THURSDAY AM

DECEMBER 4, 1969

PSC CONCLUDES INVESTIGATION
OF CON ED ELECTRIC SUPPLY

New York, Dec. 3 --- The Public Service Commission announced today the conclusion of its investigation of the past and future power supply situation in the territory served by Consolidated Edison Company of New York, Inc., with the approval of a 14,000-word opinion by Commissioner John T. Ryan which after a review of the power situation in New York City and Westchester for 1969 and future years found:

1. Con Ed did not have a sufficient reserve capacity in 1969 with a resultant requirement that it reduced voltage on several days, requested large power users to curtail consumption on four days and made similar requests to the general public on three days.

2. The company's power deficiency situation "on any of those days was not sufficiently grave to warrant fear on the part of the public that a 'blackout' was imminent. No such 'blackout' occurred."

3. Due to its inability to complete construction of proposed additions to its generating facilities, Con Ed "may be unable (particularly in the first part of the summer of 1970) to supply all demands made upon it by all of its customers without again reducing voltage, shedding load or by the use of other means."

4. Con Ed's Revised Ten Year Plan "would appear to be adequate to meet the demands of its customers for power in future years covered by the plan if it is able to carry it out as scheduled," something it has been prevented from doing in the past.

5. Con Ed has taken the only steps presently available to it in order to meet its power supply problem in the immediate future by contracting for the installation of 1,800 MW of additional gas turbine capacity.

However, as a means of maintaining close and continuing surveillance of the situation, the PSC ordered Con Ed to file with it verified monthly reports "showing the progress it has made in obtaining the requisite licenses, permits or approvals required in connection with its proposed program for the construction of facilities to provide additional generation and transmission capacity and as to the progress it has made in carrying out such programs."

The opinion ties in the current PSC study with data and recommendations contained in the 1967 report of Governor Nelson A. Rockefeller's Electric Power Committee; the enactment in 1968 by the legislature of legislation recommended and approved by the governor establishing a statewide comprehensive program aimed at marshalling the resources of public agencies and private utilities in large scale development of nuclear power and with the recent action by the governor in establishing a Nuclear Power Siting Committee; reviews the delays that have occurred in the construction of Planned Generating and Transmission facilities and finds:

"The actions heretofore taken by the government of this state, some of which have been reviewed herein," said Commissioner Ryan in his opinion, "have and will in the future prove very beneficial in carrying out the objectives of providing economical, abundant and reliable power for use by the people of this state. The State Power Program ... should do much to aid in expediting construction projects."

But, he warned: "If it should not prove sufficient, it may be found necessary for both federal and State governments to consider mandating reasonable time limits to be allowed for the consideration of and final resolution of all questions involved in the granting or denial of requisite licenses, permits or approvals for the construction of electric generating and transmission facilities."

Copies of the Commission-approved opinion are being filed by the PSC with the Federal Power Commission, New York Mayor John V. Lindsay and Westchester County Executive Edwin G. Michaelian.

In addition, the report is also being served upon "all departments, federal or state, having jurisdiction or control over the granting of the requisite licenses, permits or approvals required in order that the company may progress its planned construction program to the end that such officials may be advised of the present power supply situation and of the urgent necessity for final resolution of applications ... associated with the company's inability in the past to carry out its construction program."

Noting that "neither the company nor this Commission had the power either to eliminate or short-cut the construction delays" which have limited Con Ed's energy supply, Commissioner Ryan reviewed briefly the utility's plans to construct a pumped storage plant at Cornwall and to expand the output of its Indian Point nuclear generating plants.

Concerning Cornwall, a proposed 2,000 MW generating plant which had been scheduled to be producing 750 MW by June 1967 and the balance in the summer of 1968, Commissioner Ryan said:

"Had the company been able to complete this plant as it had planned, there would have been no power shortages in its territory either in 1969 or prospectively in 1970. Because of the delays encountered ... and the further delays the company now expects will be encountered in the future, this project is not now expected to be completed and its maximum capacity fully available until sometime in 1978 or later."

Similarly, with respect to Indian Point, the opinion observed that had the No. 2 unit at that plant been completed as scheduled by June 1, 1969 "the company would have had capacity available to have met all public demands for service in 1969 and very possibly in 1970 without resorting to the relatively less satisfactory and higher cost gas turbine capacity it has now had to contract for to enable it to attempt at least to meet the demands for its product in 1970 and ensuing years."

The opinion rates the existing installed generating capacity of Con Ed at 8,177 MW, a total which must be reduced for practical purposes to 6,627 to allow for deratings due to normal day-to-day deviations from total production, compared to an estimated peak load requirement on a hot, humid summer day of 7,725 MW, with some 520 MW being acquired by firm purchases from other utilities and additional supplies being obtained elsewhere, if available, to meet emergency requirements.

In addition to the 1,080 MW of new production to be obtained from the gas turbine installations scheduled for 1970, Con Ed expects to obtain an additional 600 in 1971 through leased gas turbine generators. For the following years, it hopes to add the following to its production line:

Year	Plant	Additional MW
1972	Indian Point #2	873
1973	Indian Point #3	965
	Roseton	480*
	Bowline Point	400*
1974	Astoria	1,200
1976	Indian Point #4	1,115
1977	Cornwall (partial)	1,000
1978	Cornwall (balance)	1,000
	Total	7,638

*Con Ed share of jointly-owned plant.

But, said Commissioner Ryan: "To summarize the matter of most immediate concern is the capacity-load situation in the early summer of 1970 . . . . Based on 1969 experience, if the peak load forecast for 1970 is reached in June and the level of system deratings experienced in 1969 again prevails, the capacity available to meet forced outages would be very small or even negative." He adds:

"The capacity situation later in 1970, absent delays in the scheduled installation of gas turbines, should be better than 1969. The company has estimated an increase in peak load on the year of 375 MW and has 1080 MW in gas turbines planned for installation by the end of the summer. With the scheduled decrease in firm purchases for the year of 190 MW, the capacity over demand should show an improvement of approximately 515 MW. The company also has indicated that it will make every effort to purchase additional power wherever available in order to meet customer demands in 1970.

The evidence in this proceeding indicates, however, that the summer peak period for the year 1970 will find the company with less than a comfortable level of reserve to cover deratings and loss of equipment. The forced outage of major units could again cause an

emergency situation, particularly if a high level of deratings occurs simultaneously."

Concerning high voltage transmission lines necessary to feed the production of some of the new plants into the Con Ed distribution system, the opinion notes that three projects are now involved. The most important, it observes, is one between Branchburg, N.J. to the Con Ed Millwood substation via Ramapo, a line which was to have been completed in May 1968 but which has been delayed due to the inability of a New Jersey utility to construct its portion of the line "because of public opposition." Although further delays in building the Ramapo-Millwood section are also being encountered by Con Ed, the company anticipates completion sometime in 1970.

Work is also under way on the reconstruction of the Millwood-Sprain Brook 345 VK line, with completion scheduled for a date two years after the conclusion of negotiations for a portion which would utilize part of the right-of-way of a New York City aqueduct. A third line, known as the Southern Tier interconnection, is scheduled for completion by January 1, 1971.

-30-

STATE OF NEW YORK
PUBLIC SERVICE COMMISSION

ADOPTED BY THE COMMISSION NOV 25 1969

CASE 25293 - Proceeding on motion of the Commission as to the service provided by Consolidated Edison Company of New York, Inc.

INDEX TO OPINION

INDEX TO OPINION (Cont'd)

STATE OF NEW YORK
PUBLIC SERVICE COMMISSION

CASE 25293 - Proceeding on motion of the Commission as to the service provided by Consolidated Edison Company of New York, Inc.

APPEARANCES:

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Timothy Costello, Deputy Mayor, City Hall, New York, New York, for the City of New York.

Gordon Miller, County Attorney (by George S. Donaldson, Senior Assistant County Attorney), County Office Building, White Plains, New York, for the County of Westchester.

Surrey, Karasik, Greene & Seham, Esqs. (by Martin Seham, General Counsel), 450 Seventh Avenue, New York, New York, for Owners Committee on Electric Rates.

Hon. William T. Conklin, New York State Senator, 21st District.

Alexander Saunders, 500 Fifth Avenue, New York, N.Y., Chairman, Scenic Hudson Preservation Conference.

Mrs. Evelyn Y. Davis, 871 Seventh Avenue (Room 903), New York, New York, Editor, Highlights & Lowlights.

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Eldon R. Clingan, 165 West 46th Street, New York, New York, representing Liberal Party.

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Morton M. Adler, Purchase Lane, Rye, New York, Investor.

Lee J. Levert, Investor, Registered Professional Engineer and Member of New York Bar.

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JOHN T. RYAN, Commissioner:

1. NATURE OF PROCEEDING

This proceeding was instituted by order of the Commission dated August 5, 1969, for the purpose of inquiring into: (1) the facts and circumstances surrounding the recent outages of generating capacity in the system of Consolidated Edison Company of New York, Inc., (hereinafter referred to as the Company) and the consequent imposition by the Company of voltage reduction within its distribution system; (2) the power supply conditions under which the Company is operating and its ability to meet system peak load requirements; and (3) what additional improvements, precautions and safeguards, if any, should be ordered and made or taken in the facilities and properties used by said company in the generation, transmission, distribution, interchange and sale of electricity, which will best promote the safety and security of the public and such utility properties; preserve the public health and safety and protect those using electricity within the Company's franchised territory.

Five days of public hearings were held in this proceeding at which 697 pages of testimony was taken and 55 exhibits were received. The hearing record was closed on October 21, 1969.

2. THE CONDITIONS WHICH PREVAILED IN THE SUMMER OF 1969

On several occasions during the summer of 1969 the Company management deemed it either advisable or necessary to request its large customers and/or the general public to reduce load. Voltage reductions were placed in effect on several occasions. The actions taken by the Company on certain of these days as taken from the hearing record are summarized in the following table:

Date 1969	Voltage Reductions Placed in effect	Calls Made to Large Customers to Reduce Loads	Appeals Made to Conserve Electricity to General Public	Press & TV Conference Called by Mr. Luce
July 18	X	X	X	
Aug. 4	X	X	X	X
Aug. 8		X	X	
Sept. 2	X			
Sept. 8	X	X		

The power supply and demand situations as they existed on each of the above days and the actions taken by Company's management with respect thereto were as follows:

(a) July 18, 1969

The Company appealed to its large customers to reduce nonessential load. Such calls began about 6:30 a.m. (Tr.242-252). It appealed to the general public via radio and TV to do the

same. This appeal was given out about 7:00 a.m. and broadcast about 8:00 a.m. (Tr. 437). Voltage reductions were placed in effect.

(b) August 4, 1969

Chairman Luce held a conference with the news media (Tr.244,290).

Appeals were made to large customers by telephone at about 9:15 a.m. (Tr. 132).

The appeal to the general public was made by radio and TV "slightly later," (Tr. 133), or about 9:30 a.m. (Tr. 437), effective about 10:45 a.m. (Tr. 438).

Notification was also given to FPC, PSC and City officials. Voltage reductions were placed in effect.

(c) August 8, 1969

No voltage reduction was placed in effect, but large customers were requested to conserve electricity.(Tr. 450-1). Such requests began about 8:15 a.m. (Tr. 452).

Appeals were also made to the public to conserve the use of electricity at about 9:30 a.m. (Tr. 454) and were broadcast at about 10:00 a.m.

(d) September 2, 1969

Voltage reductions were placed in effect, but no customers were asked to conserve electricity (Tr. 454-5).

(e) September 8, 1969

Voltage reduction was placed in effect, and an appeal to conserve the use of electricity was made to certain large customers. No appeal, however, was made to the general public. (Tr. 462-3) About 281 customers were called at noontime. They were later released from the request by further calls made at about 2:15 p.m.

The appeals made on August 4, 1969, were obviously interpreted by the press to mean that real cause existed for grave public alarm over the situation since two New York newspapers having large circulations in the Company's territory immediately thereafter printed banner headlines as follows: "Con Ed Fears Blackout" and "Power Crisis Threatens City." (Tr. 290)

Counsel for the Company at a public hearing in this proceeding presented a statement seeking to justify the Company's actions which had created wide public alarm in its territory of the possibility of a "blackout" or a real "power crisis" (Tr. 330-333), as follows:

> "MR. THORNTON: Various statements appeared in the press yesterday to the effect that Con Edison created panic unnecessarily and threw a scare in the public on July 18th and August 4th and that it could have met its power supply problems by either reducing voltage or cutting off the supply of electricity in one or more of 17 sections of the City.
>
> The position of Con Edison is that the testimony and exhibits in this case most emphatically do not show that Con Edison unnecessarily panicked or threw a scare into the public and most emphatically do not show that Con Edison appeals to its customers to conserve power were unnecessary.
>
> On the contrary, the evidence of record quite clearly shows that, on July 18th and August 4th, Con Edison officials faced a

situation wherein it was essential to the interests of all our consumers to request that nonessential power be conserved so far as possible.

The evidence of record shows that, on July 18th, by 3:00 in the morning, there were six fairly large units off the line, that Con Edison was facing the highest load in its history - 7350 MW, and that it was nearly 1300 MW short of being able to meet that load (Tr. 120-1). The record also shows that, at the time we started to alert our customers, these six units were still out. Indeed, even as late as 8 a.m. and after the appeals to customers were under way, and despite having picked up some power by additional purchases from other utilities, we were 500 MW short with the load climbing rapidly towards the morning peak.

Now, it has been suggested that we should have taken some long chances between 6 and 8 a.m. and gambled that these five or six units would be back in time to take care of the peak load with the aid of voltage reduction. We should have done this even though, as Mr. Griffin pointed out, we had an unprecedented situation to deal with. He said, you recall, he couldn't think of any time in his experience we had faced such a problem. We chose not to gamble and we think we were unquestionably correct in that choice.

On August 4th, as the morning peak came on, the record shows that Ravenswood No. 3, 1000 MW, was out of service, as were Astoria 4 and 5, totaling another 800 MW (Tr. 129-130). Our system capacity was reduced to 5900 MW, and the load - predicted for 6400 MW - was coming in heavier than anticipated. The record shows it would have reached 6800 MW except for our voltage reduction of 8 percent (Tr. 131-2).

When we appealed to the public for aid on August 4th we were in a situation which required voltage reduction, all the way to 8 percent as it turned out -- an unprecedented amount -- and in a situation where one more substantial outage in the system would have required us to start interrupting service to customers with inevitable inconvenience to them. Moreover, this was not a situation involving only brief outages of equipment. Ravenswood 3, 1000 MW, our largest unit, was down and was likely to remain down for weeks to come.

Some may feel that interrupting service to customers is preferable to alerting our customers and requesting them all to save on electricity. We disagree. So far as possible, any difficulty in power supply ought to be borne equitably by all customers. The very reason we went to our customers

and warned them of the situation was to avoid interrupting customers, if possible, and, if that had to come anyway, to at least give them the benefit of advance notice.

The record shows that we successfully got through the situations on July 18th and August 4th but only with the aid of voltage reduction, cooperation by our customers, and substantial aid from other utilities."

The facts in this record clearly establish that a power shortage occurred in this Company's territory on five separate occasions in the summer of 1969 which resulted in the Company placing in effect voltage reductions to customers and the making of appeals to large customers to conserve the use of electricity on four different days; in the Company making appeals to the public generally to conserve the use of electricity on three days and in the holding by the Company's Chairman of the Board of a press and TV conference which was followed by two newspapers expressing in headline form fear of an imminent "blackout" or "power crisis" in the city.

3. THE SUMMER OF 1970

The steps taken by the Company in an effort to obtain additional resources of power to meet expected demands in the summer of 1970 are reflected in the figures and discussion which follows.

