am aware of before the blackout. In getting ready for the restoration there were communication problems where in some cases, for instance, communication at a substation was dependent upon light and power in the system, and it being out, that communication was out. So here again we are looking at individual standby powerplants at our key substations, something that we did not have.

The CHAIRMAN. Well, if it wasn't communication, it seems to me that there was some unaccounted for reason as to why, in view of the fact that little damage was done to the Con Ed system itself, it took so long for power to be restored. The prolonged nature of the blackout aggravated customer hardship, caused considerable economic loss. Why did restoration take so long?

Mr. DUNN. Inherent in the system. There were attempts immediately made to restore power. Actually, all of the damage essentially that occurred to the system itself occurred in attempts to restore power. The transformer that burned at Buchanan near Indian Point and created a good deal of the excitement at the time was a result of attempts to restore power quickly, and resulted in equipment failure. We are looking into why that failure took place.

The CHAIRMAN. It seems to me that is a second line that would be far less expensive.

Mr. DUNN. This is correct.

The CHAIRMAN. That is, recognizing you cannot stop an outage, but you can make it half an hour or 15 minutes instead of 24 or 25 hours.

Mr. DUNN. We agree. Now, the first thing that you might say did work in the lesson learned from 1965 is the protective devices that in effect saved the major equipment to operate again. There was no damage to any of our generating plants, whereas in 1965 a total of 1,500 megawatts in a number of plants were badly damaged by the shutdown. That did not occur, so in that regard we learned from the lesson of the past and protected it.

What we are seeing here, though, is our attempt for quick restoration on the scale that we were faced with here was not successful, and after a number of tries, which were not successful and which were the reasons for hopeful prognostications of relatively early return, those failed. Recognizing that those failed, then we had to totally disconnect the system, send people to the individual substations to be sure of their condition, and that is what took the time, and rebuild the system a small part at a time.

The CHAIRMAN. In its preliminary report on the blackout, the Federal Power Commission has made several recommendations intended to improve Con Ed's reliability. Among the recommendations were speedup construction of several new interconnections with other systems, automation of small combustion turbine units, improved load shedding capabilities, and so forth.

What is your reaction? What is the Consolidated Edison reaction to these recommendations? In your view, are they practical? Can you do them without an overwhelming increase in cost? Do you intend to do them?

Mr. DUNN. Except for two, they are very close to the initial recommendations that we had already accepted ourselves.

The CHAIRMAN. What are those two exceptions?

Mr. DUNN. Those had to do with additional ties, which are in our plans for the future, but are not really available to us now. We have a disagreement with the FPC, for instance——

The CHAIRMAN. One was additional ties. What was the second?

Mr. DUNN. Both were additional ties.

The CHAIRMAN. Both were. All right.

Mr. DUNN. One with New Jersey and one with the Long Island Lighting Co. We are saying until there is additional generation those ties would not have been helpful.

The CHAIRMAN. General Dunn, it appears from your list of 13 interim corrective actions and 10 study areas that your company is making an extensive effort to improve system reliability, but I am struck by the number of corrective actions that are deemed necessary, and by the implication that the system was inadequate in so many respects. Would you say that the problems demonstrated by the recent blackout are unique to the Con Ed system, or would you consider them to be fairly common throughout the country?

Mr. DUNN. I believe that many are unique. I also believe that many have application on a wider basis, and it is my belief that all the major power companies are going to be looking very carefully at what we did and what we have done, and on their own are going to be taking another look at how they operate.

The CHAIRMAN. What you are saying is that given similar circumstances, other systems might also suffer blackouts?

Mr. DUNN. Might have some of the same difficulties, yes.

The CHAIRMAN. Would you characterize Federal efforts as generally effective in helping prevent electrical blackouts?

Mr. DUNN. I guess I have to say that is a hard one to answer. Obviously, we look to the FPC in terms of general requirements, and they have control, for instance, over interties, over any passage of power between individual companies. We are more affected by Federal agencies, I am afraid, that keep us from doing things than allow us to do things.

The CHAIRMAN. All right. To keep you from doing things, you are talking about what?

Mr. DUNN. Well, I am talking about the various——

The CHAIRMAN. Environmental agencies?

Mr. DUNN [continuing]. Environmental issues which they have to carry out, which obviously do add to our cost and time to get them done, the continued increase in requirements that are being placed upon us by the Nuclear Regulatory Commission, for instance, as they review plant operation. In the security area, they have just come out with a new requirement that is going to add considerably to costs in construction and operation.

I am not implying that that is not something that should be done. I am simply saying that those are the agencies with which we normally interrelate, the NRC, the FPC, the EPA, Corps of Engineers in terms of permits for discharge in water, things of that sort. So, those are the ones we have the most conflict with.

The CHAIRMAN. Well, you are an expert on the Corps of Engineers.

Mr. DUNN. I must know something about that. I know something about their problems and something about our problems in dealing with them.

The CHAIRMAN. Well, of course, the question is what we can do about this situation. You are very practical and you are very realistic in recognizing that the function, for example, of the environmental agencies is essential. EPA has to do its job, should do its job. We all insist it is going to do its job. The same thing is true of the other agencies. They have a responsibility. Unless we feel that we have to sacrifice their function somehow, and we do not seem to, what can we do? What can the Federal Government do to minimize the vulnerability of your system?

Mr. DUNN. I think as the President has indicated it is time to take a look at some of our regulatory requirements just to be sure about these things which add up to the fact that it takes 12 to 14 years from the time you feel a need for a nuclear plant until you can have it on line. With the additional requirements to meet various permit requirements, it will take 8 to 10 years to build a coal plant at the present time. We are not going to be building any more oil plants because of the realities of imported oil. It happens that our plants are either oil fired or nuclear.

So, this adds to your planning times. It adds to the cost, because in the area of inflation any time you add another year you add anywhere from 6 to 8 percent to the cost of the plant.

The CHAIRMAN. So you are not talking about the decision whether it is up or down, yes or no, go ahead or do not go ahead.

Mr. DUNN. We need a faster decision.

The CHAIRMAN. What you are saying now is the timing.

Mr. DUNN. Timing is very bad. It takes an inordinate amount of time to meet all the requirements.

The CHAIRMAN. If you could get a decision out of EPA in a month instead of a year or out of the Nuclear Commission——

Mr. DUNN. We would save 8 percent just on that alone.

The CHAIRMAN. The timing would take care of it. That is very helpful.

Now, as a final question, I would like to obtain your views on the ability of Consolidated Edison or other electric utilities to cope with disasters on a much greater scale than last month's blackout. I am thinking of a situation which might be accompanied by a massive damage to generation or transmission equipment, perhaps a high level of casualties among the general population or your company's work force. What does your company do to prepare for that kind of catastrophe? Now, before I let you go ahead on that one, let me point out that many people, I think, in viewing World War II's experience, without the fine opportunity we have, because of our hindsight, would say that the kind of enormous bombing that London suffered, Berlin suffered, any number of other capitals suffered, that obviously the industry would have had to grind to a halt, the defense industry particularly. That was not true.

As a matter of fact, we found that some of those cities performed better after they were bombed. Morale was higher. They were more determined than ever. They found ways because of human ingenuity to do the job. It was not just a couple of lightning bolts. It was just an all-out bombing, a tremendous amount of burning, a great loss of life, and yet those cities were able to function.

Now, how about our vulnerability now, in view of the fact that New York seems to collapse at least for a while after a couple of lightning bolts knock out a relatively limited amount of its facilities? What is the answer in the event of a far more serious situation?

Mr. DUNN. I think, and I want to be very careful in how I speak, because I do not want to get too deep into the question of security and things of that sort, but I think basically our first defense is the size of the country and the dispersion of industry. While it is true that New York was knocked out for 25 hours, while it is true that the Stock Exchange didn't function, many computers didn't function, many other things didn't happen, this would not have brought the country down had that happened in a war.

What I am saying is that the diversity of our country, the interties that are available in industry, the wide dispersal of our power generation plants means that other than an absolute all-out nuclear attack, in my opinion, while there will be disruptions in individual areas and disruptions which well could involve all of New York City, on a countrywide basis I don't see that that is really a realistic thing that is likely to happen.

I agree with you that people react to adversity, at least Americans have in the past, and it is my belief and hope they will again, to find ways, and to meet our particular need, we would find ways to bring in old powerplants, for instance, that we are not running now, that are closer to the load center, which we are not running now because of pollution problems or economics or age or some other thing, yet they are still there, and these are the types of things that we would do.

The thing we have to realize, however, is that the major generators, transformers, or other things, are items that take several years to

manufacture and deliver, so they are not going to be immediately available, and we have to have alternate means. We have to have redundancy in certain key elements, one of the things that we are looking into.

The CHAIRMAN. General Dunn, I think you have been a very impressive and effective witness. You have given us, I think, a picture, however, of a situation which our greatest city, our biggest city continues to be very vulnerable, far more vulnerable than it should be. You have admitted that it will take years before we can expect to provide a significant improvement in reliability, that we are working on it but that we do suffer that. The implication is very clear that from a national defense standpoint we are a very vulnerable society, relying as we do so heavily on electricity in order to function.

I think the general tenor of your testimony, however, is extremely constructive and helpful. Thank you very much.

Mr. DUNN. Thank you, sir.

The CHAIRMAN. The committee may have additional questions which we would appreciate your responding to for the record if you would.

Mr. DUNN. Certainly.

[The committee's questions and Mr. Dunn's responses follow:]

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October 12, 1977

Honorable William Proxmire, USS
Chairman, Joint Committee on
Defense Production
Congress of the United States
Room A-421, Senate Annex III
Washington, D C 20510

Dear Chairman Proxmire

This responds to your letter of September 26, 1977, in which you asked that I provide answers to four questions to complete the record of the hearings.

Questions and my responses are enclosed.

Sincerely

C. N. Dunn

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RESPONSES TO QUESTIONS FROM THE
JOINT COMMITTEE ON DEFENSE PRODUCTION

CARROLL H DUNN - CONSOLIDATED EDISON

Q. 1. In his prepared remarks Mr Dunn stated that "the current design, construction and operation of the Con Ed system has met all FPC and regulatory agency criteria for such a system." During the second day of hearings FPC Chairman Curtis stated that "the Federal Power Commission does not establish reliability criteria...(I)t is inappropriate in my judgment to assert that the Federal Power Commission has established criteria which are in a current state of compliance by the Con Ed system." What FPC criteria was Mr Dunn referring to when he made the statement cited above?

A. Although it is true that there is no formal document specifying an FPC criteria, the FPC has recommended in Chapter 9, Item 5a (P.89) of its "Volume I - Report of the Commission, A Report by the Federal Power Commission, July 1967," that:

> "a. Networks should remain stable under severe disturbances.
>
> Networks should be planned and tested for their ability to withstand the severe types of contingencies discussed in Chapter 5.
>
> Stability analysis should include examination of both regional and interregional strength."

The contingencies discussed in Chapter 5 of "Volume I - Report of the Commission" are those recommended in the report of the Commission Advisory Committee on Electric Bulk Power Supply. They are:

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d. The outage of an entire transmission substation of any one of the interconnected systems ...

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This recommendation has been interpreted by Con Edison and other utilities in the northeast to be regarded as minimum criteria for the design of interconnected power systems.

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A. No. The establishment of reliability criteria should be left to the regional reliability councils who in turn make up the National Electric Reliability Council (NERC). The regional councils can more readily assess their particular needs and decide on appropriate criteria to meet such needs. Review by the Federal Energy Regulatory Commission would be appropriate.

Q. 3. Does Con Ed have specific recommendations for legislation to deal with acts of sabotage, terrorism, and vandalism against utility property?

A. Previous response to this question was made in a letter dated August 12, 1977. A copy of the recommendation for legislative action included with that letter is attached.

94-984 O - 77 - 3

Re: Sabotage of Public Utilities:
Suggested Legislation

Addition to Title 18, U.S.C.A.,
as Chapter 94, §1941:

Prohibition of Certain Acts
Against a Utility Facility

(a) Whoever willfully sets fire to, damages, destroys, or disables any utility facility employed in or affecting interstate commerce, or attempts or conspires so to do, shall be fined not more than $10,000 or imprisoned not more than twenty years, or both.

(b) Whoever willfully enters or remains unlawfully in a building or other structure or upon real property of a utility facility employed in or affecting interstate commerce which is fenced or otherwise enclosed or posted with notices in a manner or with a purpose to exclude persons from entering thereon without the consent of the owner or operator of such facility shall be fined not more than $1,000 or imprisoned not more than one year, or both.

(c) For the purposes of this section a utility facility shall mean all electric and steam generating stations; all associated structures, equipment, devices or machinery necessary to generate or produce electricity and steam; all structures, equipment, devices or machinery necessary to produce gas; all transmission and distribution systems and equipment used in the transmission and distribution of electricity, steam and gas; all associated storage facilities for gas, liquefied gas and fuel; and all real property on which such stations, structures, equipment, devices, machinery, systems or facilities are located.

Q. 4. What should be the role of the federal government with respect to emergency preparedness of the utility industry before, during, and after an emergency situation?

A. This question is partially answered by the response to Question 2. Consideration might be given to the formulation by an appropriate federal agency of guidelines to meet nationwide needs. However, the best preparedness for an emergency situation is a financially healthy, reliable, interconnected utility industry which can best be assured by the maximum utilization of power pool and inter-pool arrangements.

The CHAIRMAN. Our last witness this morning is Mr. Bardyl Tirana, the Director of the Defense Civil Preparedness Agency. Mr. Tirana is a graduate of Columbia University Law School. He was a practicing attorney before his appointment to head DCPA. Mr. Tirana, the committee would appreciate a summary of your statement, and will print the entire statement in full in the record.

STATEMENT OF HON. BARDYL TIRANA, DIRECTOR, DEFENSE CIVIL PREPAREDNESS AGENCY, ACCOMPANIED BY JOHN McCONNELL, DIRECTOR, PLANS AND OPERATIONS, DEFENSE CIVIL PREPAREDNESS AGENCY, AND GEORGE JETT, GENERAL COUNSEL, DEFENSE CIVIL PREPAREDNESS AGENCY

Mr. TIRANA. Mr. Chairman, with me today are John McConnell, who is the Director of Plans and Operations for the Agency, and George Jett, its General Counsel. We last met on the Today Show May 8, and a lot has happened since then that relates directly to the blackout and the subject matter of these hearings. May 8 was also the day of the public release of what I would like to refer to as Proxmire report No. 1 on the status of emergency preparedness in the Nation and the fragmented role of government in support of State and local efforts to respond to any kind of disaster.

I read the report some time on May 8 and had the benefit of a draft before, and basically the conclusion of the report, I need not tell you, was that the Federal Government was in a mess and was creating a mess at the State and local levels. I thought it incumbent on me to try and find out if the conclusions that you and your committee had reached were correct, and the best way of doing that, I thought, was to go out and visit State and local governments.

On May 10, 2 days later, I went to see Governor Thompson of Illinois in Springfield, and met at the same time with six State directors, including Ron San Felippo of Wisconsin, and basically all of them told me one thing. They said very simply, look, Tirana, you have got an agency whose responsibility is attack preparedness and that is nuclear attack, but if the country can't respond to peacetime problems, it certainly can't respond to a wartime problem. So, you ought to change your approach. Worry about creating an organizational base, communications, management at the State and local level to respond to any kind of problem, and you will enhance whatever attack capability the Nation may have.

I took that lesson back from Springfield and met with the Executive Committee of State Civil Defense Directors in Washington when I got off the plane that night, May 10. We met all day the next day, May 11, in Washington. They confronted me further with the same message. Look, fellow, you had better change your tune and help us at the State and local level be ready to respond to any kind of disaster, because we can't help you in wartime if we are not able to deal with lesser and simpler peacetime problems.

Not wanting to let their initiative pass, we scheduled a meeting for May 16 in Washington, at which representatives of the State emergency preparedness directors and also the local emergency preparedness directors were present, and we hammered out an agreement. The agreement is dated May 16. It is in the record, and it happened to be

reported in the Washington Post coincidentally with what I would call Proxmire No. 2, the report on the Soviet and U.S. civil defense as it applies to national security.

The essence of that agreement is that our agency would support State and local efforts to accomplish total preparedness, the ability to have communications systems in place, plans in place so that there could be an immediate response to any kind of crisis, and it was our feeling that, the enhancement of that capability would make us as a Nation better prepared to deal with a wartime or potential wartime problem.

As a followup to the May 16 statement, I felt it incumbent to find out if there was acceptance of that May 16 statement. It was transmitted to all Governors, Members of Congress, State and local civil defense directors, on May 20. On May 25, I met with Governor Finch in Mississippi, and we discussed during that trip hurricane preparedness, and flood preparedness. I felt it necessary also to visit the Northeast corridor, where preparedness problems for crisis of any nature are among the most difficult.

On June 21, we went to New York City to meet with Mayor Beame, Police Commissioner Codd, and the civil defense director within the police department, Lieutenant Hogan. We met and we specifically discussed the change in our program, and authorized the city to use our matching funds for planning total preparedness, including blackout. The subject of blackout was discussed expressly with Mayor Beame, Commissioner Codd, and Lieutenant Hogan. We had a joint meeting on the same day with representatives of the New York State civil defense, the New Jersey State civil defense, and the New York Port Authority, and blackout preparations were also discussed, including our authorization for the use of civil defense matching funds to prepare for total preparedness.

The following day, we were with Governor Grasso in Connecticut. Again, the same subject matter was discussed. A week later, June 29, we went to Harrisburg to meet with Lieutenant Governor Klein and Colonel Henderson, the State civil defense director in Pennsylvania, to discuss the use of our funding to accomplish total preparedness in the State with particular emphasis on flooding.

On that day, June 29, we also scheduled a meeting with Colonel Henderson on the one hand on behalf of the State and representatives of the AFL–CIO State Federation to discuss the integration of labor and State and local government into the emergency preparedness planning effort. Needless to say, whenever there is a problem, labor must be integrated, because you need skilled workers to solve the problem.

I feel a little bit like Joe Blitzfit, the L'il Abner cartoon character. Wherever I go, I leave a disaster in my wake. The New York City blackout, the Johnstown flood has proved the wisdom of this committee's—by that I mean the Joint Congressional Committee on Defense Production—recommendations that we support total preparedness at the State and local level. That is now the official policy of my agency. Obviously, when a crisis strikes, and we have learned it both in Johnstown and in New York City, the response must be by those at the local level. Time does not permit assistance to come from Washington in a meaningful way.

Mr. DUNN. Following the 1965 blackout, it is my understanding that hospitals put in emergency generation. Certainly the telephone company put in emergency generation. The police and other agencies had some emergency generation. The railway had some capability, too—for emergency, and actually one small element of our supply to the railroad continued to operate most of the time.

Other than the preplanning by providing standby generation, there was nothing at the time of this emergency that could be done—except in our load shedding.

Now, our load shedding operation, both manual, starting about 9:22, and automatic in the last 5 minutes, did not take out circuits that would affect these key facilities, and these key items were affected only when the total system collapse took place, but here again there may be needs for additional standby that is isolated from the rest of the system.

The CHAIRMAN. And you think this can be done? This is practical. You would be able to provide power to hospitals if they do not have generating equipment of their own, and that police and fire stations, communications facilities, and so forth, would be able to have power?

Mr. DUNN. In facilities of that criticality, I think they must have their own standby power.

The CHAIRMAN. I see.

Mr. DUNN. All did. One hospital, and I don't remember which one, apparently had trouble with the standby generation. We did supply them with one of our trailer mounted standby generating plants.

The CHAIRMAN. Now, another of your interim actions is to improve communications within the Con Ed system. Were there communication problems within your system immediately before and during the blackout?

Mr. DUNN. There weren't any communication problems that I am aware of before the blackout. In getting ready for the restoration there were communication problems where in some cases, for instance, communication at a substation was dependent upon light and power in the system, and it being out, that communication was out. So here again we are looking at individual standby powerplants at our key substations, something that we did not have.

The CHAIRMAN. Well, if it wasn't communication, it seems to me that there was some unaccounted for reason as to why, in view of the fact that little damage was done to the Con Ed system itself, it took so long for power to be restored. The prolonged nature of the blackout aggravated customer hardship, caused considerable economic loss. Why did restoration take so long?

Mr. DUNN. Inherent in the system. There were attempts immediately made to restore power. Actually, all of the damage essentially that occurred to the system itself occurred in attempts to restore power. The transformer that burned at Buchanan near Indian Point and created a good deal of the excitement at the time was a result of attempts to restore power quickly, and resulted in equipment failure. We are looking into why that failure took place.

The CHAIRMAN. It seems to me that is a second line that would be far less expensive.

Mr. DUNN. This is correct.

The CHAIRMAN. That is, recognizing you cannot stop an outage, but you can make it half an hour or 15 minutes instead of 24 or 25 hours.

Mr. DUNN. We agree. Now, the first thing that you might say did work in the lesson learned from 1965 is the protective devices that in effect saved the major equipment to operate again. There was no damage to any of our generating plants, whereas in 1965 a total of 1,500 megawatts in a number of plants were badly damaged by the shutdown. That did not occur, so in that regard we learned from the lesson of the past and protected it.

What we are seeing here, though, is our attempt for quick restoration on the scale that we were faced with here was not successful, and after a number of tries, which were not successful and which were the reasons for hopeful prognostications of relatively early return, those failed. Recognizing that those failed, then we had to totally disconnect the system, send people to the individual substations to be sure of their condition, and that is what took the time, and rebuild the system a small part at a time.

The CHAIRMAN. In its preliminary report on the blackout, the Federal Power Commission has made several recommendations intended to improve Con Ed's reliability. Among the recommendations were speedup construction of several new interconnections with other systems, automation of small combustion turbine units, improved load shedding capabilities, and so forth.

What is your reaction? What is the Consolidated Edison reaction to these recommendations? In your view, are they practical? Can you do them without an overwhelming increase in cost? Do you intend to do them?

Mr. DUNN. Except for two, they are very close to the initial recommendations that we had already accepted ourselves.

The CHAIRMAN. What are those two exceptions?

Mr. DUNN. Those had to do with additional ties, which are in our plans for the future, but are not really available to us now. We have a disagreement with the FPC, for instance——

The CHAIRMAN. One was additional ties. What was the second?

Mr. DUNN. Both were additional ties.

The CHAIRMAN. Both were. All right.

Mr. DUNN. One with New Jersey and one with the Long Island Lighting Co. We are saying until there is additional generation those ties would not have been helpful.

The CHAIRMAN. General Dunn, it appears from your list of 13 interim corrective actions and 10 study areas that your company is making an extensive effort to improve system reliability, but I am struck by the number of corrective actions that are deemed necessary, and by the implication that the system was inadequate in so many respects. Would you say that the problems demonstrated by the recent blackout are unique to the Con Ed system, or would you consider them to be fairly common throughout the country?

Mr. DUNN. I believe that many are unique. I also believe that many have application on a wider basis, and it is my belief that all the major power companies are going to be looking very carefully at what we did and what we have done, and on their own are going to be taking another look at how they operate.

The CHAIRMAN. What you are saying is that given similar circumstances, other systems might also suffer blackouts?

Mr. DUNN. Might have some of the same difficulties, yes.

The CHAIRMAN. Would you characterize Federal efforts as generally effective in helping prevent electrical blackouts?

The people on the front line, where lives must be protected, are those who have to meet the crisis. Our efforts ought to be directed at strengthening local and State government.

[Complete statement of Mr. Tirana follows:]

STATEMENT BY HON. BARDYL R. TIRANA, DIRECTOR, DEFENSE CIVIL PREPAREDNESS AGENCY

Mr. Chairman, I want to thank you for the privilege of appearing before your Committee today to discuss emergency preparedness in the electric power industry with particular emphasis on the implications of the recent New York City blackout for emergency planning. As you so correctly stated, this is an important issue to our Nation. I have with me Mr. John McConnell, Assistant Director of DCPA for Plans and Operations.

Mr. Chairman, in Bill Kincade's letter of August 3 announcing your hearings, he requested that my testimony include a brief account of the following: (1) DCPA's role in emergency preparedness in the electric power industry in general, and (2) the measures taken by DCPA in connection with the July 13 New York City blackout, with an accounting of the effectiveness of these measures.

Prior to responding to these questions, I believe it would be meaningful to the Committee for me to summarize recent actions I have taken as Director which bear on DCPA's role in peacetime emergencies such as that experienced in New York last month.

As you know, on July 13, 1976, exactly one year before the blackout struck our largest city, Public Law 94-361 was enacted. That statute, among other things, amended the Federal Civil Defense Act to authorize use of civil defense resources, including personnel and equipment, in peacetime disasters. These disasters, as defined in the Federal Disaster Relief Act of 1974, included major emergencies resulting from severe weather such as the storm that dealt New York such a devastating blow.

Just after I became Director this April, I appeared at hearings before the Senate Armed Services Committee and held extensive discussions with Governors and State and local emergency preparedness officials. As a result of these exchanges, I realized that DCPA had not implemented the new law in a manner to assure that the intent of the Congress was carried out. Frankly, for the first nine months of the law's effectivity, civil defense policy at the national level on support of peacetime disaster preparedness was anything but clear. This caused real chaos at the State and local level and required immediate correction.

Accordingly, in the course of a May 16, 1977 meeting with representatives of State and local civil defense organizations, I signed, as National Civil Defense Director, a statement on civil defense which charted a new course for our Agency. The statement, which I have available for the Record, was designed to put into action the clear implications of last year's Congressional mandate to apply civil defense systems to preparedness for both attack and natural disasters at the State and local level. I announced this policy in a May 20 letter to members of Congress, Governors and State and local civil defense directors, and the results have been unanimously supported. I view my decision as entirely consistent with legislation developed by this Committee, specifically bill S. 1209, which would expand the role of civil defense to include direct support of peacetime readiness.

In the last two months, I have met with Governors Thompson (Illinois), Finch, Grasso, Hunt and Askew, key members of the Congress, municipal government leaders and State and local emergency readiness officials across the country to develop better understanding and support of common disaster readiness goals at all levels of government. Also, I have taken initiatives with selected representatives of industry and organized labor to identify means by which these sectors of our economy can contribute to an overall increase in our Nation's state of emergency readiness. This will include studies of the status and potentials of emergency preparedness programs, including electric power.

Of particular interest to your present review of the New York blackout, on June 21, I met with Mayor Beame, Commissioner Codd of the New York Police Department and other State, City and Port Authority leaders. These meetings were held specifically to discuss ways in which DCPA's new "total preparedness" policies could be utilized to enhance the City's capability to deal with a major emergency, including a larger-scale power blackout. (A New York Daily News article on our meeting is enclosed for the Record.)

As you will recall in DCPA's testimony before this Committee last June, the previous Administration sought to limit civil defense support of State and local government to preparations for nuclear attack only. This position was rejected by the Congress in P.L. 94–361 and by this Administration under my recently announced policy of dual use preparedness. Mayor Beame and his team were pleased with our re-direction and new emphasis.

With that background, I will address your specific questions on DCPA support for emergency preparedness in the electric power industry and our contribution during the New York blackout last month.

In a nutshell, DCPA does not currently provide technical planning or financial assistance for the direct support of emergency preparedness in any defined sector of U.S. industry, including electric power. We have the statutory authority in the Federal Civil Defense Act to perform studies of ways to make industry more prepared, but program priority and budget decisions in recent years have overlooked the importance of this vital research and planning. In my brief tenure, I have already undertaken initiatives within our authorities to correct this shortcoming. However, principal responsibility for preparedness in the electric power industry appear to rest, under Executive Order 11490, jointly with the Department of Interior and the Federal Power Commission. Any programs we undertake will be coordinated with these authorities. Furthermore, as will be discussed by the Defense Logistics Agency, their personnel provide onsite physical security and emergency preparedness advice to the management of select electric power facilities under the auspices of the Defense Industrial Facilities Protection Program. Continuing liaison is maintained between our agencies in this area.

Still, in very real terms, the assistance we presently provide to State and local government to better attack preparedness also supports planning for all-risk emergencies including a breakdown in electric power. I will briefly allude to four key elements of our programs which demonstrate my point.

First is warning, a key factor in a situation like the New York power outage. The National Warning System is a network of exclusively dedicated 24-hour per day, wireless and microwave circuits. It has some 2,000 receiving points throughout the United States which serve both Federal agencies and installations, and through DCPA assistance, State and local governments. The system is controlled by the National Warning Center in Cheyenne Mountain (Colorado) and the National Alternate Warning Center in a DCPA protected facility near Olney, Maryland. Each State has a central control point which permits two-way communication with all receiving points within that State. Most receiving points are in fire or police stations or local emergency operating centers manned 24 hours per day. Significantly, this system can operate in an emergency without commercial electric power from storage battery reserves.

Next is direction and control. The core of this system is an "emergency operating center" which serves State and local government as focal point for collection and analysis of essential information, decision making and announcements emanating from those decisions. The direction and control system includes essential communications to all of the emergency operating departments and to the broadcast media to keep the public informed. The DCPA assistance includes technical guidance and financial aid for the construction and equipping of these emergency operating centers including the provision of an emergency power source in case normal power goes off.

Third is emergency public information. The national network for emergency public information is the "Emergency Broadcast System" a responsibility of the Federal Communications Commission. The system includes an organized system of commercial broadcast stations which participate on a voluntary basis. DCPA supports development and maintenance of this system by assisting with the operational planning for emergency broadcasts by State and local government. Also, DCPA aids in providing essential protection features to key broadcast stations to assure their continued operation in an attack environment. This includes the emergency power source to permit the station to continue operations without commercial power. To date, almost 600 stations across the country have been so equipped.

The last program I'll mention specifically is emergency services. This program, sponsored entirely by DCPA, provides guidance through "Standards for Local Preparedness" for the development of better emergency operations in State and local police, fire, emergency welfare, rescue, and emergency medical services. Our program management and evaluation system provides for the identification of shortcomings in these departments and makes recommendations for improvement. Also, DCPA provides training manuals for auxiliary police or police re-

manufacture and deliver, so they are not going to be immediately available, and we have to have alternate means. We have to have redundancy in certain key elements, one of the things that we are looking into.

The CHAIRMAN. General Dunn, I think you have been a very impressive and effective witness. You have given us, I think, a picture, however, of a situation which our greatest city, our biggest city continues to be very vulnerable, far more vulnerable than it should be. You have admitted that it will take years before we can expect to provide a significant improvement in reliability, that we are working on it but that we do suffer that. The implication is very clear that from a national defense standpoint we are a very vulnerable society, relying as we do so heavily on electricity in order to function.

I think the general tenor of your testimony, however, is extremely constructive and helpful. Thank you very much.

Mr. DUNN. Thank you, sir.

The CHAIRMAN. The committee may have additional questions which we would appreciate your responding to for the record if you would.

Mr. DUNN. Certainly.

[The committee's questions and Mr. Dunn's responses follow:]

Carroll M. Dunn
Senior Vice President

Consolidated Edison Company of New York, Inc.
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Telephone (212) 460-4696

1977 OCT 17 AM 10:40

October 12, 1977

Honorable William Proxmire, USS
Chairman, Joint Committee on
Defense Production
Congress of the United States
Room A-421, Senate Annex III
Washington, D C 20510

Dear Chairman Proxmire

This responds to your letter of September 26, 1977, in which you asked that I provide answers to four questions to complete the record of the hearings.

Questions and my responses are enclosed.

Sincerely

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RESPONSES TO QUESTIONS FROM THE
JOINT COMMITTEE ON DEFENSE PRODUCTION

CARROLL H DUNN - CONSOLIDATED EDISON

Q. 1. In his prepared remarks Mr Dunn stated that "the current design, construction and operation of the Con Ed system has met all FPC and regulatory agency criteria for such a system." During the second day of hearings FPC Chairman Curtis stated that "the Federal Power Commission does not establish reliability criteria...(I)t is inappropriate in my judgment to assert that the Federal Power Commission has established criteria which are in a current state of compliance by the Con Ed system." What FPC criteria was Mr Dunn referring to when he made the statement cited above?

A. Although it is true that there is no formal document specifying an FPC criteria, the FPC has recommended in Chapter 9, Item 5a (P.89) of its "Volume I - Report of the Commission, A Report by the Federal Power Commission, July 1967," that:

> "a. Networks should remain stable under severe disturbances.
>
> Networks should be planned and tested for their ability to withstand the severe types of contingencies discussed in Chapter 5.
>
> Stability analysis should include examination of both regional and interregional strength."

The contingencies discussed in Chapter 5 of "Volume I - Report of the Commission" are those recommended in the report of the Commission Advisory Committee on Electric Bulk Power Supply. They are:

> "a. The outage of any power plant, including the largest of any of the interconnected systems ...
>
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c. The outage of all transmission circuits on any one common right-of-way ...

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e. The sudden dropping of a large load or a large load center."

This recommendation has been interpreted by Con Edison and other utilities in the northeast to be regarded as minimum criteria for the design of interconnected power systems.

Q. 2. Should the FPC establish reliability criteria and require utility company compliance?

A. No. The establishment of reliability criteria should be left to the regional reliability councils who in turn make up the National Electric Reliability Council (NERC). The regional councils can more readily assess their particular needs and decide on appropriate criteria to meet such needs. Review by the Federal Energy Regulatory Commission would be appropriate.

Q. 3. Does Con Ed have specific recommendations for legislation to deal with acts of sabotage, terrorism, and vandalism against utility property?

A. Previous response to this question was made in a letter dated August 12, 1977. A copy of the recommendation for legislative action included with that letter is attached.

serves, and for the establishment of a rescue capability and the training of personnel.

All of the above are accomplished in the context of a State and local community "emergency operations plan" which is a prerequisite to participation in the DCPA program. The development and promulgation of this emergency plan is coordinated and managed by civil defense employees of the States and local communities whose salaries and administrative costs may be supported by Federal matching funds up to 50 percent of the cost.

Now, for DCPA's role in the July 13 blackout. At 9:48 p.m., the DCPA Alternative National Warning Center at Olney, Maryland received a message from the State of New York warning point which reported that metropolitan New York City had suffered a major, extensive power failure. The warning center immediately called the DCPA duty officer. He directed a roll call of warning points along the national warning system in the New York, Connecticut and New Jersey areas to determine the extent of the blackout.

At 10:17 p.m. the warning center reported to our Agency that the blackout was limited to New York City and portions of three surrounding counties (Westchester, Suffolk, and Rockland). They also reported that sporadic outages were occurring in Nassau County, but were undoubtedly related to the weather due to thunderstorms in the area. This was the first accurate assessment of the extent of the power failure. This information was reported to the National Military Command Center in the Pentagon, and was available for advice to Jody Powell, the President's Press Secretary, when he contacted DCPA on the President's behalf to confirm unofficial information provided to the White House.