The record indicates the following company forecast of capacity, load and reserves expected in the summer of 1970:

CASE 25293

TABLE 1

LOAD-CAPACITY SITUATION (Megawatts) - SUMMER 1970

	By June 1		By July 1		By Aug. 1		By Sept. 1	
	Additions	Net Total	Add.	Net Total	Add.	Net Total	Add.	Net Total
Installed Capacity	496	8673	148	8821	286	9107	150	9257
Firm Purchases		520		520		520		520
Total Available Capacity		9193		9341		9627		9777
Estimated Peak Load		7725		7725		7725		7725
Nominal Capacity Reserve		1468		1616		1902		2052
Nominal Capacity Reserve - % of Peak Load		19.0		20.9		24.6		26.6

When evaluating the adequacy of the "nominal capacity reserve" reflected in the above table, account must be taken of unavoidable long and short term deratings and minor forced outages which are to be anticipated.

Deratings result from a variety of causes: fouling of boiler tubes, tube leaks, loss of auxiliary equipment, quality of fuel and other factors. The Company classifies deratings as short term, intermediate term and long term. Short term deratings cover conditions which can be corrected during a short outage of equipment, perhaps one or two days on a weekend. Intermediate term deratings require longer outages to correct and can be eliminated if the equipment has to be shut down for some other reason. Long term deratings affect equipment until a major overhaul can be performed. Major overhauls are normally scheduled outside the peak load periods.

In addition, allowances must be made for so-called steam send-out derating (this is more properly a load than a derating) and for minor forced outages. From the record it appears that the steam derating (or load) may vary from zero up to as much as 312 MW. The peak steam derating does not necessarily occur at the time of the peak electric load, although steam peaks tend to occur on the same days as electric peaks, perhaps as much as two hours earlier in the day.

The following table shows the effect on the "Nominal Capacity Reserve" estimated by the Company for 1970 of deducting deratings based on 1965 to 1969 Company data:

TABLE 2

ESTIMATED CAPACITY AVAILABLE TO PROVIDE AGAINST
ALL FORCED OUTAGES IN THE SUMMER OF 1970
(ASSUMING MAXIMUM ONE DAY DERATING BASED ON 1965 - 1969)

1.	Existing Installed Capacity (MW)	8177
2.	New Capacity (MW) - In Service	
	Gas Turbines By June 1, 1970	496
	By July 1, 1970	644
	By August 1, 1970	930
	By September 1, 1970	1080
3.	Firm Purchases (MW)	
	New England Electric System	100
	New York State Electric & Gas	150
	Rochester Gas & Electric	270
4.	Total Capacity Resources (MW)	
	By June 1, 1970	9193
	By July 1, 1970	9341
	By August 1, 1970	9627
	By September 1, 1970	9777
5.	Estimated Peak Load (MW)	7725
6.	Capacity Resources Less Estimated Peak Load (MW)	
	By June 1, 1970	1468
	By July 1, 1970	1616
	By August 1, 1970	1902
	By September 1, 1970	2052
7.	Deratings - Based on 1965-1969 Data (MW)	
	Long Term Derating	450
	Short Term Derating	900
	Steam Sendout Derating	200
	Total Deratings	1550
8.	Capacity Available for Forced Outage (MW)	
	By June 1, 1970	(82)
	By July 1, 1970	66
	By August 1, 1970	352
	By September 1, 1970	502

Company has estimated an increase in peak load on the year of 375 MW and has 1080 MW in gas turbines planned for installation by the end of the summer. With the scheduled decrease in firm purchases for the year of 190 MW, the capacity over demand should show an improvement of approximately 515 MW. The Company also has indicated that it will make every effort to purchase additional power wherever available in order to meet customer demands in 1970. The evidence in this proceeding indicates, however, that the summer peak period for the year 1970 will find the Company with less than a comfortable level of reserve to cover deratings and loss of equipment. The forced outage of major units could again cause an emergency situation, particularly if a high level of deratings occurs simultaneously.

4. CAUSES OF POWER SHORTAGES WHICH OCCURRED IN THE SUMMER OF 1969

The Company prepared at the request of the hearing Commissioner and submitted in evidence at the hearing an exhibit showing in detail the construction projects its management had previously authorized; the delays which have occurred in their completion; the reasons for such delays, and the present status of each project. Because of its importance when considering both the present and future power situation in the territory of this Company, such exhibit is incorporated in full as Appendix I to this memorandum.

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In evaluating the results indicated by the figures appearing on the foregoing table, it is to be kept in mind that the deratings used therein (based on 1965-1969) may in fact be less on the 1970 peak day than those used in the table. In 1969 on July 17 (the peak load day) deratings amounted to 921 MW, although total deratings amounted to much more on other days. The level of maintenance and the intensiveness are extremely important in influencing deratings. The 1969 deratings were abnormal compared with prior year experience.

To summarize, the matter of most immediate concern is the capacity-load situation expected in the early summer of 1970. The additional gas turbine capacity, which has been contracted for, is now scheduled to come on the line at various dates in the summer of 1970 and probably will not be fully available until September. Total capacity is now expected to exceed the projected peak load by about 1468 MW on June 1, 1970. However, this does not take into account any system deratings or possible forced outages. Based on 1969 experience, if the peak load forecast for 1970 is reached in June and the level of system deratings experienced in 1969 again prevails, the capacity available to meet forced outages would be very small or even negative. The Company has taken the only steps presently available to it, viz by contracting for additional gas turbine capacity to increase capacity in 1970; however, it is probable that the simultaneous loss of the three largest units, as occurred in 1969, would again cause a very difficult situation regardless of the level of system deratings.

The capacity situation later in 1970, absent delays in the scheduled installation of gas turbines, should be better than 1969. The

The most striking example of delay shown in the exhibit is the "Cornwall Pumped Storage Plant." This project was authorized by the Company's Board of Trustees in 1962 and 1963. Seven hundred fifty MW of its total 2000 MW proposed capacity was scheduled to go into service in June of 1967, and the balance of 1250 MW capacity by the summer of 1968. Had the Company been able to complete this plant as it planned, there would have been no power shortage in its territory either in 1969 or prospectively in 1970. Because of the delays encountered which have been documented in the attached exhibit and the further delays the Company now expects will be encountered in the future, this project is not now expected to be completed and its proposed maximum capacity fully available until sometime in 1978 or later.

The construction of Indian Point Unit No. 2 was authorized by the Company's Board of Trustees on November 23, 1965, to have a capacity of 1033 MW. Its construction was contracted for on June 15, 1966. It was scheduled by contract to be completed and available for service by June 1, 1969. Here again, if this schedule could have been met, the Company would have had capacity available to have met all public demands for service in 1969 and very possibly in 1970 without resorting to the relatively less satisfactory and higher cost gas turbine capacity it has now had to contract for to enable it to attempt at least to meet the demands for its product in 1970 and ensuing years.

The details with reference to other delays which the Company has incurred in its efforts to complete the construction of generating and transmission facilities, as well as delays encountered by certain other New York State electric utilities from which the Company had intended purchasing

power, are likewise detailed in the exhibit (Appendix I) attached to this memorandum.

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It is apparent from the facts established in this proceeding that neither the Company nor this Commission had the power either to eliminate or short-cut the construction delays which have been described herein and which have contributed so greatly to the power supply problem which existed in 1969 or which may be encountered in 1970.

5. THE COMPANY'S "REVISED TEN YEAR PLAN"

By letter dated August 12, 1969, the Company's Chairman of the Board, Mr. Luce, forwarded to Chairman Lundy of this Commission a copy of the Company's "Revised Ten-Year Program to Meet Growing Energy Needs and Reduce Air Pollution 1969-79." The same plan was presented to the Governor of the State, the Mayor of the City of New York, the County Executive of Westchester County and the Federal Power Commission. Since the plan was offered in evidence in the present proceeding, it will be reviewed herein. In making any meaningful review of such program, it is believed appropriate to make references to some parts of the power program of the government of the State of New York as expressed by actions heretofore taken by the

Governor and legislature of this state. Our analysis of this plan will deal with six important areas:

(a) the accuracy of Company load forecasting,

(b) existing generation and available capacity,

(c) capacity purchases,

(d) projected new capacity,

(e) required transmission facilities, and

(f) the State Power Program.

A. Load Forecasting

In 1959 the Company became a summer-peak company. Estimation of future peak loads made since that time has been rather accurate, so much so that there has been little or no problem with unexpectedly high loads. It is true that there has been a very heavy growth in air conditioners. This has caused localized difficulties on the distribution system, not on the overall load-supply balance.

For example, in 1962 a forecast was made by the Company of the summer peak loads for the years 1962 through 1969. The figure for 1969 was given as 7150 MW. In 1968 the figure for 1969 was revised upward to 7350 MW. The actual peak load experienced in 1969 was 7266 MW, so the 1962 forecast came within 116 MW, a difference of about 1.6%.*

*Five percent voltage reduction on that day (July 17) caused the peak to be slightly lower than it might have been.

1. Factors Affecting Peak Loads

In load forecasting the Company has the advantage of a concentrated service area, densely populated with comparatively mature and stable economic conditions. Probably the most important unknown is the weather, which has a large effect upon air conditioning loads. Variations from this cause may be considerably greater day-to-day and week-to-week than the variation in peak load from year-to-year.

The Company has found that the following six variables have a significant influence upon the level of peak load:

Temperature at peak time.

Maximum temperature for 2 days preceding.

Sunlight intensity at peak time.

Sunlight intensity for several hours before peak.

Time of year.

Time of day.

Temperature is taken as the average of wet and dry bulb temperatures.

There are, of course, other factors, including construction activity, city planning, and changes in general economic conditions. Certain one-time major occurrences must be taken into account, such as the decision to build the World Trade Center or the advent of room air conditioners that are low in price, easy to purchase and simple to install. The general national trend toward more and more use of

service per consumer must also be considered, but this growth is moderate in this Company's service area.

2. Load Forecasting Process

The Company makes forecasts for several periods, six years, ten years and twenty years. Each of these is reviewed and up-dated at least annually. The estimated peak load is made up of components, such as base load and temperature-sensitive load. To their sum is added any known additional large load such as the 100 MW forecast for the World Trade Center.

The result of this process in recent years has produced a linear type of growth prediction differing in nature from the compound-rate curves found in other electric utilities.

The following table gives statistics at the time of the one-hour maximum load for the summers of 1960 through 1969:

Year	MW	Hour Ending	Date	Peak Day Av. Wet-Dry Temp.	Max. Av. Wet-Dry Temp. 1st Preced. Day	2nd.
1959	4245	4:30 P	9-9	86.0	82.0	78.0
1960	4352	4:00 P	8-30	83.0	83.0	81.5
1961	4744	4:00 P	9-13	81.5	85.0	83.0
1962	4852	5:00 P	6-19	84.0	83.5	79.5
1963	5105	4:00 P	7-29	83.0	84.5	86.0
1964	5505	5:00 P	7-1	84.5	85.5	77.5
1965	5710	4:00 P	6-23	82.0	81.0	79.5
1966	6154	4:00 P	7-13	86.0	85.0	81.0
1967	6147	4:00 P	7-24	83.0	80.0	75.5
1968	6960	4:00 P	7-17	87.0	85.0	80.0
1969	7266* (7433)	5:00 P	7-17	87.5	83.0	80.5
otals	-	-	-	927.5	917.5	882.0
verages	-	-	-	84.3	83.4	80.2

*Est. 7433 without voltage reduction.

In the above table it can be seen that the increase from 1959 to 1960 was comparatively low, 107 MW. Similarly the change from 1966 to 1967 was actually a decrease, influenced apparently by the three very low temperatures in 1967. It will be noted that the three temperatures for 1967 were markedly lower than for 1966, and in fact well below the 11-year average.

The peak load for 1969 occurred when temperatures of the preceding two days were about average but temperature of the day itself was above average. The peak load increase from 1968 to 1969 might have been expected to be greater than it was, a normal 306 MW. However, it should be noted that there was a voltage reduction at the time of the 1969 peak, and the peak would have been somewhat higher without such reduction.

3. Curve of Forecast Loads

Computations based on actual peak loads for the summers of 1959 through 1969 yield a straight line of best-fit. As shown on the attached graph, Appendix B, the straight line fits well, with a maximum departure of about 336 MW and an average error of about 2.3 MW. This is without taking into account the three temperatures and other variables such as amount of sunlight, indicating that while these variables have a definite influence, such influence tends to an average that is nearly zero over a period of years. The equation used for the graph indicates that the Company's peak load will increase at a straight line rate of about 307 MW per year, although an adjustment should be made for any year in which a large additional

load is expected, such as the World Trade Center. The difference of some 600-odd megawatts shown between the curve and the Company's prediction for 1979 is apparently due to such adjustments.

As shown in Appendix C, it is possible to apply more complex curves to the recorded peak-load data and obtain what is apparently a better fit. Using the formula shown in Appendix D the average error is less than one megawatt, and the maximum error is 331 MW. Use of this curve indicates that the peak load for 1979 would be about 11,464 MW contrasted with the Company's estimate of 10,850. This difference of 614 MW is substantial, of course, and might seem to support those critics who think the Company should be using some kind of compound-rate curve for growth instead of a straight line. However, this 614 MW is only about 5.6% above the Company's estimate, and when it is recalled that the forecast is reviewed at least once a year it appears that the straight-line method should give reasonable results.

Appendix C shows the curve representing the equation shown in Appendix D for the years 1959 through 1979. Because this may give higher peakloads, thus adding a factor of safety, it is used in this review to estimate the Company's future loads.

The Company has had good success in the past in predicting its peak loads within a reasonable margin of error. There have been difficulties of supply, but not because of underestimation of load. The utility is predicting a peak load of about 10,850 MW for the

summer of 1979, which figure will be reviewed at least once a year to include the effect of known changes. Our review indicates that the predictions of the Company are reasonably accurate at this time, although to be conservative, we are using the higher figure of 11,464 derived from the formula in Appendix D.

B. Existing Generation

The Company's existing generation is listed in Appendix E by generating station. This table shows the capacity which was available for the summer of 1969. All of these units are believed to be serviceable, although many are quite old. None are scheduled for retirement until the Hell Gate units are taken out, possibly in 1973.

Deratings

One of the more important areas developed during the hearings in this proceeding was the effect and extent of system deratings which are a part of normal operation. The capability listed on Appendix E of 8177 MW is a net figure. The actual capability on any given day will be less because of various conditions affecting the Company's generating units and associated facilities.

Appendices F and G show long and short term deratings for the years 1965 through 1969. Intermediate term deratings are not shown separately since the Company did not start using this term of classification until the summer of 1969. The short term deratings experienced in 1969 were substantially higher than prior years with the exception of 1966. The 1966 figures were somewhat distorted by the inclusion of 500 MW for the loss of

half of the capacity of Ravenswood #3. This loss could have been considered a forced outage and not included in short term statistics.

The long and short term deratings have been added for the five-year period to produce Appendix H. There was no testimony to explain why deratings were high in 1969. There was mention in the record of the strike of Company employees in December of 1968 which interrupted the overhaul program. The strike may well have interfered with the overhaul and maintenance program and resulted in a lesser amount of work being done.

In addition to equipment deratings, the Company adds what is called a steam sendout derating. This represents steam provided by the electric department to the steam department and therefore not available for generation. The value of the derating varied during the summer of 1969 from zero to over 300 MW.

C. Capacity Purchases

The planned firm purchases by the Company for the years 1970-1972 are shown on Appendix I. The values shown thereon represent the most recent information available.

During this proceeding there was testimony to the effect that no purchases were listed beyond 1972 because the Company does not negotiate for firm capacity that far in advance. This is understandable in view of the uncertainties of load and construction programs several years in advance.

In 1970, total purchases of firm capacity will be 520 MW. This represents 100 MW of capacity from Brayton Point Unit No. 3, 150 MW from

New York State Electric & Gas Corp. and 270 MW from the Rochester Gas & Electric Ginna Station Unit No. 1. It should be noted that two of the purchases are tied to individual generating units, and if the particular unit is not available, the allotted capacity will not be available.

"Firm purchases" must be understood in the context that if the generation is needed by the selling utility, the capacity will not be available. A company representative testified in this proceeding that contracts for firm capacity had provisions for withdrawal of capacity if needed by the seller.

Scheduled purchased capacity in 1971 consists of two items: 150 MW from New York State Electric & Gas and 270 MW from Rochester. The Rochester capacity is subject to the condition described above. In 1972 the only firm capacity the Company now plans to purchase is 400 MW from the New England and Ontario Systems. We understand that these purchases are under discussion and certainly cannot be considered firm at this time. There are no purchases listed beyond 1972.

D. Projected New Capacity

Table 2 of Appendix A outlines the Company's program of electric capacity additions for the years 1970 through 1978. Apart from gas turbines, the Company presently has scheduled eight new projects of which two are joint ventures. A list of the projects follows. It will be noted that service dates differ from the information submitted by Mr. Luce in Table 2 because of developments since the program was drawn up in July of 1969.

Year		New Capacity (MW)
1971	Gas Turbine (leased)	600
1972	Indian Point #2	873*
1973	Indian Point #3	965*
	Roseton	480**
	Bowline Point	400**
1974	Astoria	1200
1976	Indian Point #4	1115
1977	Cornwall (partial)	1000
1978	Cornwall	1000

In addition to the above installations, the Company is placing 1080 MW of gas turbine capacity in units of various sizes at different locations on its system. This capacity is scheduled for completion by the end of the summer of 1970. At the present time 496 MW is expected to be ready at the start of the summer load period. Table 2 lists 900 MW, but the scope of the program has been enlarged.

The service date for Unit #2 at Indian Point is shown by Mr. Luce as 1971. It now appears probable that this unit will not be in commercial operation until 1972, and the Company now proposes to purchase 600 MW of gas turbine capacity for operation in 1971. The 600 MW is to be divided into two 300 MW segments and barge mounted. There is reason to believe that, barring a supplier's strike or unforeseen difficulties, the Company will meet its construction schedule for the gas turbine capacity.

E. High Voltage Transmission Facilities

There are three major high voltage transmission projects associated with the provision of new generation described above.

The first and perhaps the most important transmission facility is the PJM interconnection from Branchburg, New Jersey to Ramapo, New York

*Initial rating
**Joint venture (Company share)

and from Ramapo to the Millwood substation of Company. The original scheduled service date for this line was May 1968. The delay in constructing the line has been largely due to the inability of Public Service Electric and Gas Corporation to construct its portion of the line because of public opposition. Delays are being encountered on the Ramapo-Millwood section and the matter is being considered by the Hudson River Valley Commission. The Company could not give a firm date for completion but expects that the line will be in service by the end of 1970.

The Company is rebuilding the Millwood to Sprain Brook transmission line for 345 KV. Work is presently under way on a portion of the line. A second portion uses a right-of-way on a New York City aqueduct. The testimony indicates that negotiations regarding rental are being progressed. Construction of this portion is scheduled to be completed approximately two years after the completion of negotiations.

The third major transmission line is what is known as the Southern Tier interconnection. The line is scheduled for service by January 1, 1971, and the Company expects that this service date will be met.

A table outlining the capacity-load-reserve situation as presently forecast for the ten-year period has been prepared and included as Appendix J. This table uses a slightly different load forecast than the one submitted by the Company. The planned capacity additions submitted by Mr. Luce have been modified by the more recent information available. This load capacity relation is shown graphically for the years 1970-1978 in Appendix K.

F. The State Power Program

Throughout his administration, the Governor of this state has insisted upon and taken various actions necessary to achieve the objectives of providing economical, abundant and reliable electric power for use by the people of this state. Examples of some of the many steps taken to carry out such objectives may be cited in his appointment of the Governor's Committee on Power Resources which reported on the situation in 1959. The committee, known as the "Governor's Electric Power Committee," headed by Richard G. Folsom as Chairman, reported upon the power situation in the state on December 15, 1967. The report of this latter committee states that it was directed by the Governor to:

"a. define the future power requirements of the State of New York,

b. recommend the objectives to be established to achieve the lowest practicable costs of electric power within the State,

c. recommend organizational and financial mechanisms that can be utilized in meeting the above objections, ..."

The Committee reached the following conclusions and recommendations as to how best to carry out the stated objectives:

"Conclusions:

1. The present and projected plans and resources of the electric power industry appear adequate to meet the anticipated growth requirements of the State through 1990, subject to the considerations set forth herein.

2. Present technology, experience, and planning, plus foreseeable technologic development into the future will provide the base for the expansion and strengthening of the electric generating capacity of the State's utilities and of the high voltage interconnections that will be needed to assure economic pooling of the added generation capability required. Reliability,

efficiency, economy, and adequacy of supply, along with the public need for the preservation and enhancement of a safe and congenial environment, are the prime criteria.

3. Most of the new generation capacity is expected to be in the form of very large machines to take advantage of lower per-unit capital costs and lower operating costs associated with size. Such units will be used as base-load generation with high availability which in turn calls for the addition of associated peaking capability. Pumped storage hydro plants are ideally suited to this application, and are required not only now but increasingly into the future.

4. Most of the new generating capacity is expected to be in the form of nuclear generation, which not only can aid materially in reducing air pollution, but which also now indicates generation costs lower than those for fossil fuel generation in high-cost fuel areas such as New York State. Present experience and on-going research and development give promise to further improvements in the future, with the opportunity to reduce further New York State's thermal power generating costs. One confirmation of this is the power industry's planning that over 70% of the new prime generation scheduled for installation by 1973 in New York State will be nuclear. It must be stressed, however, that more development such as is now being conducted by Empire State Atomic Development Associates and other organizations, more definitiveness about the future costs of nuclear fuel (until now owned by the U.S. Atomic Energy Commission) and much more extensive introduction of new, lower-cost generation must take place before there is any noticeable effect upon the cost to the average consumer. A concommitant requirement of such expanded nuclear generation will be the availability of sites suitable in characteristics, number, and location.

5. The Power Authority of the State of New York's development and operation of New York State hydro electric resources on the St. Lawrence and Niagara Rivers have made available economical tax-exempt electric power to industrial, municipal and rural cooperative customers, and through the investor-owned utilities to rural and domestic consumers served by them in upstate New York. The Committee has received data demonstrating that there is a currently unsatisfied requirement for approximately 600 megawatts of economical expansion power for high load-factor industrial consumers (defined as those for whom cost of electric power is approximately 10 percent or more of total product value) now served by the Authority. It has also been demonstrated that the Authority's present generating facilities are insufficient to provide the supplemental base load energy to take full advantage of the maximum capacity of its installations. It is in

the public interest to provide for the maximum utilization of the Authority's existing hydroelectric facilities, to provide for the growth of the consumers the Authority has been authorized to serve and to meet the needs of such specialized industries as the electro-chemical and electro-metallurgical companies, for whom Authority low cost power represents a major inducement to remain or expand in the State of New York. To accomplish the foregoing objectives the Authority should be authorized to construct and operate for its present area of service such thermal generation as may be necessary for such purposes. Cost requirements indicate nuclear generation in this instance. Any power and energy derived from such new capacity installed by the Authority which is in excess of the requirements of the Authority to supply its own customers should be made available to other electric systems without discrimination for resale by them under their respective tariffs.

6. The New York State Atomic and Space Development Authority's cooperative activities with private enterprise have developed within the State the Nation's first nuclear reprocessing industry, with facilities now constructed and operating on an Authority site. It is in the public interest that the Authority continue and extend its cooperative development and service activities with the electric power industry of the State and with other State agencies by participating in those areas which, with regard to nuclear power plants and associated facilities involve development, health, safety, recreation, fueling, siting, conservation of natural resources and aesthetics.

Recommendations:

The recommended optimum methods of providing for State needs and of financing the same are as follows:

A. By primary reliance upon private initiative and enterprise with principal dependence upon the investor-owned utilities.

B. By promoting full cooperation between the private and public entities, including the Power Authority of the State of New York, municipals and cooperatives, engaged in electric power systems operations, and developmental and service activities associated therewith.

C. By seeking to obtain maximum benefit from the State's hydro-electric resources and by relying upon nuclear energy as the most promising source of future economic power.

D. By expediting and fully implementing the plans of the investor-owned utilities to construct large scale nuclear generating plants.

E. By authorizing the Power Authority of the State of New York, alone or in cooperation with the investor-owned utilities, to construct and operate hydro-electric pumped storage facilities throughout its area of service.

F. By authorizing the Power Authority alone, or in cooperation with the investor-owned utilities and/or the New York State Atomic and Space Development Authority, where consistent with its authority as set forth in H below, to construct and operate the base-load supplemental thermal generating facilities necessary to effectuate the purposes set forth in Conclusion #5 above. It will be desirable that the Power Authority exchange comparable cost, performance, and operating data, reflecting the Authority's tax-free status, from this new capability within the New York Power Pool to assist in accumulating thermal generation experience.

G. By authorizing the Power Authority to enter into contractual arrangements with the investor-owned utilities and the Atomic and Space Development Authority for participation in the construction of experimental or advanced design nuclear power generating facilities.

H. By increasing or removing the debt limit of the New York State Atomic and Space Development Authority and by expressly authorizing the Authority to:

a. Designate, acquire, prepare and make available sites for nuclear power facilities pursuant to agreement with the investor-owned utilities and/or the Power Authority, where consistent with its authority as set forth in F above. Such activities should be conducted in cooperation with agencies of the State with responsibilities for health, safety, conservation of natural resources and economic development.

b. Contract with the investor-owned utilities and/or the Power Authority, where consistent with its authority as set forth in F above, to participate in the incorporation of features in nuclear power plants and construct associated facilities to the extent required by the public interest in development, desalination, health, safety, recreation, conservation of natural resources and aesthetics.

c. Contract with the investor-owned utilities, or with such utilities and the Power Authority, for participation in construction, fueling and operation of reactor facilities involving advanced design concepts of types having substantial prospects of reducing power production costs such as a breeder reactor.

d. Contract with the investor-owned utilities and/or the Power Authority, where consistent with its authority as set forth in F above, in connection with fueling of nuclear facilities.

I. The Committee recommends that further study be undertaken to examine the means whereby New York State's smaller power entities, including municipals and cooperatives, may as an extension of past and current cooperation within the industry share in the future benefits of nuclear power developments."

The receipt of this Committee's report on December 15, 1967, was followed in the 1968 legislative session by the passage in the Legislature of the 1968 power program (chapter 294 of the Laws of 1968).

In his filed memorandum approving such legislation, the Governor stated:

"The bill represents the keystone of the Nation's first statewide, comprehensive program to marshal the resources of the public and private sector in the large-scale development of nuclear power, providing a framework to meet future power needs of the State of New York. The bill will also:

-- stimulate the State's economy by promoting industrial growth and development;

-- promote the provision of low cost power for both the home consumer and industry; and

-- provide for coordinated efforts to foster development that will enhance, rather than pollute, the natural environment of the State.

The program implements the recommendations of the Governor's Electric Power Committee set forth in its report of December 15, 1967.

The bill, which has been developed jointly with the Power Authority of the State of New York, the Atomic and Space Development Authority and the private electric utility companies, authorized the Power Authority to build base load nuclear generating facilities and hydroelectric pumped storage facilities and to contract with private utilities to meet the immediate needs of high-load factor industries.

Under the program, the Power Authority, with the cooperation of private utilities, can provide up to 600,000 kw of low cost power to

meet the immediate unsatisfied needs of high-load factor industry and to attract new high-load industry to New York. Through the new base load nuclear power and pumped storage facilities authorized by the bill, the Power Authority will be assured the needed capacity to meet long-range needs of such industry as well as the needs of the Authority's other customers.

In addition, the bill will enable the State to carry out its responsibility to assure fulfillment of the special health, safety, and conservation considerations associated with the development of nuclear power generation by authorizing the Atomic and Space Development Authority to participate in the development of those related aspects that specifically affect the public interest. The bill provides a mechanism whereby the Atomic and Space Development Authority will be able to participate in the provision of these special features, thereby lowering the private utility's capital investment on which rates are based."

The object, purposes and expected impact of the above legislation on the power situation in this state are more fully described in the Special Message the Governor presented to the Legislature on May 6, 1968, which stated as follows:

"TO THE LEGISLATURE:

The Power Authority of the State of New York, the New York Atomic and Space Development Authority, and the major electric utility companies in New York State join me in presenting and recommending to your Honorable Bodies a program designed to meet the immediate and future electric power needs of the State.

The program implements recommendations made by my Electric Power Committee in its report of December 15, 1967. In its report, this distinguished committee recommended marshalling the resources of the State and the electric utilities in a cooperative effort to meet the State's future power needs at the lowest practicable cost. In addition to meeting those objectives, the program presented today would provide for up to 600,000 kilowatts of low-cost power to meet the immediate needs of high load factor industry and to attract new high load factor industry to New York State.

To meet the State's power needs, the program would rely upon nuclear energy as the most promising source of future economic power, maximum utilization of hydroelectric resources, and full implementation of plans of the private electric utilities for new generating facilities.

I am submitting to your Honorable Bodies with this message the legislation necessary to implement this joint public-private program. The legislation would authorize the Power Authority to:

-- Build base load nuclear generating facilities throughout its area of service;

-- Construct hydroelectric pumped storage facilities throughout its area of service;

-- Participate with the electric utilities and the Atomic and Space Development Authority in the construction and experimental or advanced design nuclear power generating facilities.

The legislation would also broaden the powers of the Atomic and Space Development Authority by authorizing it to:

-- Designate, acquire, prepare and make available to the Power Authority or to electric utilities sites for nuclear facilities;

-- Participate in the incorporation of features in electric utilities' nuclear power plants required by the public interest but not necessarily directly involved in the generation of power such as those relating to health, safety, aesthetics, and conservation of natural resources;

-- Participate in the construction, fueling and operation of advanced design facilities, such as a breeder reactor, with the Power Authority and the electric utilities;

-- Contract with the electric utilities or with the Power Authority in connection with fueling of nuclear facilities.

The bill would remove the $30 million debt limit of the Atomic and Space Development Authority. (The Power Authority has no debt limit.)

As part of the program, the Power Authority and the private utilities will cooperate and contract to provide for immediate additional low cost power to help retain, attract and expand high load factor industry pending completion of new generating capacity by the Power Authority.

The program would thus assure the development of the electric power generating capacity necessary for the continued economic growth of the State, compatible with the public need for clean air, pure water and a safe, congenial environment in which to live and work.

"New York's Growing Electric Power Requirements Must Be Met

The Governor's Electric Power Committee has forecast an increase in power requirements from 13,000,000 kilowatts in 1965 to 22,000,000 kilowatts in 1975 (70% increase) and to 48,000,000 kilowatts in 1990 (270% increase).

In one major industrial category alone -- the electro-chemical and electro-metallurgical industries -- the Power Authority cannot now supply present needs for about 600,000 kilowatts of low cost power. The huge amount of electricity used by these firms makes the cost of such power a highly significant competitive factor. The Authority's capacity to meet the power needs of these industrial customers represents a major inducement to the industry to remain or expand in New York State.

Vital Expansion Programs Are Now Advancing

New York's major power companies now have firm plans to add 7,440,000 kilowatts of generating capacity through 1973 -- over 70% of which will be nuclear.

As the electric systems in New York State operate as a part of a vastly larger network consisting of most of the systems in the United States and Canada, the new generating capacity will be accompanied by an extensive transmission line expansion program which will in turn further strengthen intra-state and interstate power connections, thereby adding to the reliability of power in New York State.

Much of New York's Future Power Will Be From Nuclear-Fueled Units

The Power Authority's tremendous St. Lawrence and Niagara projects, and the several smaller hydroelectric plants operated by electric utilities represent about one-fifth of all electric resources in the State.

Until recently, the remainder of the State's power has been produced through the use of coal, oil and natural gas, imported from outside the State. The high transportation cost of importing these fossil fuels materially adds to the cost of power within the State; their use also contributes to air pollution.

The advent of economically competitive atomic power now provides an opportunity for New York, within the foreseeable future, to reduce its thermal power generating costs, while minimizing air pollution.