The continued operation of the warning points in the stricken areas remained an unbroken emergency communication link between New York City and the State capital in Albany throughout the night and the following day as power was gradually restored. Beginning early on July 14th, the DCPA communication network, as well as the National Warning System, was continuously used for passage of information from the State Capital in Albany through our Federal Regional Center at Maynard, Massachusetts, to the Pentagon, the Federal Power Commission and the Federal Preparedness Agency. A map of a portion of the northeast United States with the location of warning points of the National Warning System is indicated by black dots is provided for the Record. (See p. 40.)

Within the city itself, personnel and systems supported by DCPA also played key roles.

In New York City the civil preparedness function is assigned to Commissioner of Police, Michael J. Codd. The Deputy Director of the Office of Civil Preparedness, who is full-time on that function and the highest level emergency preparedness official supported by DCPA funds, is Police Lieutenant Robert A. Hogan. Lt. Hogan was notified of the power failure immediately after it occurred. He directed members of his civil emergency staff (also supported on matching funds) to report as soon as possible.

An operations center was established adjacent to the main police operations room. Under the direction of Lt. Hogan, it coordinated all emergency support activities including emergency power, use of State armories, relief activities by the Red Cross, State civil defense assistance and Federal assistance. Representatives of the State Police, Red Cross, DCPA, FPA and police operations worked out of the operations center. The center was in operation from approximately 10 p.m. Wednesday through the end of the crisis on Thursday.

Auxiliary police, whose training is supported by DCPA matching funds, were also activated and controlled by the Auxiliary Forces section. This is headquartered in the Queens operations center, Kew Gardens. Utilization of the auxiliary police was monitored through the Office of Preparedness Operations Center.

The operations center handled a tremendous volume of telephone inquiries from citizens, city agencies, police precincts and news media during the course of the crisis. It also served as a focal point for the accumulation of statistics pertaining to emergency operations.

At approximately 9:30 a.m. Thursday, the emergency operations center (Manhattan) located in the basement of the New York City Supreme Court Building was activated and manned by Auxiliary Forces section personnel and civilians from social services agencies. An emergency information number was broadcast for citizen inquiries which were handled by the emergency operations center. This center operated until the end of the crisis.

There is at least one other important contribution made by virtue of the civil preparedness program supported directly by our Agency. Throughout the black-

out period, four radio stations—WCBS, WOR, WNBC, and WABC—which have been equipped with emergency generators acquired by Federal funds as a part of the emergency broadcast system, continued to operate, providing a vital local communications link to the citizens of the city.

In conclusion, Mr. Chairman, I would like to provide two statements for the record which I believe will be of particular interest to your Committee in these hearings. First is a letter signed this Monday by New York City Police Deputy Commissioner Taylor on behalf of the city government, providing his assessment of DCPA's contribution during their power blackout emergency. Second is a letter from WCBS to DCPA's regional field office in New York commenting on the importance of the emergency broadcast system to its continued operations during the blackout.

APPENDIX A

MAY 20, 1977.

LETTER TO MEMBERS OF CONGRESS, GOVERNORS, STATE AND LOCAL CIVIL DEFENSE DIRECTORS

Representatives of the United States Civil Defense Council (local civil defense), the National Association of State Directors for Disaster Preparedness (State civil defense directors) and the Defense Civil Preparedness Agency met at the Pentagon on May 16 to discuss the present National debate and several pending bills which would affect civil defense.

We discussed the civil defense program and it was recognized (1) preparedness for any type of disaster, peacetime or attack, must necessarily be developed jointly at the local, State, and Federal level, (2) total preparedness for natural disasters, such as tornadoes, hurricanes, and floods, and man-made disasters, must exist at the local and State level before there can be effective nationwide attack preparedness, (3) there is a wide variance in the needs, abilities, and resources of the 50 States and the more than 4800 local jurisdictions accomplishing preparedness, and (4) the timing for achieving attack preparedness must necessarily vary from locality to locality, and from State to State.

We noted the difference in State and Federal priorities. Local and State governments concentrate on a broad spectrum of potential disasters, many of which occur yearly if not more frequently. The Defense Civil Preparedness Agency, on the other hand, is charged with focusing on attack preparedness. Working cooperatively, we can agree on a common goal and more effectively use whatever level of Federal funding is available for preparedness.

It was recognized that Public Law 94-361 authorized this Agency to support local and State preparedness against risks of tornadoes, hurricanes, floods, chemical spills and the like, provided that the support enhances attack preparedness. This Agency will follow the course suggested by Public Law 94-361. In return, State governments will give this Agency timetables by which progress in achieving attack preparedness can reasonably be answered.

A statement resulting from the discussion is enclosed for your information. We hope by working cooperatively together to be able to achieve the maximum protection of the Nation's citizens against all risks, and also to make the best use of taxpayers' dollars, whether derived from local, State, or Congressional appropriations.

We would appreciate your letting us know if you have any questions or comments.

Sincerely,

BARDYL R. TIRANA, *Director.*

Enclosure.

STATEMENT ON CIVIL DEFENSE

Representatives for local, State, and Federal civil defense agencies met on May 16, 1977 in Washington to discuss common goals. At least within the Federal Government, there has been a great deal of confusion over civil defense since adoption of the Federal Civil Defense Act of 1950. There has been a conflict of priorities as between local and State governments on the one hand, and the Federal Government on the other. Congressional appropriations could be used more effectively.

Local and State governments have extraordinary needs for total preparedness for the protection of their citizens and property from the consequences of natural

and man-made disasters. The Federal Government has an obligation to provide for the common defense of American citizens against the hazards of enemy attack.

Local, State and Federal governments all want to attain the same objective, the protection of people and property within their respective jurisdictions. It was today resolved to work in cooperation toward a common goal. They hope to maximize the benefit from appropriations made by local authorities, State legislatures and the Congress. They agree as follows:

1. Civil defense is government's responsibility for preparedness, response and recovery from any natural or manmade disaster.

2. At the local and State level, civil defense requires protection of people and property against all risks. Local and State governments have established single-agency responsibility for all disaster preparedness. The primary responsibility of the Defense Civil Preparedness Agency is nuclear attack preparedness.

3. Nuclear attack preparedness, as with any other type of preparedness, must exist at local, State and National levels. Thus, one cannot have nuclear attack preparedness unless local and State governments have an adequate base of total preparedness for any risk. The principal difference between the preparedness that must be exercised by local and State governments for major peacetime disasters and nuclear attack is that for the latter, response and recovery operations must take place in a nuclear attack environment.

4. Historically, protection of the lives and property of citizens has been a responsibility of the States and the Federal Government. The Federal Civil Defense Act placed on the Federal Government the obligation of supporting State and local government in protecting lives and property against the consequences of enemy attack. The 1958 amendments to the Act created a joint local, State and Federal partnership. The amendments gave the Federal Government a more direct responsibility to participate with local and State government in attack preparedness and emergency operations, and provided for Federal financial support.

5. DCPA plays a significant role in the overall Federal commitment, and is the primary channel of communications between the Federal Government and local and State preparedness agencies. However, DCPA is only one of more than 30 Federal agencies presently charged with a preparedness role. DCPA can provide useful assistance in urging other Federal agencies to support local and State preparedness efforts.

6. DCPA acknowledges that it cannot carry out its partnership responsibility to support attack preparedness unless local and State jurisdictions have adequate total disaster preparedness. Local and State governments have the responsibility to provide preparedness for enemy attack as well as peacetime disasters. Therefore, DCPA's financial assistance to local and State governments may in the future be used to achieve total preparedness against any risk. Local government, State government and DCPA will together work out appropriate guidelines so that the citizens of the several States, the President, and the Congress can be assured of progress in achieving attack preparedness on a State-by-State basis.

7. An important role which has been largely overlooked in civil defense planning in recent years has been that of industry and labor. Preparedness cannot be effective at any level of government without their cooperation and assistance. DCPA will undertake a review with industry and labor of the means by which they can effectively participate in total disaster preparedness at the local, State and National level.

8. The effectiveness of taxpayers' funds, whether from local, State, or Federal sources, will be enhanced greatly by a cooperative focus on total preparedness needs at the local and State level. A consistent approach to disaster preparedness for all risks will materially advance the objectives of local and State agencies, and also meet the partnership obligation embodied in the Federal Civil Defense Act to provide for attack preparedness.

Signed at Washington, May 16, 1977.

LEA KUNGLE, *President,*
U.S. Civil Defense Council.

DAVID L. BRITT, *President-Elect,*
National Association of State
Directors for Disaster Preparedness.

BARDYL R. TIRANA, *Director,*
Defense Civil Preparedness Agency.

APPENDIX B

[From the Daily News, June 26, 1977]

THE NEW CIVIL DEFENSE: IT'S NOT JUST AIR RAIDS

(By Stewart Ain)

In a little-noticed meeting last week, federal and city officials began mapping plans for a program that could save your life.

The plans are expected to take five years to complete, but when they have been realized, Civil Defense officials will have a blueprint for virtually any catastrophy that could befall the city—natural disaster, crippling strike or nuclear attack.

For the first time in its 27-year history, the federal government's Defense Civil Preparedness Agency is throwing its muscle, money and talent behind the city's efforts in a radical change from the past. Until now, the agency has concentrated exclusively on protecting civilians from military attack.

But after a meeting with many of the nation's governors in May, Bardyl R. Tirana, the agency's new chief, said he had been convinced that "planning for fires and hurricanes and other tragedies that can befall a city is as essential an ingredient as attack preparedness."

New York officials were happy to hear that because it will mean more federal money for its recently reorganized civil defense program, which is now under the direction of the police commissioner. An arm of the program is the Emergency Control Board, which was revamped to include a representative of every city agency so that in the event of a crisis they will be able to coordinate their own offices in implementing emergency activities.

Communication both between city agencies and with the public appears to be the key to the Civil Defense system. And it is this network that is being modernized to take advantage of the technological advances of the last 27 years.

In 1950, when air raid sirens were erected throughout the city, relatively few persons owned a television set and most radios were too big to carry around. Sirens were then the most effective way of informing residents of an impending military attack.

Today, segments of the population have shifted away from areas covered by the sirens, and modern skyscrapers prevent the wail of sirens from carrying great distances. In addition, about 70% of the sirens are no longer even working.

As part of the overhaul of the Civil Defense program, Tirana has asked City officials not to begin the multimillion dollar job of repairing those sirens until a six-month review of the "cost effectiveness" of the system has been completed.

Effective and swift communication with the public via television, radio and perhaps even a recorded message on all telephone lines is regarded as the best way to minimize panic during a disaster. And those residents who do panic and begin fleeing the city will be guided by militia, city police and auxiliary police mobilized through an internal communications system.

This same internal system could be used were terrorists to seize control of several of the city's key buildings, as occupied earlier this year in Washington, D.C., or it could help coordinate emergency preparations in the event of a police strike, such as the one last week in Yonkers.

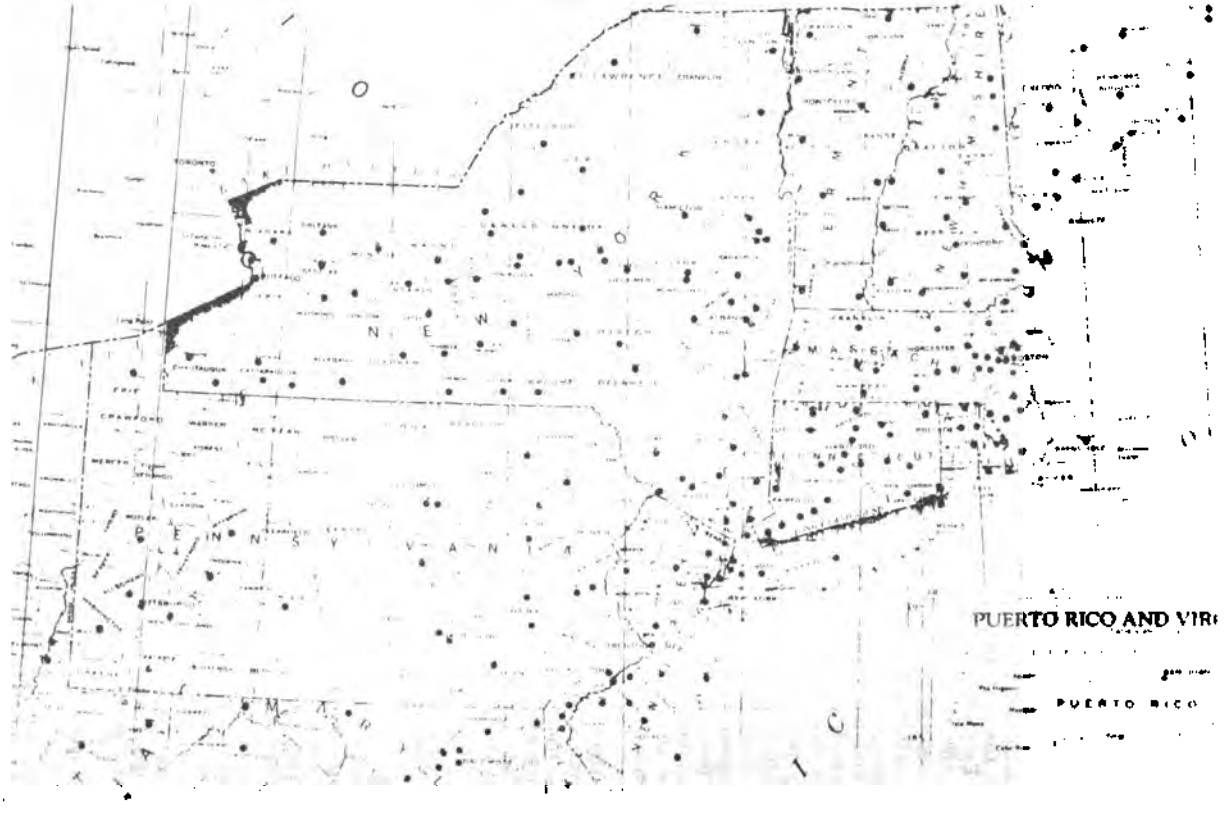
As the various plans are formulated during the next several months, it is expected that they will be tested through a series of dry runs designed to acquaint personnel with the proper procedures to be followed and to iron out any bugs.

Also coming under scrutiny will be the fallout shelter program that has been at the heart of the Civil Defense system. These shelters are scattered throughout the city, and many of them have not been opened in five years. The food stocks placed in the shelters in the mid-1960s are no longer edible, and before the shelves are restocked, federal officials plan to assess the effectiveness of the shelter program.

Some officials now believe that "sheltering may not be the answer" to protection from fallout. It is believed that the core of a skyscraper may afford equal or better protection from radiation.

Once the city's plans are complete, Tirana says, the city will be able to "deal smoothly with any crisis it faces, whether it be from terrorists, a Philadelphia legionnaire's disease, a power blackout or a nuclear attack."

Stewart Ain is a reporter for The News.



Northeast United States with location of warning points (black dots) of the National Warning System.

THE CITY OF NEW YORK,
POLICE DEPARTMENT,
New York, N.Y., August 8, 1977.

MR. BARDYL R. TIRANA,
Director,
Defense Civil Preparedness Agency,
Washington, D.C.

DEAR MR. TIRANA: As you are well aware, on July 13 and 14, 1977, the City of New York was the victim of a total power failure. I think it is useful at this time to review the assistance the Defense Civil Preparedness Agency rendered to us in the past to prepare for crisis, the kind of assistance we received from your Agency during the blackout, and some of the things we might plan for in the future.

This city's association with DCPA dates back to the earliest days of civil defense. Since that time, the civil defense structure in the City of New York has evolved to meet changing needs. At present, our civil preparedness organization has been decentralized into six city agencies which administer seven civil defense programs. These are:

1. The Police Department which administers the civil defense and auxiliary police programs;
2. The Fire Department and its 500 auxiliary firefighters;
3. The Social Services Department which manages our Emergency Welfare Division;
4. The Municipal Broadcast System which provides the city with a link to the National Warning System (NAWAS) and maintains important inter-departmental communications;
5. The Health Department which addresses itself to radiological problems;
6. The Department of Public Works which maintains our far-reaching siren system and fallout shelters.

Over the years the DCPA and its precedessors, through the surplus property program and matching funds, have provided this city with many kinds of equipment. The equipment ranges from office supplies to emergency generators and rescue vehicles.

Another important part of emergency preparedness planning is the network of Emergency Operating Centers (EOCs) that was established in this city during the height of the cold war. The EOCs were designed to provide a mechanism for the continuity of government for the period of post-nuclear attack—and to serve as a command post in non-nuclear disasters. We have also found that the EOCs are an excellent base to disseminate information to citizens in crisis periods such as transportation strikes, hospital strikes, the natural gas shortage last winter and, most recently, during the blackout.

The use of the EOC as an information center performs a vital task of relieving our "911" telephone lines to deal with genuine emergency requests by the public.

Above this administrative network and its facilities is the principal board to establish policy both before and during crises—the Mayor's Emergency Control Board (ECB), which is given staff assistance by the Office of Civil Preparedness (OCP), located in the Police Department. To meet its responsibility to anticipate crises, the OCP gathers information and monitors the daily press and economic indicators, so that it can warn the Mayor of crises which may occur in two to six months' time. As a normal part of this process, the OCP contacts city, state and federal agencies to begin planning for potential emergencies—everything from a possible transportation or telephone workers' strike to the onset of the hurricane season. When such a crisis is about to impact on the city, the Police Commissioner, as Director of Civil Preparedness, convenes the ECB to brief the Mayor and other members, and to recommend tasks for the various city departments.

Obviously, not every emergency can be anticipated in this fashion. In cases like the blackout, the emergency control system is activated by calling the ECB in session and instituting our pre-plan emergency procedures. I should note that the planning work which helps the city deal with anticipated and unexpected disasters alike is centered in the OCP—which is partially funded and significantly assisted by your Agency.

This is essentially the civil preparedness administrative structure we had in place prior to the blackout of July 13 and 14. I will describe briefly how it functioned during the crisis.

The blackout occurred at 9:35 p.m. on July 13. The Police Commissioner directed that the OCP go into its emergency posture. The Deputy Director, Lt.

Robert Hogan, and elements of the OCP established an intensive coordinating effort which ran for 26 hours, ending at 11:59 p.m. July 14.

At 10:30 p.m. on July 13, the Police Commissioner directed Lt. Hogan to notify the ECB members to report to Police Headquarters.

Within the next four hours liaison was established with the New York State National Guard to open state armories for use as emergency shelters, with the Red Cross to establish the availability of costs and feeding facilities, and with the State civil defense. C. M. Kasparian, DCPA Field Office Director, contacted our office and offered DCPA assistance.

Within six hours, Mr. Kasparian, representatives of the Red Cross, the Federal Preparedness Agency, and the State Police were present in the OCP and remained there until the crisis subsided.

The liaison that was established and operational during the crisis was useful in making inquiries in the various agencies and alerting them to possible official requests for use of the agencies' resources. For instance, although never actually used as such, the State National Guard was alerted to the possibility of using some armories as detention facilities for looting prisoners.

Our auxiliary police became operational shortly after the crisis and by the end, nearly 1200 had been utilized to supplement the professional police patrol in the city. The auxiliary police were assigned to such duties as radio car patrol, traffic intersection control, and guarding potential looting targets.

Our Emergency Welfare Division in the Department of Social Services was alerted to make ready those emergency shelters that had already been designated for use during crises. These shelters were to supplement armories if the need arose. Fortunately, there was no need to activate these facilities largely because the blackout began at 9:35 p.m., the time when most people were at home.

Similarly, the other city departments with a civil defense responsibility within their agencies provided major services when needed. For example, the Department of Public Works provided maintenance crews to repair malfunctioning emergency generators.

As previously stated, the EOC in Manhattan was utilized to serve as a facility to render information of a non-emergency nature and was manned by approximately 32 employees of our Social Services agencies. Typical calls received at our EOC facilities were from citizens on limited budgets who were concerned with spoiling food and elderly persons who were trapped in their high-rise apartments who needed food and medicine.

As already indicated, the EOC partially funded by DCPA, was used as an information center during the blackout. The actual *command* center followed the Mayor and the Police Commissioner wherever they went, it was located at Police Headquarters, but often it went with them through the streets of the city, as the occasion arose.

In this regard, a modification of regulations governing EOCs is appropriate. The requirement that EOCs be protected against radioactivity fallout, while important, should not be overly restrictive. It would seem that a city like New York could and should, have both a protected and a mobile EOC for its dual responsibly—to handle both military and peacetime disasters.

Another need which was made evident by the blackout was for a computerized inventory of emergency equipment that is available within the city, county, state federal, private and voluntary sectors. The usefulness of this information is self-evident.

Finally, the Police Commissioner would appreciate the opportunity to participate in any federal effort and review its ability to respond to any major local crisis.

During the period of July 13 and 14, the City of New York was able to maintain the essentials of city government. Despite problems, life supporting systems were maintained all during the crisis and no lives were lost as a direct result of the blackout. This is a creditable accomplishment.

The role that DCPA and its predecessor agencies have played in the development of preparedness capacity is very much appreciated.

Sincerely,

JAMES M. TAYLOR,
Acting Police Commissioner.

WCBS—CBS RADIO,
New York, N.Y., August 8, 1977.

Mr. C. M. KASPARIAN,
Director, DCPA Field Office,
Room 2551, 26 Federal Plaza, New York, N.Y.

DEAR MR. KASPARIAN: Several years ago, WCBS as a primary EBS station, received and installed emergency power generating equipment at our transmitter.

The equipment has served us well over the years, enabling us to remain at full transmitter power, during primary power failures. It's most significant use was during the recent 25 hour New York power blackout.

Wtihout such emergency backup, WCBS would have had to operate on low power which could have compromised our ability to provide all New Yorkers with up to the minute news and information concerning the emergency. We look forward to our meetings concerning possible EMP protection.

Very truly yours,

ERNEST J. MCDANIEL,
Director, Technical and Broadcast Operations.

The CHAIRMAN. Well, thank you very much, Mr. Tirana. In your meetings with the New York officials, Mayor Beame and others, preceding the blackout, did Consolidated Edison participate in those?

Mr. TIRANA. No, Consolidated Edison was not present.

The CHAIRMAN. Was there a feeling on the part of the New York officials that a blackout was unlikely?

Mr. TIRANA. No, not at all. Commissioner Codd, Mayor Beame, and Lieutenant Hogan were very concerned about blackout. I might interject a bit of history. About 3 years ago the civil defense effort or the emergency preparedness effort in New York City was downgraded or almost abandoned for lack of funds. There was a small staff of—I don't know precisely what it was, whether it was four or five people working on a planning effort, and about 6 or 7 months ago Mayor Beame, being concerned about the lack of planning and the lack of official recognition and status given to emergency preparedness, gave the function to Commissioner Codd, who is probably the most highly respected police officer in this country, and Commissioner Codd then became the head of the emergency control board. This was only 6 or 7 months ago.

In that time, he has appointed approximately 20 people to the emergency planning effort. They have been working intensively during the last approximately 6 or 7 months, and the subject that was most discussed during our meetings was blackout and the ability of New York City to manage in the event a blackout occurred.

The CHAIRMAN. That is interesting, and I want to commend you on your decision to broaden your responsibility with respect to civil defense, not only the prospect of a nuclear holocaust which you have to be prepared for and have the fundamental responsibility for as far as civilians are concerned, but to recognize that if that is going to work it needs some practice. It will rust if left unused. It will be ignored and considered so remote or so cataclysmic that there is no point in thinking about it.

On the other hand, we have gone through, as you point out, just in the last few weeks, a couple of disasters, in Johnstown and New York. We are certain to have serious problems in the future, and your agency can be extremely helpful. You can be right at the heart of

working in this area and prepare us better in the event there should be some kind of military catastrophe. What I would like to get at is, it appears from your testimony that your organization has no deep or direct involvement in electric power preparedness outside of financial support to general preparedness at the State and local levels and operation of the warning and notification systems that are available for any emergency. Isn't that the case?

Mr. TIRANA. Yes and no. In January 1977, this year, we prepared a booklet on what to do in the event of energy emergencies, including a blackout, and that booklet is in the process of distribution to State and local governments.

The CHAIRMAN. Do you have a copy of that booklet, sir?

Mr. TIRANA. Yes. It is called "Energy Emergencies, Defense Civil Preparedness Agency, January 1977."

The CHAIRMAN. How widely distributed is that booklet?

Mr. TIRANA. It is in the process of getting distributed. We are late on the distribution. Unfortunately, we had not distributed it as of the time of the New York City blackout.

The CHAIRMAN. Can you give us a quick summary as to what that booklet proposes you do in the event of a blackout?

Mr. TIRANA. I would like to let John McConnell, who prepared it, respond to that question.

The CHAIRMAN. Mr. McConnell, go right ahead.

Mr. MCCONNELL. Mr. Chairman, this booklet was prepared as a result of the experiences of civil defense directors' involvement in the fuel energy crisis of 1973 and 1974. We sent some of our staff from Defense Civil Preparedness Agency headquarters out to the State and local governments to determine what some local executives had chosen to have their civil defense directors do in this kind of an energy shortage situation. We compiled those experiences and added others from other types of energy shortage. We then coordinated the publication with the Federal Power Commission. At the time the booklet was printed we were having a controversy within the Federal Government on maintaining strictly a nuclear attack approach, so we held it as a stock item pending the possibility of a slowly increasing energy shortage.

However, since it does include some of the actions that could be taken in advance of a commercial power shortage or blackout, and therefore because of the New York City situation, Mr. Tirana made the decision to make the distribution immediately.

The CHAIRMAN. Well, it might be a good idea to see what we can learn from this particular experience New York has had. They have a lot of very bright people up there who I am sure have some ideas on what they could do in the future or what other cities could do if they were faced with that kind of a situation. I see you have an appendix here on how to pump gasoline when the power is off, what to do when your home freezer stops, and questions of that kind. I do not mean to demean that. That is a very serious practical problem for millions of people, but I would think that the agency would have other advice to give in view of the terrible experience they had with rioting up there, public disorder, that kind of thing.

Mr. TIRANA. Yes. I am very concerned about the behavioral aspects of the blackout, which go far beyond the technological questions. That is a subject which we are reviewing. As you will note, as an appendix

to my prepared remarks, there is a letter of August 8 from the New York City Police Department. Members of my staff met with Lieutenant Hogan on August 8, and we are undertaking with New York City a review of the behavioral problems and how they would impact upon any crisis that might confront the United States, particularly an international crisis such as a possible conflict in the Middle East or elsewhere. That is a tough knot.

The CHAIRMAN. Now, you stated in your testimony that you have, and I quote, "taken initiatives with selected representatives of industry and organized labor to identify means by which these sectors of our economy can contribute to an overall increase in our Nation's state of emergency readiness. This will include," you go on to say, "studies of the status and potentials of emergency preparedness programs, including electric power."

Isn't DCPA limited to conducting studies in this areas? What would you suggest be done to implement any proposals developed in the course of those studies?

Mr. TIRANA. Well, I would like to go back to my testimony before the Senate Armed Services Committee. I was asked by Senator Culver what I would do differently if the Congress appropriated only the $90 million requested by President Carter. That was at a time when both the Senate and the House were considering greater authorizations and greater appropriations. I said that the one major thing that I would do is take something on the order of $1,250,000 from some part of our budget and it is a part that I have not yet identified, and put it in to beginning studies for industrial survival and recovery. What are the questions that should be asked?

What I want to do is look at roughly 10 or 12 basic industries, $150,000 an industry, because you cannot look at any industry in isolation. We have had the Boeing study on nuclear effects on the aerospace industry. You need a similar look at electrical power, at refining, at auto. I have had some initial discussions with GM. We are looking perhaps at refining in the Texas area. But it does not do any good simply to look at industry alone. You also have to look at labor, because unless you can protect your essential work force, the protection of plant and equipment is meaningless. I spent an hour with Doug Fraser, the president of the United Auto Workers, in Detroit, last month. The entire community services program of the UAW will be integrated into at least the peacetime preparedness efforts at the State and local level. The UAW was very much in evidence and in assistance in Johnstown.

The CHAIRMAN. I don't want to lose sight of the fact that you operate under very critical limitations in this whole area. You do so because you are a military, part of the military organization, part of the Defense Department. We have a longstanding tradition that the military does not exercise control over the civilian economy. Even in wartime, the fact that most responsibilities for electric power preparedness are assigned to civilian agencies reflects that longstanding tradition.

As a matter of policy, let's consider that for a minute. Is it desirable or appropriate for your agency to become directly involved in the preparedness planning of the utility industry, considering the fact that most of these problems would be of a civilian nature, civilian disasters, and so forth rather than of a military nature?

Mr. TIRANA. Yes, I think it is. We are an entirely civilian agency. We have no military employees. We are one of the few elements of

the Department of Defense that does not operate with a command structure.

The CHAIRMAN. Why, then, are you in the Defense Department? Why would you be placed under the Secretary of Defense? After all, his responsibility is overwhelmingly military.

Mr. TIRANA. The single greatest task of the Federal Government, or at least one of the greatest tasks of the Federal Government is the maintenance of peace, the maintenance of the national security, and the protection of lives of American citizens. Civil Defense may have a relationship to the national security. The threat of attack is something which is singularly within the province of the President, the National Security Council, and the Secretary of Defense, to analyze, and the means by which the population can be protected as directed by the Civil Defense Act of 1950 as amended again is principally within the province of the National Security Council, the President, and the Secretary of Defense.

The CHAIRMAN. Well, obviously, there is a degree of responsibility but there is also strictly or likely to be a strictly civilian application not related to military. What happened in New York, for instance, is not military, at least in its direct implications. What happened in Johnstown was not military.

You suggested in your testimony that the principal responsibility for preparedness in the electric power industry rests jointly with the Department of the Interior and the Federal Power Commission. Are you familiar with those agencies' electric power preparedness activities? And do you feel they are adequate? They are both civilian agencies in a civilian area.

Mr. TIRANA. I am familiar with them. The question is whether they are adequate. I would have to break it down into two parts. Are they adequate for peacetime purposes? Are they adequate for potential attack? Peacetime, I am really not competent to give comment on. On the potential attack questions, I think I can comment.

One of the significant risks or threats in nuclear attack is that of electromagnetic pulse. That is just a characteristic of a nuclear explosion. Unless efforts are made to provide for electromagnetic pulse protection in the electric power industry, there would be significantly greater damage to electric generating capacity than would otherwise occur by virtue of attack.

The CHAIRMAN. I know you do not have direct responsibilities in the area, but do you have any suggestions on how the vulnerability of our electric power system might be minimized?

Mr. TIRANA. Frankly, again, that is a question which needs two different looks. You need a peacetime look and a potential wartime look. I think the estimate of the Department of the Interior, the Federal Power Commission, and also the Department of Defense is that in the event of attack, you probably have because of the broad scale of electric generating capacity in the United States a proportionate survival of that capacity as would exist with the population itself. Population survival and electric generating capacity survival would probably be proportionate, with the exception of the electromagnetic pulse problem, so that the thing that is needed for wartime preparedness is the building in of electromagnetic pulse protection in the generating industry.

The CHAIRMAN. How expensive would the building in of electromagnetic pulse protection be? What does this amount to?

Mr. TIRANA. I don't know. I don't know if John knows, either. Do you know, John? No, we don't know.

The CHAIRMAN. Can you give me any global notion? Is it $1 billion, multibillion dollar operation? Is it a lot less than that?

Mr. TIRANA. John has been working on it on communications. Maybe he can give the answer.

Mr. MCCONNELL. No, sir, Mr. Chairman. I can't answer that question. I am sure the Federal Power Commission, who have studied it, can give you some idea, but to equate the small amount of electromagnetic pulse protection that we have been doing in the Defense Civil Preparedness Agency in emergency operating centers and in radio stations, I cannot equate that to the power industry.

Mr. TIRANA. We have been providing funds and building in electromagnetic pulse protection in radio stations so that in the event of a worst case you would still have the capability of broadcasting to citizens.

The CHAIRMAN. That would be very helpful. I think certainly in the New York situation if it were possible to broadcast it would have been helpful. On the other hand, so many radios and television stations which are the heart of our communications system with the public rely on local electric outages, so it would not do you any good if the radio station could broadcast if your radio could not get it. Of course, if it had its own internal battery system, which relatively few people have, you could receive it.

Mr. TIRANA. Senator, there were four radio stations in New York that had emergency generating capability during the blackout.

The CHAIRMAN. But who could hear them?

Mr. TIRANA. The emergency generating——

The CHAIRMAN. You could if you were in your automobile. Many people have an automobile, that is true, with an automobile radio.

Mr. TIRANA. Automobile and battery operated radios, which a lot of people have. The communications that did exist in New York City were handled through the New York City Emergency Operating Center, which was funded with our assistance. The broadcasting, particularly Commissioner Codd's order that the police report, went through four radio stations that had emergency generators provided with our funding. Those four stations are programed to get electromagnetic pulse protection next year, and this within our relatively tight overall budget.

The CHAIRMAN. Now, is it not correct that the Interior Department has conducted workshops on the effect of EMP?

Mr. TIRANA. Yes; it is.

The CHAIRMAN. Have you had an opportunity to coordinate with them?

Mr. TIRANA. I personally have not, but I know that our staff has.

The CHAIRMAN. Well, thank you very much, Mr. Tirana. We appreciate your excellent and thoughtful testimony. I want to thank both you and Mr. Dunn for your cooperation and your very informative testimony. I think we are getting a picture that was not as clear in my mind, certainly, of what happened in New York before and during the July 13 blackout, and the serious implications that it has for this country's emergency preparedness planning.

It is becoming more obvious in light of the testimony that we have heard this morning that we must do more to protect these vital power systems from national disasters, sabotage, terrorism, and attack. It seems obvious that this industry is particularly vulnerable. Con Ed's problems are not unique. It is difficult, however, to balance between the urgent need for better protection of this industry and the necessity to deliver adequate power resources to the citizens of this country at a reasonable cost. It is clear from the testimony by Mr. Dunn that improvement will cost a great deal of money and take time.

As Mr. Dunn has pointed out in his testimony, the need to meet environmental standards and safety standards as established at the Environmental Protection Agency and the Nuclear Regulatory Commission could encumber the efficient production and delivery of power. These are considerations which Congress must keep in mind.