The Atomic and Space Development Authority Can Assist In Achieving Maximum Development of Nuclear Generating Capacity

Under this program, the Atomic and Space Development Authority, in cooperation with the power companies, can increase basic research and development and provide a service to the electric utilities as well as to all New Yorkers.

While the long-run potential for economic power from nuclear generation is far ahead of that of power generated from conventional fuels, the added initial investment due to the high cost of nuclear fuels, public demand for the incorporation of special features in nuclear generating plants and the difficulties in obtaining suitable sites for them could represent a substantial increase in the rate base -- the investment on which the cost of the electricity to the consumer is computed -- resulting in higher costs for nuclear generated power than might be possible with the new arrangements made possible under this program.

In a third party role, the Authority would be in a far better position than would the industry to reconcile the many important interests that must be considered in the selection of a site for a nuclear facility.

The Authority could participate in the cost of special features in a nuclear power plant to the extent required by the public interest in such areas as health, safety, recreation, and conservation of natural resources, features that might not be required solely for the efficient operation of a power facility.

Electric utilities or the Power Authority could lease the nuclear fuel for a power plant from an "inventory" of fuel owned by or available to the Atomic and Space Development Authority. In the past, all fuel has been owned by the Atomic Energy Commission and leased to the users, but the Commission is now phasing out this operation. In the case of electric utilities, continued public ownership could materially reduce the fuel-related rate base, and thereby help keep down power costs to the consumer.

These activities of the Atomic and Space Development Authority would be facilitated by the removal of its debt limit, as proposed in the legislation. The Authority would be able to issue bonds only for self-supporting projects and the removal of a limitation on the amount of bonds that could be sold conforms to common practice with regard to other public authorities.

Removal of the Authority's debt limit and its coincident ability to own fuel will greatly enhance the development of nuclear support industries in the State, such as the reprocessing industry already established through private-State cooperation in Cattaraugus County.

Immediate and Long-Range Needs of
Power Authority Customers Will Be Met

The Power Authority serves high load factor industry, municipals and cooperatives, and, to some extent, private power companies.

Under this program the Authority can meet the currently unsatisfied needs of high load factor industry with the cooperation of private power companies and, through new base load nuclear power facilities and pumped storage facilities throughout its area of service, assure the capacity to meet long-range needs of such industry.

To the extent that this power demand remains unsatisfied, New York's economy cannot realize the benefits of the jobs, capital investment, and continuing payroll and operating expenditures that such power can help attract and retain.

The immediate needs of high load factor industry would be provided for under this program. The electric utility companies have agreed to supply the Power Authority with sufficient energy to allow it to sell an additional 200,000 kilowatts of firm power from its existing hydroelectric projects at the Authority's applicable rates.

These projects have a capacity to produce more electric energy than can be produced by water normally available on an around-the-clock, year-round basis. By providing energy to supply customers during hours when there is insufficient water to turn the generators at their full capacity, the utility companies will be making possible sale by the Power Authority of an additional 200,000 kilowatts on an around-the-clock, year-round basis.

In addition to this 200,000 kilowatts on an immediate basis for high load factor customers, the Power Authority, with the cooperation of the electric utilities, can make available up to 400,000 additional kilowatts of low cost power, as needed, to meet further industrial needs prior to completion of the Authority's new nuclear generating capacity.

The availability of this 400,000 kilowatts is related to the construction of hydroelectric pumped storage facilities by the Power Authority. The energy required to pump water into the storage facility will ultimately come from the Authority's base load nuclear facilities, but during the three-year interim between completion of a pumped storage facility (target date 1972) and completion of a base load nuclear facility (target date 1975), the private utilities will supply the energy needed to operate the pumped storage facility.

Through this cooperative arrangement, up to 400,000 kilowatts beyond the 200,000 kilowatts to be made immediately available can be sold as needed at Authority applicable rates for new high load factor industrial expansion.

The needs of the Power Authority's municipal and cooperative customers are now being fully met. In fact, the Power Authority has allocated to such customers far more power than they are presently using. Under the expanded role of the Power Authority, as described in this program, municipal and cooperative customers will always have available to them all the power they may require.

Any power generated by the Power Authority's new pumped storage or nuclear facilities in excess of the needs of its customers would be available to other electric systems in New York State without discrimination for resale by them under their respective tariffs.

* * *

The program I have outlined represents a balanced approach to meeting the State's immediate and long-range electric power needs through a cooperative effort involving both the public and private sectors. I urge your Honorable Bodies to take early and favorable action on the legislation I am submitting to you.

(Signed) Nelson A. Rockefeller"

On October 11, 1969, the Governor issued a release which stated:

"Governor Rockefeller today announced formation of a Nuclear Power Siting Committee to advise the State Atomic and Space Development Authority on selection of sites for future use in nuclear electric power generation.

Chairman of the new committee will be Dr. W. Mason Lawrence, deputy commissioner of the State Conservation Department.

'Our goal,' the Governor said, 'is to obtain enough sites to meet our expanding power needs, while satisfying the many environmental considerations involved.'

Under the State Power Program adopted in 1968, the Atomic and Space Development Authority is authorized to select and acquire sites for nuclear electric power generation and make them available, as needed, to electric power generating organizations through leases or other contractual arrangements.

The program calls for the Authority's nuclear power plant site selection activities to be carried out in cooperation with State agencies responsible for conservation, health, and economic development, as well as the State's electric utility industry.

In making today's announcement, the Governor said:

'This new committee provides a rapid, cooperative and effective mechanism through which the objectives and intent of the 1968 State Power Program can be carried out to determine the site selection of future nuclear power generating stations.'"

The actions heretofore taken by the government of this state, some of which have been reviewed herein have and will in the future prove very beneficial in carrying out the objectives of providing economical, abundant and reliable electric power for use by the people of this state. The State Power Program, described herein, should do much to aid in expediting construction projects. If it should not prove sufficient, it may be found necessary for both federal and state governments to consider mandating reasonable maximum time limits to be allowed for the consideration of and final resolution of all questions involved in the granting or denial of the requisite licenses, permits or approvals for the construction of electric generating and transmission facilities.

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The Company's "Revised Ten Year Plan" follows generally along some of the guide lines recommended by the "Governor's Electric Power Committee" particularly in the emphasis it places on the desirability of constructing nuclear energy and pumped storage plants to provide power at lower costs. The plan does, however, call for the Company's

adding substantial gas turbine capacity to meet public demands on its system in 1970. The Company states in explaining its plan (Exhibit 17, page 3):

> "Gas turbine units can be manufactured and installed more quickly than other types of capacity, although they are definitely a second choice to a peaking facility such as the Cornwall pumped storage plant, particularly from a system reliability point of view. We have, however, had to install about 175 megawatts of additional gas turbines during 1968-69 and plan 900 megawatts of this type of capacity in 1970. Gas turbines are not designed for base load operation and because of their inherently high operating cost, can be used only for a few peak load days and at times of emergency need for capacity. The amount of such capacity that can be absorbed on any system is limited. We are adding these gas turbines because it is the only capacity we can install and have operational in 1970."

The addition of the proposed gas turbine capacity which admittedly has such an inherently high operating cost does not appear to be in conformity with the stated objectives of the State's Power Program. Such added gas turbine capacity will be required, however, if the Company is to meet demands of the public for electric service in 1970 because of the delays encountered by the Company, which were beyond its control, in the completion of its pumped storage plant and nuclear unit described herein.

6. CONCLUSIONS, FINDINGS AND RECOMMENDATIONS

A. The Company did not have available at all times during the summer of 1969 a sufficient amount of reserve capacity. As a result it exercised its managerial discretion by lowering voltage supplied to customers on several days, appealing to its large customers to conserve power on four days and to the general public on three days. The power

deficiency situation on any of those days was not sufficiently grave to warrant fear on the part of the public that a "blackout" was imminent. No such "blackout" occurred.

B. The Company, primarily because of lack of a proper reserve margin due to its inability to complete construction of proposed additions to its generating and transmission facilities, may be unable (particularly in the first part of the summer of 1970) to supply all demands made upon it by all of its customers without again reducing voltage, shedding load or by the use of other means.

C. The Company's "Revised Ten Year Plan" would appear to be adequate to meet the demands of its customers for power in future years covered by the plan if it is able to carry it out as scheduled. It has not been able to do so up to the present time. The past delays encountered resulted: (1) in the Company being unable in 1969 to supply all of its power requirements without resorting to voltage reductions and appeals to large customers or the public generally to conserve power; (2) in the necessity for it to arrange for the installation of inherently high cost gas turbine capacity in an effort to meet the demand of the public for service in 1970; and (3) in delaying the retirement of certain of its older, high operating cost plants which should be retired from service.

D. The Company has taken the only steps presently available to it in order for it to meet its power supply problem in the immediate future, viz by contracting for the installation of 1080 MW of additional gas turbine capacity.

E. It is recommended that no order be entered by the Commission at the present time for the construction of generating or transmission facilities not already planned for or under construction by this Company.

F. It is recommended, however, that a copy of this memorandum be forwarded to the Federal Power Commission, the Mayor of the City of New York, the Westchester County Executive and to all departments or agencies, federal or state, having any jurisdiction or control over the granting of the requisite licenses, permits or approvals required in order that the Company may progress its planned construction program to the end that such officials may be advised of the present power supply situation and of the urgent necessity for final resolution of applications discussed herein associated with the Company's inability in the past to carry out its construction program.

It is further recommended that an order be entered herein requiring the Company, until otherwise ordered, to file a verified monthly report with this Commission showing the progress it has made in obtaining the requisite licenses, permits or approvals required in connection with its proposed program for the construction of facilities to provide additional generation and transmission capacity and as to the progress it has made in carrying out such program. Upon the adoption of such order, this proceeding should be closed on the records of the Commission.

November 7, 1969

COPY

APPENDIX A

Consolidated Edison Company of New York, Inc.
4 Irving Place, New York, N.Y. 10003
Telephone (212) 460-2003

August 12, 1969

The Honorable James A. Lundy
Chairman
Public Service Commission
199 Church Street
New York, N. Y. 10007

Dear Chairman Lundy:

The loss of our Ravenswood 1,000,000 KW generator during this summer's peak load season has brought to everyone's attention the serious consequences of delays in the construction of new power projects. If the construction of the Cornwall hydroelectric 2,000,000 KW project -- or the Indian Point No. 2 nuclear 1,000,000 KW project -- had not been delayed, Con Edison would have had adequate reserves even with the loss of Ravenswood.

In the next decade the ability of Con Edison to meet the growing energy needs of New York City and Westchester County will depend upon our ability to complete new generating projects and transmission lines as they are scheduled. In large part, timely completion will depend upon the cooperation of the various state, local, and federal regulatory agencies concerned with power supply and protection of the environment.

We have therefore decided to request interested public agencies to make a coordinated review of our construction program for the next decade. This program entitled "Con Edison's Revised Ten-Year Program To Meet Growing Energy Needs and Reduce Air Pollution 1969-79," dated July 22, 1969 as supplemented August 12, 1969, is a revision of a previous ten-year program furnished to the City of New York in November, 1966. Basically, the revisions reflect the delays encountered and anticipated in building the nuclear and pumped-storage units as scheduled in 1966. The revised program seeks to blend considerations of reliability of power supply, protection of the environment, and economy. If the projects shown in these plans can be completed on the schedules shown, there should be an ample supply of power for New York City and Westchester County, although our reserve position will not reach our desired goal until 1971.

The review of our program, we believe, should also include a general survey of projects which, though not now scheduled for completion within the next ten years, may be started within that period. Principal among these are generating projects on the Trap Rock site at Verplanck on the Hudson, Fort Slocum in Long Island Sound, and artificial islands in or near lower New York Harbor.

We believe our plans are sound, but we have no stubborn pride of authorship in them. We recognize that they are always subject to be changed to meet changing circumstances. The one thing not subject to change is the growing demand for electric energy. Therefore if any proposed project is removed from the schedule, another must be proposed to replace it with the same completion date.

Serious objections of one sort or another have been voiced from various sources to all of the major power plants we have proposed, whether hydroelectric, nuclear or oil-fired. There are also serious objections to most of the Company's proposed new transmission lines. If these objections can be resolved in a timely way with the assistance of the power and environmental experts available to the public regulatory agencies, the public would be greatly benefited. Resolution of the conflicts will not be easy, but it is imperative to the future of our City and State and Nation that they be promptly and sensibly resolved.

We would greatly appreciate a prompt review of the enclosed ten-year program by the staff of the State of New York Public Service Commission. We would hope that such review can be done in close coordination with the following agencies which we are also asking to review our plans: the State of New York, the City of New York, Westchester County, and the Federal Power Commission.

Of course our own planning people will cooperate to the fullest extent in the review of our program with your representatives as well as with those representatives of the other public entities. Pending the review it is our belief that we must take the steps necessary to try to keep the projects included therein on the schedules as shown.

We hope that we will hear from you favorably as to the Commission's participation in this coordinated review of our advance program.

Sincerely,

/S/ Charles F. Luce

Enclosure

COPY

July 22, 1969

CONSOLIDATED EDISON COMPANY OF NEW YORK, INC.

Con Edison's Revised Ten-Year Program To Meet Growing Energy Needs and Reduce Air Pollution 1969-79

In November 1966 Con Edison submitted to the Mayor of the City of New York its "Ten-Year Program To Meet Growing Energy Needs and Reduce Air Pollution," a program covering the period 1966 through 1976. The Program set forth a plan for the addition of sufficient new capacity to permit retirement and shutdown of considerable amounts of older equipment. The Program further set forth projected peak electric loads and capacity available through the period. The remainder of the report was devoted to a discussion of various factors inherent in the Program and included commentary regarding generating units to be added or retired, interchanges with other utilities, transmission right-of-way problems, and alternative sources of power supply for New York City and Westchester County.

Since that time, the Company has experienced delays in its plans for the installation of new generating equipment and electric loads have grown at a rate greater than had been projected. The following pages set forth revisions we have made in our plans and cover the period 1969 through 1979. Subjects covered are:

SYSTEM PROJECTIONS

During the next decade Con Edison's Electric load is expected to increase from 7,350,000 kilowatts to 10,850,000 kilowatts, and the Company's net generating capacity will grow from 8,172,000 kilowatts to 14,037,000 kilowatts. Attached Table 1 outlines peak electric loads and capacity available by years through 1979. Table 2 shows planned additions to electric generating capacity and Table 3 lists the planned electric capacity retirements.

DELAYS WHICH AFFECTED THE PROGRAM OF 1966

1 - Indian Point No. 2 nuclear unit was originally scheduled for service in 1969, but it is doubtful that it will be ready before the summer of 1971 for various reasons, including design revisions required by the Atomic Energy Commission and labor problems at the construction site.

2 - Indian Point No. 3 nuclear unit was originally planned for 1971. Interventions before the Atomic Energy Commission and other delays have adversely affected the schedule. It appears that a construction permit may not be granted by the AEC before late this summer and that the project cannot be completed before 1973.

3 - Our Cornwall project was first announced in 1962 for service in 1967. Interventions initially by conservation groups and lately by the City of New York led to hearings before the Federal Power Commission in 1964, 1966, 1967 and 1969. A Federal Court remanded the initial license granted by the FPC in 1965 for further hearings. The Commission has not yet rendered its decision and further review by the Courts is anticipated. It now appears that the project cannot be placed in service before 1977-78, a loss of ten years in providing its benefits to the people of New York City and Westchester County.

4 - When the Cornwall plant was delayed beyond 1972, Nuclear No. 4 was rescheduled for 1974 service date. The accumulative effect of delays on Indian Point Units 2 and 3 clearly show that the 1974 date cannot be attained and it is now scheduled for 1976.

5 - These delays in the operation of new capacity will postpone the deactivation of older fossil fuel generating units in the City of New York which had been planned for 1971 and 1972.

DELAYS IN NUCLEAR PLANTS NOT UNIQUE

While some of the problems associated with delays are unique to the metropolitan New York Area, other problems with nuclear plants have been experienced by utilities throughout the country.

The Nine-Mile Point 500,000 kilowatt nuclear unit of Niagara Mohawk has been delayed about one year, and is now scheduled for late 1969.

The nuclear unit of Niagara Mohawk scheduled for 1971 at Easton is indefinitely postponed. Instead, the Power Authority of the State of New York will install a nuclear unit on Lake Ontario for service in 1973.

The Ginna 420,000 kilowatt nuclear unit of Rochester Gas and Electric has been delayed about six months, and is now scheduled for late 1969. Con Edison had planned to purchase 270,000 kilowatts for three years from this unit commencing with the summer of 1969.

The Bell nuclear unit of New York State Electric and Gas Company has been indefinitely postponed. Con Edison had agreed to purchase generating capacity from this unit starting with 600,000 kilowatts in the summer of 1973.

The Oyster Creek 640,000 kilowatt nuclear unit of General Public Utilities has recently gone critical but final testing will probably not be completed before the end of the summer, a delay of more than two years.

The Millstone Point 650,000 kilowatt nuclear unit of Northeast Utilities is also delayed about six months and then will be available initially at a reduced rating.

These are but a few of the projects recently affected by delays caused by the longer time required to obtain permits and licenses from the authorities having jurisdiction, the increased demand on manufacturing facilities, and delays from various causes during the construction period.

NEW GENERATING FACILITIES

Because of various delays and the continued rapid growth of load, we have been forced to take a number of alternate steps from the former program, in order to provide adequate and reliable service to the people of New York City.

Gas turbine units can be manufactured and installed more quickly than other types of capacity, although they are definitely a second choice to a peaking facility such as the Cornwall pumped storage plant, particularly from a system reliability point of view. We have, however, had to install about 175 megawatts of additional gas turbines during 1968-69 and plan 900 megawatts of this type of capacity in 1970. Gas turbines are not designed for base load operation and because of their inherently high operating cost, can be used only for a few peak load days and at times of emergency need for capacity. The amount of such capacity that can be absorbed on any system is limited. We are adding these gas turbines because it is the only capacity we can install and have operational in 1970.

Con Edison has joined with Central Hudson Gas and Electric Corp and Niagara Mohawk Power Corporation in the construction of a 1200 Mw oil fired base load plant at Roseton N Y on the Hudson River north of Newburgh for service before the summer of 1973. Our share of this capacity will be 480 Mw for four years and 360 Mw for the next four years.

Following the postponement of the Bell nuclear unit, previously mentioned, from which Con Edison expected to purchase 600 Mw of capacity starting in the summer of 1973, we are now planning a joint project with Orange and Rockland Utilities, Inc. for 1973 on their system. This will be a 600 Mw oil fired unit, of which 400 Mw will be our share.

The next large generating capacity addition for the Con Edison system is required in 1974. Recent experience shows that it requires four to five years from date of authorization to place a fossil unit in service and from six to seven years for a nuclear unit. Nuclear No. 4, an 1115 Mw unit outside of New York City, was planned for a 1974 service date but this date cannot now be attained, and 1976 appears to be the earliest service date possible for such a unit. After study of many possible alternates, the company has concluded that the capacity requirement for 1974 must be met by an oil and gas fired plant of approximately 1200 to 1600 Mw located in New York City for reasons which are described later.

DEACTIVATION OF OLDER GENERATING FACILITIES

Con Edison fully recognizes the desirability of deactivating certain older generating facilities within New York City as soon as possible, both from the standpoint of air pollution and from the aspects of reliability and economics. By 1973 some individual units will be 55 years old and the average age will be about 45 years. The equipment is very inefficient by today's standards and costly to operate from every standpoint -- fuel, manpower and maintenance. It is regrettable that the delay of Cornwall and our nuclear units necessitate postponement of deactivation which had been planned for 1971 and 1972.

In our revised program all units in Hell Gate Station are scheduled to be retired by the summer of 1973 and those in the Sherman Creek and Kent Avenue Stations the following year. These and other miscellaneous unit retirements are outlined on Table 3 with all of the retirements listed in the former program completed by 1976 totalling 1452 megawatts. In addition, the program now envisages retirement of an additional 724 megawatts by 1978 at the expected completion of the Cornwall project.

All of these retirements must be contingent upon due completion of the installation of new capacity as programmed. The older units will not be dismantled until the new facilities have proven their reliability.

Throughout the program, the units planned for retirement will be operated as little as possible and in some years it may be possible to assign certain of this equipment to cold standby status, that is, called into service only under emergency conditions.

INTERCHANGE WITH OTHER UTILITIES

During the ten-year period of this program, Con Edison has no plans to sell firm capacity to any other utilities during the summer peak period. Table 1 shows the expected purchases of firm capacity from other systems through 1972, and includes joint ownership of outside capacity in the years following. Through its membership in such organizations as the New York Power Pool and the Northeast Power Coordinating Council, Con Edison is constantly alert to the planned activities of neighboring systems and the opportunities for coordinated planning.

TRANSMISSION RIGHTS-OF-WAY

Con Edison has only two rights-of-way for overhead transmission through Westchester County to the Dunwoodie-Sprain Brook substations in Yonkers, south of which all transmission is underground. One of these, the route of the Catskill Aqueduct of the Department of Water Resources of the City of New York, now carries a double circuit 138 kv line by agreement between the City and the Company. It is planned to replace this line with a double circuit 345 kv line as an essential part of the future transmission development. Negotiations have been under way with the Department for nearly two years but agreement has not been reached under which permission would be granted. The other right-of-way is owned by the Company and has installed on it a double circuit 138 kv line and a double circuit 345 kv line. It is planned to rebuild the 138 kv circuits for 345 kv operation. Considering the residential development of Westchester County, the Company will not seek additional rights-of-way for overhead transmission through this area.

The six aforementioned 345 kv circuits, therefore, represent the ultimate overhead transmission approaching the City from the north. The output of the planned nuclear units and the share of joint generating projects north of the City, the Cornwall pumped storage plant and emergency power from upstate New York, New England, and Ontario as well as a major portion of emergency power from the Pennsylvania-New Jersey-Maryland (PJM) system will fully utilize the reliable capacity of all six circuits.

Thus, any additional capacity from northern sources will require additional transmission facilities to the heart of the City which would have to be underground. Underground costs are ten to twenty times those for equivalent overhead transmission capacity and since substantial distances are involved the underground costs exert a large penalty on the import of additional power into the City. Forty miles of underground costs at least as much as 400 miles of overhead to handle the same capacity.

OTHER POSSIBLE SOURCES OF POWER

Canadian Power

Con Edison has investigated other possible sources of generating capacity such as the planned Canadian hydroelectric development. Recent inquiry in this regard determined that essentially the entire output of the Churchill Falls plant now under construction in Labrador, will be required for anticipated load growth in Canada. Only short term capacity could be made available. This could not be utilized because of the transmission required.

Mine-Mouth Plants

Mine-Mouth generating plants in Pennsylvania to supply this area have been studied frequently. These studies all show that additional high capacity transmission lines are required since the strong high voltage network existing and being planned throughout the Northeast, for reliability purposes, cannot also be used for importing large blocks of power such as 1,000,000 or 2,000,000 kilowatts. The required new, long transmission links to the city, a considerable portion underground, make this alternative unattractive economically and uncertain for a specific service date because of the difficulties that will be encountered in obtaining the extensive right-of-way necessary for both the overhead and underground sections. This right-of-way will be particularly difficult to obtain because it is through areas which are not being served by the lines.

LOCATION OF FOSSIL FIRED CAPACITY FOR 1974

The only feasible alternate for a source of new capacity for 1974 is to locate additional conventional capacity in the City. It is proposed to install about 1,200-1,600 MW of new capacity, fired by 0.37 per cent sulfur oil or natural gas whenever natural gas is available. Such an addition on very low sulfur fuel oil would contribute substantially to the improvement of air pollution control in the City. For instance, this capacity using 0.37 per cent sulfur oil would emit only about one-quarter the amount of sulfur dioxide that would be emitted by equivalent capacity of the older, less efficient equipment (proposed to be deactivated) on 1 per cent sulfur oil.

Studies have been made of several possible sites and it is concluded that the Astoria plant in Queens is the most desirable. It is close to the center of load on the system and reasonably remote from the concentration of buildings in Manhattan. From the standpoint of thermal discharge, Quirk, Lawler and Matusky Engineers, have reported that at the Astoria location more than 1600 MW of capacity may be installed and still comply with the proposed criteria of the New York State Water Resources Commission.

ESTIMATED STACK EMISSIONS

Table 4, attached, is a comparison of the estimated stack emissions associated with the 1966 Ten Year Program and those in the current program. It shows that by 1974 the emission of both SO_2 and particulates under the current program including the enlarged plant at Astoria will be less than contemplated under the 1966 program.

C O P Y

TABLE 1.

CONSOLIDATED EDISON SYSTEM

ESTIMATED ELECTRIC LOAD AND CAPACITY - SUMMER PEAK

MEGAWATTS

	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979
Load											
Maximum 1 Hour Net Distributed Load	7,350	7,725	8,075	8,400	8,725	9,075	9,425	9,775	10,125	10,475	10,850
Capacity											
Estimated Installed Capacity	8,172	9,072	9,945	9,945	11,265	11,975	12,043	12,881	13,761	14,037	14,037
Estimated Firm Purchases from Other Utilities	710	445	420	400	0	0	0	0	0	0	0
Estimated Capacity Usable for Con Edison System	8,882	9,517	10,365	10,345	11,265	11,975	12,043	12,881	13,761	14,037	14,037

July 22, 1969

TABLE 2

CONSOLIDATED EDISON SYSTEM

PROGRAM OF ELECTRIC CAPACITY ADDITIONS*
PRIOR TO SUMMER PEAK IN YEAR INDICATED

Year			Net Capacity Megawatts
1970	Gas Turbines at Astoria Plant		450
	Gas Turbines at Undetermined Location		450
		Total	900
1971	Nuclear Unit No. 2 at Indian Point Station		873
1973	Increased Capacity in Unit No. 2 at Indian Point Station		92
	Nuclear Unit No. 3 at Indian Point Station		965
	Roseton Plant (Con Ed Share)		480
	Bowline Point Plant (Con Ed Share)		400
		Total	1 937
1974	Increased Capacity in Unit No. 2 at Indian Point Station		35
	Expansion of Astoria		1 200 **
		Total	1 235
1975	Increased Capacity in Unit No. 2 at Indian Point Station		33
	Increased Capacity in Unit No. 3 at Indian Point Station		35
		Total	68
1976	Increased Capacity in Unit No. 3 at Indian Point Station		33
	Nuclear Unit No. 4		1 115
		Total	1 148
1977	Pumped Storage Units No. 1, 2, 3 and 4 - Cornwall Plant		1 000
	Roseton Plant - (Decrease in Con Ed Share)		-120
		Total	880
1978	Pumped Storage Units No. 5, 6, 7 and 8 - Cornwall Plant		1 000

* Subject to periodic revisions dependent upon changing conditions including variations in Construction Schedules.

** Depending on detailed studies the additional capacity may be as great as 1600 MW.

July 22, 1969

TABLE 3

CONSOLIDATED EDISON SYSTEM

PROGRAM OF ELECTRIC CAPACITY RETIREMENTS
PRIOR TO SUMMER PEAK IN YEAR INDICATED

Year			Net Capacity Megawatts
1973	Noll Gate Station - All Units		617
1974	Kent Avenue Station - All Units		92
	Sherman Creek Station - All Units		199
	Hudson Avenue Station Units No. 1,2,3 and 4		234
	B)74th Street Station Unit No. 3 (Effective Capacity)		0
		Sub-Total	525
1976	A)East River Station Units No. 1 and 4		239
	B)59th Street Station Unit No. 7		32
	B)Waterside Station Unit No. 1		39
		Sub-Total	310
1978	A)East River Station Units No. 2 and "3"		75
	A)Hudson Avenue Station Units No. 5,6,7 and 8		510
	B)Waterside Station Units No. 10,11,12 and 13		107
	B)59th Street Station Unit No. 8		32
	B)74th Street Station Unit No. 4 (Effective Capacity)		0
		Sub-Total	724
		Total	2 176

A)Associated boilers are expected to be retained for the steam system.

B)Boilers at the stations noted produce steam for high pressure turbines. The exhaust from those turbines can be utilized either to generate power from low pressure turbines or to provide steam for the distribution system. Only the low pressure turbines cited are to be retired; the boilers are expected to remain in service.

Table 4

CONSOLIDATED EDISON SYSTEM

ESTIMATED STACK EMISSIONS

	1966 Program		Current Program	
	SO_2 (1000 Tons)	Particulates (Tons)	SO_2 (1000 Tons)	Particulates (Tons)
1966	340	11 350	-	-
1967	278	11 050	-	-
1968	277	10 230	-	-
1969	233	5 880	168	7 236
1970	192	5 760	181	7 772
1971	122	4 660	152	6 516
1972	109	4 380	169	7 344
1973	112	4 530	125	5 380
1974	121	4 840	91*	4 079*
1975	130	5 220	98*	4 354*
1976	100	4 090	86*	3 879*

*Assumes Astoria expansion at 1600 MW.

COPY

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CONSOLIDATED EDISON COMPANY OF NEW YORK, INC.

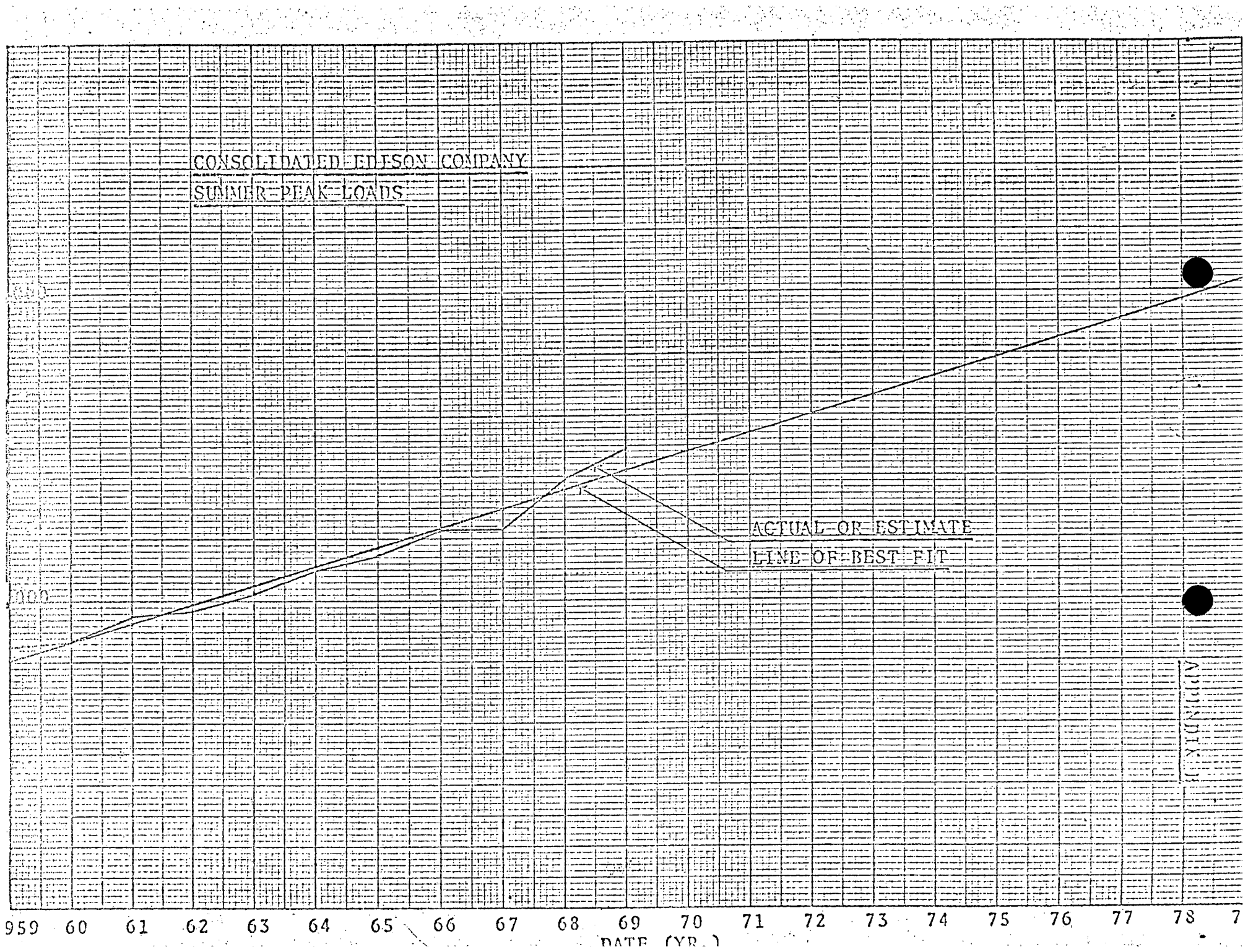
Supplement To
Con Edison's Revised Ten-Year Program
To Meet Growing Energy Needs and Reduce Air Pollution
1969-79