Tomorrow we will be hearing from Mr. Charles Curtis, Chairman of the Federal Power Commission, Assistant Secretary Joan Davenport from the Department of the Interior, Mr. Julius Bleiweis, of the Northeast Power Coordinating Council, and General Woodrow Vaughan, Director of the Defense Logistics Agency. These hearings will reconvene at 10 a.m. tomorrow in this room.

Thank you very much. The committee stands in recess.

[Whereupon, at 11:38 a.m., the committee was recessed, to reconvene at 10 a.m. of the following day.]

EMERGENCY PREPAREDNESS IN THE ELECTRIC POWER INDUSTRY

THURSDAY, AUGUST 11, 1977

U.S. CONGRESS,
JOINT COMMITTEE ON DEFENSE PRODUCTION,
Washington, D.C.

The committee met at 10:05 a.m., pursuant to recess, in room 5302, Dirksen Senate Office Building, Senator William Proxmire (chairman of the Joint Committee) presiding.

Present: Senator Proxmire.

The CHAIRMAN. The committee will come to order.

Today we continue our hearings on emergency preparedness in the electric power industry and implications of the New York blackout for emergency planning.

The electric utility industry is the dynamo that powers our economy. Its loss can bring the country to a standstill. We must be sure that every measure is taken to protect these vital power sources from natural disasters, sabotage, terrorism, and attack.

The Joint Committee has conducted a year-long review of this Nation's emergency preparedness plans and programs. In the course of our investigations, we have found that the measures to protect our power systems have been neglected. The July 13 blackout in New York provides a graphic example of the disastrous consequences that can result from sudden loss of electric power in the Nation's major urban industrial areas. And, testimony yesterday indicated that the problems Consolidated Edison has are not unique. Although the high population density and proportion of underground cables may make Con Ed more vulnerable in some ways, yesterday's testimony indicated that other utilities in other parts of the country have similarly vulnerable interconnections and transmission lines. What happened in New York last month could happen elsewhere today or tomorrow or next month. Yesterday's hearing also showed that Federal standards may not be adequate.

Because this industry is so vital, it is essential that remedial action be taken immediately. However, Mr. Dunn, the senior vice president of Con Ed, testified yesterday that costs, environmental considerations, and Federal regulations complicate efforts to provide adequate protection to the utilities. Improvements in the power systems might be very expensive. We must find a balance between safeguarding against further disasters in the electric power industry and providing adequate power resources to the citizens of this country at reasonable costs.

Today we will be hearing from representatives of Federal agencies which have responsibility for regulating and coordinating planning

for emergency preparedness in the electric power industry, and a representative from the Northeast Power Coordinating Council. We will be asking them who has the authority and responsibility to see that these vital industries are adequately prepared for natural disasters, sabotage, terrorism, and attack. And, what steps should be taken to correct the inadequacies which the New York blackout demonstrated.

Our first witness this morning is Mr. Charles Curtis who was recently named Chairman of the Federal Power Commission. As Chairman of the Federal agency which is studying the New York blackout in the most detail, we especially look forward to hearing his views on the July 13 blackout in specific and the state of emergency preparedness in the power industry in general.

Mr. Curtis served as counsel to the House Interstate and Foreign Commerce Committee from 1971 to 1976. He was a member of the Carter-Mondale transition team as liaison with the Federal Energy Administration.

Mr. Curtis, this may be your first or one of your first appearances before a congressional committee. We are delighted to have you. You have a fine background. You have won the admiration of those who have worked with you in the past who know of your ability and integrity. Your statement is lengthy. I would appreciate a 15-minute oral summary if you can give that to us. Your written statement will be printed in full in the hearing record. You may go ahead.

STATEMENT OF HON. CHARLES CURTIS, CHAIRMAN, FEDERAL POWER COMMISSION, ACCOMPANIED BY JACK WEISS, ACTING CHIEF, BUREAU OF POWER; ED FOWLKES, BUREAU OF POWER; AND DAN GOLDSTEIN, ASSISTANT LITIGATION COUNSEL, FEDERAL POWER COMMISSION

Mr. CURTIS. Thank you, Mr. Chairman. This is, indeed, my first opportunity to appear at a congressional hearing from this side of the table. I was sworn in yesterday, less than 24 hours from this moment, Quite obviously I have tried to develop as much background as possible in the very short time available to me. I have brought with me members of the staff who are both knowledgeable and involved in the Con Ed situation and with the indulgence of the committee, I would like to deflect some of the technical questions to the staff members as that occasion may arise.

The CHAIRMAN. Very good.

Mr. CURTIS. Mr. Chairman, I will attempt to summarize the testimony.

The CHAIRMAN. Before you go ahead with the testimony, let me make sure I understand who your colleagues are. This is Dan Goldstein on your right?

Mr. CURTIS. That is correct.

The CHAIRMAN. What is your office?

Mr. GOLDSTEIN. I am an attorney. My general responsibility is the Federal Power Act.

The CHAIRMAN. Mr. Jack Weiss, is that correct?

Mr. WEISS. That is correct.

The CHAIRMAN. What is your capacity?

Mr. WEISS. Acting Chief of the Bureau of Power of the Federal Power Commission.

The CHAIRMAN. Mr. Edward Fowlkes, what is your capacity?

Mr. FOWLKES. I am Chief of the Reliability Analysis Branch of the Bureau of Power.

The CHAIRMAN. Mr. Curtis, go ahead.

Mr. CURTIS. Mr. Chairman, I would note there is an errata sheet on my prepared remarks. I ask that those remarks be printed as if corrected.

The CHAIRMAN. Yes, indeed.

Mr. CURTIS. Thank you, sir.

Mr. CURTIS. Federal authority in the area of security of electric systems is divided among various agencies. I must suggest that, in a review of the emergency preparedness I conducted, albeit over a brief period of time, I find the inescapable conclusion that it is limited in content and that it has not been given adequate resource attention at the Federal Power Commission. To the extent that we have responsibilities in this area, we need to bring greater resources to bear on it.

I think your opening statement well measures the importance of the continuous reliable delivery of electrical power of this Nation and its citizens. We have a high priority responsibility to do a better job in this area.

In terms of practical impact, the disruptive effect of natural disturbances such as tornadoes, violent electric storms, earthquakes, and floods on electric systems may not be very different from damage caused by acts of terrorism or sabotage.

FPC's emergency preparedness activities fall in three areas:

First. The Federal Power Commission maintains power system report forms, circuit diagrams, and other essential material at the National Relocation Center. Such information is also ordinarily maintained at an FPC relocation center. We are currently attempting to resolve an FPC relocation center decision with GSA.

Second. The FPC prepares and collects data relating to electric power generating stations and electric substations and switching stations. This information is turned over to the Federal Preparedness Agency, an entity under the supervision of the General Services Administration, and is used by the Federal Preparedness Agency in coordination with the Defense Electric Power Administration.

Third. FPC personnel maintain a close working relationship with DEPA to provide technical assistance on electric systems in the event of any exercise simulating disaster conditions. Most recently, 14 Commission employees participated in a regional exercise, REX 1977, in Atlanta on May 9 to 13, 1977. REX is administered by the Federal Preparedness Agency in order to familiarize the attendees with regional emergency procedures for a simulated nuclear attack on the United States.

With respect to emergency preparedness in times of national emergency, the FPC defers responsibility for electric power reliability to the Defense Electric Power Administration of the Department of the Interior. Under an interagency agreement between the FPC and Interior, which is attached to my statement, dated September 14, 1972, the FPC is to supply DEPA with information and advice; DEPA is to have total responsibility and operational control during national emergencies.

Let me comment, if I may. Fundamentally what we are saying to the committee is that the Federal Power Commission collects and retains information and offers technical advice. But the authorities to respond to emergencies are exercised through the Office of the Executive, directly from the President, and not through the Federal Power Commission. Our role is supportive.

This is undoubtedly a consequence of the Constitution's lodging in the President the executive powers. Emergency powers which are granted to the President must be exercised directly through the executive branch agencies, rather than independent regulatory commissions.

DEPA has been concerned about the vulnerability of electrical power systems. In 1964 it published "Vulnerability of Electric Power Systems to Nuclear Weapons," an analysis by region of potential damage from nuclear weapons. I am sure you are familiar with that report. Interior later published a similar document for natural gas systems.

We are informed that the industry has criticized both of these exercises—not from the standpoint of participating in an assessment of our vulnerability, but from the standpoint of making reports which document that vulnerability—because of the obvious concern that it will serve as instruction to those who would seek to damage those systems.

For that reason the staff has been informed that there is a reluctance by the industry to participate in further exercises if the product of those exercises is to be a published report. Here we are not talking about that documentation furnished to the Congress or to the agencies of government.

More recently, in April 1977, the Federal Preparedness Agency published an interim document—not yet final—entitled "Federal Response Plan for Peacetime Nuclear Emergencies." Annex I of this report is a guideline for the Federal-State relationship and Annex II analyzes the many various legal authorities.

The FPC is not listed among Federal agencies cited by these documents with responsibilities under conditions of terrorism or sabotage, although the FPC did assist with the preparation of the documents.

In 1965, as we are all aware, there was a massive power blackout in the Northeast which affected four entire States and significant portions of adjacent areas. This is in sharp contrast to the unfortunate incident on July 13 in New York City, which was confined to the city and the surrounding suburbs. The 1965 blackout prompted a thorough reexamination of the reliability practices of the electric power industry.

Following the issuance of several preliminary reports, the Federal Power Commission published a three-volume study in July 1967 entitled "Prevention of Power Failures," which contains several recommendations regarding improvements in the reliability of power systems. These were followed by a sequence of orders which brought into being eventually nine regional councils—reliability councils, planning organizations—whose reach now covers the entire contiguous 48 States, as well as a national electric reliability council. As I mentioned, these are planning agencies which look to the reliability requirements of the electric utility systems included in their membership.

Mr. CURTIS. In 1976 the Commission amended an outstanding order expanding the scope of the information to be reported to the Commission by the electric power industry. This information includes a description of the communication and control systems within regions and detailed data on the industry's capacity to handle the demand on its generating and transmission systems. The nature of this information is detailed at pages 9 through 12 [see p. 58] of my prepared statement.

In addition to these actions, the Commission also issued order 445 in 1972 for the purpose of encouraging every electric utility system "to develop contingency plans for operation in emergency situations: contingency plans for possible load reductions or curtailments; and contingency plans coordinating all such procedures of other utilities so that that bulk power transfers and coordinated operational arrangements may occur between and among systems to minimize the consequences of power fluctuations or shortages." The Northeast Power Coordinating Council, of which Con Ed is a member, regularly reports to the Commission pursuant to orders of the Commission.

Overall, Mr. Chairman, as a result of the voluntary planning measures and reporting system the people of the United States have enjoyed a high degree of electric power reliability. They also have experienced some unacceptable failures in the reliability systems.

The Commission's effort to date, I must underscore, has been one of obtaining voluntary cooperation of the various electric utility systems to plan and to establish contingency plans to safeguard their systems from interruption and to assure their continued reliability. In the past, the FPC has taken the position that the primary responsibility for planning, financing, and operating interstate high voltage transmission lines and large scale generating plants rests with the management of the electric utility industry and the reliability councils.

I should point out that the House has recently passed a bill, H.R. 8444, which closely embodies the President's National Energy Act and which would give the Commission important new tools to assure the reliability of electric systems. Specifically, section 541 gives the Commission authority to require interconnection of transmission facilities with facilities of other electric utilities and to order the pooling of facilities as well as the wheeling of energy from one system to another if it will aid reliability or reduce energy cost.

The current authorities of the Commission are impaired in accomplishing this result other than through persuasion and voluntary compliance. Moreover and more importantly, section 545 of that act requires the Commission to prescribe rules within a 2-year period relating to electrical reliability.

Although not expressly stated in this section, it would undoubtedly permit the Commission to establish security standards for generation and major substation facilities. I do not want to imply that the Commission has taken the position that it intends to implement that rulemaking authority by that means. I use it as an example illustrative of such authority.

The Commission itself, following its 1967 report, has requested Congress on two occasions for similar authorities, specifically, (1) to make the regional planning councils based on the statute; (2) to enable the Commission, with the advice of those councils, to establish reliability

standards; (3) to provide for Commission review of extra high voltage transmission lines to assure their consistency with high standards of reliability, usefulness, efficient utilization of land and conservation of historic sites and limited resources; and (4) to authorize the Commission to require, of its own motion, interconnections between bulk power suppliers and to review proposals for bulk power services.

I can only speak for myself today but from my personal point of view, I welcome the provisions of H.R. 8444, as passed by the House, as equipping the Commission with important tools to respond to this most important need.

Now, let me turn, if I may, Mr. Chairman, to the immediate circumstances of the failure of the Con Ed system on July 13. Members of the committee have been furnished with copies of the preliminary report to the President forwarded by the Commission containing the staff's preliminary analysis. As you know, the President asked the Commission to report promptly within 2 weeks on the circumstances of the occurrence and to assess corrective action where indicated. If appropriate, Mr. Chairman, that report may be included in the record following my statement.

The CHAIRMAN. How long a report is that?

Mr. GOLDSTEIN. Seventy-six pages.

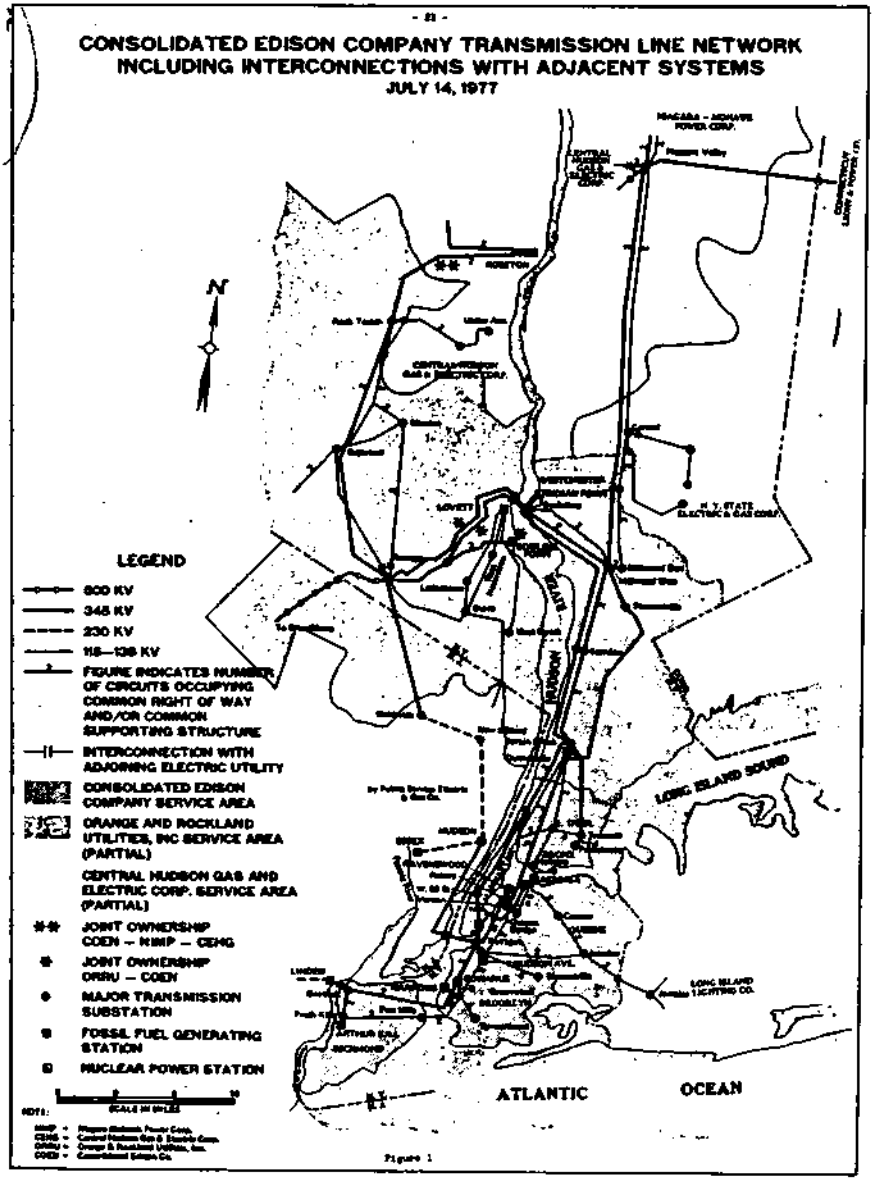
The CHAIRMAN. That report will be kept in committee files and be made available to members of the committee and others who want to review it. I am afraid if it were printed in full it would cost several hundred dollars. I don't want to give myself a Golden Fleece. So we will keep it in the files.

Mr. CURTIS. We have also distributed, Mr. Chairman, a map which superimposes a schematic diagram of the Con Ed system which may be useful should you wish to get into a discussion of the occurrence.

Set out in my statement, as well as in the report, is a summary of the sequence of events which occurred resulting in a total system closedown. If you would like, I would be happy to go over that summary now.

The CHAIRMAN. I am familiar with it. I don't think that will be necessary.

Mr. CURTIS. Mr. Chairman, I should point out that the staff report emphasizes that it is, as yet, sketchy and far from complete. The Commission has directed the staff to continue its investigation and prepare a complete report on which we can reach reliable conclusions at the earliest possible time. Our current estimate is that that report will be available to the Commission and to this committee within 60 days. It may be appropriate to come back to the committee as you may wish, to discuss our final determinations.


CONSOLIDATED EDISON COMPANY TRANSMISSION LINE NETWORK
INCLUDING INTERCONNECTIONS WITH ADJACENT SYSTEMS
JULY 14, 1977
N
LEGEND
500 KV
345 KV
230 KV
115—138 KV
FIGURE INDICATES NUMBER OF CIRCUITS OCCUPYING COMMON RIGHT OF WAY AND/OR COMMON SUPPORTING STRUCTURE
INTERCONNECTION WITH ADJOINING ELECTRIC UTILITY
CONSOLIDATED EDISON COMPANY SERVICE AREA
ORANGE AND ROCKLAND UTILITIES, INC SERVICE AREA (PARTIAL)
CENTRAL HUDSON GAS AND ELECTRIC CORP. SERVICE AREA (PARTIAL)
JOINT OWNERSHIP COEN — NMP — CEHG
JOINT OWNERSHIP ORRU — COEN
MAJOR TRANSMISSION SUBSTATION
FOSSIL FUEL GENERATING STATION
NUCLEAR POWER STATION
HUDSON
LONG ISLAND SOUND
ATLANTIC
OCEAN

[Complete statement of Mr. Curtis follows:]

STATEMENT OF CHARLES B. CURTIS, CHAIRMAN, FEDERAL POWER COMMISSION

Mr. Chairman and members of the committee, I am appearing here today in response to Chairman Proxmire's letter of July 20, 1977, addressed to my predecessor, Richard L. Dunham. Chairman Proxmire's letter indicates a concern about "the vulnerability" of electric utility systems to "threats of sabotage, terrorism, natural disaster and nuclear attack." The Chairman's letter also asks for a discussion of the preparedness implications of the recent Consolidated Edison blackout.

Twelve copies of the Commission's preliminary blackout report, issued August 4, 1977, were delivered last week to the Committee.

Federal authority in the area of security of electric systems is divided among various agencies. The Nuclear Regulatory Commission prescribes security standards for nuclear generating plants. The Federal Power Commission authorizes the construction and supervises the operation of water power projects constructed by non-Federal entities. The FPC has authority to prescribe standards for the physical security of those projects but has not exercised that authority. No Federal agency has jurisdiction over the security of fossil fired electric generating plants. We have not attempted to assess if there reside in any state agencies responsibilities or powers over the physical security of electric systems. The companies owning electric generating facilities do provide their own security arrangements. In the event of a declaration of emergency by the President, extensive powers are vested in the Defense Electric Power Administration (DEPA), a preparedness unit under the administrative supervision of the Secretary of the Interior.

The physical integrity of power plants from a design standpoint with regard to earthquakes, storms and other natural disasters is regulated by the Nuclear Regulatory Commission for nuclear plants and by the Federal Power Commission for water power plants constructed by non-Federal entities. In terms of practical impact, the disruptive effect of natural disturbances such as tornadoes, violent electric storms, earthquakes, and floods on electric systems may not be very different from damage caused by acts of terrorism or sabotage.

FPC's emergency preparedness activities fall in three areas:

1. The Federal Power Commission maintains power system report forms, circuit diagrams and other essential material at the National Relocation Center. Such information is also ordinarily maintained at an FPC relocation center. We are currently attempting to resolve an FPC relocation center decision with GSA.

2. FPC prepares and collects data relating to electric power generating stations and electric substations and switching stations. This information is turned over to the Federal Preparedness Agency, an entity under the supervision of the General Services Administration, and is used by the Federal Preparedness Agency in coordination with the Defense Electric Power Administration.

3. The FPC personnel maintain a close working relationship with DEPA to provide technical assistance on electric systems in the event of any exercise simulating disaster conditions. Most recently, 14 Commission employees participated in a Regional Exercise (REX 1977) in Atlanta on May 9–13, 1977. REX is administered by the Federal Preparedness Agency in order to familiarize the attendees with regional emergency procedures for a simulated nuclear attack on the United States.

With respect to emergency preparedness in times of national emergency, the FPC defers responsibility for electric power reliability to the Defense Electric Power Administration of the Department of the Interior. Under an interagency agreement between the FPC and Interior (attached), dated September 14, 1972, the FPC is to supply DEPA with information and advice; DEPA is to have total responsibility and operational control during national emergencies.

DEPA depends on quickly mobilized, previously selected Federal employees and National Defense Executive Reservists for communications with and control of electric utilities during emergencies. Because these people consist basically of utility system officers with extensive experience, they have functioned well under emergency exercise conditions.

DEPA has been concerned about the vulnerability of electric power systems. In 1964, it published "Vulnerability of Electric Power Systems to Nuclear

Weapons", an analysis by region of potential damage from nuclear weapons. Interior later published a similar document for gas systems. Industry has criticized both reports as being too detailed in that they aid potential saboteurs by identifying the points of system vulnerability. Therefore, industry has informally indicated to FPC staff that it will not cooperate further in such studies.

More recently, April 1977, the Federal Preparedness Agency published an interim document (not yet final) entitled "Federal Response Plan for Peacetime Nuclear Emergencies." Annex I of this report is a guideline for the Federal/State relationship, and Annex II analyzes the many various legal authorities. The FPC is not listed among Federal agencies cited by these documents with responsibilities under conditions of terrorism or sabotage, although the FPC did assist with the preparation of the documents.

The massive power blackout in the northeast on November 9, 1965, affected the entire area of the states of New York, Connecticut, Rhode Island and Massachusetts, and significant portions of Vermont, New Hampshire and the Province of Ontario, and caused a massive reexamination of the power planning and electric reliability practices of the electric power industry in the United States and adjacent portions of Canada. The November 9, 1965 blackout affected an area of 8,000 square miles and directly affected an estimated 30 million people in the United States and Canada. By contrast, the recent Con Ed disturbance was largely limited to the service area of Consolidated Edison Company (with very small temporary disruptions of service on two neighboring systems) affecting a total of about 8 million people. In short, the cascading power loss disturbance which characterized the 1965 blackout was not repeated in the recent Con Ed disturbance because certain protective devices and operating procedures were followed which were not in place at the time of the 1965 disturbance.

In response to President Johnson's memorandum of November 9, 1965, the Federal Power Commission conducted an extensive analysis of the causes of the 1965 northeast power failure and after issuing a series of preliminary reports, the Commission published its three volume study in July 1967 entitled "Prevention of Power Failures." Some of the recommendations of that report were as follows:

To the extent they do not now exist, strong regional organizations need to be established throughout the Nation, for coordinating the planning, construction, operation and maintenance of individual bulk power supply systems.

A Council on Power Coordination should be established, made up of representatives from each of the nation's regional coordinating organizations to exchange and disseminate information on regional coordinating practices to all of the regional organizations, and to review, discuss, and assist in resolving matters affecting interregional coordination.

A Central Study Group or Committee should be established to coordinate industry efforts in investigating some of the more challenging problems of interconnected system development.

In furtherance of the foresaid recommendations, the Commission issued Order No. 383, Docket No. R-362, Reliability and Adequacy of Electric Service, 41 FPC 846, 34 F.R. 11200, on June 25, 1969, calling for the creation of regional reliability councils covering all of the contiguous 48 states for the purpose of coordinating power reliability planning throughout the country by all segments of the electric utility industry in a voluntary setting with appropriate participation by FPC and State Public Service Commission personnel. FPC Order No. 383 also provided for a system for reporting to the Commission and the state regulatory agencies of long range and intermediate range data on an annual basis by all segments of the electric power industry coordinated by and reported through the regional reliability councils and the National Electric Reliability Council (NERC). By the Spring of 1970, the five regional councils extant in June of 1969, which covered only a portion of the country, had grown to nine regional electric reliability councils covering the entire contiguous 48 states.[1] These nine regional councils are still actively functioning. The reliability councils

[1] East Central Area Reliability Coordination Agreement, Mid-America Interpool Network, Mid-Atlantic Area Coordination Group, Mid-Continent Area Reliability Coordination Agreement, Northeast Power Coordinating Council, Southeastern Electric Reliability Council, Southwest Power Pool, Texas Interconnected System, Western Systems Coordinating Council.

are concerned with matters of reliability and planning for the adequacy of future bulk power facilities, i.e., generating plants and high voltage transmission lines. The regional councils are planning bodies which also concern themselves to some extent with the day-to-day operation of the electric utility systems or the economic transactions occurring between companies and power pools. The operation of bulk power supply facilities is controlled by a number of power pools and electric utility systems.

Commission Order No. 383 was last revised on December 13, 1976, as Order No. 383–4. This Order sets forth the public reporting procedures in Appendix A–1 which provide information relating to the Commission's adequacy and reliability program. Appendix A–1 as modified by Order No. 383–4 has ten items. Two of the items, Items 7 and 9, contain information pertinent to emergency power system operational preparedness:

7. A description of the principal communication and control systems operating or planned within the region and listing of functions performed by such facilites.

9. Information on following coordinated regional practices:

(*a*) Load shedding programs, including estimated steps of load reduction at various steps of declining frequency.

(*b*) Emergency power and shutdown facilities to prevent damage to equipment if station loses system power.

(*c*) Power facilities available for unit startup in the event of total loss of system power.

(*d*) Availability of continuous power independent of system sources for communication and control facilities.

(*e*) Provisions for sustaining the operation of generating units on local loads.

(*f*) Programs for scheduling maintenance outages of generation and transmission facilities.

(*g*) Programs for the selection, setting and maintenance of relays that affect the overall reliability of the interconnected network.

(*h*) Operating reserve policy.

To maintain efficient, economic and secure electric power system operation, a satisfactory communications and control network is essential. Appendix A–1 Item 7 information describes these facilities and the functions they perform. Item 9–d describes the capability for maintaining communications and control facilities in the event of total loss of normal system power sources.

Item 9–b addresses measures to prevent damage to generating facilities due to loss of pertinent auxiliary power needs when a system or major portions thereof are lost. No major generator damage was associated with the July 13, 1977, Con Edison incident in sharp contrast to substantial damage suffered during the November 1965 disturbance. Facilities discussed in Item 9–c of Appendix A–1 are intended to provide flexibility in restarting shutdown generation and to minimize the time required to restart generation.

Item 9–e includes provisions for sustaining the operation of generating units on local loads during a system collapse.

Properly scheduled maintenance is necessary to sustain efficient and reliable operation of electric power system facilities. Items 9–f and 9–g address these provisions, which should serve to minimize facility failures that might interrupt the power supply system.

Item 9–h provides for system policy for operating reserve. Operating reserve can be defined as operating or readily available (within 10–30 minutes) generating capacity, over and above projected hourly or daily peak load requirements, needed to comply with regulation requirements or to provide backup capacity in the event of load forecast error and forced outage of generation.

Item 9–a information describes the automatic load shedding provisions of systems to arrest frequency decline and prevent system collapse. Generally, three stages of load shedding are used to drop 30 percent of the system load in three 10 percent blocks. The frequency at which these load segments are dropped is a function of the system load characteristics and generation response capability. Table I shows the load shedding provisions for U.S. power systems by Regional Electric Reliability Council area.

TABLE I.—SUMMARY OF LOAD SHEDDING, ORDER 383–4 ITEM 9A, SUMMER 1977

NERC Regional Council	Summer 1977 peak load		Percent of load shed at frequency given by region/subregion													Percent load shed	
	Megawatt	Percent	59.6	59.5	59.3	59.2	59.0	58.9	58.8	58.7	58.6	58.5	58.3	58.0	57.8	57.5	Region/ subregion	Continental U.S. total
ECAR	59,838	15.35			10.0			15									25.0	3.84
ERCOT	27,582	7.07			5.0			10				10.0					25.0	1.77
MAAC	32,650	8.37			10.0			10				10.0					30.0	2.51
MAIN	33,663	8.63			10.0		10.0			10.0							30.0	2.59
MARCA	17,664	4.53			10.5		9.9			10.2							30.6	1.39
NPCC	35,495	9.10																
NYPP	21,590	5.53			10.8				13.9				9.1		14.6		48.4	2.67
NEPOOL	13,905	3.57			10.8				13.9								24.7	.88
SWPP	37,090	9.51			10.0		10.0			10.0							30.0	2.85
SERC	82,022	21.04																
FS	15,681	4.02				14.6			14.6		23.6						52.8	2.12
SCS	19,946	5.11		10.0		10.0			10.0								30.0	1.53
TVA	20,150	5.17		12.8	1.7	26.5											41.0	2.12
VACAR	26,245	6.73			10.0		10.0					10.0					30.0	2.02
WSCC	63,717	16.34																
NWPP	19,033	4.88		2.3			22.5					21.1		17.6		16.2	79.7	3.89
United States only:																		
RMPA	4,226	1.08	0.5	6.0			9.2					11.5		14.12			27.2	.30
Arizona-New Mexico	6,871	1.76	.6				22.4					23.5		19.13		5.7	71.33	1.25
South Calif.-Nevada	17,548	4.50		10.5			24.2					25.6		10.15		1.9	72.35	3.25
North Calif.-Nevada	16,039	4.11	.5	9.08			20.2					20.7		.1		.72	51.3	2.11
Total	389,721	100.0																36.62

Commission Order No. 445, Docket No. R-405, was issued January 11, 1972, for the purpose of encouraging each and every electric utility system "to develop contingency plans for operation in emergency situations; contingency plans for possible load reductions or curtailments; and, contingency plans coordinating all such procedures of other utilities so that bulk power transfers and coordinated operational arrangements may occur between and among systems to minimize the consequences of power interruptions or shortages".

The Commission further requested each electric utility system which participates in the work of a regional reliability council or the council itself to voluntarily submit contingency plans to the FPC and to any state utility commission or other affected government agency upon request, and to keep submitted plans current. All contingency plans submitted are for informational purposes and are available to the public for copy and use through the Commission's Office of Public Information.[2]

The Northeast Power Coordinating Council (NPCC) reports regularly to the Commission pursuant to Order Nos. 383-4 and 445. These reports contain the reliability information relating to Consolidated Edison Company, a member for power planning and reliability purposes of the NPCC, the reliability council for the six New England states, New York and the Provinces of Ontario and New Brunswick. Consolidated Edison Company is also a member of the New York Power Pool, a planning and operating entity which utilizes the modern technology of central dispatch to obtain the most economical combination of the bulk power resources of all its members, i.e., the seven investor-owned companies located in the State of New York[3] and Power Authority of the State of New York (PASNY). On a day-to-day, hour-to-hour basis, Con Edison and the New York Power Pool deal with two adjoining power pools, New England Power Exchange (NEPEX) and Pennsylvania-New Jersey-Maryland Power Pool (PJM) (the power pool for all of New Jersey, the District of Columbia, Maryland and Delaware, and most of Pennsylvania).

In general, the people of the United States have enjoyed a high degree of electric power reliability as a result of the voluntary planning performed by these nine regional councils with the assistance and participation of FPC and state public utility personnel. However, we recognize that there is always room for improvement and we believe the President's energy plan as passed by the House of Representatives provides measures that will enhance our authority to improve electric power system reliability.

The New York City blackout started at about 8:37 p.m. July 13 with a sequence of events initiated by lightning storm activity in the lower Hudson Valley. It resulted in the loss of all electric load by Con Edison, for periods ranging from 5 to 25 hours, throughout the densely populated area it serves.

Con Edison's service area covers a 600 square-mile area with a population of 8,317,000 in the five Boroughs of New York City and a large portion of Westchester County, north of the City. The company serves 3.11 million households.

The report details the sequence of events which spread across Con Edison's system over a period of just more than an hour on the night of July 13, bringing on the complete disruption of service.

When the disturbance started, Con Edison's system load was 6,091 megawatts. Its generation, with all other generation in New York, was being dispatched by the New York Power Pool Control Center in Guilderland, N.Y. Con Edison was generating 3,891 megawatts, with 2,200 megawatts being imported. All interties with other systems were in service except the Farragut-Hudson 345 kilovolt line interconnecting Con Edison with the Pennsylvania-New Jersey-Maryland Interconnection. Con Edison's total operating reserve was 2,734 megawatts.

At 8:37 p.m., lightning struck the double-circuit Buchanan south bus to Millwood West 345 kilovolt lines. Circuit breakers on these and other 345 kilovolt lines opened automatically to prevent damage. This also removed from service the Ladentown-to-Buchanan 345 kilovolt transmission line. Indian Point generating station Unit No. 3 ceased operation, since there was no longer any transmission path to load centers. Power inflows over the remaining interconnections and Con

[2] A list of the responses on file at the Federal Power Commission is attached to this testimony. Shown are the dates of first plan submission and the date the plan was last revised.

[3] Long Island Lighting Company, Con Ed, Central Hudson Gas and Electric Co., Orange and Rockland Electric Co., Rochester Gas and Electric Co., Niagara Mohawk Power Co., and New York State Electric and Gas Co.

Edison's generation increased to take up the slack and continue to meet the load.

A second lightning strike at 8:55 p.m. disconnected the Ramapo substation from Con Edison's system and the circuit breakers failed to reclose. At the same time, one of two 345-kilovolt lines from the Pleasant Valley substation tripped out. These additional losses of 1,200 megawatts of imports were offset by increased inflows over remaining ties and by increased system generation.

At 9:19 p.m., additional import capability from the north was lost. Manual load shedding and use of some combustion turbines did not prevent overload on interconnections with Long Island Lighting, which were manually tripped at 9:22 p.m. Additional load was manually shed, but the load on the remaining interties became intolerable. With a load of 1,170 megawatts, the Goethals/Linden interconnection with PJM opened automatically, isolating the Con Edison system. Con Edison's generation was insufficient to carry its area load. The Ravenswood generating unit No. 3, operating at 844 megawatts, tripped at 9:29 p.m., followed by loss of all remaining generation. Restoration efforts began at once, but it took until 4 p.m. the following day to restore all interties with the New York Power Pool systems.