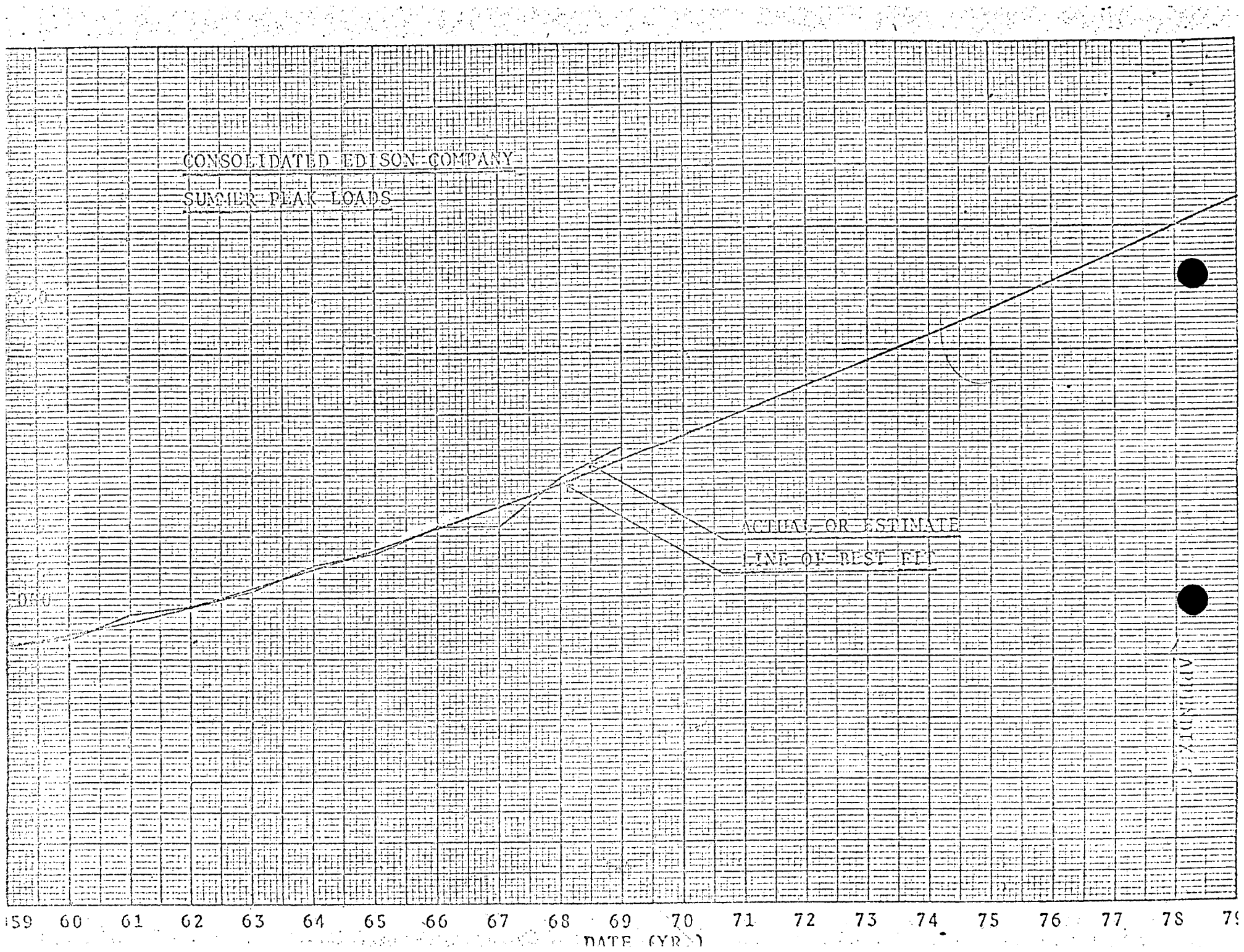
We show on Table 2 of this revised "Ten-Year Program to Meet Growing Energy Needs and Reduce Air Pollution, 1969-79," planned additions of 900 megawatts of gas turbines. Recent information from our suppliers indicates the following timetable for these additions: 523 MW by June 30, 1970; 225 MW additional by July 31, 1970, and 150 MW by August 31, 1970.

The purchase orders for some of the gas turbines have an incentive clause which provides a bonus for improvement of the scheduled service date and a penalty for each day's delay of service date. Seventy-five megawatts of those scheduled for July 31 and all of those scheduled for August 31 have this incentive clause.

We have been recently informed by Westinghouse that the service date for Indian Point No. 2 could be September 21, 1970. We are concerned, however, that intervention in the provisional license proceedings could delay this service date by six months or more. The availability of the 420 MW of firm purchases from other utilities shown for 1971 on Table 1 of our Ten-Year Program is dependent on their having sufficient excess generating capability over their load and reserve requirements.

Two high voltage interconnections are underway which were originally scheduled for 1968 and 1970 completion. The first is from Branchburgh, New Jersey to Millwood, New York. This interconnection is encountering opposition in both states. The other is from Binghamton to Ramapo, New York, This interconnection is also encountering opposition. If these interconnections are not completed by the summer of 1971, there will be serious limitations on the amount of firm and emergency power which can be reliably imported by Con Edison from the upstate Companies and PJM.


CONSOLIDATED EDISON COMPANY
SUMMER PEAK LOADS
ACTUAL OR ESTIMATE
LINE OF BEST FIT
000
959 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 7
DATE (YR.)


CONSOLIDATED EDISON COMPANY
SUMMER PEAK LOADS
ACTUAL OR ESTIMATE
LINE OF BEST FIT
59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79
DATE (YR.)

APPENDIX D

Application of Curve y = (0.26 x log x +4.245) (1000) to load data of Con Ed, 1959

No. (i=1)	a=0.26x	log x	a log x	+4.245	Actual	Necessary Correction to Above Formula
	0.26	0	0	4.245	4.245	0
	0.52	.3010	.157	4.402	4.352	-.050
	0.78	.4771	.372	4.617	4.744	+.127
	1.04	.6021	.626	4.871	4.852	-.019
	1.30	.6990	.909	5.154	5.105	-.049
	1.56	.7782	1.214	5.459	5.505	+.046
	1.82	.8451	1.538	5.783	5.710	-.073
	2.08	.9031	1.878	6.123	6.154	+.031
	2.34	.9542	2.233	6.478	6.147	-.331
	2.60	1.0000	2.600	6.845	6.960	+.115
	2.86	1.0414	2.978	7.223	7.433	+.210
9)	5.46	1.3222	7.219	11.464	-	-
			Total			.007
			Average			0.7 mw.

APPENDIX E

CONSOLIDATED EDISON SUMMER CAPACITY 1969

Thermal	Capability (MW)
Arthur Kill	892
Astoria	1577
East River	806
Hell Gate	617
Hudson Avenue	794
Kent Avenue	92
Ravenswood	1827
Sherman Creek	199
Waterside	593
59th Street	210
74th Street	159
Total Thermal	7766
Nuclear	
Indian Point	280
Gas Turbines	
Astoria	15
Kent Avenue	22
Ravenswood	15
Waterside	11
74th Street	34
Hudson Avenue	34
Total Gas Turbines	131
Total Capability, all types	8177

APPENDIX F

LONG TERM DERATINGS - 1965-1969

Megawatts

Summer Workdays

Derating Not to Exceed Days	1965	1966	1967	1968	1969
10	350	250	250	350	450
9	350	250	250	350	450
8	350	250	250	350	450
7	350	250	250	350	450
6	350	250	250	350	450
5	350	250	250	350	450
4	500	250	250	350	450
3	500	250	250	350	450
2	500	250	250	350	450
1	500	300	250	350	450
0	500	300	250	350	450

Source: Case 25293

1965 Data - EXH. 20
1966 " - " 21
1967 " - " 22
1968 " - " 23
1969 " - " 41

APPENDIX G

SHORT TERM DERATINGS - 1965-1969

Megawatts

Summer Workdays

Derating Not to Exceed Days	1965	1966	1967	1968	1969
10	400	800	450	300	500
9	450	850	450	300	550
8	450	900	450	350	550
7	450	950	450	350	550
6	450	950	450	350	650
5	450	950	500	350	650
4	450	950	500	350	700
3	450	1000	550	400	700
2	450	1050	550	400	700
1	450	1050	550	550	850
0	450	1100	700	700	900

Source: Case 25293

1965	Data	- EXH.	20
1966	"	- "	21
1967	"	- "	22
1968	"	- "	23
1969	"	- "	41

APPENDIX H

LONG & SHORT TERM DERATINGS - 1965-1969

Megawatts

Summer Workdays

Derating Not to Exceed Days	1965	1966	1967	1968	1969
10	750	1000	700	550	900
9	750	1050	700	550	950
8	750	1050	750	550	950
7	750	1150	750	550	1000
6	750	1150	750	550	1050
5	750	1200	800	550	1050
4	750	1200	800	600	1100
3	750	1200	800	600	1100
2	750	1250	900	650	1100
1	750	1250	900	750	1250
0	750	1350	950	850	1350

Source: Case 25293

1965 Data - EXH. 20
1966 " - " 21
1967 " - " 22
1968 " - " 23
1969 " - " 41

APPENDIX I

FIRM PURCHASES 1970-1972

(Megawatts)

	1970	1971	1972
New England Electric System (Brayton Point Unit No. 3)	100		
New York State Electric & Gas Corporation	150	150	
Rochester Gas & Electric Corp. (Ginna Unit No. 1)	270	270	
New England & Ontario Systems[a]			400
Totals	520	420	400

[a]Under Discussion

CONS. EDISON CO. OF N.Y.

SUMMER PEAK - MW

	1969	1970	1971	1972	1973	1974	1975	1976	1977	1978
sting Installed Capacity	7 662	8 177	9 257	10,130	10,130	11,450	12,160	12,228	13,066	13,946
Capacity										
rthur Kill Unit No. 3	515									
as Turbines		1080								
ndian Point Unit No. 2			873							
ncreased Capacity - Nuclear Plants					92	35	68	33		
ndian Point Unit No. 3					965					
oseton Plant (Con Ed Share)					480					
owline Point (Con Ed Share)					400					
etire Hell Gate Station - All Units					-617					
xpansion of Astoria Plant						1 200				
etire Kent Avenue & Sherman Creek Stations - All Units						-291				
etire Miscellaneous Units - Various Stations						-234		-310		-724
uclear Unit No. 4								1 115		
ornwall Plant									1 000	1 000
oseton Plant - (Decrease in Con Ed Share)									-120	
al Installed Capacity	8 177	9 257	10,130	10,130	11,450	12,160	12,228	13,066	13,946	14,222
sed Gas Turbine Capacity			600	600						
n Purchases										
ong Island Lighting Company(Northport No.2)	100									
ew England Electric System (Brayton Point Unit No. 3)	250	100								
range & Rockland Util.,Inc.(Lovett Unit No. 5)	160									
ew York State Electric & Gas Corp.	200	150	150							
ochester Gas & Electric Corp.(Ginna Unit No. 1)		270	270							
ew England & Ontario Systems*				400						
*(Under Discussion)										
al Purchases	710	520	420	400	0	0	0	0	0	0
al Capacity Resources	8 887	9777	11.150	11.130	11.450	12.160	12.228	13.066	13,946	14,222
imated Peak Load	7 223	7612	8 010	8 417	8 832	9 254	9 683	10 120	10 562	11 010
erve - MW	1 664	2165	3 140	2 713	2 618	2 906	2 545	2 946	3 384	3 212
			39.2	32.2	29.6	31.4	26.3	29.1	32.0	29.2

APPENDIX K

CONSOLIDATED EDISON COMPANY
ESTIMATED SUMMER PEAK LOAD
Vs. TOTAL CAPACITY RESOURCES

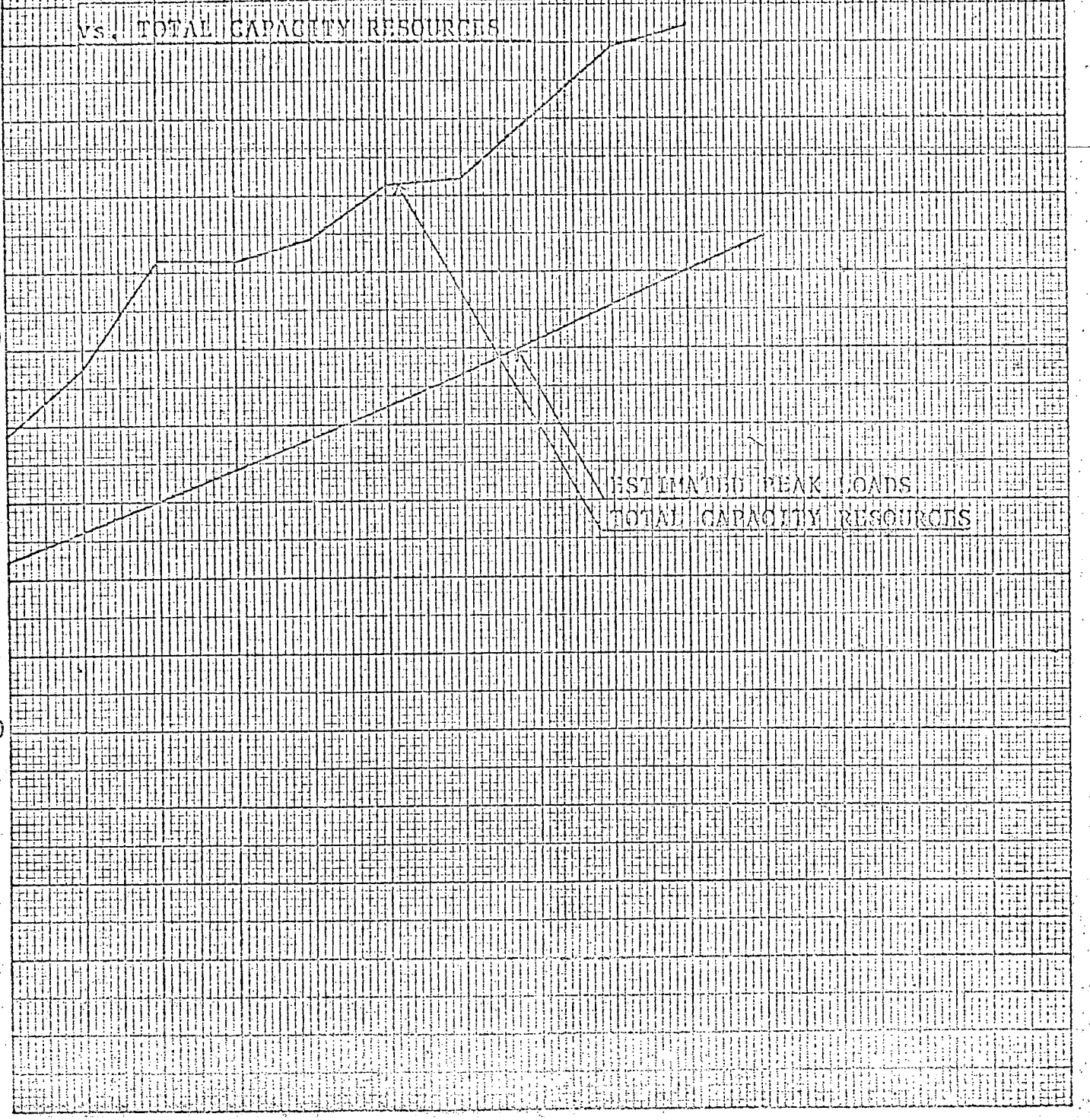


Exhibit 49

TABLE OF CONTENTS

CON EDISON GENERATING PLANT CONSTRUCTION

Cornwall Pumped Storage Plant

Dates Authorized by Board of Trustees

September 25, 1962 (6 generating units)
January 22, 1963 (amended to 8 generating units)

Dates of Major Equipment Orders and Names of Contractors

November 30, 1962 - General Electric (motor generators)
December 20, 1962 - Allis Chalmers (pump turbines)
June 30, 1964 - Chicago Bridge & Ironwork Co. (penstocks)

Capacity

2000 MW (8 units of 250 MW each) -
Originally, three units (750 MW) were scheduled to go on the line the first year of operation, the remaining five units (1250 MW) to be in service the following year. The present schedule provides for an initial capability of 1000 MW, the remaining 1000 MW to be in service one year thereafter.