The August 4, 1977 FPC staff report emphasizes that the FPC staff's review and analysis of the July 13 failure "is as yet sketchy and far from complete."

However, the preliminary staff report makes 10 recommendations for actions which Con Ed shou'd undertake immediately.

The report adds that the short time frame within which the preliminary study was conducted and the limited information and data now available from Con Edison merely emphasize the necessity for a continuing investigative effort. The staff said it would then be able to make many detailed recommendations which might contribute to the elimination of massive service interruptions in the foreseeable future following subsequent analyses.

During the further investigation, the staff will study in detail the operation of Con Edison's generation, transmission, and distribution facilities. The investigation will a'so focus on the design of the transmission network and the reasons for the inability of the bulk power supply system to withstand disturbances of the type experienced July 13.

The House Energy bill, H.R. 8444, passed on Friday, August 5, 1977, provides the Federal Power Commission and its successor with additional tools to enhance reliability of our Nation's electric utilities. Section 541 gives the Commission authority to require interconnection of transmission facilities with facilities of other electric utilities and to order pooling of facilities as well as the wheeling of energy from one system to another if it will aid reliability or reduce energy costs.

Moreover, Section 545 of the Act requires the Commission to prescribe rules relating to electric reliability within two years of the Act's enactment. Although not expressly stated, this Section would probably permit the Commission to establish security standards for generating and major substation facilities.

There is a definite need to re-evaluate the Government's authority and responsibility to protect the reliability of the Nation's power systems not only from natural, but also intentional disruptions. For example, on two occasions, the Pacific Gas and Electric Company's Hicks Substation transformers and circuit breakers were damaged by pipe bombs. On March 27, 1975, at 12:01 a.m. PDT, explosions occurred, interrupting service to 34,000 customers. On April 8, 1977, at 12:32 p.m. PDT, pipe bomb explosions at the 115/12-kilovolt substation caused the interruption of 65 megawatts in load affecting 20,000 customers for 3 hours and 22 minutes. In both cases, service was restored shortly to customers via alternate distribution facilities, and damaged transformers and circuit breakers were replaced with spares until the original equipment could be repaired. In addition, because of the smaller capacity of the equipment, mobile transformers were temporarily connected until other replacements could be made. These incidents highlight the need for security measures to be included in the determination of electric system reliability.

MEMORANDUM OF AGREEMENT EXECUTED BY THE SECRETARY OF THE INTERIOR AND THE CHAIRMAN OF THE FEDERAL POWER COMMISSION ON SEPTEMBER 14, 1972

The Secretary of the Interior and the Federal Power Commission, in discharging their respective duties and responsibilities, have agreed upon the following procedures to implement parts 7 and 19 of Executive Order No. 11490, dated October 28, 1969, 34 F.R. 17567.

Executive Order No. 11490 assigns to the Secretary of the Interior responsibility for preparing national emergency plans and developing preparedness programs for natural gas and electric power. Executive Order No. 10480 dated August 14, 1953, 18 F.R. 4939 places in the Department certain responsibilities for carrying out such programs during an emergency. Executive Order No. 11490 contemplates that the Secretary shall utilize the maximum those capabilities of other agencies qualified to perform or assist in the performance of assigned functions by contractual or other agreements. The Department and the Commission each have their respective essential functions to be performed within the meaning of Executive Order No. 11490.

This agreement sets forth areas of responsibility of the Commission in assisting the Secretary to carry out the responsibilities of the Department under these Executive orders.

The Secretary and the Commission are agreed that by means of these procedures the economic regulatory and other functions exercised by the Commission over electric power systems or natural gas systems, by reason of the provisions of the Federal Power Act, 16 U.S.C. 791A, et seq., the Natural Gas Act, 15 U.S.C. 717(A) et seq., and Executive Order No. 10485, dated September 3, 1953, 18 F.R. 5397, will be coordinated with, and in support of the emergency preparedness functions of the Department.

Actions of the Commission in assisting the Department shall include, but not be limited to, the furnishing of data, information, judgments and conclusions to the Department on (1) supply and requirements for electric power and gas resources, (2) fuel requirements for electric systems, (3) critical electric power and gas facilities, (4) critical material needs of extant or new electric power and natural gas facilities, (5) damage assessment, (6) financial requirements and economic conditions affecting the various components of the electric and gas industries; and such other supporting data, information, judgments and conclusions of the commission and staff services as may be mutually agreed upon by the parties hereto.

It is anticipated that the supporting data, information, judgments, conclusions, advice and counsel of the Commission which will be of major assistance to the Department in preparedness programs and under emergency conditions are those which involve:

(1) assessment of the adequacy and reliability of available electric power and natural gas resources in pre-determined areas under pre-emergency, emergency and post-emergency conditions;

(2) Evaluation as to needed development of additional electric power and natural gas resources, including further interconnections and uses of electric generating and transmission facilities and natural gas facilities to serve various local, State or regional energy requirements throughout the United States, or to limit the national exportation or importation of electric power or natural gas;

(3) identification of specific electric power or natural gas facilities to serve particular priority usages for defense mobilization, production and civilian survival;

(4) assistance in ascertaining and evaluating data regarding physical damages sustained by electric power and natural gas facilities under emergency conditions, and the need of affected systems for critical materials to repair, replace or further develop such facilities; and

(5) evaluation as to needed operating revenues or financial requirements of the various electric power and natural gas suppliers under defense mobilization, production or post-attack emergency conditions, together with appropriate amounts of compensation for any nongovernmental facilities taken over and used by supervening governmental authority under these conditions.

This Memorandum of Agreement supersedes the Memorandum of Agreement dated August 9, 1962, as referred to in section 1901 Executive Order No. 11490, and may be modified from time-to-time by mutual agreement.

Dated this 14th day of September, 1972, Washington, D.C.

JOHN N. NASSIKAS,
Chairman, Federal Power Commission.
ROGERS C. B. MORTON,
Secretary of the Interior.

REGIONAL ELECTRIC RELIABILITY COUNCILS, SUBREGIONS OF THE COUNCIL AND INDIVIDUAL ELECTRIC SYSTEMS RESPONDING TO FPC ORDER NO. 445, DOCKET R-405, ON FILE AT THE FEDERAL POWER COMMISSION

Reliability council area: Name of respondent (region/subregion/system)	Recorded filing dates of responses: 1st plan submitted	Last revision to plan
ECAR:		
East Central Area Reliability Coordination Agreement Executive Office	March 1972	May 1973.
Hoosier Energy Division, Indiana Statewide Rural Electric Coop	May 1972	
ERCOT: Electric Reliability Council of Texas—Chairmans Office	June 1973	
MAAC: Mid-Atlantic Area Coordination Agreement—Pennsylvania-New Jersey-Maryland—Interconnection Office	March 1972	May 1977.
MAIN:		
Mid-America Interpool Network—Coordination Center	do	May 1973.
Western Illinois Power Cooperative, Inc	April 1972	
Sherrard Power System, Orion, Ill	March 1972	
Southern Illinois Power Coop	April 1972	
Wisconsin Michigan Power Co	April 1977	
MARCA:		
Mid-Continent Area Reliability Coordination Agreement—Executive Office	March 1972	
Basin Electric Power Cooperative	April 1972	
Central Iowa Power Cooperative	(1)	
Cooperative Power Association	March 1972	
Corn Belt Power Cooperative	April 1972	
Dairyland Power Cooperative	May 1972	
Eastern Iowa Light & Power Cooperative	March 1972	
Interstate Power Co	February 1972	
Iowa Electric Light & Power Co	do	
Iowa-Illinois Gas Electric Co	do	July 1974.
Iowa Power & Light Co	March 1972	May 1973.
Iowa Public Service Co	do	
Iowa Southern Utilities Co	January 1972	
Lake Superior District Power Co	July 1972	April 1973.
Minnesota Power & Light Co	December 1971	April 1976.
Minnkota Power Cooperative	(2)	
Montana-Dakota Utilities Co	(2)	
Nebraska City Utilities	February 1972	
Nebraska Public Power District	March 1972	
Northern Minnesota Power Association	(2)	
Northern States Power Co	January 1972	May 1977.
Northwestern Public Service Co	February 1972	May 1973.
Northwestern Wisconsin Electric Co	(2)	
Omaha Public Power District	March 1972	
Otter Tail Power Co	do	
Richland Center Municipal Utility	(2)	
Rural Cooperative Power Association, Minnesota	(2)	
U.S. Bureau of Reclamation, Upper Missouri Region	(1)	
NPCC:		
Northeast Power Coordinating Council—Executive Director	March 1972	April 1973.
Central Hudson Gas & Electric Corp	August 1972	August 1974.
Maine Public Service Co	March 1972	
SERC:		
Southeastern Electric Reliability Council	(1)	
Florida Subregion	March 1972	May 1973.
Southern Subregion:		
Alabama Power Co	do	January 1977.
Georgia Power Co	do	February 1977.
Gulf Power Co	do	Do.
Mississippi Power Co	do	March 1977.
Southeastern Power Administration—U.S. Department of Interior	February 1972	May 1973.
Tennessee Valley Subregion	March 1972	Do.
Virginia-Carolinas (VACAR) Subregion	February 1972	
Carolina Power & Light Co	do	May 1977.
Duke Power Co	March 1972	May 1973
South Carolina Electric & Gas Co	April 1972	Do.
South Carolina Public Service Authority	March 1972	Do.
Virginia Electric & Power Co	February 1972	May 1977.
Yadkin, Inc	do	May 1973.
SPP:		
Southwest Power Pool—Executive Director	June 1972	April 1973.
Arkansas Power & Light Co	March 1972	
Central Telephone & Utilities Corp.—Western Power Division	do	
Farmers Electric Cooperative Corp	April 1972	
Kansas City Power & Light Co	March 1972	June 1977.
Kansas Power & Light Co	do	
Missouri Public Service Co	do	
Missouri Utilities Co	May 1972	
Petit Jean Electric Coop	April 1972	
Public Service Co. of Oklahoma	March 1972	
Southwestern Electric Power Co	July 1971	
Southwestern Electric Power Administration—U.S. Department of the Interior	March 1972	
Kansas Gas & Electric Co	do	
Mississippi Power & Light Co	January 1974	

See footnotes at end of table.

REGIONAL ELECTRIC RELIABILITY COUNCILS, SUBREGIONS OF THE COUNCIL AND INDIVIDUAL ELECTRIC SYSTEMS RESPONDING TO FPC ORDER NO. 445, DOCKET R-405, ON FILE AT THE FEDERAL POWER COMMISSION—Con.

Reliability council area: Name of respondent (region/subregion/system)	Recorded filing dates of responses	
	1st plan submitted	Last revision to plan
WSCC:		
Western Systems Coordinating Council	May 1972	July 1973.
Northwest Power Pool Subregion	do	Do.
Bonneville Power Administration	March 1973	
Idaho Power Co	May 1972	
Montana Power Co	March 1972	
City of Seattle, Wash., Department of Lighting	April 1972	
City of Tacoma, Wash., Department of Public Utilities	do	
Utah Power & Light Co	do	
Rocky Mountain Power Area Subregion	May 1972	Do.
Public Service Co. of Colorado	March 1972	
Arizona-New Mexico Area Subregion	May 1972	Do.
California-Nevada Area Subregion	do	Do.
San Diego Gas & Electric Co	March 1972	
Southern California Edison Co	do	

[1] Stated they had no formal plan.
[2] Stated they had no formal plan, under control of another utility.
[3] Merged with United Power Association, May 1, 1972.
[4] No council guidelines provided.

The CHAIRMAN. Thank you very much for your presentation. Chairman Curtis, you have given us a very helpful and clear picture not only of the responsibility of the Federal Power Commission but of its limitations. Obviously you have limitations with respect to protecting against any kind of military action or any sort of sabotage or anything of that kind which you have sketched out. That responsibility does not lie primarily with your agency but with the Interior Department.

Obviously the Defense Department has a responsibility. We had testimony from the agency of the Defense Department that has responsibility in the disaster field generally. Nevertheless, I think most of us recognize that the Federal Power Commission is the Federal agency principally responsible for our utilities and that you have an overall expertise and competence and responsibility at least for the general reliability that others don't have.

Now, yesterday, General Dunn, the senior vice president of Consolidated Edison, said, and I quote:

> The current design, construction and operation of its system has met all FPC (Federal Power Commission) and other regulatory agency criteria for such a system.

Do you agree with that?

Mr. CURTIS. Mr. Chairman, this is a point I intended to make in my opening remarks. I am happy to have the opportunity to respond to it.

I saw that statement. I inquired of the staff as to whether the Federal Power Commission had established criteria and if so, were they binding. The answer, sir, to both questions is that the Federal Power Commission does not establish reliability criteria. They participate in a voluntary action with the regional planning councils. It is inappropriate in my judgment to assert that the Federal Power Commission has established criteria which are in a current state of compliance by the Con Ed system.

I wonder if I might ask the Acting Chief of the Bureau of Power to comment further on that?

The CHAIRMAN. Yes; I would like to get that.

Before we get his answer in that area—obviously you can't be held responsible for the Federal Power Commission. You have had only 24 hours on the job. At the same time, it seems to me it is very late in the day for this kind of thing. After all, we have had problems before. We have had potential problems. Reliability is one of the most significant responsibilities of our utilities. We know how much of our civilization depends on it. It seems to me that by now the criteria should have been developed. It would seem appalling that in this year, you say, you have not developed criteria for reliability. Perhaps we can get a response from your staff on that.

Mr. WEISS. Mr. Chairman, the Commission's position with respect to the development of reliability standards stems from the adoption of Order 383. This is primarily an informational device. The Commission has pointed to various aspects of adequacy of both power supply and reliability criteria to which the utilities and the regional councils address themselves. That appears in the Commission's rules, section 2.11. But the Commission itself, because of the voluntary nature of the authority that is given to it under section 202(a) of the Federal Power Act, has not in the past developed reliability criteria.

The CHAIRMAN. I don't understand why that should prevent you from doing it. It seems to me one of the things that would be most helpful on a voluntary basis would be to develop these standards for utilities to try to meet. I don't understand what General Dunn was talking about when he said:

> The current design and construction and operation of the system has met all criteria.

If you say there are not any criteria to meet, then Con Ed has not met anything. Do I misunderstand or is there something else you think Mr. Dunn might have had in mind that FPC had developed?

Mr. WEISS. Not unless he had reference to the criteria that have been established by the various regional councils in response to the information supplied to the Federal Power Commission. But the Commission itself has not established any criteria.

The CHAIRMAN. But you are in the process of working in the direction, is that right?

Mr. WEISS. We have been working all along on a voluntary basis with the regional councils. We review the criteria that they submit to the Commission. We compare the criteria established among the various——

The CHAIRMAN. What you are saying is that the FPC does not assume responsibility for the criteria developed, but you cooperate with what this particular agency is developing, what would affect Con Ed. You comment on it. You try to have some expert assistance with respect to it, but it is their criteria, not yours. Is that correct?

Mr. WEISS. Exactly, sir.

The CHAIRMAN. However, if I understand, you are working in the direction of a Federal Power Commission overall criteria. You expect to provide, or are you going to continue in this status of simply advising the particular regional groups as to what they might consider and let them decide what their criteria will be?

Mr. WEISS. I expect that if the legislation that is before Congress to which Chairman Curtis referred is enacted, we will probably proceed in that fashion.

The CHAIRMAN. Now, the preliminary FPC report on the blackout highlights the inadequacies of the Con Ed system. The report found that in the design of the transmission network the protective devices installed to protect equipment were not adequate, and that the emergency operating procedures were not adequate.

My question, Mr. Chairman, is whether these inadequacies are unique in your judgment to Con Ed or do you believe they would be common throughout the industry?

Mr. CURTIS. First, Mr. Chairman, I think the staff is careful to say that Con Ed's procedures were not adequate to cope with these circumstances.

It does not, in its preliminary nature, constitute a finding of the staff or the Commission of inadequacy. It is clear that Con Ed's procedures were inadequate to cope with these circumstances.

The CHAIRMAN. What I am talking about, however, is whether or not you have a similar lack of ability to meet this kind of situation on the part of utilities in Chicago, Los Angeles, Florida, wherever?

Mr. CURTIS. Mr. Chairman, I think there are common characteristics in other utility systems which may suggest equivalent vulnerability. For that reason the staff report has recommended that the regional councils require immediate reports from their members and a complete review and assessment of various listed items on the basis of the Con Ed experience to assess that very question. That also will be the subject of the final report to the Commission. We are proceeding to enlist the voluntary cooperation, which we fully expect to get, from the regional planning councils for that report.

The CHAIRMAN. In the case of Con Ed it became clear that their requirement to buy electricity from other utilities, even at a time when it is capable of meeting demands internally, that dependence on having to buy from other systems, makes them more vulnerable. That was General Dunn's conclusion. Do you agree with that?

Mr. CURTIS. That is a conclusion that I really think requires some technical experience. I would like to defer that to Mr. Weiss.

The CHAIRMAN. Mr. Weiss

Mr. WEISS. It is true that the New York Power Pool is centrally dispatched on an economic basis. In effect that means that the most economic units in the pool are used first within system security limits. Not only is Con Ed therefore bound by the provisions of the New York Power Pool agreement but it is my understanding that they also have been urged by the New York Public Service Commission to obtain the most economical sources of supply.

The CHAIRMAN. It obviously makes them more vulnerable, does it not?

Mr. WEISS. Yes, it does, sir.

The CHAIRMAN. This is not an uncommon practice in the industry, is that right? In other words, other utilities also buy. Con Ed is not unique in that respect? Maybe it buys more than others but there are others who are dependent on outside utilities, too?

Mr. WEISS. That is correct. I think one has to take into account the peculiar configurations of the Con Ed system, the fact that they have a long, narrow transmission corridor, which makes it to some extent possibly more vulnerable than other utilities which are engaged in economic dispatch operations.

The CHAIRMAN. The reason they do this, as I understand it, and other utilities buy power from the outside is that it is cheaper to do it rather than to build their own complete adequate system. It would cost more. So what we have here is the problem of balancing that need for power at as low a cost as possible with the desirable reliability. How do we determine how much reliability we need and at what cost? Do we leave that up to the utility? Do they make the judgment together with the local and State supervising commissions?

Mr. WEISS. Yes sir, unless there are provisions within an operating agreement which would be on file with the Federal Power Commission, the rate schedule of the various selling utilities, we would then make some determination as to whether or not the rates and charges, for example, are reasonable.

The CHAIRMAN. At this point it seems to me that there is a national interest because the national interest in reliable utilities in this country takes on actual security interests. We don't know what we are going to face in the future. We might face massive sabotage. We don't know what kind of outside threat. That is a real possibility at least. If not nuclear war, which is of course an entirely different kind of problem than we can consider this morning, sabotage, some kind of widespread protest, is something that would have a national concern and involve national responsibility.

So I wonder if there is not some need for us to move into this situation even further. You gentlemen feel that the action by the House in passing legislation to which you referred and which you support is adequate to provide the degree of responsibility which our country should assume as a Nation in providing reliable electricity in the event of some kind of national security threat?

Mr. CURTIS. Mr. Chairman, if I may respond to that, and, again, I only reflect the views of one member of the Commission although I have the responsibility of its chairmanship. I think the provisions which are contained in section 545 of the referred to House bill H.R. 8444 are significant tools for increasing the reliability of electrical utility systems.

However, they are prospective. They set out balancing criteria such as you have identified as required in your opening statement of today. They provide a means of delegating this responsibility to the States where they are in a position of having adequate resources for and commitment to this effort. Reliability standards prospectively applied should not be confused with preparedness for emergency circumstances. I think we need both efforts. I don't want to leave the impression with the committee that the reliability standard authority provided in this legislation is going to solve the problem.

My very brief assessment is that we need a fuller commitment to emergency preparedness in this area at least from the standpoint of the Federal Power Commission's role in that responsibility, given, as you pointed out, the Federal Power Commission's statutory mission to assure an abundant supply of energy for the Nation.

The CHAIRMAN. Now the action by the House obviously is to interject a national policy. You indicated your support for it. Do the House energy bill's provisions on interconnections tend to increase rather than decrease the vulnerability of power systems? Do you feel that that is possible or would you respond to that?

Mr. CURTIS. I think the preliminary assessment of the staff has been that if there were stronger ties available to Con Ed, interconnections, if you will, it would help in avoiding this circumstance. I think interconnection is a very important means of assuring system reliability. Now, if the interconnection systems are used, rather than as reliability tools, almost exclusively as a means of lessening the cost of the delivery of electric energy in the service area to the detriment of reliability, which circumstance occurred in the Con Ed system, then increased interconnection of electric systems, if not prudently managed could lead to practices which result in a diminishing of reliability.

I would hope that the Commission would not so exercise that power.

The CHAIRMAN. Now, inadequate emergency operating procedures also contributed to the July 13 blackout. Several idle generating stations were unmanned, so these generators could not be brought on line in time. Load shedding was not initiated until later in the sequence of disturbances. No effort was made through the media to initiate voluntary customer power reductions. I am sure that list could be expanded.

What is required of utilities in terms of emergency operating procedures in view of the fact that this broke down on Con Ed? And I am sure on the basis of previous testimony that could happen elsewhere. It would seem to me there ought to be some sort of initiative on a national basis to assist utilities in meeting the situation.

Mr. Fowlkes.

Mr. FOWLKES. Pursuant to the Commission's Order 445 the utility systems file emergency procedures for contingency conditions. Included in these are certain load reduction measures. We have filings from the New York Power Pool that deal specifically with these situations.

The circumstances of July 13, however, cover a substantial period of time and we still have not determined whether or not the operating procedures on that day were inadequate and, if so, in what way.

The CHAIRMAN. Do you think the Government should set standards for emergency operations and require some compliance by utilities?

Mr. CURTIS. Mr. Chairman, I think, again expressing a personal view, that unless we have strong evidence emerging out of this assessment that the Commission has asked of the regional planning councils, that responsible action will be taken to increase our emergency preparedness and our general system reliability, the Government may have to do this.

I think that as a matter of the House's judgment they have determined that the Federal Government should assume this responsibility. In my opinion, I believe that if we are asked to bear a statutory responsibility for system reliability, we must have the tools to carry it out. For that reason I today have stated a strong support for section 545 of the House passed bill which contemplates the Federal Government, and specifically the Commission, assuming this responsibility for mandatory controls.

The CHAIRMAN. In your statement you describe Pacific Gas and Electric's experience with bomb explosions. Of course, this is something with which the Joint Committee on Defense Production—and this is the committee that is responsible for these hearings—is concerned.

In both cases of the bomb explosions in the Pacific Gas and Electric System, service was restored to the customers via alternate distributing facilities. Those bombs seem to have caused only minor destruction. But what is the potential for similar acts causing major loss of power over prolonged periods?

Mr. CURTIS. Mr. Chairman, I think the potential for disrupting transmission facilities is very great, as they are stretched over large geographical areas and constructed in a manner which makes very difficult the implementation of effective security systems.

The CHAIRMAN. You say that the potential is great. You also imply that because it is spread over a great area that the security system would be enormously costly to provide if it is going to do so with any improvement in reducing the likelihood that we will have these occurrences.

Mr. CURTIS. That is correct. I think perhaps the more beneficial area of inquiry is whether we can, through systems of redundancy, isolate areas of sabotage and protect the system from being brought down from it.

Indeed, in the case of Pacific Gas and Electric Co., they were able to successfully isolate the effects of those incidents of sabotage and maintain their customer responsibilities for service. The same is true of Bonneville when the towers were bombed.

The CHAIRMAN. Do you have studies of that which would indicate the capability of meeting sabotage by isolating the effect and limiting the effect?

Mr. WEISS. No sir, we do not.

The CHAIRMAN. This is such a limited experience we have had. We can't tell what is going to happen in the future. We should do all we possibly can to provide the greatest possible reliability. It would be helpful if we had some sort of notion of how we can do it.

Apparently Pacific Gas and Electric was prepared in this instance to act but we don't know whether this is true of the other 3,500 utilities in this country. It seems to me we ought to have some notion of how vulnerable we are and what we can do in the sensible way you have suggested to improve that and what the cost would be. Is any work at all being done in that area?

Mr. CURTIS. Mr. Chairman, from my standpoint I believe this type of inquiry is required. Indeed it is one of the areas that we have asked the reliability councils to assess and report back to us. That report may suggest the need for further inquiry at that time. I would like the opportunity to report back to the committee on what the Commission intends to do to follow up.

The CHAIRMAN. Very good. We would like to get that.

In your prepared remarks you say:

> There is a definite need to reevaluate the Government's authority and responsibility to protect the reliability of the Nation's power system not only from natural but also intentional disruptions.

Yesterday, General Dunn said, and I quote:

> There should be assurances that the appropriate Federal agencies have authority to investigate and prosecute such disruptions which affect national defense as well as interstate commerce.

What exactly is the Federal role in protecting the Nation's power system from sabotage, terrorism, vandalism?

Mr. CURTIS. If I may defer this to Mr. Goldstein for a legal response.

The CHAIRMAN. Mr. Goldstein.

Mr. GOLDSTEIN. First of all, Mr. Chairman, the Power Commission is not given any specific responsibility to act in the sense of policing intelligence or a kind of surveillance of groups that might conduct terrorist acts. I am informed that when such acts do occur, the FBI is brought into the investigation.

The CHAIRMAN. You say the FBI. How about the Interior Department? Are they involved in this or the Defense Department?

Mr. GOLDSTEIN. The Defense Electric Power Preparedness Administration, which is over in Interior, is a creature which is designed to respond to nuclear war or the kind of pervasive emergencies where the President makes a declaration. As I understand it, it is a kind of mechanism for, in effect, federalizing utility executives in time of extreme crisis.

As I understand it, they do not have an active role in protecting the physical integrity——

The CHAIRMAN. It seems to me we ought to fix responsibility somewhere. We have found out how vulnerable we are to this kind of thing. I notice in your statement on page 2 [see p. 56], Chairman Curtis, you say "FPC has authority to prescribe standards for physical security of those projects but has not exercised that authority." You have the authority but have not used it?

Mr. CURTIS. Yes, sir. That is with respect to hydro projects only.

The CHAIRMAN. How about with respect to that? Why hasn't that authority been used with respect to hydro projects?

Mr. CURTIS. I cannot explain the circumstances of the past. I believe it should be, Mr. Chairman. I will ask the Commission to direct its attention to that.

The CHAIRMAN. And any other suggestions you have on how we fill this vacuum with respect to the Nation's responsibility for preventing sabotage, terrorism, and vandalism. Obviously it is a national function. We can say the FBI has responsibility for enforcing all of our Federal laws but I think we ought to have a very clear degree of responsibility with respect to expert evaluation and cooperation and so forth from FPC.

The FBI can't possibly be equipped to know what you know about the utility business and how to meet the problem fully and effectively.

Are there any special penalties for intentional disruption of electric power, Mr. Goldstein?

Mr. GOLDSTEIN. I am not aware of any, sir.

The CHAIRMAN. So it is treated like any other crime?

Mr. GOLDSTEIN. It is treated like any other crime.

The CHAIRMAN. Would it be whatever the State law would provide or is there a Federal law?

Mr. GOLDSTEIN. There may be Federal laws.

The CHAIRMAN. I am talking about a situation which we have in every case I know of, where you obviously don't have Federal property. Con Ed is privately owned. You usually have something that is owned by a private corporation within a State and therefore it is hard to see the basis for the FBI's intervention.

Mr. GOLDSTEIN. As a matter of physical flow, Mr. Chairman, everything east of a point that runs, say, north-south through Nebraska is one electric network with Texas being a somewhat specialized case. So there is an interstate interrelationship at all times between electric power high voltage lines and generating stations. If something happens in Indiana, you can see the effect in Birmingham, Ala.

The CHAIRMAN. We have the interstate basis then for Federal involvement. Should we legislate special penalties to provide more of a role for Federal authorities in order to deter disruptive acts against utilities?

Mr. GOLDSTEIN. I think that is worthy of study, Mr. Chairman. I think it might be helpful to examine what the experience has been with these acts.

The CHAIRMAN. Would you consider that when you go over your remarks and give us your recommendation? We would like to have that from you if you will give us that. [See page 77, question 4.]

Mr. GOLDSTEIN. Yes, sir.

The CHAIRMAN. Does the Federal Government in your view have any role to play in supplying backup generators or encouraging key facilities to install such units to prevent this kind of disruption we have suffered or that we might suffer?

Mr. FOWLKES. As part of our earlier report on Order 445, industry planning requirements, we did recommend that emergency power supply facilities be provided. However, I don't believe we have any specific authorization to mandate that they be installed at specific locations.

Mr. CURTIS. If I might interpret your question, Mr. Chairman, it is a question of whether the Federal Government should assume financial responsibility for the installation of these facilities, recognizing that we may be getting into an area where there is a national interest in maintaining reliability of a particular system, whereas the assumption by the ratepayers of that particular system of the costs involved may be burdensome.

I think it would be only in that last circumstance where we cannot find it cost-effective to the ratepayer—a cost-effective system for augmenting reliability of a system to respond to the public need—that the Federal Government might assume that responsibility.

My personal view is that there may indeed be areas where those costs will exceed the individual benefit to the ratepayers.

The CHAIRMAN. Chairman Curtis, I would like to ask you and your experts if you can help me with this: We have seen this great Con Edison—which, I guess, is one of the biggest or perhaps the biggest utility system in the country—go out for a period of 25 hours, at least up to 25 hours, as a result of a couple of little old lightning bolts. The question that I have for you is: What would happen in the event of a military situation where massive damage to generation and transmission equipment is suffered as a result of a war or some enormous natural disaster?

Do you have any notion how long it would take to recover from that massive damage if we just grind to a halt?

Yesterday I cited the experience in World War II where some of these cities were just bombed and bombed and bombed and entire cities were reduced to rubble. I looked at some after World War II—Warsaw, for instance. It was true of many of the German cities and English cities. Yet they seemed to be able to operate. Factories operated. In fact, they produced more after that kind of bombing than they did before.

Have we gone to a point of vulnerability, of weakness, where, in the event of a great natural disaster or war, we would not be able to function or are we still able to operate in spite of what appears to be this very great vulnerability exposed by the blackout?

Mr. CURTIS. Mr. Chairman, I cannot give you a personal assessment of that vulnerability. There has been attempt to assess it in published reports in 1964—for both our power system and our natural gas system—and there has been a recent updating of that analysis, which the staff of the Federal Power Commission participated in.

I think it probably doesn't require detailed study to suggest that we as a nation are considerably vulnerable in the event of a nuclear attack, being as reliant as we are on elaborate power systems.

The CHAIRMAN. Set aside the nuclear situation for the moment because that is so catastrophic that it would take too long to discuss that one, but are we vulnerable to very skilled, widespread, massive sabotage, knocking out our utilities? It seems if we can paralyze New York this way with a couple of lightning bolts, you could do enormous damage to the rest of our country with a bomb.

You implied something—and maybe I misunderstood it—in your opening statement when you indicated that utilities were concerned about spelling out the degree of their security for fear it might make it easier for a saboteur to destroy their operations. Did you say something of that kind?

Mr. CURTIS. Yes, sir, only to the extent that their spelling it out becomes embodied in a published report, which they fear may serve as an instruction to persons who may wish to inflict harm on their systems.

The CHAIRMAN. My fundamental question is: How vulnerable are we? Am I exaggerating this thing? Can you give us a clear picture?

Mr. CURTIS. I certainly cannot, Mr. Chairman.

Mr. FOWLKES. The circumstances would have to be very widespread and also have to be very well coordinated, that is, happen all at once. In addition it would have to cover a wide area of the country. For example, the Eastern interconnection goes all the way from the east coast of the United States to about the Mississippi River.

So certainly if you have hundreds of people who are working together, I am reasonably sure that someone who knows about electric power networks could coordinate such an operation to, for example substantially damage the Eastern interconnection. Naturally as you confine your thoughts to a smaller area, for example, one system, then it becomes easier for them to damage it, but they would have to inflict substantial damage because all of the Eastern interconnection as well as the Western interconnection have systems that are substantially interconnected.

Electric systems don't rely on, for example, one powerplant. Utility systems have a number of powerplants. Damage would have to be very widespread. I really don't see how you could protect against it.

The CHAIRMAN. Mr. Curtis, I have just a couple more questions. You have been a very patient witness. This is important testimony and I want to get as much in the record as I can. Is it clear exactly what functions would be performed by DEPA and which by FPC in a national emergency?

Mr. CURTIS. I think it is clearly covered by an interagency agreement. As I tried to note, essentially the Federal Power Commission's role in supporting of DEPA.

The CHAIRMAN. What concerns me is that Chairman Dunham in the 1976 annual report to the Joint Committee on Defense Production said that the Memorandum of Agreement between FPC and the Department of the Interior is proving—and this is his language—"is proving to be outdated, misunderstood and, because it is not specific, unworkable. Also various orders conflict with paragraphs 202(c) of the Federal Power Act. These problems contribute to the lack"—and this is his language—"lack of a clearly understood emergency preparedness mission or objective of the FPC and affects the agency's ability to prepare a definitive emergency operations plan."

It is pretty devastating language, indicating that the agreement apparently is not as clear and specific as it ought to be.

Mr. CURTIS. Mr. Chairman, as you know, the Congress has passed the Department of Energy Act which the President has signed. That department will come into creation within 120 days or such earlier date as the President may specify. I believe that the authority for emergency preparedness will be transferred to the Secretary and that will give us an opportunity to give clarification to the respective roles of the new department which will, I hope, meet these deficiencies that Chairman Dunham found in the existing interagency agreement.

The CHAIRMAN. Thank you very much. I want to thank all of you gentlemen very much for your testimony. It has been most helpful. I certainly wish you very well, Chairman Curtis, in your new responsibility.

Mr. CURTIS. Thank you.

FEDERAL ENERGY REGULATORY COMMISSION
WASHINGTON, D. C. 20426

OFFICE OF THE CHAIRMAN

October 17, 1977

Honorable William Proxmire
Chairman
Joint Committee on Defense Production
Congress of the United States
Washington, D. C. 20510

Dear Mr. Chairman:

Provided below are my responses to the questions accompanying your letter of September 26, 1977. I am pleased to supply these additional views and information.

Several of the questions are posed in terms of existing or prospective Federal Power Commission (FPC) policies or authority. As you know, on October 1, 1977 the FPC was terminated and its jurisdiction was transferred in large measure to the Federal Energy Regulatory Commission, an independent entity within the new Department of Energy. Some of the FPC's former authority, however, was shifted to the Secretary of the Department of Energy. Where applicable, these jurisdictional adjustments are reflected in the responses to the questions which follow:

Question 1

In his remarks before the Joint Committee, Chairman Curtis states that emergency preparedness "has not been given adequate resource attention at the Federal Power Commission." What recommendations does the FPC have for the handling of emergency preparedness by the new Department of Energy?

Answer

On October 1, 1977, the Federal Power Commission went out of existence and was replaced by the Federal Energy Regulatory Commission (FERC), an independent body within

the Department of Energy. Under the Department of Energy Organization Act, (Public Law 95-94) FPC's emergency authorities were transferred to the Secretary. The former emergency powers of the Commission with respect to electric system reliability have been transferred by the Secretary to the Economic Regulatory Administration of the Department of Energy.

I continue to be of the belief that the Federal Government should apply greater resources to emergency preparedness and I have conveyed my views to the Secretary for his consideration in the preparation of a Departmental budget.

Question 2

"Federal authority in the area of security of electric systems is divided among various agencies." (Chairman Curtis statement before the JCDP). NRC has jurisdiction over nuclear facilities, FPC has jurisdiction over hydro facilities, and no federal agency has jurisdiction over the security of fossil fired electric generating plants. Are these jurisdictional responsibilities appropriate and adequate? If no, does HR 8444 provide the means for improving the state of federal jurisdiction over generation plant security or is further legislation needed? If further legislation is needed, what should this legislation entail?

Answer

The security of a public utility's generating plants and transmission facilities is primarily a management responsibility. Although it provides a public service, a utility is a private entity and, therefore, has the primary obligation for the protection of its property. As I stated in my prepared remarks on August 11, 1977, the Commission has the authority to prescribe security standards for the physical security of non-Federal water power projects through the licensing procedure, but no Federal agency has such authority in the area of fossil-fired electric generating plants. If, as a matter of national policy, the public interest requires Federal prescription of security standards

for utilities, legislation would be required for the Federal Government to act with respect to fossil-fired electric generating plants. Section 545 of H.R. 8444, as passed by the House, gives the Commission authority to establish minimum standards for the purchase, construction, operation and maintenance of bulk power facilities, but does not expressly provide for security measures. Arguably, however, provision for security standards could comprise one aspect of operation and maintenance. However, if such is the intent of the Congress, the proposed statute or, at a minimum, its legislative history should explicitly so provide.

Question 3

DEPA is activated in the case of an attack on the U. S. or a declared national emergency. This obviously excludes cases such as the July 13 New York City blackout. Should special provision be made for federal emergency activity during electrical outage incidents when the DEPA would not be activated?

Answer

Monitoring of the restoration of electrical service by the Federal Government in these situations that fall short of DEPA activation should be generally adequate. However, if necessary Section 202(c) of the Federal Power Act gives the Federal Government power to assist in restoring electrical service. Under this provision the Secretary of Energy may order "such temporary connections of facilities and such generation, delivery, interchange, or transmission of electric energy as in its judgment would best meet the emergency and serve the public interest." Such authority would appear to provide Federal jurisdiction to deal with the restoration of the bulk power supply system, assuming that action could be taken with sufficient promptness. This section of the Act has not been used for this purpose up to this point presumably because of a lack of need to do so and undoubtedly due to the time factor.

Jurisdiction over local distribution to ultimate consumers is vested in the respective State Public Utility Commissions under the administrative responsibility of the State Governors. In addition, the Governors have at their disposal the National Guard and State Police to assist in handling the emergency side-effects of a blackout. The Governor can also request Federal assistance. This would appear to be adequate at least in cases where a blackout is limited to a single state, such as the case with the July 13 New York City disturbance. In cases of multi-state disturbances, however, some DEPA coordination may be appropriate to handle the emergency side-effects of a blackout.

Question 4

Does the FPC have specific recommendations for legislation to deal with acts of sabotage, terrorism, and vandalism against utility property?

Answer

Although existing provisions of Federal criminal statutes are probably adequate to reach acts of sabotage, terrorism and vandalism directed against utility property, specific prophylactic criminal legislation directed at such conduct may well be warranted. In this regard, I am aware that Consolidated Edison has submitted proposed legislation to the Joint Committee which would accomplish this purpose. On first impression, it is my view that this proposal would provide an appropriate deterrent to criminal activities of this nature.

Legislation that would require preventive measures by utilities to protect against such conduct, however, should not be adopted without careful evaluation of all considerations. For example, high voltage transmission lines cover vast and often remote areas. It is doubtful that such facilities could be adequately protected against all contingencies and efforts to do so would involve extremely high costs that would ultimately require the support of ratepayers or governmental subsidization. Therefore, it is my view that Congress should impose such requirements only after careful cost-benefit

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analyses have shown that such requirements are justified and required in the national interest. It is my opinion that H.R. 8444, as passed by the House, could be utilized to provide adequate discretionary Federal authority in this area. See my response to Question 2, supra.

Question 5

Is any other federal legislation needed to improve federal regulation of electric facilities?

Answer

As I indicated to the Committee at the August 11 hearing, I support the enactment of H.R. 8444 as passed by the House of Representatives. I believe that that legislation would provide the additional Federal authority required to improve the regulation of electric utilities.

Question 6

What should be the role of the Federal government with respect to emergency preparedness of the utility industry before, during, and after an emergency situation?

Answer

As noted in Question 3, DEPA (Defense Electric Power Administration) is activated in the case of war or of a declared national emergency; therefore, I assume your question relates to situations other than those.

The Federal Government should continue to actively seek to bring about thoroughly coordinated emergency planning among the electric utility systems and the state public utility commissions. In addition, Federal programs to foster voluntary interconnections and other self-help activities should continue to be pursued. To this end, the Commission has worked persistently to develop the electric reliability councils and cooperated with them in the development of adequate contingency planning to meet emergency needs. Of course, the

primary responsibility for emergency planning must rest with the electric utility systems and their respective reliability councils. However, the Federal Government should have strengthened powers to require specific actions if and when management fails to meet its obligations. In this regard, I would direct the Committee's attention to §542 of H.R. 8444, as passed by the House of Representatives. This provision, relating to continuance of service, provides specific authority for the Commission to compel certain procedures and identified actions to assure the maintenance of electric service including the specific requirement that each utility file contingency plans with the Commission for its review. This provision would, moreover, provide the Commission with residual authority to require needed actions to protect service when voluntary efforts are not forthcoming. I see this as the appropriate Federal role in this area.

During and after emergency situations, the Federal Government should assist in minimizing their impact as requested to do so by state public utility commissions, state emergency organizations or by the Governor of a State. In appropriate emergency situations, State Governors can activate the capabilities of both the National Guard and State Police organizations as dictated by the extant emergency situation.

Greater Federal involvement should be dictated by national security considerations or when Federal intervention pursuant to Section 202(c) of the Federal Power Act would assist in meeting the emergency. An example of the former would be a situation in which power supply to a national defense installation is interrupted. While such installations presumably have independent power supply, DEPA should perhaps have a role in the determination of the order of restoration because of the possibility of additional outages.

Question 7

Most of Con Ed's interconnections with other systems are concentrated in a relatively narrow corridor due to the geography of the New York City area. Are any other companies

which supply major urban areas tied in a similarly limited manner to other systems?

Answer

The principal interconnection limitations of the Consolidated Edison Company system are:

1. A high proportion of its interconnection capability with generating capacity outside of the metropolitan New York area is contained in a single (North/South) transmission corridor.

2. A high proportion of its high voltage transmission facilities in the New York area is underground.

3. A relatively small proportion of its total base load generating capability is located geographically within New York City.

With respect to the first two of these limitations, the Consolidated Edison system is fairly unique. With respect to the third limitation, there are other metropolitan areas in the country that have a high proportion of total base load generating capability located outside the metropolitan service area. In general, however, these systems have transmission interconnections of high capability and in several directions so that they are probably less vulnerable to transmission outage than is the Consolidated Edison system. This matter is currently under study in connection with the Commission's investigation of national implications of the Consolidated Edison system outage and will be addressed in our final report on this matter.

Question 8

Certain services are so essential to our society's well-being that they cannot tolerate interruption even for a few hours. Do any federal programs encourage and/or offer support for the installation of emergency power facilities for these essential services?

Answer

We checked with the Defense Electric Power Administration (DEPA), and were informed that two Federal programs of this nature are now in existence. One is sponsored by the Environmental Protection Administration (EPA); it provides for standby electric power to be provided for sewage disposal plants. In addition, the Department of Health, Education and Welfare has been supporting efforts by the states to provide for standby electric power for hospitals.

The Commission has also made recommendations in this area. In its 1967 report entitled Prevention of Power Failures, the Commission recognized the need for emergency power supply for vital facilities. Two of the recommendations in that report are as follows:

"29. All levels of government appropriately should establish requirements for emergency power sources for services essential to the safety and welfare of the public, and ensure the availability of such facilities.

Precautions should be taken not only against the possibility of a future area-wide power failure, but also the more likely occurrence of local outages such as caused by severe storms. Since the November 1965 power failure, Federal agencies and many state and local governmental bodies have taken steps to lessen the impact of future power interruptions. More than half of the states now require local auxiliary power for certain critical loads. This practice should be extended, under carefully considered criteria to assure essential emergency service while safeguarding against unwarranted duplication of expensive generating facilities. Accordingly, the Commission urges state, county and local government agencies to encourage and direct by legislation, regulation and other means, the planning and installation of needed auxiliary power facilities to provide

essential services for the safety and welfare of the public.

30. Utilities should cooperate with appropriate public officials and customers in planning and maintaining customer standby facilities to assure service to critical loads in the event of emergency.

Even though the improvements recommended herein will do much toward preventing further widespread power failures, the possibility of interruptions remains. Localized failures will continue to occur from storms, equipment breakdown and other causes. The complete dependence of many important public services upon electric power requires the appropriate provision of emergency power supplies. These services typically include hospitals, police and fire departments, sewer and water plants, transportation systems and terminals, communications facilities, and emergency lighting and elevator service in public or other multi-story buildings which normally contain many people. Many such facilities in the Northeast were not equipped with emergency power. Others had standby sets that did not operate because they had not been tested and maintained or because informed operators were not available to start them.

The Commission urges that utilities and agencies responsible for essential services work together in the proper planning and maintenance of emergency power facilities."

I hope this information is of assistance to the Joint Committee.

Sincerely yours,

Charles B. Curtis

Charles B. Curtis
Acting Chairman

The CHAIRMAN. Our next witness is Joan Davenport, Assistant Secretary of the Interior for Energy and Minerals. Ms. Davenport joined Federal service in 1969 as an economist in the Division of Energy and Minerals of the Bureau of Land Management. Since that time she has held the positions of Deputy Director and Acting Director of the Office of Technical Analysis of the Environmental Protection Agency and Director of the Office of Environmental Assessment in the Federal Energy Administration.

Ms. Davenport, your statement is brief. You may read or summarize it. Will you identify the distinguished colleagues who are with you.

STATEMENT OF JOAN M. DAVENPORT, ASSISTANT SECRETARY, ENERGY AND MINERALS, DEPARTMENT OF THE INTERIOR; ACCOMPANIED BY ROBERT PRESLEY, EMERGENCY PREPAREDNESS COORDINATOR, AND PHILLIP SWART, ELECTRIC POWER REPRESENTATIVE

Ms. DAVENPORT. Chairman Proxmire, I am happy to have this opportunity to testify here this morning. I have brought with me today Mr. Bob Presley, who is the Emergency Preparedness Coordinator on the staff of Energy and Minerals, and Mr. Phillip Swart, who is our electric power representative.

To the extent that my statement is already very brief. I think I will quickly go through it.

The CHAIRMAN. You may go ahead.

Ms. DAVENPORT. Senator Proxmire, I am happy to have this opportunity to testify about emergency preparedness for the Nation's electric power resources.

The New York City power outage certainly reconfirms that "it can still happen to us." We are the most technologically advanced nation in the world; nonetheless we can still experience systemwide power breakdowns which cost communities and citizens millions of dollars and which jeopardize our national security. It is vital that our Nation's power supply be made as reliable and secure as possible.

The Defense Production Act of 1950, as amended, is the principal authority upon which our emergency preparedness programs are based. As you know, it provides for a system of priorities and the allocation of scarce and critical resources for defense purposes. Under certain circumstances these authorities can also be extended to nondefense-related emergencies.

In Executive Order 11490, as amended, the President delegated emergency preparedness planning for energy, minerals, and water to the Secretary of the Interior. In Executive Order 10480 he further delegated the priority and allocation responsibilities associated with energy and minerals to the Secretary.

All energy-related emergency preparedness responsibilities of the Secretary are scheduled to be transferred to the Secretary of Energy in the very near future. This is one of the provisions in the President's energy reorganization plan. Thus I believe it is most appropriate for

me to limit my comments to a discussion of current responsibilities and program activities.

Standby emergency agencies have been established for each of the resources under our jurisdiction. For electric power this standby agency is the Defense Electric Power Administration, or DEPA. Until this past January the electric power unit was a separate organization with three professional staff persons assigned to it.

At that time, my predecessor consolidated the staff and functions of this organization with those of the petroleum and gas and solid fuels and minerals emergency preparedness units. The staff that was transferred under this reorganization plan continues to be responsible for the planning and maintenance functions of the defense electric power preparedness program.

Working with the electric power industry, this staff develops and updates national preparedness plans and policies. It conducts vulnerability studies and maintains a nationwide field organization to assist in implementing these programs during emergencies.

This field organization consists of approximately 100 experienced professionals and managerial personnel currently employed in the electric power industry. They serve without compensation and spend a few days each year in training programs and in developing plans to respond to national emergencies or natural disasters.

In a natural disaster, members of the field organization can provide assistance requested by the Secretary. However, the initial request for assistance must come from the Director of the Federal Disaster Assistance Administration in the Department of Housing and Urban Development. In a declared national emergency this organization may be activated by executive decision. And in the event of an attack upon the United States, they are automatically activated.

The electric power staff works closely with the Federal Disaster Assistance Administration on such disasters as hurricanes, floods, and earthquakes. Assistance is provided to the extent requested by FDAA. The kind of assistance most generally provided is to help in collecting damage assessment information or to evaluate the progress in restoring electric power.

I would also like to note that the electric power staff is currently working with the Department of Defense to assist in identifying those electric power facilities required to maintain reliable electric power for key defense facilities. When this inventory is completed they will work with the electric power industry to improve those systems and reduce their vulnerability.

In light of the recent power failure in New York City, I believe it is most appropriate for the Congress to review our domestic and defense-related electric power needs and systems. I am sure this administration will be most interested in cooperating with you.

Since the electric power preparedness functions of Interior will soon become a responsibility of the new Department of Energy, I believe it would be more appropriate for you to continue this study with them. However, we will be pleased to continue to work with you and this committee during the transition period. If it is all right with you, I would like to defer any final recommendations to DOE.

Thank you for this opportunity and I am prepared to answer questions.

PREPARED STATEMENT OF JOAN M. DAVENPORT, ASSISTANT SECRETARY, ENERGY AND MINERALS

Senator Proxmire, members of the Joint Committee on Defense Production, I am happy to have this opportunity to testify about emergency preparedness for the Nation's electric power resources.

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All energy related emergency preparedness responsibilities of the Secretary are scheduled to be transferred to the Secretary of Energy in the very near future. This is one of the provisions in the President's Energy Reorganization Plan. Thus, I believe it is most appropriate for me to limit my comments to a discussion of current responsibilities and program activities.

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cooperating with you. Since the electric power preparedness functions of Interior will soon become a responsibility of the new Department of Energy. I believe it would be more appropriate for you to continue this study with them. However, we will be pleased to continue to work with you and this committee during the transition period. If it is all right with you, I would like to defer any final recommendations to DOE.

Thank you for this opportunity and I am prepared to answer questions.

The CHAIRMAN. Let me see if I understand your concluding observation. You say the electric power preparedness functions of Interior will soon become the responsibility of the new Department of Energy.

Ms. DAVENPORT. Yes, sir.

The CHAIRMAN. That means that your job will be abolished?

Ms. DAVENPORT. Well, I have a few other responsibilities above and beyond the emergency preparedness.

The CHAIRMAN. Then I should say: The jobs of the people who work with you under the $120,000 appropriation—two professionals and a secretary—that would be abolished?

Ms. DAVENPORT. They will all be transferred.

The CHAIRMAN. Abolished as far as Interior is concerned?

Ms. DAVENPORT. Right.

The CHAIRMAN. It will surface again in the Energy Department?

Ms. DAVENPORT. Exactly.

The CHAIRMAN. It does seem to be a very small commitment to a very big problem but I am glad to see money being saved somehow.

What plans do you make to mitigate potential effects of sabotage and terrorist activities? It is clear from the testimony we have had so far this is pretty much your responsibility now; it will be the Department of Energy's responsibility a little later.

Ms. DAVENPORT. We have been working continuously for the last year or so with the Federal Preparedness Agency in identifying points in systems which might be particularly vulnerable to terrorist activities. This is ongoing work in cooperation with that agency.

The CHAIRMAN. With whom do you work again?

Ms. DAVENPORT. Federal Preparedness Agency.

The CHAIRMAN. Officials of that agency have not testified. It is confusing; there are so many agencies involved here. At any rate, you have obviously a limited kind of input because you have limited staff.

Ms. DAVENPORT. That is correct.

The CHAIRMAN. Yet you do have a responsibility. Your agency has been referred to by others as having a responsibility in this particular area, and you have worked with—the Federal Preparedness Agency. I am told by the staff that they have a coordinating role rather than an active role; they don't have the fundamental responsibility.

You have recommendations with respect to sabotage and so forth?

Ms. DAVENPORT. Our basic authorities really come into effect in case of a declared national emergency or a nuclear attack.

The CHAIRMAN. The whole point is that this requires preparation?

Ms. DAVENPORT. Yes, sir.

The CHAIRMAN. In the event that an attack should hit, especially the kind of situation we face now, it is likely to be very fast. The whole thing might be accomplished in a matter of hours rather than days or weeks. If we try to man and prepare at that point, it would be like closing the barn door after the horse is stolen.

I wonder if you have any clear capability for doing planning work. It seems to me that there is no substantial commitment by the Federal Government to meet this kind of threat.

Ms. DAVENPORT. Most of our activities historically have been related to planning for a major catastrophic event such as an attack. However, because of the broad network we have on a stand-by basis and the experience represented in that network, we have been working on a modest level on the terrorist problem. I think Mr. Swart can go into that in more detail.

The CHAIRMAN. All right, sir; go ahead.

Mr. SWART. Mr. Chairman, we are working with the Federal Preparedness Agency in looking into the range of problems and potential problems that could arise from terrorism. Last year we were involved in discussions with 11 different companies who were brought to Washington to discuss their problems and potential problems in terrorism.

Many of these companies were very reluctant to give specific data which had been requested to isolate the most critical areas of their companies and with very good reason. We concur with that. We do not wish to have them identified so that it would be an easy target, a rather simple target, to put them out of business.

We are at the present time working with the Federal Preparedness Agency to develop scenarios in various sections of the country to determine what could happen and what matters could be used to mitigate the effects of these terrorist attacks.

The CHAIRMAN. I appreciate that. It seems to me that this discloses a very unfortunate weakness and vulnerability on which we should be acting. I am disturbed very much by the notion that if this is published so that Congress can meet the problem, act on it, think about it, debate it, and discuss it, discuss it in newspapers and bring it to the public's attention, it makes the utility vulnerable. At the same time, if we don't do it, nothing will be done.

I think in time any determined organization will find this out. They will have people who are sufficiently competent and sufficiently well informed so that they can find out the vulnerability without having to go to a study of this kind.

Mr. SWART. Much of the information to which you refer is already available, unfortunately, in various unclassified documents. The Federal Power Commission has much of this available. Of course, it is not difficult to look at a map or see a generation station or a switching station and identify that as rather an important object.

If there were a relatively small group of dedicated, knowledgeable individuals, I think they could bring down almost any section of the country, not a widespread network.

The CHAIRMAN. It could be widespread if they were a little bigger than you say and organized on a national basis?

Mr. SWART. That is true. At the present moment, we are working with the Wisconsin Electric Co. as a matter of fact.

The CHAIRMAN. You have the right State.

Mr. SWART. We are and have been working with them to determine the scenario, a type of scenario that could be identified for potential damage. We are not trying to be specific. Facility-wise we don't want to do that for obvious reasons.

The CHAIRMAN. You would not have the staff or the resources to get into that, anyway, would you?

Mr. SWART. We do not do those things. I am not an engineer, Senator, but we do have these individuals who are part of our field organization who have given us fantastic support over the last 25 years. We do most of our work with their concurrence, knowledge, and help.

We are planning to point out to all resources that if electric power is cut down by 25 percent in the Chicago-Milwaukee corridor through to Cleveland, what would be the effect on other resources as well as the similar effects if there were a 50-percent reduction. At that point in time we will work with the other resources and the EPA to determine if there is anything that could be done to mitigate such effects without citing specific details.

The CHAIRMAN. Thank you very much. I think you have given us a picture of the status of your operation. I don't mean to be critical of you. I am sure you are doing a highly intelligent and fine job with the limited resources you have.

It seems to me that the Government is putting very little emphasis on this, devoting almost no resources to it and neglecting an area that could provide us with substantial security in view of our great vulnerability.

Thank you very much.

Ms. DAVENPORT. Thank you, Senator.

The CHAIRMAN. Our next witness is Mr. Julius Bleiweis, executive director of the Northeast Power Coordinating Council. He has been with the council since 1967. NPCC's member systems supplying 98 percent of the electric requirements in the Northeast: New York, New England, and the Canadian Provinces of Ontario and New Brunswick. So it is an international organization. He is also a member of the Federal Power Commission's task force on the New York blackout, and area director of the Defense Electric Power Administration.

Mr. Bleiweis, the correspondence and enclosures which you submitted will be printed in full in the hearing record. If you will please give the committee a brief summary of the information contained as it relates to the subject matter of these hearings, then we will get into questions.

Will you please identify the gentleman with you.

STATEMENT OF JULIUS BLEIWEIS, EXECUTIVE DIRECTOR, NORTHEAST POWER COORDINATING COUNCIL; MEMBER, FPC TASK FORCE ON NEW YORK BLACKOUT; AREA DIRECTOR, DEFENSE ELECTRIC POWER ADMINISTRATION, ACCOMPANIED BY CARL D. HOBELMAN, ESQ., LEGAL COUNSEL

Mr. BLEIWEIS. Mr. Chairman, my name is Julius Bleiweis, executive director of the Northeast Power Coordinating Council. At the table with me is Carl D. Hobelman, Esq., legal counsel.

NPCC was established in January 1966. It has 21 member systems, in New England and New York, and Ontario Hydro, and New Brunswick Power Commission, serving the provinces of Ontario and

New Brunswick, Canada. Although Ontario and New Brunswick subscribe fully to council activities, and participate in all matters before the council they are not participating in this statement inasmuch as they deem it inappropriate for Canadian entities to comment under these circumstances to the U.S. Congress.

NPCC is 1 of 9 regional reliability councils together making up the National Electric Reliability Council (NERC) which encompasses all 48 contiguous States. NERC also includes four Canadian provinces, two within NPCC and one each in two other reliability councils.

The chairman in his opening remarks yesterday, stated that electric power is the heart of our economic potential. The electric industry recognizes this axiom and is mindful of its responsibility to closely coordinate its activities to promote the reliability of the interconnected system.

The activities of the National Electric Reliability Council as well as the activities within the individual regional councils bring together in their respective activity both public and private sectors of the electric utility industry.

In addition to the National Electric Reliability Council, cooperation and close coordination is afforded by the North American Power Systems Interconnection Committee most commonly known as NAPSIC, its activity also brings together the private and public sectors.

Sir, as I stated in my letter to you dated August 4, 1977, we thank you very much for your letter of July 29 informing me of the hearings of the Joint Committee on Defense Production which will be held on August 11, 1977. Your letter notes that I have been designated a Regional Director of the Defense Electric Power Administration and have also been asked to serve on an ad hoc task force assembled by the Federal Power Commission to investigate the recent blackout in New York. Both functions arise ex officio from my employment as executive director of the Northeast Power Coordinating Council.

I should point out that the matters which your letter states to be of particular interest to the committee concerning the vulnerability of electric systems to threats of sabotage, terrorism, natural disaster, and nuclear attack are not, as individual instigating forces, matters which fall within the purview of the Northeast Power Coordinating Council. The Council's purpose is to promote maximum reliability and efficiency of electric service on the interconnected systems of its utility system members by extending the coordination of their system planning and operating procedures. Our focus of attention is upon the reliable operation of the interconnected system in the Northeast and the impact of electrical disturbances upon that system, I believe the following is a key phrase—"from whatever cause."

The council has developed and recommended to its members for their guidance criteria for elements of system design and operation which affect the interconnected system. Copies of these documents have been previously submitted to the committee. "Basic Criteria for the Design and Operation of Interconnected Power Systems," and may I point out that this document was originally pre-

pared in 1967, which predates the Federal Power Commission Order 383–3. Since that time, 1967, the document has been revised twice; "Operating Reserve Policy;" "Procedure in Major Emergency;" "Bulk Power System Protection Philosophy;" "Minimum Maintenance for Protective Relaying."

These documents are presently on file with the Federal Power Commission pursuant to the Commission's Order 383–4 in its docket number R–362 entitled "Data on Coordinated Regional Bulk Power Supply Programs." This document is also filed with the chairman of each of the State public service commissions in the NPCC's region, in New York and in the New England States.

By the way, this is the document which has been referred to several times during this hearing an informative document that includes data, criteria, and other types of information on the interconnected systems. [Mr. Bleiweis at this time displayed a copy of NPCC's report to the Federal Power Commission, "Data on Coordinated Regional Bulk Power Supply Programs", dated April 1, 1977.]

Protection against breaches of plant security is a local responsibility. Internal building security at the master control center for New York and New England is the responsibility of the control center staffs. May I pause here for a moment? During the committee hearings yesterday and today the terms "systems," "pools," and "councils" have been used and perhaps I could put those in a little bit of perspective for the committee.

I indicated earlier that NPCC is made up of 21 individual member systems in New York and New England, Ontario, and New Brunswick. There is a distinct power pool in New York, namely the New York Power Pool, and another distinct power pool in New England, namely the New England Power Pool. The next level of review and coordination is the Northeast Power Coordinating Council. The council does not have a control center for day to day operating functions as the pools do.

Protection of individual plant facilities against breaches of security for any cause is the function of the utility system which operates the facility. Area power pools and the Northeast Power Coordinating Council deal with the effect of outages upon the operation of the interconnected system.

As I mentioned earlier, our concern is an outage "from whatever cause," not with the means of protecting specific facilities against acts of terrorism, vandalism, sabotage or, of course, natural disasters.

This statement and attachments have been filed with the Commission previously and I stand ready for questions.

[Complete statement of Mr. Bleiweis follows:]

NORTHEAST POWER COORDINATING COUNCIL,
New York, N.Y., August 4, 1977.

HON. WILLIAM PROXMIRE,
Chairman, Joint Committee on Defense Production,
Congress of the United States,
Washington, D.C.

DEAR MR. PROXMIRE: Thank you very much for your letter of July 29 informing me of the hearings of the Joint Committee on Defense Production which will be held on August 11. Your letter notes that I have been designated a regional director of the Defense Electric Power Administration and have also

been asked to serve on an ad hoc task force assembled by the Federal Power Commission to investigate the recent blackout in New York. Both functions arise ex officio from my employment as Executive Director of the Northeast Power Coordinating Council.

I should point out that the matters which your letter states to be "of particular interest to the Committee" concerning the vulnerability of electric systems to threats of sabotage, terrorism, natural disaster, and nuclear attack are not, as individual instigating forces, matters which fall within the purview of the Northeast Power Coordinating Council. The Council's purpose is to promote maximum reliability and efficiency of electric service on the interconnected systems of its utility system members by extending the coordination of their system planning and operating procedures. Our focus of attention is upon the reliable operation of the interconnected system in the Northeast and the impact of electrical disturbances upon that system, from whatever cause. The Council has developed and recommended to its members for their guidance criteria for elements of system design and operation which affect the interconnected electric system in the Northeast. For the information of the Committee, I have enclosed copies of the following documents with this letter:

Basic Criteria for the Design and Operation of Interconnected Power Systems—The criteria define area generation and transmission requirements.

Operating Reserve Policy—Establishes standard terminology and minimum requirements governing the amount, availability, and distribution of operating reserve.

Procedure in a Major Emergency—Outlines a plan of operations to be followed in the event of a major emergency such as unusually low frequency, low voltage, or equipment overload.

Bulk Power System Protection Philosophy—Establishes relay protection objectives on the NPCC bulk power system.

Minimum Maintenance for Protective Relaying—Establishes minimum maintenance periods for protective relay equipment that has been in service beyond the initial break-in period.

These documents are presently on file with the Federal Power Commission pursuant to the Commission's Order No. 383-4 in its Docket No. R-362, "Data on Coordinated Regional Bulk Power Supply Programs".

Protection against breaches of plant security is a local responsibility. Internal building security at the master control centers for New York and New England is a responsibility of the control center staffs. The control centers also serve as a means for the dissemination of any threats of sabotage or terrorist acts. Protection of individual plant facilities against breaches of security for any cause is a function of the utility system which operates the facility. Area power pools and the Northeast Power Coordinating Council deal with the effects of outages upon the operation of the interconnected systems, not with the means of protecting specific facilities against acts of terrorism, vandalism, sabotage or, of course, natural disasters.

Apart from the foregoing and the information enclosed herewith, I do not have anything further to offer in the way of prepared testimony at my appearance before your Committee on August 11. I would be happy, if you desire, to read the content of this letter into the record and to offer its enclosures for inclusion in the Committee's files. I will also attempt to answer any questions the Committee may have concerning the Council's activities.

Very truly yours,

JULIUS BLEIWEIS,
Executive Director.

MINIMUM MAINTENANCE GUIDE, PROTECTIVE RELAYING AND ASSOCIATED DEVICES

[Prepared by Northeast Power Coordinating Council Task Force on System Protection, July 13, 1971]

The primary intent of this report is to establish minimum maintenance periods for protective relay equipment that has been in service beyond the initial break-in period. It is based on the experience and judgment of NPCC members supplemented by survey information of other utility groups. It contains the maintenance intervals and practices which, in the considered opinion of the NPCC Task Force

on System Protection, are the minimum which will result in operation of a relay system with a high degree of reliability. There are reasons peculiar to many individual situations which will justify or require more frequent maintenance intervals. Each company must evaluate its own particular circumstances and determine if any additional maintenance should be performed on its system.

While this report is intended to apply only to those relays associated with the NPCC bulk power system, suggested maintenance practices for some other elements have been included for reference purposes. The bulk power system is defined as the three-phase alternating current electrical interconnected systems of NPCC members comprising generation and transmission facilities on which faults or disturbances can have a significant effect outside of the local area.

Tabulated on the following pages is a recommended minimum schedule for periodic maintenance of protective relays and associated devices. Minimum maintenance includes verifying input quantities, making visual inspection, checking the operating value at one significant coordinating point, and performing trip tests—as required to assure satisfactory operation of the protective system.

The time schedules are intended to apply to installations that have been made in such a way as to insure proper environmental conditions for reliable operation of the equipment. Where abnormal conditions—such as temperature extremes, vibration, or corrosive atmosphere—are unavoidable, more extensive maintenance may be required.

Protective relays and associated devices may be tested one at a time on energized circuits and equipment, provided there is sufficient redundancy in the design to permit this to be done while maintaining an appropriate level of protection. The possible loss of the protective element, whose relays are being tested, should be considered when permission to test the relays is given.

TASK FORCE ON SYSTEM PROTECTION

Robert K. Alexander, *Chairman*, Power Authority of the State of New York
Alex Paullow, Consolidated Edison Company of New York, Inc.
Robert A. Thompson, The Hydro-Electric Power Commission of Ontario
Robert O. Bigelow, New England Electric System
L. L. Brandow, New York State Electric & Gas Corporation
F. H. Freer, Niagara Mohawk Power Corporation
Nicholas Derewianka, Northeast Utilities
Albert R. Christlieb, Public Service Company of New Hampshire

TABLE 1.—RECOMMENDED MINIMUM MAINTENANCE SCHEDULE FOR PROTECTIVE RELAYS

[Values in table may be subject to revision with further operating experience.]

Protective relays	Maintenance interval (years)	
	Electromechanical relays	Static [1] relays
A. Generators: Main unit electrical relays	2	1
Auxiliary systems:		
Main bus relays	2	1
Transformer relays	2	1
Critical circuit relays (e.g., main unit pumps, draft fans, excitation, etc.)	2	1
All others	4	2
B. Transformers:		
Differential relays	2	1
All other relays (if used for tripping)	2	1
C. Busses:		
Differential relays	2	1
All other relays (if used for tripping)	2	1
D. Lines:		
Transmission relays	2	1
Subtransmission relays	4	2
E. General: Underfrequency relays	4	2

[1] The interval for static relays has been set relatively short, pending additional experience with this type of equipment

TABLE 2.—*Recommended minimum maintenance procedure for associated devices*

Associated devices	*Procedure*
A. Unmonitored Communication Systems used for Relay Blocking.	Test for signal adequacy every two weeks. Test for proper performance each time associated relays are tested.
B. Continuously Monitored Communication Systems used for Tripping.	Test for proper performance every four months.
C. Auxiliary Tripping Relays.	Test for proper performance each time associated relays are tested.
D. Circuit Breaker Tripping.	Test trip from each protective system on each protective relay maintenance period.
E. Current Transformers.	Perform sufficient tests to verify characteristics of the current transformer and the integrity of the associated circuitry on every fourth relay maintenance period.
F. Potential Transformers.	Take a voltmeter reading on each secondary output of each potential transformer at every relay maintenance period with the transformer energized at normal primary voltage.
G. Potential Devices.	Check calibration; e.g., verify magnitude and phase angle on every relay maintenance period.
H. Control Battery.	Make sufficient checks once a month to insure that the battery is in proper operating condition.
I. Line Traps.	Make annual visual inspection.