Original Scheduled Service Dates

June, 1967 - 750 MW
Summer, 1968 - 1250 MW, a total of 2000 MW

Significant Delays in Acquiring Requisite Licenses, Permits, or Approvals

First Round of Hearings - January 1963 to March 1965

Application for an FPC license was filed on January 29, 1963. The Company recognized at that time that measures to retain or enhance the scenery of the area should be considered. It decided to install underwater transmission facilities across the Hudson River notwithstanding the substantial additional cost as compared to overhead wires. It planned for recreational facilities and fish protection devices. The project plan was discussed in detail with community leaders and local government officials.

FPC hearings commenced on February 25, 1964 and concluded in May after nine days of hearings. Ten intervenors appeared, including various conservation groups and municipalities. The Presiding Examiner's initial decision,

Significant Delays in Acquiring Requisite Licenses, Permits, or Approvals (Continued)

recommending construction of the project, was issued July 31, 1964. Oral argument before the full Commission was heard November 17, 1964, and on March 9, 1965 the Commission ordered that a license be issued; it also ordered that additional hearings be held on the question of detailed routing of overhead transmission facilities and the design of fish protection screens.

The first phase of the case consumed about 26 months.

Second Round of Hearings and The Appeal - March 1965 to December 1965

The supplemental transmission and fish protection hearings were held in May, 1965 (The FPC order amending the original license as to location of transmission lines and design of fish protection devices was issued on October 4, 1965.). On July 6, 1965 Scenic Hudson Preservation Conference and three towns which had intervened petitioned the United States Court of Appeals for review of the FPC's principal licensing order. The Company moved for expedited hearing of the appeal on the ground that it would be necessary to build a fossil fueled unit in New York City unless there was a decision by the end of October, 1965. The Court heard the case on October 8, 1965. Its decision, which vacated the license and remanded the proceeding, was handed down on December 29, 1965 [Scenic Hudson Preservation Conference v. FPC, 354 F2d 608 (2d Cir. 1965), cert. den. Consolidated Edison Co. v. Scenic Hudson Preservation Conference, 384 US 941 (1966)].

Third Round of Hearings - January 1966 to October 1968

Pursuant to the Second Circuit's remand order, the FPC scheduled further hearings. Con Edison amended its application to propose complete undergrounding of the hydroelectric powerhouse in order to allay the claims of scenic impairment.

The Second Circuit's opinion ordering remanded hearings, in practical effect, required that the entire proceeding be relitigated. In compliance with the Court's mandate to "probe all feasible alternatives", in depth evidence was presented on a vast range of alternate generating schemes.

Further detailed evidence was prepared with respect to transmission, aesthetics and recreation. A scale model of the site, showing the plant installed, was built. Experts on landscaping and park development were called upon to testify. Very considerable effort, expense and time were required to prepare the case on remand.

Preparation of this evidence, together with persistent pleas by the opposing intervenors for more time, resulted in delayed opening of the remand hearings until November 14, 1966. These hearings continued, with numerous recesses, until May 23, 1967. In this period there were 72 days of hearings, 3 days of depositions, and 3 days of

Significant Delays in Acquiring Requisite Licenses, Permits, or Approvals (Continued)

site visiting by the Examiner and counsel. Testimony was heard from 73 witnesses. The record grew to 16,230 pages and 568 exhibits. Unsworn statements of position were given by 79 individuals and organizations, some for and some against the project.

Briefing in this remand phase was completed in late August, 1967. Con Edison's main brief consisted of 244 printed pages. Some intervenors' and staff's briefs were even more lengthy.

Fourth Round of Hearings - October 16, 1967

In August 1967, as reply briefs on Round Three were being prepared, the State of Connecticut Board of Fisheries and Game petitioned to intervene. Although untimely, the petition was unopposed and it was granted August 17, 1967. The Connecticut petition was directed to possible adverse effect upon fishing in Connecticut waters. A hearing was held October 16, 1967 to receive Connecticut's evidence.

Fifth Round of Hearings

The Examiner's initial decision was handed down on August 6, 1968. The Examiner recommended construction of the project as then proposed, with some modifications in project transmission line routing and design. The powerhouse was to be wholly underground. Recreational facilities were planned.

Exceptions to the Examiner's initial decision and requests for oral argument before the Commission were filed. Opponents broadly assailed the decision on scenic, fishing and engineering grounds. Con Edison excepted only to certain technical matters.

As the exceptions were being completed, New York City petitioned, on October 25, 1968, to intervene and reopen the hearings. The City's demand was to present evidence regarding its assertion that the project underground powerhouse, as recommended by the Examiner, would be located too close to the City's Catskill Aqueduct. This Aqueduct issue had already been considered on the record, and the Examiner had considered it in his August 6, 1968 decision. However, up to this time the City had chosen not to intervene. The City's petition urged that the project powerhouse be relocated on an alternate site (on park lands of the Palisades Interstate Park Commission) which the Examiner had found to be less suitable than the one he recommended.

The Company did not oppose the City's petition, but urged that further hearings proceed immediately. The Commission granted the City's petition and indefinitely postponed oral argument on November 19, 1968.

Significant Delays in Acquiring Requisite Licenses, Permits, or Approvals (Continued)

The City and Scenic Hudson obtained until March 4, 1969 to prepare and present evidence on the Aqueduct location issue. Hearings were held between March 4, 1969 and May 1969. Briefing was completed May 23, 1969..

By this time the record contained 18,914 pages of transcript and 675 exhibits.

The following is a list of organizations which have actively opposed the Cornwall project (a number of individuals have also actively opposed the project, but are not listed below):

Adirondack Mountain Club
Appalachian Mountain Club
Board of Fisheries & Game - State of Connecticut
Boscobel Restoration, Inc.
Carmel, Town of
Citizens Committee on National Resources
Constitution Island Association
Cornwall Taxpayers Water Protection Assn.
Cortlandt Citizens for the Hudson River
Cortlandt Conservation Association
Cortlandt, Town of
Council of Brooklyn Organizations, Inc.
Federation of New York State Bird Clubs
Freeport, Village of
Garrison Fish & Game Club, Inc.
Hempstead Town Lands Resources Council
Hudson River Conservation Society
Hudson River Fisherman's Association
Long Island League of Salt Water Sportsmen, Inc.
Nassau County
Nassau County Fish and Game Association, Inc.
National Audubon Society
National Parks Association
National Party Boat Owners Alliance
National Trust for Historic Preservation in the U. S.
Nature Conservancy
Philipstown Citizens' Association
Philipstown, Town of
Power Committee of the Community Council of Hilltop Village Cooperatives #1,2,3,4
Putnam County
Putnam County Historical Society
Putnam Valley, Town of
Rock Industries (KCOR, Inc.)
Scenic Hudson Preservation Conference
Sierra Club
Sportsmen's Council Marine District of New York State, Inc.
State Bird Clubs, Inc.
Isaak Walton League
Westport Striped Bass Club, Inc.
Wilderness Society
Yorktown, Town of

Significant Delays in Acquiring Requisite Licenses, Permits, or Approvals (Continued)

Organizations which have actively supported the Cornwall project include:

Associated Industries of New York State, Inc.
Bethlehem Rod & Gun Club, Inc. - Meadowbrook, N. Y.
Black Rock Fish and Game Club, Inc. - Cornwall, N. Y.
Board of Education, Cornwall Central School District - Cornwall, N. Y.
Board of Supervisors of the County of Orange - State of New York
Bronx Board of Trade and Chamber of Commerce
Brooklyn Downtown Lions Club - Brooklyn, N. Y.
Builders Institute of Westchester and Putnam Counties
Building and Construction Trades Department of Washington, D. C.
City of Newburgh, N. Y.
Commerce and Industry Association of New York, Inc. - New York, N. Y.
Cornwall Taxpayers Association - Cornwall, N. Y.
Downtown Brooklyn Association
Economic Development Council of New York City, Inc.
Empire State Chamber of Commerce
Exchange Club of The Tarrytowns - Tarrytown, N. Y.
Greater Newburgh Chamber of Commerce - Newburgh, N. Y.
Greenpoint Lodge No. 403 - Brooklyn, N. Y.
Hudson Valley Progress Committee - Cornwall-on-Hudson, N. Y.
International Union of Operating Engineers of the United States and Canada - Washington, D. C. and New York, N. Y.
Kiwanis Club of Greenwich Village - New York, N. Y.
Kiwanis Club of Little Neck - Douglaston, N. Y.
Kiwanis Club of Mamaroneck - Mamaroneck, N. Y.
La Guardia Airport Kiwanis Club
New York Chamber of Commerce - New York, N. Y.
New York City Central Labor Council, AFL-CIO - New York, N. Y.
N. Y. State American Federation of Labor - Congress of Industrial Organization
N. Y. State Building & Construction Trades Council
Orange County Building & Construction Trades Council
Orange County Federation of Sportsmen's Clubs, Inc. - Orange County, N. Y.

Significant Delays in Acquiring Requisite Licenses, Permits, or Approvals (Continued)

Pine Plains Grange - Pine Plains, N. Y.
Rocky Hill Civic Association, Inc.
South Shore Lions Club - Staten Island, N. Y.
The Broadway Association, Inc. - New York, N. Y.
The Downtown Lower Manhattan Association
The East Side Association - New York, N. Y.
The New York State Society of Professional Engineers, Inc. - New York, N. Y.
The Mid-Hudson Municipal Association
Town of Cornwall, N. Y.
Town of Highlands Fish & Game Club, Inc. - Highlands, N. Y.
Town of Highlands, N. Y.
Utility Workers Union ofAmerica, AFL-CIO Local 1-2 - New York, N. Y.
Village of Cornwall, N. Y.
Westchester County Association, Inc.
West Side Association of Commerce in the City of New York, Inc.
Yonkers Chamber of Commerce - Yonkers, N. Y.

Other Causes of Delay

None to date.

Present Status

Since May 23, 1969, the Examiner has been preparing his supplemental decision on Round Five. The elapsed time since the Second Circuit's remand order has been three years and nine months to date.

It is hoped that 1000 MW of Cornwall's capacity will be available by 1977 and the remaining 1000 MW by 1978. This, of course, is dependent largely on what happens in the FPC proceedings and any subsequent appeals and how long such proceedings and appeals continue.

CON EDISON GENERATING PLANT CONSTRUCTION

Indian Point Unit No. 2

Date Authorized by Board of Trustees	November 23, 1965
Date of Major Equipment Order and Name of Contractor	June 15, 1966 Westinghouse
Original Scheduled Service Date	June 1, 1969 (Contract date with Westinghouse)
Capacity	1033 MW - The unit will go into service at 873 MW and will be increased to full capacity over a period of approximately four years.
Significant Delays in Acquiring Requisite Licenses, Permits, or Approvals	The Company's application to the Atomic Energy Commission for a construction permit and the submission of the Preliminary Safety Analysis Report were made December 6, 1965. The construction permit was issued on October 14, 1966. Although a period of eleven months elapsed between application for, and granting of, the construction permit, this is not considered an unusual time interval. The Company anticipates a delay in obtaining an operating license from the Atomic Energy Commission, as discussed below under "Present Status".
Other Causes of Delay	This plant is being furnished by Westinghouse Electric Corporation pursuant to a "turn-key" contract. The primary cause of delay has been the failure of Westinghouse to comply with its undertaking to have the plant ready for commercial operation by June 1, 1969. There have been substantial delays in the construction of this unit as a result of labor problems which arose after the start of construction. Slow-downs and walk-outs occurred during Westinghouse's negotiations with labor unions to settle these labor difficulties.

Other Causes of Delay (Continued)

Westinghouse was eventually compelled to replace its piping sub-contractor in order to increase piping progress and steamfitter labor productivity which had been slowing overall job progress.

Present Status

Westinghouse now estimates that the plant will be ready for the commencement of fuel loading in the spring of 1970 and could be in commercial operation in the late fall of 1970. It is necessary to obtain an operating license from the Atomic Energy Commission before the commencement of fuel loading, and the Company believes that this may be a delaying factor.

The application to the Atomic Energy Commission for an operating license, together with the Final Safety Analysis Report, was submitted in October 1968. The Company received the first written response from the Commission Staff by letter dated August 4, 1969. Review by the Staff and the Commission's Advisory Committee on Reactor Safeguards cannot be completed before the winter of 1969-70. The Staff letter requested data which must be supplied by Westinghouse, who has recently informed the Company that it cannot furnish this information until February 1970. This may delay completion of the Staff review until March or April of 1970. That would permit an operating license to be issued in the late spring or early summer of 1970 if the license is uncontested. Various persons have already announced that they intend to oppose this license. It is difficult to estimate the time of a contested proceeding because of the leniency generally allowed to intervenors in obtaining additional time to prepare. It is reasonable to anticipate a six to nine months' delay, which would not permit commencement of fuel loading until early 1971.

The time interval between the commencement of fuel loading and the commercial operation of the plant is dependent on the problems arising during this startup period. The Company presently estimates that nine months may be required for startup. Accordingly, the Company does not believe that it would be prudent to plan on having the plant in operation during the summer of 1971 and is providing additional gas turbine capacity as temporary replacement.

CON EDISON GENERATING PLANT CONSTRUCTION

Arthur Kill Unit No. 3

Date Authorized by Board of Trustees	December 21, 1965
Dates of Major Equipment Orders and Names of Contractors	February 1, 1966 - General Electric (turbine generator) February 10, 1966- Combustion Engineering, Inc. (steam generator)
Capacity	515 MW
Original Scheduled Service Date	June 1, 1968
Significant Delays in Acquiring Requisite Licenses, Permits, or Approvals	None
Other Causes of Delay	A strike at General Electric's Schenectady plant delayed delivery of the turbine generator for six months, requiring a rescheduling of the planned service date to December 1, 1968. The boiler erection sub-contractor experienced labor difficulties, particularly with boilermakers, at the plant site, causing a further delay of approximately five months. Considerable difficulty was experienced in attracting and holding skilled labor.
Present Status	Arthur Kill Unit No. 3 went into service on May 15, 1969.