BASIC CRITERIA FOR DESIGN AND OPERATION OF INTERCONNECTED POWER SYSTEMS

[Originally adopted by the members of the Northeast Power Coordinating Council, September 20, 1967. Revision adopted by the members of the Northeast Power Coordinating Council, July 31, 1970. Revision adopted by the members of the Northeast Power Coordinating Council, June 6, 1975.]

CONTENTS

1. INTRODUCTION

The purpose of the Northeast Power Coordinating Council is to improve the reliability and efficiency of the interconnected power systems of its members through improved coordination in system design and operating procedures.

One of the steps in reaching this objective is the development of criteria that will be used in the design and operation of the major interconnected power systems. Definitions of several terms used in the following paragraphs are listed in the Appendix.

It is recognized that more rigid criteria will be applied in some segments of the Council area because of local considerations. It is also recognized that the basic criteria are not necessarily applicable to those elements of the individual members' systems that are not a major part of the interconnected transmission network.

The transmission criteria are applicable either to the areas (New Brunswick, New England, New York or Ontario) or to the entire Council interconnection in its relations with neighboring "pools".

An interconnected power system should be designed and operated at a level of reliability such that the loss of a major portion of the system would not result from reasonably foreseeable contingencies. In determining this reliability, it would be desirable to give consideration to all combinations of contingencies occurring more frequently than once in some stipulated number of years. However, sufficient data and techniques are not available at the present time to define all the contingencies that could occur or to assess and rank their probability of occurrence. Therefore, it is proposed that the interconnected power systems be designed and operated to meet certain specific contingencies. Loss of small portions of the system (such as radial portions) may be tolerated, provided that these do not jeopardize the integrity of the over-all interconnected power systems.

The following criteria for design and operation of interconnected power systems define area generation and transmission requirements. In addition, criteria for determining inter-area transmission transfer capabilities are defined.

Two categories of transmission transfer capabilities are to be considered: normal and emergency. Normal conditions are to be assumed unless an emergency, as defined by Item 2 in the "List of Definitions", exists.

Design studies will assume applicable contractual transfers and the most severe expected load and generation conditions. Operating transfer capability studies will be based on the particular load and generation pattern expected to exist for the period under study. All reclosing facilities will be assumed in service unless it is known that such facilities have been rendered inoperative.

2. GENERATING CAPACITY

Generating capacity will be installed and located in such a manner that after the due allowance for required maintenance and expected forced outages, each area's generating supply will equal or exceed area load at least 99.9615 percent of the time. This is equivalent to a "loss-of-load probability of one day in ten years".

3. AREA TRANSMISSION REQUIREMENTS

The power system should be designed with sufficient transmission capacity to serve area loads under the conditions noted below. The power system should also be operated in such a manner that the design objectives are fulfilled.

3.1 Stability Conditions

Stability of the interconnected power systems shall be maintained during and after the most severe of the conditions stated in a, b, c, d, and e below. Also, the system must be adequate for testing of the outaged element as described in "a" through "e" by manual reclosing after the outage and before adjusting any generation. These requirements will also apply after any critical generator unit, transmission circuit, or transformer has already been lost, assuming that the area generation and power flows are adjusted between outages by use of Five-Minute Reserve.

(*a*) A permanent three phase fault on any generator, transmission circuit, transformer or bus section, cleared in normal time, with due regard to reclosing facilities.

(*b*) Simultaneous permanent phase to ground faults on different phases of each of two adjacent transmission circuits on a multiple transmission circuit tower, cleared in normal time, with due regard to reclosing facilities.

(*c*) A permanent phase to ground fault on any generator, transmission circuit, transformer, or bus section with delayed clearing and with due regard to reclosing facilities. This delayed clearing could be due to circuit breaker, relay system or signal channel malfunction.

(*d*) Loss of any element without a fault.

(*e*) A permanent phase to ground fault on a circuit breaker, cleared in normal time, and with due regard to reclosing facilities.

3.2 Steady State Conditions

(*a*) Voltages, line and equipment loadings shall be within normal limits for pre-disturbance conditions.

(*b*) Voltages, line and equipment loadings shall be within applicable emergency limits for the system load and generation conditions that exist following the disturbance specified in 3.1.

4. TRANSMISSION CAPABILITIES

Transfers of power from one area to another, as well as within areas, should be considered in the design of inter-area transmission and internal area facilities.

Operating capabilities shall be adhered to for normal transfers and transfers during emergencies. These capabilities will be based on the facilities in service at the time of the transfers. In determining the emergency transfer capabilities, it is assumed that a less conservative margin is justified.

Transmission transfer capabilities shall be determined under the following conditions:

4.1 Normal Transfers

4.1.1 *Stability Conditions.*—Stability of the interconnected power systems shall be maintained during and after the most severe of the conditions stated in *a*, *b*, *c*, *d*, and *e* below. Also, the system must be adequate for testing of the outaged element as described in "*a*" through "*e*" by manual reclosing after the outage and before adjusting any generation.

(*a*) A permanent three phase fault on any generator, transmission circuit, transformer, or bus section, cleared in normal time, with due regard to reclosing facilities.

(*b*) Simultaneous permanent phase to ground faults on different phases of each of two adjacent transmission circuits on a multiple transmission circuit tower, cleared in normal time, with due regard to reclosing facilities.

(*c*) A permanent phase to ground fault on any generator, transmission circuit, transformer, or bus section with delayed clearing and with due regard to reclosing facilities. This delayed clearing could be due to circuit breaker, relay system or signal channel malfunction.

(*d*) Loss of any element without a fault.

(*e*) A permanent phase to ground fault on a circuit breaker, cleared in normal time, and with due regard to reclosing facilities.

4.1.2 *Steady State Conditions.*—

(*a*) For the facilities in service during the transfer, voltages, line and equipment loadings shall be within normal limits.

(*b*) Voltages, line and equipment loadings shall be within applicable emergency limits for the system load and generation conditions that exist following the disturbance specified in 4.1.1.

4.2 Emergency Transfers

4.2.1 *Stability Conditions.*—Stability of the interconnected systems shall be maintained during and after the most severe conditions in "*a*" and "*b*" below. System conditions may be adjusted before the outaged element as described in "*a*" and "*b*" below is tested.

(*a*) A permanent three phase fault on any generator, transmission circuit, transformer, or bus section, cleared in normal time and with due regard to reclosing facilities.

(*b*) Loss of any element without a fault.

4.2.2 *Steady State Conditions.*—

(*a*) For the facilities in service during the transfer, voltages, line and equipment loadings shall be within applicable emergency limits.

(*b*) Voltages, line and equipment loadings shall be within applicable emergency limits following the disturbance in 4.2.1.

5. POSSIBLE BUT IMPROBABLE CONTINGENCIES

Studies will be conducted to determine the effect of the following contingencies on system performance and plans will be developed to minimize the spread of any interruption that might result.

(*a*) Loss of the entire capability of a generating station.

(*b*) Loss of all lines emanating from a generating station, switching station or substation.

(c) Loss of all transmission circuits on a common right-of-way.

(d) Permanent three phase fault on any generator, transmission circuit, transformer, or bus section, with delayed clearing and with due regard to reclosing facilities. This delayed clearing could be due to circuit breaker, relay system or signal channel malfunction.

(e) The sudden dropping of a large load or major load center.

(f) The effect of severe power swings arising from disturbances outside the Council's interconnected systems.

APPENDIX—LIST OF DEFINITIONS

1. Area

An area is defined as either New Brunswick, New England, New York or Ontario.

2. Emergency

An emergency is assumed to exist in an area if firm load may have to be dropped because sufficient power is unavailable in that area. Emergency transfers are applicable under such conditions.

3. Applicable Emergency Limits

These limits depend on the duration of the occurrence, and on the policy of the various member systems of NPCC regarding loss of life to equipment, voltage limitation, etc.

Short time emergency limits are those which can be utilized for at least five minutes.

The limiting condition for voltages should recognize that voltages at key locations should not drop below that required for suitable system stability performance, and should not adversely affect the operation of the interconnected systems.

The limiting condition for equipment loadings should be such that cascading will not occur due to operation of protective devices on the failure of facilities.

4. Five-Minute Reserve

Five-Minute Reserve is that portion of unused generating capacity which is synchronized to the system, and is fully available within five minutes, plus that portion of capacity available in shut down generating units, in pumped hydro units and by curtailing interruptible loads which is fully available within five minutes.

5. "With Due Regard to Reclosing Facilities"

Is intended to mean that recognition will be given to the type of reclosing: i.e., manual or automatic, and the kind of protective schemes insofar as time is concerned.

6. Element

An element is defined as a generator, transmission circuit, transformer, circuit breaker or bus section.

OPERATING RESERVE POLICY

[Originally adopted by the Members of the Northeast Power Coordinating Council March 30, 1972. Revision adopted by the Members of the Northeast Power Coordinating Council September 24, 1976]

1.0 Purpose

In the continuous operation of electric power systems, operating capacity is required to meet forecast load, including an allowance for error, to provide reasonable protection against equipment failure and to provide adequate regulation of frequency and power flow over interconnecting tie lines.

This policy establishes standard terminology and minimum requirements governing the amount, availability and distribtuion of operating reserve. Procedures are included for corrective action and mutual assistance in case of operating reserve shortages. The objective is to insure a high level of reliability in the NPCC Areas by coordinating Operating Reserve practices.

2.0 Definitions

2.1 *Area*—an area is one of New Brunswick, New England, New York or Ontario.

2.2 *System*—a system is any member or group of members whose generation is normally dispatched by a single control center.

2.3 *Synchronized Reserve*—that unused portion of generating capacity which is synchronized to the system and ready to pick up load to claimed capacity and capacity which can be made available by curtailing pumping hydro units.

2.4 *Non-Synchronized Reserve*—that portion of generating capacity which is available for synchronizing to the system and capacity which can be made available by curtailing load to the extent that such curtailment is under the control of the System Dispatcher.

2.5 *Ten-Minute Reserve*—the sum of Synchronized and Non-Synchronized Reserve which is fully available in ten minutes.

2.6 *Thirty-Minute Reserve*—the sum of Synchronized and Non-Synchronized Reserve that can be utilized in thirty minutes, excluding capacity assigned to ten minute reserve.

2.7 *Operating Reserve*—the sum of Ten-Minute and Thirty-Minute Reserve.

2.8 *Reserve on Automatic Generation Control*—that portion of Synchronized Reserve which is under the command of an automatic controller or a computer to respond to load demands without need for manual action.

2.9 *First Contingency Loss*—the largest capacity outage including any assigned ten-minute reserve which would result from the loss of a single generator, circuit, transformer or bus section.

2.10 *Second Contingency Loss*—the largest capacity outage which would result from the loss of a single generator, circuit, transformer or bus section after allowing for the First Contingency Loss.

3.0 Minimum Requirements

3.1 *Ten-Minute Reserve*—the Ten-Minute Reserve in each Area shall at least equal its First Contingency Loss.

3.2 *Synchronized Reserve*—at least one-half of each Area's Ten-Minute Reserve shall be Synchronized Reserve.

3.3 *Automatic Generation Control*—at least one-third of each Area's Ten-Minute Reserve requirement shall be on Automatic Generation Control.

3.4 *Distribution of Ten-Minute Reserve*—no more than five percent of the sum of the required Ten-Minute Reserve for all NPCC Areas shall be assigned to any one generating unit. The reserve in an Area will be assigned to four or more units.

3.5 *Thirty-Minute Reserve*—each Area normally shall maintain sufficient Thirty-Minute Reserve to cover one-half of its Second Contingency Loss.

4.0 Availability of Operating Reserve

4.1 Each area shall make every effort to schedule its required Ten-Minute Reserve at all times.

4.2 The capacity claimed for any generation source shall recognize any temporary deratings, equipment limitations, governor load limits and proven maximum loading rates affecting the maximum capacity and speed of response of such sources.

4.3 Each Area's required Operating Reserve shall be distributed so as to insure that it can be utilized without exceeding equipment or transmission system limitations.

4.4 Operating Reserve shall have sustained capability until replacement capacity can be brought to operating status.

5.0 Shortage of Operating Reserve

5.1 When an Area foresees that it will not be able to provide its required Ten-Minute Reserve, it shall, where circumstances permit, proceed as follows in the order indicated to the extent that transmission limitations permit:

5.1.1 Obtain capacity from outside the Area in amounts sufficient to meet its Ten-Minute Reserve requirements.

5.1.2 Bring a sufficient amount of Thirty-Minute Reserve to Ten-Minute Reserve status to restore the required Ten-Minute Reserve.

5.1.3 Reduce voltage up to five percent, if voltage reductions has not previously been counted as Operating Reserve, in amounts sufficient to meet its required Ten-Minute Reserve. If voltage can be reduced within ten minutes, this action can be deferred until Ten-Minute Reserve approaches zero, or until a contingency occurs.

5.1.4 When Ten-Minute Reserve approaches zero, and provided a five percent voltage reduction is in effect, request other Areas for emergency energy.

This energy may be obtained by the other Areas reducing voltages or if they can effect voltage reductions within ten minutes by other Areas supplying energy from their Ten-Minute Reserve.

5.2 When an Area experiences contingencies in excess of its Ten-Minute Reserve, request the other Areas to activate their Ten-Minute Reserve as necessary, and within transmission limitations, to return the loading on NPCC ties to adjoining pools to normal within a ten-minute period.

5.3 When a shortage of Ten-Minute Reserve exists throughout NPCC, available energy must be transferred between Areas to provide the best combination of loadings on inter-Area ties to meet further contingencies.

5.4 When an Area foresees that it will not be able to provide its required Thirty-Minute Reserve, the deficient Area shall arrange to obtain it from other sources. Such Thirty-Minute Reserve should not be from another Area's required Operating Reserve.

5.5 Energy associated with Operating Reserve may be interchanged as economy energy provided such a transaction does not impair the required Operating Reserve response. It is understood that economy energy is immediately recallable and, only the seller can be credited for such capability in meeting the Operating Reserve requirement.

6.0 Application of Policy

6.1 It shall be the responsibility of each Area's control center to identify a loss of capacity in its Area and properly signal for the pickup of that Area's Operating Reserve.

6.2 The NPCC Task Force on Interpool Coordination shall assume responsibility for implementing and monitoring the application of this Operating Reserve Policy.

Bulk Power System Protection Philosophy

[Prepared by Northeast Power Coordinating Council Task Force on System Protection—Adopted by the members of the Northeast Power Coordinating Council, August 31, 1970]

INDEX

1.0 PURPOSE

The purpose of this Protection Philosophy is to establish the relay protection objectives on the NPCC bulk power system. The bulk power system is defined as the interconnected three phase, alternating current electrical systems of NPCC members comprising generation and transmission facilities on which faults or disturbances can have a significant effect outside of the local area. These objec-

tives shall apply to all relay protection systems specified for installation after the date of adoption of the philosophy.

Special conditions and considerations on some segments of the system may require the use of more demanding objectives.

It is recognized that there are existing portions of the system which do not meet the objectives as outlined herein. It will be the responsibility of individual members to assess the protection systems at these locations and make modifications which in their judgment are required to meet the general intent of this philosophy as outlined in Section 2.0.

2.0 GENERAL PROTECTIVE PHILOSOPHY

2.1 Protection Objectives

The design objectives of relay protection systems on the bulk power system are.

2.11 To minimize the effects of system disturbances.

2.12 To minimize possible damage to system equipment.

2.13 To insure to the maximum practical extent that no single contingency will totally disable the protection on any bulk power system element.

In general, this requires that protective relay systems have the ability to recognize and isolate all system faults rapidly and with a high degree of dependability and security. Reliable operation of protective relay systems on the bulk power system must be assured because a malfunction can have far-reaching effects, such as extensive service interruptions and/or damage to vital equipment. At minimum, this means that relay systems must satisfy the "NPCC Basic Criteria for Design and Operation of Interconnected Power Systems". However, consideration should be given to providing relay system designs which will permit the power system to meet more severe requirements than are contained in the above-mentioned criteria.

2.2 Dependability

Dependability is one of the two most important factors which must be considered in the design of relay protective systems. A dependable relay system design must include careful attention to the following:

2.21 To insure maximum dependability, all elements of the bulk power system must be protected by at least two protective systems, each of which is independently capable of detecting and isolating all faults without undue disturbance to the Bulk Power System consistent with basic NPCC criteria. Common components are to be avoided and areas of common exposure should be kept to a minimum, to reduce the possibility of any circumstance that may lead to the simultaneous failure of both systems. It is desirable to avoid the use of two identical systems in order to minimize the risk of simultaneous failure of both systems due to an obscure design or material weakness.

2.22 Relaying systems should be no more complex than is required for any given application.

2.23 The components used in protective relay systems should be of proven quality as demonstrated either by practical operational experience or by stringent tests under simulated operating conditions to insure that the dependability of the protective relay systems is not adversely affected by some device of unknown quality or capability.

Components should have both the ability to withstand the most severe short-time overloads to which they may be subjected, and a continuous thermal capability such that they will not impose restrictions on the operation of the power system.

The protective relay systems should be designed to minimize the possibility of component failure or relay malfunction due to transient conditions.

2.24 Monitoring of the protective system is required to provide information regarding its operating condition.

2.25 Breaker failure protection must be provided to trip all necessary local and remote breakers in the event that a breaker fails to clear a fault.

2.26 The relay system should be designed to minimize damage to relays and associated equipment in the event of a malfunction or failure of a component part.

2.3 Security

Ranking in importance with dependability is the ability of a protective system to be secure against undesired operations. In a highly complex bulk power system, an undesired breaker operation, occurring especially during a condition of system fault or other disturbance, may produce or initiate events of far-reaching consequences.

2.31 One of the primary requisites of a protective system is to isolate only the section necessary to remove any type of fault from the system. For faults outside of its intended zone of operation, every relay system must be designed to either not operate or operate selectively with other systems.

2.32 Protective systems should also be secure against any abnormal or unusual operational condition. They must be so designed that they will not operate for any system swing of less severity than that which would cause instability. Except in rare cases, protective relay settings should not be the load-limiting factor. In such cases, the load limits imposed by the relay setting must be well documented and become a system operating constraint.

2.33 The design should minimize the possibility of undesired operations caused by component failures or environmental conditions, such as vibration, shock, temperature, etc.

2.34 Circuitry and techniques should be employed which minimize the possibility of undesired operations due to personnel error.

2.4 Operating Time

Requirements of the bulk power system for high-speed clearing are particularly stringent. Normal practice should provide for clearing all faults in the shortest possible time with due regard to selectivity, dependability and security. In those cases where there is consideration of a possible increase of clearing time to gain other advantages, careful analysis must be given to the following:

2.41 System stability and any decrease in stability margins which might result from longer clearing times.

2.42 Possible damage to equipment and the effect of time on the extent of damage which might be expected if faults are allowed to persist for a longer time than minimum.

2.43 Possible hazard to personnel.

2.44 Effect of disturbances on service to customers in the area and the consequences which may result from voltage fluctuations during such disturbances.

2.5 Maintenance

The design of the protective relay system should facilitate periodic testing and maintenance. Test devices or switches should be used to eliminate the necessity to remove or disconnect wires during testing.

Equipment should be located physically so as to be easily accessible.

2.6 Coordination of System Planning and Relay Protection

Close cooperation should be maintained between the respective System Planning, Operating, and Protection groups to insure that modifications or additions to the power system or its relaying will result in facilities that can be adequately protected and reliably and safely operated.

3.0 GENERAL CONSIDERATIONS FOR ALL APPLICATIONS

3.1 Instrument Transformers and Potential Devices

3.11 Current Transformers—Each current transformer associated with relaying must have adequate characteristics for its intended function. In particular, the following requirements apply:

3.111 The long-time thermal capability on the highest ratio tap should be at least equal to the long-time thermal capability of the equipment with which the current transformer is associated.

3.112 The output of each current transformer must remain within acceptable limits under all anticipated fault currents and connected burdens to insure correct operation of the protective relay system.

3.113 The short-time thermal and mechanical capabilities on the operating tap must be adequate to prevent damage under maximum fault conditions or emergency system loading conditions.

3.114 In each independent relaying system, separate current transformer secondary windings must be used.

3.115 The current transformer or its secondary windings must be located so that adjacent relay protective zones overlap.

3.116 Current transformer secondary systems (paralleled current transformers, differential systems, etc.) must be grounded at only a single point.

3.117 Care should be taken in specifying the size and type of current transformer secondary leads to assist in keeping the current transformer burden within design limits and to provide mechanical strength.

3.12 Potential Transformers and Potential Devices

3.121 Potential transformers and potential devices must have adequate characteristics and volt-ampere capacity to supply the connected burden and maintain the required accuracy over the specified primary voltage range.

3.122 Two relay systems protecting the same area must not rely on a common source of potential. The two systems may use separate secondary windings on one transformer or device, provided each secondary winding has sufficient capacity to permit fuse protection of the circuit.

3.123 Where fuse ratings of less than 20 amperes are used, special attention should be given to the physical properties of the fuse.

3.124 Potential transformer secondaries should be grounded at only one point.

3.2 Batteries and Direct Current (DC) Supply

3.21 It is essential that the DC supply associated with the power system protection have an extremely high degree of reliability.

3.22 Two batteries each with its own charger must be provided at each location. The two relaying systems protecting the same area must be supplied from separate batteries.

3.23 Each battery should have sufficient capacity to permit operation of the station in the event of loss of its battery charger or battery charger supply source for the period of time necessary to switch the load to the other battery or re-establish the supply source. Each charger should be of sufficient capacity to supply the total DC load of the station.

A switching arrangement should be provided to connect the total load to either battery without creating areas where, prior to failure of either a battery or a charger, a single contingency can disable both DC supplies.

3.24 Batteries and chargers and all associated circuits must be protected against short circuits, and all protective devices should be coordinated to minimize the effect of any disturbance.

3.25 The circuitry between the battery and its first protecting device should possess the highest possible degree of reliability.

3.26 The regulation of the DC voltage should be such that voltage within acceptable limits will be supplied to all devices under all DC loading conditions.

3.27 Abnormal DC voltage levels, both high and low, should be monitored to detect charger and battery troubles. Other abnormal conditions, such as loss of AC to battery chargers, charger failure, and DC system grounds should also be monitored.

3.28 Careful attention should be given to the design of the DC system to minimize voltage transients.

3.3 Circuit Breakers

The application of circuit breakers should conform to appropriate standards as published by the American National Standards Institute.

Circuit breaker auxiliary switches used in protective relay circuits should be of a highly reliable type with a positive make-break action and good contact wipe.

Two trip coils must be provided for each operating mechanism and so arranged that failure of one coil will not damage or impair the operation of the other coil.

3.4 Control Wiring

Control wiring and all auxiliary control devices should be of such quality as to assure high reliability with due consideration given for published codes and standards, fire hazards, current-carrying capacity, voltage drop, insulation level, mechanical strength, shielding, grounding and environment.

3.5 Physical Separation

Physical separation should be maintained between any two relaying systems which protect the same area in order to minimize the risk of both sets being simultaneously disabled by fire or accidents.

3.6 Communication Channels

Where communication channels are required to obtain adequate relaying, the communication facilities should be of such overall quality as to reflect the same degree of reliability as the relay system.

Where redundant communication channels are required, these channels should be separated physically and designed to minimize the risk of simultaneous failures by avoiding mutual-use components.

3.7 Environment

Means should be employed to maintain environmental conditions that are favorable to the continued correct performance of protective relays.

4.0 TRANSMISSION LINE PROTECTION

Each of the two independent relay systems must recognize and initiate action to clear any line fault without undue system disturbance. One of the relay systems should operate fast enough for any line fault so that if ultimate clearing must be accomplished by a breaker failure scheme, a widespread system disturbance will not result. A protective system, which can operate for faults beyond the area it is designed to protect, should be selective in time breaker failure clearing of the area it is overreaching, except in those cases where lack of selectivity can be tolerated.

Relay systems associated with transmission facilities must be designed not to operate due to system swings which are less severe than those which would result in instability. Where stability is not a consideration, the relay system should not limit the load-carrying ability of a line except in unusual cases; and under such circumstances, the conditions must be well documented.

Where relaying systems require communication facilities in order to perform their protective function, the protective systems must be so designed that a loss or misoperation of any one communication facility will not allow incorrect tripping of more than one line for an external fault. The design must also be such that if two relay systems protecting the same line use communication facilities, the loss of any one communication facility or power supply will not impair the operation of both relay systems.

5.0 TRANSMISSION STATION PROTECTION

Each area in a station must be protected by two independent relay systems. In areas not protected by line relaying, at least one of the two systems should be a differential type.

One of the relay systems should operate fast enough for any station fault so that if ultimate clearing is accomplished by a breaker failure system, a widespread disturbance will not result. The relay systems should operate properly for the anticipated range of currents and, if practical, to the momentary rating for which the buses are constructed.

All relay systems must be designed so they will not operate for load current or system swings which are less severe than those which would result in instability.

Due consideration should be given to the station ground grids, control cables, etc., to minimize the risk of false operation of protective relay systems which might result from fault current and/or transient voltages in the station.

5.1 Breaker Failure Protection

Breaker backup relay systems must be installed to trip local and remote breakers as required to protect the system if any breaker fails to interrupt. One set of relays protecting each individual area must also initiate the breaker failure protection. Fault current detectors must be used to determine if a breaker has failed to interrupt. In addition, auxiliary switches may be necessary for high-speed detection of a failed breaker where the distribution of fault current may be such that fault detectors operate sequentially. Examples of this can be found with breaker-and-one-half and ring-bus arrangements. Auxiliary switches

may also be required, in instances where the fault currents are not large enough to operate the fault detectors.

6.0 GENERATOR PROTECTION

Generator faults severe enough to disturb the bulk power system must be detected by more than one protective relay system.

In addition, generators should be protected to keep damage to the equipment and outage time to a minimum.

In view of the special consideration of generator unit protection, the following items are listed as electrical conditions which should be detected by the protective relays:

1. Field ground
2. Loss of excitation
3. Faults in the generator or generator leads
4. Generator out of step with the rest of the system
5. Faults in the unit transformer
6. Unbalanced phase currents
7. Faults in unit-connected station service transformer
8. Over-excitation

It is recognized that the overall protection of a generator must also involve non-electrical considerations. These have not been included as a part of this philosophy.

The apparatus should be protected when the generator is starting up or shutting down as well as running at normal speed; this may require additional relays as the normal relays may not function satisfactorily at low frequencies.

A generator should not be tripped for a system swing condition except when that particular generator is out of step with the remainder of the system. This does not apply to relay systems designed to trip the generator as part of an overall plan to maintain stability of the power system.

Procedure in a Major Emergency

[Originally adopted by the Members of the Northeast Power Coordinating Council based on recommendations by the Operating Procedure Coordinating Committee on 5/24/67. Revision adopted by the Members of the Council on March 27, 1972]

1. INTRODUCTION

This procedure outlines a plan of operations to be followed in the event of a major emergency such as unusually low frequency equipment overload, or low voltage, which might seriously affect the operation of the bulk power supply systems. The objectives of the plan are:

(*a*) To restore the balance between load and generation in the shortest practical time.

(*b*) To minimize the risk of damage to bulk power supply facilities.

(*c*) To minimize the effect on customer service.

The plan of operation is intended to indicate the results that should be attained but does not indicate the method to be used to obtain these results. The basic system designs and the methods of control vary widely among the systems. The methods to be used in implementing this procedure in detail in each area will not necessarily be uniform but must be coordinated.

2. DEFINITIONS

Load Relief.—Load reduction accomplished by reducing voltage or by load shedding or both.

Automatic Load Relief.—Load reduction accomplished without manual intervention by reducing voltage or by load shedding or both.

Load Shedding.—Disconnection of customer load.

Dispatchers.—The terms dispatcher and system operator have the same meaning.

Area.—As the situation requires, may mean a part of a system, or more than a single system.

3. PRINCIPLES

The plan of operation during an emergency derives from the following basic principles:

(*a*) Tie lines, including internal transmission circuits, should not be opened deliberately except to prevent sustained interruption to customers' service or to prevent damage either to such tie lines or to equipment due to overloads, extreme voltages, or extreme frequencies.

(*b*) A sustained frequency excursion of ±.2 hertz is an indication of major load-generation unbalance. It is important for the area in trouble to provide load-generation balance at once to restore frequency so that any separated areas may be reparalleled as soon as possible.

(*c*) Any general rule for balancing load and generation based on frequency alone risks undesirable overloading or tripping of tie lines or internal transmission circuits. If frequency is dropping rapidly, the risk from the application of underfrequency relays is preferred to the risk of widespread shutdowns.

(*d*) At some low frequency, the ability of generators to maintain output is endangered. Although some machines will operate safely below 58.5 hertz, for the sake of uniformity the value of 58.5 hertz has been selected for the last step in the following procedure. It is recognized, however, that some machines may be in danger above 58.5 hertz. If a machine is tripped above 58.5 hertz, equivalent load relief must be provided.

(*e*) Machines that are to be disconnected from the system, insofar as possible, should be isolated on local load to be available for resynchronization.

4. REQUIREMENTS

In order to follow the recommended plan of operation effectively, each system should meet the following requirements:

(*a*) Accurate and reliable metering of tie line loadings and system frequency should be available at each dispatch center.

(*b*) Reliable and immediately available communication channels should exist between the dispatchers of adjacent power systems.

(*c*) Each dispatcher should know the permissible emergency loading of each of his tie lines and transmission circuits. The settings of the relays on the tie lines must exceed this value.

(*d*) Each system must provide a means to shed a minimum of 25 percent of its system load automatically to protect against low frequency conditions. This amount of automatic load shedding is designed to return frequency to at least 58.5 hertz in 10 seconds or less and to at least 59.5 hertz in 30 seconds or less, for a generation deficiency up to 25 percent of the load.

(*e*) Each system must provide a means to shed a minimum of 50 percent of its system load manually in 10 minutes or less to protect against low voltage and overload, as well as low frequency conditions. The automatic portion, if also controlled by manual means, may be included as part of the 50 percent manual portion.

(*f*) All automatic load frequency controls will be removed from service at 59.8 hertz on frequency decline and 60.2 hertz on frequency increase.

5. LOAD RELIEF PROCEDURE

5.1 Low Frequency Condition

1. Automatic

(*a*) At a nominal trip point of 59.3 hertz all systems initiate shedding of 10 percent load.

(*b*) At a nominal trip point of 58.8 hertz all systems initiate shedding of an additional 15 percent load.

(*c*) By 58.3 hertz any member may automatically initiate shedding of additional load to meet his local conditions which may arise following separation from the system.

(*d*) If the frequency drops to 57.5 hertz for 10 seconds or to 56.0 hertz for 0.35 seconds, any member may automatically initiate steps to protect generating equipment, including separation from the system with or without load. It is recognized, that in special cases unusual requirements may dictate higher settings for underfrequency relays to protect equipment from damage.

2. Manual

When the generation-deficient area is clearly identifiable, when the frequency decline is slow enough to permit communication among various system operators, and when adequate consideration can be given to the amount of assistance which can be delivered to the deficient area by all power systems, the following procedures will apply:

The deficient system will initiate immediate action to correct load-generation unbalance using procedures involving operating and emergency reserves including voltage reduction.

If the action taken by the deficient system is not sufficient, and frequency continues to decline, then automatic load shedding will occur as detailed above.

If at any time in the above procedure the decline in frequency is arrested and all operating and emergency reserves have been actuated, the deficient system shall then manually shed sufficient load to permit resynchronizing the island.

At 58.5 hertz, if frequency is still declining, all systems shall shed up to 25% of load manually and then take such steps as are necessary, including isolating units with local load, to preserve generation and to minimize damage and service interruption.

When the generation-deficient area is not clearly identifiable and when the frequency decline is so rapid as to preclude analysis and communication among various system operators, all systems will apply the above procedure without regard to tie line loadings.

5.2 Transmission Overload Condition

1. Establish communication with system operator of system producing overload.
2. All systems in a position to assist shall take any available action to relieve the overloaded condition, short of shedding load.
3. If the action in 2 above is insufficient, the system causing the difficulty shall take all steps necessary to relieve the overload promptly including the manual shedding of load.
4. If, after a reasonable time based on overload, improvement is not made, open those ties necessary to prevent damage to equipment.

5.3 Low Voltage Condition

1. Establish communication with the system causing the low voltage.
2. All systems in a position to assist shall take any available action to relieve the low voltage condition, short of shedding load.
3. If the action in 2 above is insufficient, the system causing the difficulty shall take all steps necessary to relieve the low voltage condition promptly, including the manual shedding of load.
4. If, after a reasonable time based on voltage level, improvement is not made, separate the affected portion of the system to prevent damage to equipment.

6. RESTORATION PROCEDURE

In the event that an area becomes isolated and after the frequency decline has been arrested:

1. Restore frequency to 60 hertz.
2. Establish communication with system operators of adjacent systems.
3. Synchronize with adjacent systems.
4. Coordinate restoration of any load previously shed.

It is permissible to restore load concurrent with the performance of steps (2) and (3) provided frequency is maintained at 60 hertz, other system conditions permit, and synchronization with adjacent systems is not delayed as a result of such action.

The CHAIRMAN. Mr. Bleiweis, as executive director of the Northeast Power Coordinating Council you are head of one of the nine major regional reliability councils established after the 1965 blackout. Incidentally, this is the area pretty much where the 1965 blackout occurred. The 1977 blackout, while far smaller, was nevertheless within the Northeast Council's area.

In your opinion, how do these councils make the electrical power system more reliable?

Mr. BLEIWEIS. May I back up on one comment you made? You said I was head of the Northeast Power Coordinating Council. The NPCC has an executive committee which includes a chairman and vice chairman. I am titled executive director. The head of the council is its chairman.

The CHAIRMAN. You are very modest. In my experience the executive director usually runs it anyway. But go ahead.

Mr. BLEIWEIS. The establishing of the reliability council—and I believe that the Northeast Power Coordinating Council established in January 1966 was the first of these councils—brought together member systems which are interconnected to formally coordinate the planning and operation of their systems.

The Federal Power Commission reports quarterly system disturbances that occur throughout the United States. System disturbances are reported if they affect a predefined number of customers, or megawatts. If those parameters are met then the disturbance is reported.

In these reports there have not been to my knowledge any system disturbances approximating the 1965 system disturbances which was cascading in nature, affecting 30 million people and many hundreds of square miles and many States.

The CHAIRMAN. Have there been instances like 1965 where because of the greater redundancy and the other protections that have been built in, partly perhaps as a result of your operations, these outages have been prevented?

Mr. BLEIWEIS. The cascading of outages have been minimized and brought about by the coordination and also the establishment of——

The CHAIRMAN. I am not asking for a theoretical analysis of it. Have there been specific instances of this occurring such as lightning striking or perhaps sabotage or some other breakdown where you have been able to continue reliable service?