CON EDISON GENERATING PLANT CONSTRUCTION

Indian Point Unit No. 3

Date Authorized by Board of Trustees	December 20, 1966 (Preliminary authorization) April 25, 1967 (Final authorization)
Dates of Major Equipment Orders and Names of Contractors	December 5, 1966 (Preliminary commitment for turbine generator) Westinghouse February 17, 1969 (Formal plant contract, effective as of December 20, 1966) Westinghouse
Capacity	1033 MW - The unit will go on the line initially at 965 MW and is presently expected to be operated at full capacity within approximately three years thereafter.
Original Scheduled Service Date	June 1971
Significant Delays in Acquiring Requisite Licenses, Permits or Approvals	The Company's application to the Atomic Energy Commission for a preliminary construction permit, and the submission of the Preliminary Safety Analysis Report were made on April 26, 1967. The construction permit was not issued until August 13, 1969. A long delay was encountered in the AEC Staff review. Unit No. 3 was originally designed as a twin unit to Unit No. 2, and it was thought that approval of Unit No. 2 would readily extend to Unit No. 3. After the issuance of the construction permit for Unit No. 2, the AEC proposed new criteria for the design of nuclear plants. Although these criteria have not been formally adopted by the AEC, the Company was required to submit extensive additional information concerning the relationship of the plant design to the new criteria and, in some instances, to re-design features of the plant.

Significant Delays in Acquiring Requisite Licenses, Permits or Approvals (Continued)

Further delays were encountered in the public hearing conducted by the Atomic Safety and Licensing Board, appointed by the Atomic Energy Commission. Two intervenors, the Citizens Committee for the Protection of the Environment and Mrs. Mary Hays Weik, opposed the granting of the construction permit. The Board was liberal in granting delays requested by the intervenors. The Board also engaged in an unusually rigorous examination of the Safety Analysis. Hearings were conducted on three days in March, three days in April and five days in May. The Board rendered its decision on August 13, 1969, and a construction permit was issued on that date.

Other Causes of Delay

Because of the unexpected nature of this regulatory delay, that construction which is permitted by the AEC in advance of a construction permit, was finished prior to August 13. This means that it was necessary to halt construction until the permit was issued. Construction crews then had to be reassembled and construction renewed.

Delay has been experienced by the construction sub-contractor because of a shortage of lathers.

Present Status

Construction of Indian Point Unit No. 3 is now underway and the unit is scheduled to be in service by July 1973.

HIGH VOLTAGE TRANSMISSION

PJM Interconnection

(Branchburg, N. J. to Ramapo, N. Y. - Ramapo to Millwood)

Date of Commitment

June 8, 1964 - Agreement with Public Service Electric and Gas Co.

Original Scheduled Service Date

May 1968 - Later changed to December 31, 1969

Causes of Delay

After five years, the New Jersey segment of the tie is still incomplete, mainly because of condemnation problems. Public Service Electric and Gas Co. experienced serious public opposition to the construction of its portion of the line in New Jersey and did not receive required permission from the Public Utility Commission of New Jersey until May 31, 1967.

Serious delays have also been encountered in constructing the Ramapo - Millwood section of the line. Since a Hudson River crossing is involved, it was necessary to submit the crossing plans to the Hudson River Valley Commission. The Commission's jurisdiction relates to consideration of aesthetic aspects of proposed new construction visible from the Hudson River and within two miles of the shoreline. As to the River crossing itself, plans to install overhead lines on existing 138 KV towers, modified to carry 345 KV circuits, were approved by the Commission in May 1968. It also approved the routing of the overhead lines running from the east bank of the River to Millwood.

However, in June 1969, the HRVC withheld its approval of the proposed overhead facilities approaching the River crossing on the west bank. As to this segment, it found that "the benefits of the project, although substantial in terms of reducing the possibility of a power blackout, are not sufficient to justify constructing a project which

Causes of Delay (Continued)

will have a permanent adverse effect on the scenic resources of the Valley".

Subsequently, and at the request of the HRVC, the Rockland County Board of Supervisors set up a special committee of citizens, local officials, HRVC representatives and utility company representatives to re-consider the routing of the entire 16 miles of line proposed between Ramapo and the River. This special committee has completed its study and has proposed a modified route for consideration by the Rockland County Board of Supervisors.

No significant difficulties have been encountered on the east side of the Hudson River.

Present Status

Construction is underway in New Jersey.

The new route proposed for the New York portion of the line on the west side of the Hudson River is now under review by the HRVC.

All required permits for the portion of the line to be constructed on the east side of the Hudson River have been obtained and construction is underway.

The PJM Interconnection is presently scheduled to be in service by December 31, 1969 but could be delayed by as much as one year.

HIGH VOLTAGE TRANSMISSION

Aqueduct Line Rebuilding
(Millwood to Sprain Brook)

Date Authorized by Board of Trustees	August 23, 1966
Original Scheduled Service Date	Spring 1969
Causes of Delay	Although requisite permits and licenses were received from the six affected municipalities in Westchester County in the summer of 1967, the Company has been unable to commence construction of this line, in the absence of the consent of The City of New York to the use of its Aqueduct right-of-way. Application for such permission was made, in April 1967, to the City's Department of Water Supply, Gas and Electricity. Such permission has not yet been granted and the Company is still negotiating with the City.
Present Status	Construction of the Aqueduct Line should be completed within approximately two years after permission of The City of New York is obtained.

HIGH VOLTAGE TRANSMISSION

1956 Line Rebuilding
(Millwood to Sprain Brook)

Date Authorized by Board of Trustees	August 27, 1968
Original Scheduled Service Date	Spring 1970
Causes of Delay	None to date
Present Status	All requisite licenses, permits and approvals have been acquired. Construction was started this summer. The old line was taken out of service on September 24, 1969 and tower rebuilding is underway. It is expected that this line will be in service as originally scheduled.

HIGH VOLTAGE TRANSMISSION

Southern Tier Interconnection

(Ramapo to Vicinity of Coopers Corners)

Date Authorized by Board of Trustees	January 28, 1969
Original Scheduled Service Date	January 1, 1971
Causes of Delay	None to date
Present Status	Discussions, on an informal basis, have been held with all regulatory agencies having jurisdiction, including the Public Service Commission, the Planning Departments of Orange and Rockland Counties, and the zoning and planning boards of the eleven affected municipalities in Orange and Rockland Counties. Right-of-way options are being acquired. When a major portion of the right-of-way in any municipality has been obtained, formal application for required permits and franchises will be made. It is expected that the scheduled service date will be met.

CAPACITY PURCHASE COMMITMENTS

Rochester Gas and Electric Corp. - Robert E. Ginna Nuclear Plant

Date of Commitment	Commitment presently oral; formal agreement in preparation
Capacity Originally Committed	270 MW - from June 1, 1969 through October 25, 1969 270 MW - from April 26, 1970 through October 24, 1970 270 MW - from April 25, 1971 through October 30, 1971
Reductions in Committed Capacity	No capacity was made available in 1969.
Reasons for Reductions in Committed Capacity	See "Causes of Delay".
Original Scheduled Date of Availability	June 1, 1969
Causes of Delay	The principal cause of delay was a generally optimistic construction schedule which the plant contractor was unable to meet. Other causes of delay included the contractor's inability to attract sufficient skilled labor, delays in shipment of component parts, and delays caused by changes in AEC safety standards.
Present Status	270 MW of the Robert E. Ginna Plant Capacity are expected to be available by summer 1970.

CAPACITY PURCHASE COMMITMENTS

Long Island Lighting Co. - Northport No. 2 Unit

Date of Commitment	December 20, 1965 (letter of intent) April 26, 1968 (formal agreement)
Capacity Originally Committed	250 MW - for the period June 1, 1968 through May 31, 1969 150 MW - for the period June 1, 1969 through October 25, 1969
Reductions in Committed Capacity	250 MW were made available for the period June 1, 1968 through May 31, 1969. On February 3, 1969, the 150 MW committed for the period June 1, 1969 through October 25, 1969 were reduced to 100 MW. This commitment was further reduced to 95 MW on July 17, 1969, and to 78 MW on August 25, 1969.
Reasons for Reductions in Committed Capacity	Unforeseen increase in LILCO's own capacity requirements.
Original Scheduled Date of Availability	June 1, 1968
Causes of Delay	None
Present Status	78 MW are expected to be available until termination of the commitment on October 25, 1969.

CAPACITY PURCHASE COMMITMENTS

Orange and Rockland - Lovett No. 5 Unit

Date of Commitment	September 29, 1966 (letter of intent) March 26, 1969 (formal agreement)
Capacity Originally Committed	195 MW - from April 27, 1969 through October 25, 1969 155 MW - from October 26, 1969 through April 25, 1970 75 MW - from April 26, 1970 through October 24, 1970
Reductions in Committed Capacity	The original letter of intent provided for 195 MW through October 25, 1969 which was reduced, under the terms of the subsequent formal agreement, to 160 MW through October 25, 1969. On April 27, 1969, 160 MW were made available until July 17, 1969 when capacity committed for the period through October 25, 1969 was further reduced to 121 MW.
Reasons for Reductions in Committed Capacity	Unforeseen increase in Orange and Rockland's own capacity requirements.
Original Scheduled Date of Availability	Summer 1969
Cause of Delay	None
Present Status	121 MW are presently available through October 25, 1969. 160 MW are expected to be available for the period commencing October 26, 1969 through April 25, 1970. However, the 75 MW called for by the agreement are not expected to be available from April 26, 1970 through October 24, 1970 because of unforeseen load growth on the Orange and Rockland system.

CAPACITY PURCHASE COMMITMENTS

New England Power Co. - Brayton Point No. 3 Unit

Date of Commitment	May 15, 1967 (letter of intent) April 10, 1969 (formal agreement)
Capacity Originally Committed	250 MW - from date of commercial operation through October 25, 1969 175 MW - from October 26, 1969 through April 25, 1970 100 MW - from April 26, 1970 through October 24, 1970
Reductions in Committed Capacity	238 MW became available on July 29, 1969.
Reasons for Reductions in Committed Capacity	This new unit has not yet reached its full operating capability, but is expected to do so by October 30, 1969.
Original Scheduled Date of Availability	Summer 1969
Causes of Delay	Startup difficulties were experienced.
Present Status	Brayton Point Unit No. 3 went into service on July 29, 1969 at which time 238 MW became available. After October 30, 1969 committed capacity is expected to be available for the remainder of the commitment period.

CAPACITY PURCHASE COMMITMENTS

New York State Electric and Gas Corp. - Homer City Unit No. 1

Date of Commitment	March 25, 1969
Capacity Originally Committed	200 MW - from date of commercial operation of Homer City Unit No. 1 through October 25, 1969
Reductions in Committed Capacity	None
Reasons for Reductions in Committed Capacity	-----
Original Scheduled Date of Availability	Summer 1969
Causes of Delay	Delays were caused by startup problems and furnace fouling of Homer City Unit No. 1.
Present Status	Homer City Unit No. 1 went into service on July 31, 1969 at which time 200 MW of committed capacity were made available and are expected to remain available through October 25, 1969.

CAPACITY PURCHASE COMMITMENTS

New York State Electric and Gas Corp. - Homer City Unit No. 2

Date of Commitment	September 1969 (oral)
Capacity Originally Committed	150 MW - from April 26, 1970 through October 24, 1970
Reductions in Committed Capacity	None
Reasons for Reductions in Committed Capacity	----
Original Scheduled Date of Availability	April 26, 1970
Causes of Delay	None to date
Present Status	Homer City Unit No. 2 is scheduled to be in service late in 1969, and 150 MW are expected to be available on April 26, 1970.

JOINT GENERATING PLANT CONSTRUCTION

Roseton Generating Station

Date Authorized by Board of Trustees	September 24, 1968
Date of Agreement with Joint Owners	October 31, 1968 - Niagara Mohawk and Central Hudson
Dates of Major Equipment Orders and Names of Contractors	August 30, 1968 - General Electric (turbine generator) August 30, 1968 - Combustion Engineering, Inc. (steam generator)
Capacity	1200 MW (two 600 MW units) - Con Edison initially will participate for 40% of the capacity -- 480 MW. Con Edison's share will be reduced to 360 MW on the later of May 1, 1977 or four years after commencement of commercial operation of Unit No. 2 of the plant, and is subject to further reductions at later dates.
Scheduled Service Dates	Unit No. 1 - Fall 1972 (600 MW) Unit No. 2 - Spring 1973 (600 MW, for a total of 1200 MW)
Causes of Delay	None to date
Present Status	Building permits were granted by the Town of Newburgh on March 26, 1969. Approval of preliminary site development work (grading and existing structure demolition) was granted by the Hudson River Valley Commission on February 16, 1969. The Hudson River Valley Commission approved plant construction on May 2, 1969 but such approval is subject to compliance with requirements of other State agencies and to architectural review. The Federal Aviation Agency approved stack construction on June 23, 1969. Applications for approval of construction of river front facilities and dredging were filed with the U. S. Army Corps of Engineers and the New York State Conservation Department Water Resources Commission on June 23, 1969, and it is expected that approvals will be granted by the latter part of October 1969.

Present Status (Continued)

An application for the construction and operation of a sewage treatment plant was filed with the New York State Department of Health on March 5, 1969. A construction permit was granted on July 25, 1969, but operating approval will not be granted until construction is complete. The right to use underwater property is presently under review by the New York State Commissioner of General Services.

Permits will also be required from the New York State Department of Health relative to liquid waste disposal, atmospheric discharge, thermal discharge and river front facilities.

Construction of the Roseton Generating Station is on schedule, as are engineering and design. Plant excavation is complete and foundation construction underway. It is expected that the scheduled service dates of each unit will be met.

JOINT GENERATING PLANT CONSTRUCTION

Bowline Point Generating Station

Date Authorized by Board of Trustees	August 26, 1969
Date of Agreement with Joint Owner	May 19, 1969 (letter of intent with Orange and Rockland) October 10, 1969 (formal agreement)
Dates of Major Equipment Orders and Names of Contractors	March 24, 1969 - General Electric (turbine generator) March 28, 1969 - Combustion Engineering, Inc. (steam generator)
Capacity	600 MW - Con Edison's participation is two-thirds of the capacity -- 400 MW.
Scheduled Service Date	July 1, 1972
Causes of Delay	Site preparation is one month behind the engineer-architects' construction schedule pending approval by the Hudson River Valley Commission of preliminary site preparation work which includes grading, warehouse and shopbuilding construction, main plant foundation piling and pile cap work.
Present Status	Building permits for temporary buildings were obtained from the Town of Haverstraw on September 16, 1969. On September 12, 1969, application was made to the Hudson River Valley Commission for approval of plant construction and for preliminary approval of site preparation work. This application is pending. Approval of stack construction must be obtained from the Federal Aviation Agency. Approval of construction of river front facilities and dredging must also be obtained from the U. S. Army Corps of Engineers and the New York State Conservation Department Water Resources Commission. Permits will also be required from the New York State Department of Health relative

Present Status (Continued)

to liquid waste disposal, atmospheric discharge, thermal discharge and river front facilities.

Engineering and design are on schedule. In view of the very tight schedule, this capacity is not included in the Company's plans for the summer of 1972.

AS TO OTHER PLANNED FACILITIES

In addition to the facilities previously described in this exhibit, the testimony refers to Con Edison's plans for an oil-fired plant of 1200 - 1600 MW at Astoria, a nuclear plant (Nuclear 4) at Verplanck, New York of 1115 MW, and to the addition of gas turbine capacity of about 1660 MW.

It was not deemed necessary to refer to these facilities in detail herein. The Astoria plant, which is planned for availability in 1974, is in the early planning stages.

The fabrication and construction of the additional gas turbine capacity, in the approximate amount of 1060 MW in 1970 and an additional 600 MW in 1971, is on schedule.

Nuclear 4 is planned for completion in 1976. The proceeding for a construction permit was only initiated on June 3, 1969. While we anticipate opposition from intervenors, the proceeding is not yet at a stage where the consequences of such opposition can be evaluated.

PSC Case No. 25293

Exhibit 47

APPENDIX I

CONSOLIDATED EDISON COMPANY OF NEW YORK, INC.

Delays and Related Problems with Generating Plant Construction, High Voltage Transmission Facilities, Capacity Purchase Commitments, and Joint Generating Plant Construction

October 16, 1969