Mr. BLEIWEIS. On the overall interconnected system?

Th CHAIRMAN. Since 1965.

Mr. BLEIWEIS. Yes.

The CHAIRMAN. Can you give us one or two instances?

Mr. BLEIWEIS. In New York State there was an occurence several years ago that was isolated to a relatively small area and cascading was prevented. It was prevented because of criteria procedures that have been instituted, and the installation of certain hardware in the last 12 years.

The CHAIRMAN. In a way even the New York City disaster of last month is an example not only of the failure but also of success inasmuch as it was confined to that area, that it did not cascade and knock out much of the east coast as the 1965 situation did, isn't that correct?

Mr. BLEIWEIS. That is correct.

The CHAIRMAN. You are perhaps in the best position of any witness we have heard so far or will hear to comment on the comparability of Con Ed's weaknesses with those of other utilities. My question is, is the Con Ed situation unique or are other areas in the Northeast similarly threatened with blackouts? For instance, are Boston and Buffalo similarly vulnerable?

Mr. BLEIWIS. The uniqueness in Con Ed's system is the configuration of its franchise area, the size of its area, the electric system configuration, and the population that it serves. It has been pointed out that Con Ed is unique in the sense that it has perhaps the largest underground system of any other system. I cannot compare it with Chicago or Boston completely. Boston's configuration is slightly different. It has an underground system but the configuration of its transmission and generation system is not the same. Therefore, I could not draw a parallel as far as vulnerability of these other systems is concerned.

The CHAIRMAN. But the difference in vulnerability is a matter of degree. The vulnerability is there in every case, is that correct, but it is not quite as vulnerable perhaps as New York?

Mr. BLEIWEIS. As I mentioned earlier, sir, the Federal Power Commission report on system disturbances indicates that vulnerability exists, that there always is a possibility of a system disturbance.

The CHAIRMAN. Yes; I am trying to get some notion as to the differences in vulnerability. I realize you don't want to do arithmetic but is it a factor of 10 or 2? Is New York twice as vulnerable, 10 times as vulnerable as the others because of this concentration, because of the purchasing from the outside, because of the great amount of underground resources that they have?

Mr. BLEIWEIS. I could not comment, sir, because the purchasing activity goes on among many systems.

The CHAIRMAN. We are concerned with trying to determine what the role of the Federal Government ought to be in minimizing electric power vulnerability. You may have heard Mr. Curtis, Chairman of the Federal Power Commission, point out that the House energy bill which passed the House August 5, just before we went into our recess, requires the Federal Power Commission to "prescribe rules relating to electrical reliability within 2 years of the act's enactment." Would you comment on the value of that kind of requirement?

Mr. BLEIWEIS. I do believe that each reliability council does have a set of reliability criteria—perhaps not exactly the same as ours or with the same titles, but essentially they do. Each reliability criteria is defined and designed based on the configuration of the region which adopts it.

As you look across the country, regions vary, the Northeast, Southeast, the West, the Midwest, the Chicago area, the Gulf area, are different, the systems are different, their generation and transmission configurations are different. Therefore, regional criteria would be more conversant with the electric system.

A national standard in my view, should be avoided.

The CHAIRMAN. You make that flat statement that a national standard should be avoided but aren't there some elements that would apply to all areas even though it couldn't be in the same detail and would not precisely be the same?

Mr. BLEIWEIS. It could be, yes. Yes; there would be elements that would be common across all the electric systems.

The CHAIRMAN. What about the timing? One of the problems is of course when the system goes out, how long is it going to be out. If New York had been out 15 minutes or a half hour it would not have been so bad. If it had been out a couple of weeks it would have been an enormous disaster. The time it takes to restore service is very significant.

It has been suggested that utility companies decrease restoration time in a major emergency by maintaining stockpiles of especially vulnerable components. To what extent do companies maintain stockpiles of components?

Mr. BLEIWEIS. If I may define that term as spare parts, the question of spare parts has been on utility system planning consideration since the beginning of utility systems. An electric system is so complex and it is made up of so many components, from the very large generator and turbine to pumps, fans, and motors and relays and wire and on and on and on, that spare parts is a requirement for the system to review. But then the cost-benefit ratio as to what kind——

The CHAIRMAN. In other words, what items could be stored without excessive cost?

Mr. BLEIWEIS. Probably the smaller ones.

The CHAIRMAN. Without cost getting out of hand so that obviously you don't have the cost-benefit justification. Is there an economic list? Is there a way in which utilities could advise the council to have certain items that might be useful in the event of a need to restore power that wouldn't be too expensive?

Mr. BLEIWEIS. Advised by an agency?

The CHAIRMAN. Advised by your agency and others.

Mr. BLEIWEIS. I think the spare parts question is specifically theirs, the system itself. Again the configurations of their system, they are aware of the number of parts that they have on their system that are duplicated because of duplicate substations, and because of their experience the systems, I believe, are in the best position to determine spare part requirements.

The CHAIRMAN. They may be doing a fine job. At the same time we find in the past these systems don't work the way they ought to. I think we ought to know what they have in reserve, what their stockpile of spare parts is and perhaps in some cases, it might be called to their attention that they are lacking spare parts that might be very useful and which aren't too costly.

It has been suggested some financially hard-pressed utility companies neglect maintenance. The report of your task force on system protection includes a minimum maintenance schedule for protective relays in associated services. Do most companies in your council follow the schedule?

Mr. BLEIWEIS. The member systems adopt these criteria. To the best of my knowledge the criteria when adopted is abided by.

The CHAIRMAN. Have they adopted them?

Mr. BLEIWEIS. I am not particularly aware.

The CHAIRMAN. Should you not be aware of that?

Mr. BLEIWEIS. The criteria have been adopted, yes. I am sorry.

The CHAIRMAN. Then is there any need to impose a maintenance requirement or do you think that they are following through on it? Adopting criteria is one thing and meeting criteria is something else.

Mr. BLEIWEIS. I agree. The member system adopts the criteria. All of these criteria I outlined earlier are adopted by the member systems.

The CHAIRMAN. My question is whether they meet the criteria and you don't know that?

Mr. BLEIWEIS. To the best of my knowledge they do.

The CHAIRMAN. I understand you are an area director of the Defense Electric Power Administration which comes under the Department of the Interior, is that correct?

Mr. BLEIWEIS. Yes, sir.

The CHAIRMAN. Do you think that DEPA performs a useful function in peacetime?

Mr. BLEIWEIS. The Defense Electric Power Administration—I was appointed to my post in October of 1976—to the best of my knowledge, of all of the agencies that you mentioned earlier, the proliferation of agencies in the emergency arena or activity is the only one that has electric power as its specific function. It is the agency completely and totally to the best of my knowledge in the electric power business. It does serve a useful function. DEPA established the National Electric Reliability Council region as its region so that DEPA regions coincide with the National Electric Reliability Council regions. The area directors that are in place, the major utility representatives, the liaison people, are all utility system people actively engaged in the utility business. Therefore, the Washington office of DEPA does have this in-place net work of utility people that they can draw on for information during peacetime or during nondisaster time and during a national emergency time.

The CHAIRMAN. How active is it? It is a very small agency.

Mr. BLEIWEIS. Yes. It does distribute notices, and information bulletins to the area directors. It sponsors training exercises. In fact, we had one several months ago where the area directors were brought together and simulated exercises were put forward with simulated responses requested.

In the Northeast Power Coordinating Council we have three area directors, myself, a person in New York, and a person in New England. We sponsored an area exercise in April of this year at which time we brought together in the Northeast the several people who are responsible for the emergency preparedness posture. The program essentially requested that these individuals explain what they do. We had an exercise at the very end of the meeting. We went through an exercise type of procedure that was established by the DEPA organization.

The CHAIRMAN. What would your responsibility as a DEPA director be in response to national emergency?

Mr. BLEIWEIS. Basically and in very broad terms——

The CHAIRMAN. First, if the President declares a national disaster?

Mr. BLEIWEIS. I understand that all of these responsibilities are covered by several Executive orders. Very briefly, there is a manpower allocation responsibility indicating that through our very efficient network of communications in the NPCC region we can determine where manpower would be necessary. I would coordinate that information with the other two area directors and also with the DEPA organization here.

There is also the point of claimancy of equipment. If equipment is necessary the DEPA organization then has some mechanism to obtain equipment for the required system. I believe those are two basic roles, without getting into a lot of other detail.

The CHAIRMAN. How can such a small organization with a staff of three retain control over the activities of field organizations?

Mr. BLEIWEIS. The organization behind it, the area directors that exist throughout the United States, the utility people that are in place, the area directors and the other people within the formal DEPA organization out in the field, the WOCs, if you will—without compensation I think it is called—that gives the DEPA organization here some of the additional manpower. But certainly the staff here is small as you indicated.

The CHAIRMAN. Thank you very much, Mr. Bleiweis. You have been a highly competent witness. You have aided us greatly.

Our final witness today is Lt. Gen. Woodrow W. Vaughan, Director of the Defense Logistics Agency. General Vaughan has had considerable experience in the field of materiel, logistics, and business in the U.S. Army. He served as Senior Logistics Advisor to the Korean Army; Deputy Chief of Staff for Logistics for the Army in the Pacific and in Europe; Commanding General of the U.S. Army Natick Laboratories; and Director of the Defense Supply Agency.

General Vaughan, it would be appreciated if you could limit your oral statement to 15 minutes. Your full written statement will be printed in the hearing record.

We are delighted to have you here. If you will identify your colleagues.

STATEMENT OF LT. GEN. WOODROW W. VAUGHAN, DIRECTOR, DEFENSE LOGISTICS AGENCY, ACCOMPANIED BY COL. JACK PRUETT, DIRECTOR OF INDUSTRIAL SECURITY, AND JERVIE FOX, DIRECTOR IN CHARGE OF SUPERVISION OF THE INDUSTRIAL FACILITIES PROTECTION PROGRAM

General VAUGHAN. Mr. Chairman and members of the committee, I am here in response to your invitation regarding the Defense Industrial Facilities Protection Program. I have with me Colonel Pruett, Executive Director of Industrial Security in my headquarters, and Mr. Fox, Chief, Industrial Facilities Protection Program Division, who is directly charged with the supervision of the industrial facilities protection program.

I have submitted a statement for the record but I should like to highlight some significant portions for you and respond to any questions you may have.

The CHAIRMAN. Very good.

General VAUGHAN. The purpose of the Defense Industrial Facilities Protection Program is to encourage selected industries—that is, those important to defense production, defense mobilization or national security—to protect their facilities from sabotage, espionage, and other hostile or destructive acts, to minimize the effect of attack damage and to develop plans for restoration of production.

The Defense Logistics Agency provides these facilities with advice and guidance concerning the application of physical security and emergency preparedness measures needed to protect against these contingencies.

A basic tenet of the Defense Industrial Facilities Protection Program is that the responsibility for the protection of property is that of the owner. Accordingly the Department of Defense does not assume re-

sponsibility for the physical security of privately owned facilities, or federally owned facilities under the control of any other Federal department or agency, or of facilities owned by any State or political subdivision of any State.

The Industrial Facilities Protection Program and its predecessor, the Industrial Defense Program, evolved from responsibilities assigned to the Secretary of Defense by the Internal Security Act of 1950, Executive Order 10421, providing for "the physical security of facilities important to national defense," and Executive Order 11490, assigning emergency preparedness functions to Federal departments and agencies.

The Assistant Secretary of Defense (Comptroller) establishes policy through publication of DOD directive 5160.54, "Industrial Facilities Protection Program—DOD Key Facilities List." The Defense Logistic Agency executes this policy.

As a basis for managing and administering this program, a list of vital industrial facilities has been developed known as the DOD Key Facilities List. The Key Facilities List is prepared under the policy direction of the Secretary of Defense and is compiled, published and distributed by the Defense Logistics Agency.

The criteria and categories of importance of facilities in the key facilities list—developed by the Joint Chiefs of Staff—are used as the basis by which DOD components—the military departments and defense agencies—identify facilities that should be on the list because of their importance to our national security.

The key facilities list currently contains 3,290 facilities. It is published annually by the Defense Logistics Agency and distributed to interested Federal agencies. It is kept current based on update data from DOD components. The next publication is scheduled for October 1, 1977.

Once a facility is placed on this key facilities list our personnel trained in industrial security inspect the facility and provide recommendations to management to improve the security of the facility. Recommendations generally cover emergency procedures, facility security, fire control, and restoration plans. Since there is no provision of law to require compliance, management action is voluntary.

To give you some idea of the program let me summarize activity for the year July 1976 to June 1977:

Facilities surveyed, 2,204; recommendations made, 7,772; recommendations implemented, 1,490; partially implemented, 546; funds expended by management to implement our recommendations, approximately $12 million.

In addition to the inspection we make of these key facilities, we also provide other services to assist management in providing improved security to its facilities. These include: (a) training of its people at our Industrial Security Institute in Richmond; (b) based upon discussion with industry representatives, we are developing a traveling training team to give onsite training; (c) providing planning guides, handbooks and other publications explaining how to improve planning for and executing plans to improve facility security.

Within the context of our total program, I have been asked to address specifically our program as it relates to electric power facili-

ties. There are about 900 electric power facilities, owned by some 138 electric power companies, on the Key Facilities List. Incidentally, I believe there are about 3,600 electric power companies in the United States, so our coverage represents only a small part of the power industry.

An analysis of surveys made during the past 12 months reflects a total of 2,685 recommendations made to the electric power industry with almost 500 being totally or partially implemented at a cost of over $2 million. Since our program provides only that electric power facilities generally be surveyed every 4 years, these figures cover only 25 percent of these facilities on the Key Facilities List.

Electric power facilities represent a little more than 25 percent of the total number of facilities on the key facilities list. Our surveys of these facilities result generally in the same sort of recommendations we make for other facilities, and the response of the electric power facility management to these recommendations is generally typical of other industry segments we survey.

I might say, insofar as response is concerned—this applies generally to all industry as well as to the power companies—it is quite good. I think certainly over the last 5 or 6 years the interest on their part has increased, I suppose due in large measure to some of the difficulties which have arisen. Nonetheless we find most of the companies are interested and responsive to what we are trying to do.

I hope I have given you some useful summary of our program. I shall be delighted to try to answer any questions you have.

[The complete statement of General Vaughan follows:]

STATEMENT BY LT. GEN. WOODROW W. VAUGHAN, DIRECTOR, DEFENSE LOGISTICS AGENCY

Mr. Chairman and members of the Committee, I am here in response to your invitation to provide information regarding the mission and functions of the Defense Industrial Facilities Protection Program.

The Defense Logistics Agency is directly responsible to the Secretary of Defense for providing supplies and rendering services used in common by the Military Services. The mission of the Agency is to:

(*a*) Provide effective logistic support to the operating forces of all Military Services in war and peace, and to Federal civil agencies as assigned.

(*b*) Provide that support at the lowest feasible cost to the taxpayer.

(*c*) Provide contract administration services in support of the Military Departments, other DOD components, the National Aeronautics and Space Administration, and other government agencies assigned.

Included in this mission is responsibility for administering the Defense Industrial Facilities Protection Program.

The purpose of this Program is to encourage selected industries, (i.e., those important to defense production, defense mobilization, or military operations designated as DOD "Key Facilities") to protect their facilities from sabotage, espionage and other hostile or destructive acts, or to minimize the effect of attack damage and to develop plans for restoration of production. The Defense Logistics Agency provides these facilities with advice and guidance concerning the application of physical security and emergency preparedness measures needed to protect against the above-cited contingencies. A basic tenet of the Defense Industrial Facilities Protection Program is that the responsibility for the protection of property is inherent in ownership. Accordingly, the Department of Defense does not assume primary responsibility for the physical security of privately-owned facilities, of federally-owned facilities under the control of any other Federal department or agency, or of facilities owned by any State or political subdivision of any State. That responsibility remains with the owning agency. The Assistant Secretary of Defense (Comptroller) through the Deputy

Assistant Secretary of Defense (Security Policy) establishes policy through publication of DOD Directive 5160.54, "Industrial Facilities Protection Program—DOD Key Facilities List." The Defense Logistics Agency executes implementation of policy through the mechanism of the DOD Key Facilities List and the voluntary cooperation of management of the key facilities.

The Industrial Facilities Protection Program, and its predecessor, the Industrial Defense Program, evolved from responsibilities assigned to the Secretary of Defense by the Internal Security Act of 1950, Executive Order 10421, "Providing for the Physical Security of Facilities Important to National Defense," and Executive Order 11490, "Assigning Emergency Preparedness Functions to Federal Departments and Agencies."

Within the Department of Defense, the Office of the Assistant Secretary of Defense (Comptroller) through the Deputy Assistant Secretary of Defense (Security Policy):

(*a*) Provides overall policy direction, guidance and advice for the Department of Defense Industrial Facilities Protection Program, and

(*b*) Represents the Secretary of Defense with other Federal Departments and Agencies and with industry when required.

As a basis for managing and administering the responsibilities indicated above, a list of vital industrial and related facilities has been developed known as the "DOD Key Facilities List" (KFL).

The Key Facilities List is prepared under the policy direction of the Secretary of Defense and is compiled, published and distributed by the Defense Logistics Agency. The criteria and categories of importance of facilities in the Key Facilities List are developed by the Joint Chiefs of Staff and are used as the basis by which DOD components, (the Military Departments and Defense Agencies) identify facilities that should be on the list because of their importance to our national security.

The Key Facilities List currently contains 3,290 facilities. These facilities fall into nine broad categories:

Communications, Electric Power, Transportation, Manufacturing, Water, Warehouse and Storage, Research and Development, Transportation Pipeline and Petroleum Storage.

The Key Facilities List is published annually by Defense Logistics Agency and distributed to interested Federal Agencies. It is kept current based on update data from the DOD components. The next publication is scheduled for 1 October 1977.

As I stated earlier, it is the responsibility of the Military Departments and Defense Agencies to determine which industrial facilities will be placed on the Key Facilities List. Once the list is published, the Defense Logistics Agency assumes the responsibility for conducting physical protection surveys of the facilities.

The purpose of the Industrial Facilities Protection Program survey is to assess the overall vulnerability of a facility to hostile or disruptive actions, to recommend courses of action that can meet the varying threats to which each type of industry or facility may be exposed, to encourage industry to take action to reduce vulnerability to these threats, and to provide for rapid restoration of such capabilities should disruption occur.

Defense Logistics Agency executes this mission through its nine Defense Contract Administration Services Regions (DCASRs). Each region has a given geographic responsibility and a staff to accomplish its missions. Assigned to each of these regions are Industrial Security Representatives who physically survey, on a regularly-scheduled basis, the industrial facilities on the Key Facilities List which have elected to participate in the Program.

The first step of the survey is for management of the facility to be advised of the selection of their facility for inclusion in the Defense Industrial Facilities Protection Program and the Key Facilities List. If the facility elects to participate, management is notified when surveys are scheduled. This, in addition to being a courtesy measure, affords the facility an opportunity to prepare for the survey. Prior to the survey, the Industrial Security Representative reviews all available information about the facility and at the appointed day, he physically visits the facility. After an entrance interview with management, he conducts the survey using a list of questions as a guide to his survey.

Upon completion, he discusses his findings and recommendations with management in an exit interview. A letter fully discussing the survey findings is sent to the facility within 30 days of the visit. Recommendations concerning the ap-

plication of physical security and emergency preparedness measures made as a result of a survey, if implemented, will result in reducing the overall vulnerability of a facility.

While costs are not the final determinant in recommendations, every effort is made to achieve a practical balance between cost and a reasonable degree of facility protection.

Implementation of our recommendations is voluntary since there is no regulatory provision upon which to require compliance.

Generally, survey recommendations are divided into four general categories:

I. Emergency Procedures
II. Restoration Plans and Preparation
III. Fire Prevention and Control
IV. Facility Security

Typical of the most common recommendations made to companies are:

(*a*) Prepare or update written emergency procedures.
(*b*) Prescribe in writing the security policy for the facility.
(*c*) Provide a guard or security force to include an auxilliary guard force.
(*d*) Establish an entry control identification system.
(*e*) Install perimeter barriers.
(*f*) Install protective lighting along perimeter barriers.
(*g*) Establish liaison with local fire and police department.
(*h*) Designate and mark shelter areas.

To summarize one year's experience, here is a table that indicates actions taken on recommendations made between July 1976 and July 1977:

Recommendations made July 1, 1976 to June 30, 1977	7,772
Total number of recommendations implemented	1,490
Total number of recommendations partially implemented	546
Funds expended by management to implement or partially implement these recommendations	$11,658,682
Percent of recommendations implemented	19
Percent of recommendations partially implemented	7

In addition to the nationwide survey program, the Defense Logistics Agency has been actively pursuing measures to improve the Industrial Facilities Protection Program.

A booklet entitled, "Industrial Defense Against Civil Disturbances, Bombings and Sabotage" has been made available to all facilities on the Key Facilities List. This is a planning guide prepared to assist management in developing a comprehensive industrial defense plan to reduce vulnerability to hostile acts and protect people and property during an emergency. Widest dissemination has been made of this booklet and it is still available to industry.

We are distributing a copy of a booklet developed by the Law Enforcement Assistance Administration entitled, "Prevention of Terroristic Crimes: Security Guidelines for Business, Industry and Other Organizations." It will be sent to each facility on the Key Facilities List. The purpose of the booklet is to alert executives and other concerned groups to the potential threats posed by terrorists, and to present various techniques and precautions that should be employed to prevent these types of violent acts.

A handbook to be distributed to industry further amplifying the Industrial Facilities Protection Program has been completed in draft and will soon be finalized for printing. This is another step in our determination to maintain a close and continuous flow of information between our Agency and the facilities in the Program.

At our Defense Industrial Security Institute at Richmond, Virginia, we present nine classes on The Defense Industrial Facilities Protection Program each year which are open for participation by management of Key Facilities and representatives of Federal agencies with a responsibility for planning with industry. Response has been most favorable and we believe this educational effort has a potential for increasing industry's understanding and cooperation in supporting this Program.

Two major conferences have been held at the Defense Logistics Agency this year specifically to discuss the Industrial Facilities Protection Program and the Key Facilities List. These conferences included representatives from all government agencies who use the Key Facilities List and contributed to a better and more viable program.

So far I have described the DOD Industrial Facilities Protection Logistics Agency.

I have been asked to address specifically our program as it relates to the Electric Power facilities.

There are 900 electric power facilities, owned by 138 electric power companies on the Key Facilities List. Incidentally, there are about 3,600 electric power companies in the United States, so our coverage represents only a small part of the power industry.

An analysis of surveys made during the past 12 months reflects a total of 2,685 recommendations made to the electric power industry, with almost 500 being totally or partially implemented at a cost of over $2 million. Since our program only provides that electric power facilities generally be surveyed every four years, these figures cover only 25 percent of the facilities on the KFL.

Categories of recommendations	Total recommended	Total implemented		Estimated cost
		All	Part	
Part I	912	103	14	$30,394
Part II	103	13	3	3,000
Part III	107	31	1	109,016
Part IV	1,563	317	32	2,042,102
Total	2,685	464	50	2,184,512

Briefly summarizing, electric power facilities are a little more than 25 percent of the Key Facilities List. Our surveys of these facilities result in the same general sort of recommendations we make for other facilities and their response to these recommendations are generally typical of other segments we survey.

I hope this presentation has been helful to you.

The CHAIRMAN. General, you certainly have. You have ended on a hopeful and constructive note. I wonder about that. You say that the participation in this program is voluntary on the part of these so-called key facilities.

On page 6 [see p. 114], you have some interesting statistics. At the bottom of the page, you say the percent of recommendations implemented is 19 percent, or about 1 out of 5. The percent of recommendations partially implemented, 7 percent. In total, those that are fully or partially implemented are only 1 out of 4. Three out of four apparently are not. For most scores, that would be considered a rather feeble record.

You were a basketball player; you were captain of the Army team. It is like missing a hundred free throws in a row.

General VAUGHAN. I wouldn't stay on the team if that happened.

The CHAIRMAN. What about that record? Does that look as though you are not getting cooperation?

General VAUGHAN. I think the point I was trying to make was that the interest and participation has been increasing in recent times, if you compare it to an earlier period.

The CHAIRMAN. It must have been horrendous earlier, then.

General VAUGHAN. I think that the question is what an industry will spend to protect itself from disasters or concerns that are not readily apparent to them——

The CHAIRMAN. I assume your recommendations take into account the cost. In other words, you don't make recommendations that are obviously so costly that they couldn't afford it or that would have a clearly negative benefit-cost ratio.

General VAUGHAN. We do try to make recommendations that we think are within the realm of possibility. I must say, however, that

our people are not totally familiar with the financial position of a company or how much that company should or could spend but we don't make recommendations that are outrageous. We try to confine ourselves to reasonable recommendations.

The CHAIRMAN. Would it not be reasonable to conclude that this failure to implement 3 out of 4 recommendations suggests a very high degree of vulnerability? Under the law, that is all you can do, recommend, but there seems to be a very high degree of vulnerability. Every one of these recommendations, I presume, is to reduce the vulnerability and increase reliability, and most of them have not been carried out.

General VAUGHAN. You could consider it as that and you might also consider it a reflection of the degree to which people generally assess the likelihood of terrorism, sabotage, or disorders of that variety. I don't know which comes first. I think you first would have to have a recognition of that problem.

The CHAIRMAN. This area, the utilities, it seems to me, is one area where we have a lot of experience of the heavy hand of Government. They can charge only a certain rate. That is the most significant decision that a private business can make—what price they want to charge. With the utilities, the utility commissions fix the price.

It seems to me where you have reliability, where it is a matter of survival of the community, particularly if it has national security implications, that the Government has a much clearer area of discretion and responsibility under our system.

So it is hard for me to understand why we have a business here which is regulated and the price is fixed by the Government but the Government says: "No, we won't get into requiring you to have a system which is sufficiently reliable so that you can protect your customers against interruption."

General VAUGHAN. I would say this is a legislative area for the Government to consider whether it wants to impose some sort of——

The CHAIRMAN. Can you give us some notion of the vulnerability to sabotage? You say all you can do is make recommendations; you can't implement them. Can you give us some notion as to the vulnerability when you say a determined, skilled, competent adversary, whether it is a terrorist group or nation or whatever, could wreak a considerable amount of damage on our system nationwide, not just one area?

General VAUGHAN. I will try to answer that; but it is purely my own personal observation; and there, of course, is a good deal of information I am not privy to. My guess is that it would require a very sizable, highly disciplined, organization to wreak great havoc.

The CHAIRMAN. You say "a very sizable." Obviously, it would seem to me, if a couple of lightning bolts could knock out Con Edison, a couple of bombs might have done almost as much damage. With 10 people in that area and maybe a few hundred around the country timed properly, they could bring the country to its knees almost.

General VAUGHAN. I think a small, highly disciplined, highly organized group could cause a lot of damage locally against an individual production facility, against a bridge, against a power facility, against a key communications facility. In order for that to reflect itself in some sort of wide national disaster, however, it seems to me that it is not just

a few, that it would require a large enough group of people that it would seem to me some of our investigative organizations would know about it.

The CHAIRMAN. What I am getting at is: T. K. Jones, of Boeing, testified before this committee that we were very vulnerable to nuclear attack, far more than the Soviet Union. He says in the Soviet Union the defense system is much more adequate, they have hardened their sites. Conceivably they could strike first, evacuate their cities. He says only 2 or 3 percent of their people would be killed compared to 50 percent of ours.

In that event, it would be obviously a great loss on our part and, in a sense, to an extent it would be a victory for them.

It seems to us, in looking this over, why worry about a nuclear strike? Could they not, by simply knocking out all of our utilities in a concerted way, render us pretty feeble or, as a matter of fact, coordinate with a nuclear strike?

The argument that we could harden all of our industrial sites may be the case but, looking at the Soviet Union, they could be vulnerable to an attack on their utility operations.

Electricity is so much at the heart of our economy today. Even a city like New York, which is not a manufacturing city—all of the elevators stopped, all of the mass transit stopped, lights went out. Of course, almost every machine operates on the basis of electrical energy. All of a sudden the whole system grinds to a halt.

General VAUGHAN. I think there is much in what you say. Of course, you have to realize that the facilities which I deal with are limited to those that have some direct impact on defense needs, whereas there may be many other facilities, or indeed, larger numbers of those already on our list that could have an enormous effect on the economic life, the social life, of the country.

I must say that it might be well if there were some sort of national list, if you please, of facilities that would be a key to our economic and societal well-being. Then at least, we would know what they are and whether or not the Federal Government would see fit to involve itself financially in providing for their security or would provide at least some advice on what these facilities could do for themselves. Certainly, the industries in which the Government is already heavily involved in regulation and rate setting could become a factor in that whole process. But, there is no question that there is lacking some sort of national key list, if you please, of facilities which would have the greatest impact on our continued survival and well-being.

The CHAIRMAN. What you have done is pick out what you call key facilities essential for the maintenance of a national economic effort. In each key facility, provision for auxiliary power to meet minimum essential needs—is the term you use—is examined in the protection program survey. What is meant by "minimum essential needs" in that case?

General VAUGHAN. Mr. Fox might want to amplify this. I think it simply means: Is there enough power for that facility to keep itself going, not necessarily in full production, but at least enough to keep the production lines open, keep the power generated?

The CHAIRMAN. Mr. Fox, do you have any rule of thumb—50 percent, 40 percent, 90 percent?

Mr. Fox. No rule of thumb per se, Mr. Chairman. However, when we use the term "minimal needs," General Vaughan has pretty well outlined what we are talking about. We might be more specific and say we are talking about such things as adequate lighting in the dispensary or medical station at the facility, sufficient power to keep the computer system cool so that it does not burn up, sufficient power for lighting the interior of the building to assure the safety of the people in the building.

The CHAIRMAN. How do you determine that? Could you have the elimination of 50 or 60 or 80 percent of your power and still be able to operate your elevators or would that be considered essential? How do you know you could keep lighting in places unless you have generators?

Mr. Fox. As far as operation of the elevators is concerned, we feel that the minimal needs would not necessarily include the elevators.

The CHAIRMAN. How about the subway system?

Mr. Fox. Minimal needs certainly would not keep the subway system running.

The CHAIRMAN. How about the facilities at the police and fire departments? You are considering the industrial operation?

Mr. Fox. That is right.

The CHAIRMAN. When you talk about "facilities," you are not talking about utilities; you are talking about the United States Steel operation in Gary?

Mr. Fox. That is right, sir.

General VAUGHAN. We might be talking about a power facility which is directly associated with an industrial capability. We do have 900 powerplants on our list.

The CHAIRMAN. Can you give us some more specific notion of how you pick a key facility? Would you say the Ford Motor Co., plant is a key facility or an aluminum company's operation? Obviously we can get along without buying automobiles.

General VAUGHAN. The military departments and defense agencies identify the industrial plant on which they rely for military equipment. If it meets the criteria specified by the Joint Chiefs of Staff——

The CHAIRMAN. If they are building ships, missiles, tanks, planes?

General VAUGHAN. Ammunition, electronic equipment; that is the kind of plant that would be on our list.

The CHAIRMAN. What do you do to provide auxiliary power in those cases? We have a plant in Chippewa Falls, Wis., which produces artillery shells. That would be considered, I presume, a key facility.

General VAUGHAN. It would be.

The CHAIRMAN. If that key facility would be dependent on the local utility, then the local utility has to be able to provide sufficient power to that company so that it can continue to function?

General VAUGHAN. When our people visit the plant, they would ask: "Do you have any emergency power? What will it do? Will it keep the production lines going? Can you operate the plant? How much power does it take?" If the answer is that they don't have any or enough emergency power, then that would be one of the recommendations we would make to that outfit—that they should install emergency power sufficient to keep a production line going.

The CHAIRMAN. They will say: "If you will pay for it we will put it in but we don't have that kind of money."

General VAUGHAN. As I remarked initially, the Federal Government does not assume the responsibility for protection and, if it were not voluntary on their part, then it would just be one of those recommendations that was never implemented.

The CHAIRMAN. That obviously is not part of your defense contract; there is no way of charging that to Government?

General VAUGHAN. There would not be. Whatever they spend money for will have to be paid for by somebody.

The Chairman [continuing]. Provided they were exclusively producing for you. There are very few who are exclusive defense contractors.

General VAUGHAN. Most of that cost would be passed on to somebody else.

The CHAIRMAN. Including the stockholders in some cases?

General VAUGHAN. Or customers.

The CHAIRMAN. Yes, or the customers.

In your view should the Government take on greater responsibility with respect to security and emergency planning of key facilities? Should implementation of DLA recommendations be made mandatory?

General VAUGHAN. As I stated earlier, I believe there is some merit to a national key facilities list, not just limited to those directly associated with the defense production, military production. However, I don't believe I can give you a yes or no answer as to whether I think our recommendations ought to be mandatory. I think this involves the whole structure of prices and private enterprise. Unless I had some more evidence, I really at the moment would be hesitant to make our recommendations mandatory.

The CHAIRMAN. From your survey result how would you characterize the emergency preparedness and security of key facilities in general and electric utilities specifically? Are these facilities adequately prepared, in your view, and secure against conceivable contingencies?

General VAUGHAN. Again this is a judgmental thing, based upon talking to people and reading reports that we have. My general summary would be that against small intruders, trespassing, small rioting that might occur—not from some organized effort, but a spur of the moment thing—I think their security probably is generally fairly good. They must rely on local police authority and local law enforcement agencies to enter that very early. Against a very determined, organized, tough band of terrorists, my guess would be that very few of our facilities are immune.

The CHAIRMAN. What should be done to better prepare for emergencies?

General VAUGHAN. The first thing we have to do if we really are convinced that there is a serious threat is to convey that to the American people—to society generally—that there is a legitimate threat here, there is something that people should be concerned about. Then, I think, people would begin to act in their own self-interest and would see the necessity of it.

I think just to say, you know, we ought to have mandatory standards and spend a lot of money to hire a lot of people, to put in standby

power, to hire more guards to make it more difficult to enter a place would be difficult to bring about unless you convince society generally that the threat of a fairly large terrorist activity is likely.

The CHAIRMAN. How does your organization interact with other Federal agencies with responsibilities for emergency preparedness on civil defense? For instance, does DLA coordinate its efforts with DEPA, FPC, FPA, and DCPA?

General VAUGHAN. We do. We meet with them regularly. In fact, we have a new memorandum of understanding which has just been worked out tentatively between DEPA and the Defense Department. It has not been signed, but I assume that now that this is in motion there will be some more formal coordination between our activity and DEPA. We do coordinate and meet with the Civil Defense Preparedness Agency, also the agency within the General Services Administration.

The CHAIRMAN. Thank you very, very much, General Vaughan. Gentlemen, we are very grateful to you. You have made a most helpful and clear record.

Let me just say in conclusion that the Joint Committee's hearings on emergency preparedness in the electric power industry are concluded as of your testimony. I think these hearings have given the committee a useful insight into the causes of the recent New York blackout. More importantly, the hearings have shown that the New York blackout is something that could happen, in my judgment, anywhere. Today's electric utilities are highly complex and very vulnerable to sabotage and natural disasters.

The impression I received from these hearings is that we can thank the talented people in this industry that such occurrences are not more common. A crippling blackout could occur anywhere in the country.

We have seen Federal programs to prevent or cope with disasters suffer from fragmentation and disorganization. We find one agency responsible for setting rules on how to assure a reliable supply of electricity while another is responsible for communication during a power failure and others provide emergency equipment and disaster relief.

Even in setting security standards, we find that one agency sets standards for hydroelectric power stations while another sets standards for nuclear facilities. And no agency has this authority for coal-, gas-, or oil-burning plants. The interagency coordination problems must be phenomenal. Of course, many of them are not solved.

Our current Federal standards are also inadequate. In fact, we have been told today that the Federal agency with responsibility to regulate electric utilities has set no standards for reliability.

I am more convinced than ever that consolidation of Federal disaster preparedness and relief functions is vitally necessary. That is the only way that the confusion about which agency should properly exercise which function can be clarified.

As I say, we have a fearsome vulnerability, pathetically inadequate resources devoted to preventing interruption of service which could be so critical to our society. I think a big job for all of us is to get to work on it.

Thank you very much. The committee stands adjourned.

[Whereupon, at 12:25 p.m. the committee adjourned.]

APPENDIX I

CARROLL H. DUNN

Born: August 11, 1916, Lake Village, Ark. Marital status: Married, two children. Education: University of Illinois (BS in Mechanical Engineering) 1938; State University of Iowa (MS in Civil Engineering) 1947.

Joined Consolidated Edison Company October 1, 1973 as Vice President, Construction. Since September, 1974 has been Senior Vice President, Construction, Engineering and Environmental Affairs.

Prior to joining Consolidated Edison, he spent 35+ years in the U.S. Army retiring on September 30, 1973 as a Lieutenant General. His last assignment was as Director, Defense Nuclear Agency, Department of Defense, Washington, D.C. Prior to that, he was Deputy Chief of Engineers, U.S. Army, Washington, D.C. from August 1969 to August 1971. From February 1966 to October 1967, he served as Director of Construction and then as Assistant Chief of Staff for Logistics, Military Assistance Command, Vietnam. In these assignments, he was directly responsible for the planning required to develop ports, airfields, roads, cantonments and other facilities needed to support the U.S. and free world forces in Vietnam.

Other assignments have included: Deputy Chief of Staff, 8th Army, Korea; Division Engineer, Southwestern Division U.S. Army Corps of Engineers in Dallas, Texas; Director of Construction for the Titan II Ballistic Missile program; Director of the Waterway Experiment Station, Vicksburg, Mississippi, and various assignments with combat forces including 11 months of combat in Europe during World War II.

BARDYL R. TIRANA

Mr. Tirana heads a Pentagon staff, eight regional offices, and the DCPA Staff College at Battle Creek, Michigan.

By law, civil defense is a joint responsibility of the Federal, State and local governments. Mr. Tirana will define major objectives of the program and provide guidance and assistance to carry out civil defense missions with active cooperation of State and local authorities.

His duties also include close liaison with the military services, and management of the national attack warning system and a series of national communications systems between governments.

Mr. Tirana, 39, has been a practicing attorney since his graduation from the Columbia University Law School in 1962. He also holds a 1959 A.B. degree from Princeton University.

His legal experience includes service as a trial attorney in the Admiralty and Shipping Section, Civil Division, of the U.S. Department of Justice from 1962–64, and private practice since then in two Washington law firms; Amram, Hahn and Sundlun (1956–72), and Sundlun, Tirana and Scher (1972–77).

Mr. Tirana served as an elected member-at-large on the District of Columbia Board of Education from 1970–74, and is a trustee of the National Repertory Theatre Foundation and a director of The Washington Ballet. He also was a director and secretary of two firms: Executive Jet Aviation, Inc., in Columbus, Ohio, and Technics, Inc., of Alexandria, Virginia.

The new DCPA Director was born in Geneva, Switzerland, on December 16, 1937. He is married to the former Gail Richards of New York, and they have two daughters, Kyra and Amina, born in 1965 and 1967, respectively.

CHARLES B. CURTIS

Charles B. Curtis was born April 27, 1940, in Upper Darby, Pennsylvania. He received a B.S. from the University of Massachusetts in 1962 and an LL.B. from Boston University Law School in 1965.

From 1965 to 1967 Curtis was a staff attorney, then supervising staff attorney, in the Office of the Comptroller of the Currency. From 1967 to 1971 he served on the Securities and Exchange Commission, as special counsel to the Division of Trading and Markets; chief of the Branch of Regulation and Inspections; and attorney-advisor (finance).

Curtis was counsel to the House Committee on Interstate and Foreign Commerce from 1971 to 1976, with special emphasis on energy and securities regulation. From November 1976 to January 1977 he worked for the Carter-Mondale transition team as liaison to the Federal Energy Administration. Since January he has been with the Washington law firm of Van Ness, Curtis, Feldman & Sutcliffe.

JOAN M. DAVENPORT

Ms. Davenport, 34, was born and raised in northern New Jersey, and attended local grammar and secondary schools. In 1964 and 1968, she received Bachelor's and Master's degrees from Georgetown University in Washington, D.C. During graduate studies Ms. Davenport was employed as an economist by the Conference on Economic Progress in Washington, D.C.

In 1969, Ms. Davenport joined the Federal service as an economist in the Division of Energy and Minerals of the Bureau of Land Management. In this position, she participated in systemizing and computerizing an economic evaluation system for leaseable energy minerals both onshore and offshore. She was also charged with development of initial procedures for compliance with the National Environmental Policy Act within the Bureau of Land Management.

Shortly after its creation, Ms. Davenport was employed by the Office of Technical Analysis of the Environmental Protection Agency as staff economist. She subsequently served as Deputy Director and Acting Director of that office.

In 1975, Ms. Davenport joined the Office of Energy Conservation and Environment of the Federal Energy Administration in the capacity of Director of the Office of Environmental Assessment. Her responsibilities at the Federal Energy Administration included analysis of the energy impact of environmental regulations pertaining to resource development, and the environmental impacts of energy resource development strategies.

Ms. Davenport is married to Matthew P. Daley. She resides in Washington, D.C.

JULIUS BLEIWEIS

Mr. Bleiweis is currently executive director of the Northeast Power Coordinating Council, a member system supplying 98 percent of the electric requirements in the Northeast, New York, and the Canadian provinces of Ontario and New Brunswick. He has been with the council since its organization in 1967. He is also a member of the Federal Power Commission's task force on the New York blackout, and has been area director of the Defense Electric Power Administration since October 1976.

Previous to his position with the Northeast Power Coordinating Council, Mr. Bleiweis was distribution editor for Electrical World, a trade publication, from 1963 to 1967. From 1946 to 1963 he was employed as assistant engineer with the Consolidated Edison Company to design generating stations and substations.

Mr. Bleiweis is a former member of the Institute of Electrical and Electronics Engineers and has written several technical papers for the Institute. He is also co-author of a chapter in the *Electrical Engineer's Handbook*.

He received his bachelor's degree in engineering from the New York University. He is a native of New York.

LT. GEN. WOODROW W. VAUGHAN

General Vaughan was born in Woodford, Oklahoma, May 9, 1918. He attended public school in Ardmore, Oklahoma, and entered Texas A&M College in 1934. General Vaughan was appointed to the U.S. Military Academy from Oklahoma

in 1936 and graduated with a Bachelor of Science degree in 1940. As a cadet he was active in baseball, track, and basketball and was co-captain of the Army basketball team. Upon graduation in 1940, he was commissioned a Second Lieutenant in the Regular Army.

During World War II, he served principally in the China-Burma-India Theatre in a succession of staff and command positions. During that time, he was promoted to Colonel at the age of 27, making him one of the youngest Colonels in the United States Army.

General Vaughan has spent his entire career in the material, logistics or business side of the Army. He has served at every level and in every functional area—in research and development, procurement, supply; staff and command, from a company in the field to Theatre Headquarters; on the Army General Staff, the Joint Chiefs of Staff, the Army Materiel Command, and the Defense Supply Agency.

In the area of Research and Development, General Vaughan served in the R&D Directorate of the Army General Staff and commanded the Natick Laboratories.

In the area of procurement, he has served as a Contracting Officer, as supervisor of Contracting Officers, commanded the U.S. Army Procurement Agency, Europe, and was the Head of the Procuring Activity for U.S. Army, Europe.

In the logistics area, he commanded depots, served as supply and transportation staff officer in a division; as staff officer in the Supply Division of the Army General Staff; staff officer on the Army General Staff concerned with the Mutual Security Program; as Senior Logistics Advisory to the Republic of Korea Army and as Deputy Chief of Staff for Logistics in the Pacific and Europe.

General Vaughan has command experience at every level—platoon; company; depot; laboratory; Theatre Support Command, Europe; Army Materiel Command; and Defense Supply Agency.

His military education includes—in addition to various branch and specialty schools—the Army Command and General Staff College, the Armed Forces Staff College, the Naval War College and the Industrial College of the Armed Forces. His civilian education includes attendance at Texas A&M College, graduation from United States Military Academy, and the Graduate School of Business, Stanford University.

General Vaughan's positions since his promotion to General Officer in 1963 reflect the wide range of responsibilities that has characterized his career:

Senior Logistics Advisory to the Korean Army.
Commanding General, U.S. Army Natick Laboratories.
Deputy Director, Defense Supply Agency.
Deputy Chief of Staff for Logistics, U.S. Army, Europe.
Commanding General, Theatre Army Support Command, Europe.
Deputy Commanding General, Army Materiel Command, Alexandria, VA.
Since 1 January 1976, as Director, Defense Supply Agency.

General Vaughan is married to Elizabeth S. Hinkle of Fredericksburg, Virginia. They have three children and five grandchildren. His oldest son is a graduate of the Naval Academy where he, incidentally, was Captain of the Navy basketball team twenty-four years after General Vaughan captained the West Point team.

APPENDIX II
GSA RESPONSES TO QUESTIONS

UNITED STATES OF AMERICA
GENERAL SERVICES ADMINISTRATION
WASHINGTON, DC 20405

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August 30, 1977

Honorable William Proxmire
Chairman, Joint Committee on
Defense Production
Congress of the United States
Washington, DC 20510

Dear Mr. Chairman:

By letter of August 3, 1977, your Committee requested the General Services Administration (GSA) to answer three questions relating to emergency preparedness in the electric power industry and the implication of the New York blackout for emergency planning. The questions were as follows:

1) What is the role of your agency in emergency preparedness in the electric power industry?

2) What measures were taken by your agency in connection with the New York blackout?

3) Were these measures adequate?

1) GSA has no explicit assignment in electric power industry emergency preparedness. We are concerned with this area both as a major buyer and user of electric power for federal buildings and as the general coordinator of government emergency preparedness.

Executive Orders 10480 and 11725 require the Administrator of General Services to delegate certain priorities and allocations authority under the Defense Production Act of 1950, including authority relating to electric power, to the Secretary of the Interior. Use of this authority is limited to national defense purposes. Had the New York City situation persisted, careful evaluation of national defense implications may have resulted in a determination to use this authority. Actions taken under this authority would have been performed by the Defense Electric Power Administration of the Department of the Interior in close cooperation with the Federal Power Commission.

GSA regards electric power emergency preparedness as being within its broad purview in that it is an important element within comprehensive emergency preparedness. In our contingency planning to assist communities in meeting unexpected resource crises and in our overview of potential

terroristic actions which could disrupt economic activity, electric power is an important consideration. The vulnerability of electric power systems to disruptive acts has been of special concern to us, as we recently advised when we provided your Committee with our initial planning guidance for Federal response to the consequences of terrorism. The working draft, now in the hands of a number of agencies for comment, gives planning guidance for the development of a Federal capability for dealing with terroristic acts having potential national implications.

In the event of electric power shortages, there are emergency procedures that are used by GSA in all GSA-operated buildings. A predetermined plan of action to reduce electrical consumption is available for immediate implementation. Outlined below are the general procedures that are followed.

(a) Particular attention is given to energy conservation techniques such as reduction of refrigeration compressor loads and the maximum use of outside air.

(b) Electrical/mechanical equipment which can be shut down, or whose electrical requirements can be materially reduced have been previously identified. This includes agency equipment which can also be curtailed or shut down.

(c) Occupant agencies are advised of the need for such curtailment and that conditions will return to normal when the power can be restored to the buildings.

(d) The priority or sequential order of equipment shut down is clearly indicated and followed when the plan is placed in action.

(e) The entire plan is closely coordinated between GSA and the utility company involved.

(f) In case of a complete blackout, emergency power, where available, is utilized to provide stairwell and exit lighting for safe and easy egress from the building.

2) When New York City's power was knocked out at about 9:30 p.m. on July 13, GSA's Federal Preparedness Agency (FPA) immediately established contact with national and regional Federal offices which had emergency responsibilities in the crisis. These included the Defense Electric Power Administration, Federal Power Commission, Federal and Regional Defense Civil Preparedness Agency Offices, and State and local civil emergency centers which were contacted through the FPA and Defense Civil Preparedness Agency (DCPA) regional offices.

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There was agreement among the involved Federal officials that no action would be taken by them that might interfere with or delay efforts of local officials to restore power. At the same time, it was agreed that communications would be maintained for reporting any serious national impact, for receiving local requests, and for transmitting any Federal response measures.

There were no major safety or evacuation problems encountered in any of the Federal Office Buildings. A central point was established at 26 Federal Plaza. The Federal buildings in the affected area were closed on orders from the Federal Executive Board and on the recommendation of the Mayor of New York City.

Emergency fire and safety procedures were in force for all GSA-operated buildings powered by battery or generators. Generators were in operation where installed, except for two locations: the generator at the Federal Office Building, 201 Varick Street, failed to start, and the generator at the U.S. Courthouse was being repaired as a result of water damage caused by a broken city water main in April, 1977.

Agencies with computer complexes were shut down without any problems and were not reactivated until the power was restored. There was no damage to Government offices located in or near the areas of looting.

Commercial radio was utilized to inform off-duty GSA Federal Protective Officers to report for duty in event of emergencies. All buildings in the affected area under the charge and control of GSA were placed on a modified "Yellow Alert" status in accordance with the provisions of GSA Order PBS 5930.16 dated February 20, 1976 (copy appended). Briefly a Yellow Alert entails:

(a) Restricting access to the building to a minimum number of entrances.

(b) Requiring that visitors either display a U.S. Government identification card or receive specific clearance from the office to be visited to enter the building.

(c) Making all packages, other than those carried by persons with U.S. Government identification, subject to inspection and denying entry to persons refusing to submit to this inspection.

(d) After regular duty hours, permitting only persons with U.S. Government identification to enter the building and requiring them to sign in and out of the building.

Wherever possible, telephone calls to New York City were diverted to attended Federal Telecommunications System (FTS) switchboards in other

parts of the State for information. Two telephones were manned by GSA's Automated Data and Telecommunications Service (ADTS) in the lobby of the Federal Office Building for emergency calls.

By early morning DCPA advised that it was monitoring developments through its Region 1 Office and the New York Southern District Office, and would keep us advised. These contacts were maintained even though hampered by over-burdened telephonic communications and the inability of some key agencies in the city to open their offices in the Federal Center. Emergency officials by mid-morning moved to and established contact through the nearby New York City Police control center.

A canvas of Federal agencies was conducted by FPA on the morning of July 14. Responses indicating active attention to the situation in New York were received from the Department of Agriculture, the Public Health Service and other elements of DHEW, including the Food and Drug Administration, Federal Disaster Assistance Administration, Federal Power Commission, Department of Justice, Department of Commerce, Nuclear Regulatory Commission, Federal Energy Administration, Federal Reserve Board, Treasury's Bureau of Government Financial Operations, Department of Transportation, and Department of Interior's Defense Electric Power Administration. For example, DHEW provided warnings on the refreezing of food; USDA was looking into possible need for emergency food to be transported into the area; Treasury asked commercial banks to temporarily hold or divert financial transactions conducted through the city; the Corps of Engineers was maintaining emergency power in the Federal Building; Transportations' RETCOs (Regional Emergency Transportation Coordinators) were actively monitoring delays and stoppages of motor, rail and air services in and near the city; the Nuclear Regulatory Commission had inspectors examining damage at the Indian Point reactor site; and FPC organized a team to work with local officials both in the restoration of power and in follow-up inspection to determine the cause of the failure and to prevent recurrences.

This information was available as a basis for further Federal planning and coordinated response action should the situation have worsened and required it.

The measures taken by GSA generally are believed to have been adequate. However, some possible new measures are being considered.

Our current basic policy has been to provide only the power essential to permit safe building evacuation, including corridor and stairwell lighting and partial elevator operation, and to allow for continuity of fire alarm and fire protection systems and special critical functions. We believe that measures that were taken were adequate and security measures appeared to have been sufficient to prevent major criminal

incidents in Federal buildings during the blackout. As a result of our experience from the New York blackout, however, we are going to review our basic policy.

We will explore the possibility of providing limited building operation if the power outage is more than short term (2 to 4 hours). Some additional considerations that will be explored are:

1) minimum heating to prevent building freeze up;

2) domestic water system for drinking and sanitation;

3) provision for a sewage ejection system;

4) provision for critical telephone and data communication services;

5) emergency power for specified agencies where it is vital that special equipment operate on a 24 hour basis.

GSA is also considering the establishment of a Federal emergency communications post in the basement of the Annex of the Federal Building in New York. Such a center could be used to conduct coordinated Federal business in event of a future emergency. It might also become one prototype for similar emergency posts in other Federal Regional cities.

Sincerely,

Jay Solomon

Jay Solomon
Administrator

Enclosure

GENERAL SERVICES ADMINISTRATION
WASHINGTON, D. C. 20405

PBS 5930.16
February 20, 1976

GSA ORDER

SUBJECT: Physical Security of Buildings Alert Guidelines

1. Purpose. This order prescribes physical security of buildings alert guidelines for PBS personnel responsible for providing assistance to Government departments, establishments, and agencies housed in GSA-controlled facilities. The guidelines are designed to produce a mutual understanding of responsibilities and of action to take under the situations that necessitate a security alert.

2. Background. Under the provisions of FPMR 101-20.5, Physical Protection, the GSA buildings manager is the GSA representative who is designated to assist officials of occupant agencies in achieving objectives of the Facilities Self-Protection Plan, and who provides information and guidance, including copies of appropriate publications dealing with emergencies. Accordingly, each buildings manager must review with those occupant agencies their responsibilities under the physical security of buildings alert guidelines. If the occupant agency is located in a remote or leased facility which does not have assigned Federal Protective Officers, GSA guards, or contract guards, the buildings manager shall advise the designated official in the use of existing resources and shall assist the designated official in implementing the requirements in the HB, Operation and Maintenance of Real Property, 21-4 (PBS P 5800.18A). The referenced paragraph sets forth specific guidelines for the buildings manager in preparing for emergencies. Since occupant agencies are responsible for safeguarding life and property during emergencies except enemy attack, precautionary measures must be taken to ensure that whatever action is selected is positive and orderly and cause the minimum disruption to normal Government operations. Where applicable, the guidelines with occupant agency implementing instructions shall become an addendum to the agency Facility Self-Protection Plan.

3. Coordination. Each Regional Commissioner, PBS, shall determine the applicability of the physical security of buildings alert guidelines. The buildings manager shall ensure that written concurrence of the Director, Buildings Management Division (BMD); Director, Federal Protective Service (FPSD); and the appropriate designated official has been obtained prior to implementing those portions of the guidelines requiring support to FPSD from BMD and occupant agencies.

Distribution: P1; P2; P3; P4; F; RP(1ϕ; 2ϕ; 3ϕ; F2) Attachment

4. Communications. Regional offices shall coordinate communications associated with emergency situations with the Regional Director, FPSD, for notification to the Assistant Commissioner, Office of Federal Protective Service Management (OFPSM) or his designee, who shall relay such information to the Administrator and to the Commissioner, PBS. This action is not intended to interfere with established reporting procedures between Regional Buildings Management personnel and the Office of Buildings Management nor between the Office of Buildings Management and the Commissioner, PBS.

5. Physical security of buildings alert guidelines. Terms used in the guidelines are identified below:

a. Security alert. Security alert is an action that can be declared when a condition dictates the advisability of establishing security measures.

b. Degrees of security alert. There are three degrees of alert which can be declared when the condition has been identified:

(1) MODERATE;
(2) MEDIUM; or
(3) MAXIMUM.

c. Conditions. A situation can be described by one of the following three conditions:

(1) Gray;
(2) Yellow; or
(3) Red.

d. Application. Generally, the condition that is selected to describe a situation will determine the degree of security alert:

CONDITION		SECURITY ALERT
Gray	_____	MODERATE
Yellow	_____	MEDIUM
Red	_____	MAXIMUM

However, application of this system is flexible. It is designed to effectively deal with situations which affect Government personnel working in leased or Government-owned buildings in a metropolitan, regional, or national area. As an example, a condition yellow may be declared in a region, but a particular building in that region may be on Red (MAXIMUM) security alert.

c. Guideline chart. Appendix A, Physical Security of Buildings Alert Guidelines identifies each condition, each degree of security alert, and the required coordination to sustain a security action during the emergency period.

Nicholas A Panuzio

NICHOLAS A. PANUZIO
Commissioner
Public Buildings Service

PHYSICAL SECURITY OF BUILDINGS ALERT GUIDELINES
(Applicable only where FPO's, GSA Guards, or Contract Guards are present)

CONDITION	DEGREE OF SECURITY ALERT	AUTHORITY TO DECLARE SECURITY ALERT	COORDINATION BY FPSD	ACTION BY FPS	ACTION BY PBS	ACTION BY OCCUPANT AGENCY
GRAY: There is reason to believe that an unusual situation may develop.	MODERATE: 1. Access to GSA-owned and -leased buildings manned by FPO's or contract guards is restricted to a minimum number of designated buildings entrances. 2. During normal duty hours, FPO's or contract guards stationed at designated entrances will observe for persons and packages which arouse suspicion and will take action as appropriate. 3. After normal duty hours: a. FPO's or contract guards restrict building access only to personnel displaying appropriate Government identification. b. All personnel must sign the Building Register upon entering and leaving the building.	Director, FPSD, with consent of the Regional Commissioner, PBS, and the Regional Administrator.	Designated Official or his alternate, and Building Manager or building owner.	1. Notify the Assistant Commissioner, OFPSM, who will inform the Administrator and PBS Commissioner. 2. Assign FPO's or contract guards when available to designated entrances as required. 3. Ensure that all other entrances are secured to prevent entry but not to restrict egress of personnel and that appropriate signs are posted at these entrances. 4. Begin FPO or contract guard building interior and exterior roving patrols. 5. Coordinate with central regional control point to relay and request information. 6. Establish liaison with the utilities officer, a member of the Facilities Self-Protection Organization.	Alert Buildings Management Division to direct its subordinate elements to coordinate with and respond to the situation as required by the Regional Director, FPSD. This action may require seeking auxiliary volunteers to assist the FPO or contract guard force.	Ensure that Facility Self-Protection Plan telephone cascade lists are up-to-date.

PHYSICAL SECURITY OF BUILDINGS ALERT GUIDELINES CONTINUED
(Applicable only where FPO's, GSA Guards, or Contract Guards are present)

CONDITION	DEGREE OF SECURITY ALERT	AUTHORITY TO DECLARE SECURITY ALERT	COORDINATION BY FPSD	ACTION BY FPS	ACTION BY PBS	ACTION BY OCCUPANT AGENCY
Yellow: The unusual situation has developed to the point where additional preparedness measures are required.	MEDIUM: 1. Access to GSA-owned and -leased buildings manned by FPO's or contract guards is restricted to a minimum number of designated building entrances. 2. Display of Government identification is required to enter the building during ALL hours. 3. Packages, briefcases, handbags, and other containers being brought into the building are subject to inspection except when the carrier presents a Government credential or unless otherwise posted. Visitors who decline package inspection will be denied entry. 4. During regular duty hours, visitors must report to the building receptionist who will contact office to be visited for clearance.	Director, FPSD, with consent of the Regional Commissioner, PBS, and the Regional Administrator.	Designated official or his alternate and Buildings Manager or building owner.	1. Notify the Assistant Commissioner, OFPSM, who will inform the Administrator and PBS Commissioner. 2. Assign FPO's or contract guards when available to designated entrances as required. 3. Ensure that all other entrances are secured to prevent entry but not to restrict egress of personnel, and that appropriate signs are posted at these entrances. 4. Increase FPO or contract guard building interior and exterior roving patrols. 5. Coordinate with central regional control point, and establish liaison with the utilities officer, a member of the Facilities Self-Protection Organization.	Alert Buildings Management Division to direct its subordinate elements to coordinate with and respond to the situation as required by the Regional Director, FPSD. This action may include the furnishing of auxiliary personnel to assist the FPO or contract guard force.	1. Ensure Facility Self-Protection Plan telephone cascade lists are up-to-date. 2. Provide personnel to staff building receptionist position(s) during normal duty hours.

CONDITION	DEGREE OF SECURITY ALERT	AUTHORITY TO DECLARE SECURITY	COORDINATION BY FPSD	ACTION BY FPS	ACTION BY PBS	ACTION BY OCCUPANT AGENCY
	5. After regular duty hours: a. FPO's or contract guards shall restrict building access to only personnel displaying Government identification. b. All personnel must sign the Building Register upon entering and the leaving the building.			6. Designate one entrance for visitors when necessary. 7. Post signs requiring display of Government identification. 8. FPO or contract guards check personnel for Government identification.		

PHYSICAL SECURITY OF BUILDINGS ALERT GUIDELINES CONTINUED
(Applicable only where FPO's, GSA Guards, or Contract Guards are present)

CONDITION	DEGREE OF SECURITY ALERT	AUTHORITY TO DECLARE SECURITY ALERT	COORDINATION BY FPSD	ACTION BY FPS	ACTION BY PBS	ACTION BY OCCUPANT AGENCY
RED: The situation requires immediate measures to protect against the ongoing situation.	MAXIMUM: 1. Access to GSA-owned and -leased buildings manned by FPO's or contract guards is restricted to a minimum number of designated building entrances. 2. Display of Government identification is required to enter the building ALL hours. 3. Visitors must report to the building receptionist who will contact the office to be visited for clearance. 4. Require sponsoring office to provide escorts for visitors as may be necessary. 5. Packages, briefcases, handbags, and other containers being brought into the building are subject to inspection except when	1. Assistant Commissioner, FPSM, with consent of the Commissioner, PBS, and the Administrator. 2. However, if the situation dictates IMMEDIATE action, the Regional Administrator may implement MAXIMUM security alert procedures. Under these circumstances, the Assistant Commissioner for Federal Protective Service Management will be notified PROMPTLY and he will inform the Administrator and PBS Commissioner.	1. Designated official or his alternate, and Buildings Manager of building owner. 2. Director, FPSD, establishes telephonic communication immediately and confers with the Assistant Commissioner, FPSM. 3. If so directed by the Assistant Commissioner, FPSM, the Director, FPSD, will designate a communicator who will keep the Assistant Commissioner, FPSM, advised of all developments. 4. The communicator will be so situated that he can be contacted immediately by the Assistant Commissioner, FPSM. 5. The Director, FPSD, will keep the communicators advised at all	1. Assign FPO's or contract guards when available to designated entrances as required. 2. Ensure that all other entrances are secured to prevent entry but not to restrict egress of personnel, and that appropriate signs are posted at these entrances. 3. Increase FPO or contract guard building interior and exterior roving patrols. 4. Coordinate with central regional control point, and establish liaison with the utilities officer, a member of the Facilities Self-Protection Organization. 5. Designate one entrance for	Alert Buildings Management Division to direct its subordinate elements to coordinate with and respond to the situation as required by the Regional Director, FPSD. This may include the furnishing of auxiliary personnel to assist the FPO or contract guard force.	1. Ensure Facility Self-Protection Plan telephone cascade lists are up-to-date. 2. Provide personnel to staff building receptionist position(s) during regular duty hours. 3. Advise building elements that they must provide personal escorts for visitors which they sponsor or with whom they have business as may be necessary.

PHYSICAL SECURITY OF BUILDINGS ALERT GUIDELINES CONTINUED
(Applicable only where FPO's, GSA Guards, or Contract Guards are present)

CONDITION	DEGREE OF SECURITY ALERT	AUTHORITY TO DECLARE SECURITY ALERT	COORDINATION BY FPSD	ACTION BY BY FPS	ACTION BY PBS	ACTION BY OCCUPANT AGENCY
	the carrier presents a Government identification credential UNLESS ORDERS ARE ISSUED THAT ALL PACKAGES, BRIEFCASES, ETC. BE INSPECTED. a. Any person declining package inspection when inspection is in effect may not bring the package into the building. b. Packages NOT inspected may NOT be left with the receptionist, in the FPO office, or elsewhere. They must be removed from the building by the carrier. 6. Vehicle parking adjacent to building areas will be observed by FPO's or contract guards for persons and situations which arouse suspicion and will take action as appropriate.		times of where he can be contacted. 6. The Assistant Commissioner, FPSM, will keep the Administrator and PBS Commissioner fully informed and will carry out such instructions as are issued. 7. The Assistant Commissioner, FPSM, may direct implementation of certain procedures, specific dispersal or utilization of manpower, or employment of other protection measures.	visitors when necessary. 6. Post signs requiring display of Government identification. 7. FPO or contract guards check personnel for Government identification. 8. Prepare to implement auxiliary FPO or contract guard force on 12 hour shifts upon minimum notice. 9. Any other actions as deemed prudent by the Director, Federal Protective Service Division.		

PHYSICAL SECURITY OF BUILDINGS ALERT GUIDELINES CONTINUED
(Applicable only where FPO's, GSA Guards, or Contract Guards are present)

CONDITION	DEGREE OF SECURITY ALERT	AUTHORITY TO DECLARE SECURITY ALERT	COORDINATION BY FPSD	ACTION BY FBS	ACTION BY PBS	ACTION BY OCCUPANT AGENCY
	7. After regular duty hours, all personnel must sign the Building Register upon entering and leaving the building, or DURING ALL HOURS, if so directed.					

NOTE: COMMUNICATIONS ASSOCIATED WITH EMERGENCY SITUATIONS ARE TO BE COORDINATED BY REGIONAL OFFICES WITH THE REGIONAL DIRECTOR, FPSD, FOR NOTIFICATION TO THE ASSISTANT COMMISSIONER, OFPSI, OR HIS DESIGNEE, WHO WILL RELAY SUCH INFORMATION TO THE ADMINISTRATOR AND TO THE COMMISSIONER, PBS. THIS ACTION IS NOT INTENDED TO INTERFERE WITH ESTABLISHED REPORTING PROCEDURES BETWEEN REGIONAL BUILDINGS MANAGEMENT PERSONNEL AND OFFICE OF BUILDINGS MANAGEMENT AND BETWEEN OFFICE OF BUILDINGS MANAGEMENT AND THE COMMISSIONER, PBS. (Reference the HB, Physical Protection (PBS P 5930.2A)

PHYSICAL SECURITY OF BUILDINGS ALERT GUIDELINES CONTINUED
(Applicable only where FPO's, GSA Guards, or Contract Guards are present)

CONDITION	DEGREE OF SECURITY ALERT	AUTHORITY TO DELARE SECURITY ALERT	COORDINATION BY FPSD	ACTION BY BY FPS	ACTION BY PBS	ACTION BY OCCUPANT AGENCY
	the carrier presents a Government identification credential UNLESS ORDERS HAVE BEEN ISSUED THAT ALL PACKAGES, BRIEFCASES, ETC. BE INSPECTED. a. Any person declining package inspection when inspection is in effect may not bring the package into the building. b. Packages NOT inspected may NOT be left with the receptionist, in the FPO office, or elsewhere. They must be removed from the building by the carrier. 6. Vehicle parking adjacent to building areas will be observed by FPO's or contract guards for persons and situations which arouse suspicion and will take action as appropriate.		times of where he can be contacted. 6. The Assistant Commissioner, FPSN, will keep the Administrator and PBS Commissioner fully informed and will carry out such instructions as are issued. 7. The Assistant Commissioner, FPSN, may direct implementation of certain procedures, specific dispersal or utilization of manpower, or employment of other protection measures.	visitors when necessary. 6. Post signs requiring display of Government identification. 7. FPO or contract guards check personnel for Government identification. 8. Prepare to implement auxiliary FPO or contract guard force on 12 hour shifts upon minimum notice. 9. Any other actions as deemed prudent by the Director, Federal Protective Service Division.		

PHYSICAL SECURITY OF BUILDINGS ALERT GUIDELINES CONTINUED
(Applicable only where FPO's, GSA Guards, or Contract Guards are present)

CONDITION	DEGREE OF SECURITY ALERT	AUTHORITY TO DECLARE SECURITY ALERT	COORDINATION BY FPSD	ACTION BY FPS	ACTION BY PBS	ACTION BY OCCUPANT AGENCY
	7. After regular duty hours, all personnel must sign the Building Register upon entering and leaving the building, or DURING ALL HOURS, if so directed.					

NOTE: COMMUNICATIONS ASSOCIATED WITH EMERGENCY SITUATIONS ARE TO BE COORDINATED BY REGIONAL OFFICES WITH THE REGIONAL DIRECTOR, FPSD, FOR NOTIFICATION TO THE ASSISTANT COMMISSIONER, OFFSH, OR HIS DESIGNEE, WHO WILL RELAY SUCH INFORMATION TO THE ADMINISTRATOR AND TO THE COMMISSIONER, FPS. THIS ACTION IS NOT INTENDED TO INTERFERE WITH ESTABLISHED REPORTING PROCEDURES BETWEEN REGIONAL BUILDINGS MANAGEMENT PERSONNEL AND OFFICE OF BUILDINGS MANAGEMENT AND BETWEEN OFFICE OF BUILDINGS MANAGEMENT AND THE COMMISSIONER, FPS. (Reference the HB, Physical Protection (PBS P 5930.2A)