POWER AUTHORITY of the STATE of NEW YORK
10 COLUMBUS CIRCLE, NEW YORK, N.Y. 10019

CONSOLIDATED EDISON COMPANY of NEW YORK, INC.
4 IRVING PLACE, NEW YORK, N.Y. 10003

June 10, 1980

Re: Indian Point Unit No. 2
Docket No. 50-247

Indian Point Unit No. 3
Docket No. 50-286

Mr. Harold R. Denton, Director
Office of Nuclear Reactor Regulation
U. S. Nuclear Regulatory Commission
Washington, D. C. 20555

SUBJECT: INDIAN POINT PLANT SYSTEM RELIABILITY and ECONOMIC COSTS OF SHUTDOWN

Dear Mr. Denton:

The Commission's May 30, 1980 Order directs the creation of a Task Force to assess, among other things, the economic and social effects of shutting down the Indian Point plants. In April, the Power Authority of the State of New York and Consolidated Edison Co. of New York each received requests from the Department of Energy to provide information in connection with the Task Force's efforts regarding certain consequences to our service area should the Indian Point plants ever shut down for a period of time. Our responses consisted of a letter from the Power Authority's H. Kenneth Haase dated May 7, 1980, and a letter from Con Edison's William A. Harkins dated May 5, 1980. These comments are of course only summary discussions of a complex topic. We are unclear whether our responses to DOE have been included in our NRC dockets. In view of the deliberations by the Commissioners in regard to interim operations of Indian Point, we submit herewith copies of these documents for our dockets.

A005,1

8006160108 P

Should the Commissioners or you or the Task Force have any questions, please contact us.

Very truly yours,

Paul J. Early
Vice President and
Assist. Chief Engineer
(Projects)
Power Authority of the
State of New York

William J. Cahill, Jr.
Vice President
Consolidated Edison Co.
of New York, Inc.

Attachments

cc: Peter Crane, Esq., NRC General Counsel's Office
U.S. Nuclear Regulatory Commission
John F. Ahearne, Chairman
Peter A. Bradford, Commissioner
Victor Gilinsky, Commissioner
Joseph M. Hendrie, Commissioner
Richard T. Kennedy, Commissioner
Samuel J. Chilk, Secretary to the Commission
Ellyn Weiss, Esq.

Consolidated Edison Company of New York, Inc.
4 Irving Place, New York, N Y 10003

May 5, 1980

Mr. Bard Jackson
Division of Power Supply
and Reliability
Economic Regulatory Administration
U.S. Department of Energy
Washington, D.C.

Dear Mr. Jackson:

In addition to other information we have furnished, I am forwarding to you, for your possible use in responding to the NRC's April 28, 1980 letter regarding shutdown of the Indian Point units, a copy of a paper written by Con Edison entitled, "The Consequences of a Shutdown of the Indian Point Nuclear Plants".

If you have any questions on this please do not hesitate to contact me.

Truly yours,

William A. Harkins
Chief Generation Planning Engineer

WAH/jk

April 7, 1980

The Consequences Of A Shutdown Of The Indian Point Nuclear Plants

Introduction

The two operating nuclear power plants at Indian Point (Unit 2, an 849 Mw unit owned by Con Edison, and Unit 3, a 965 Mw unit owned by the Power Authority of the State of New York) represent about 16 percent of the electric generating capacity available to serve loads in New York City and Westchester County. Because of their low fuel costs, they are operated to produce about 30 percent of the electric energy consumed in the area. The Indian Point nuclear plants are a valuable asset for consumers of electricity both because of the low cost of their electric output relative to other generation sources and because they provide a stable, non-oil-dependent supply of electricity.

This paper considers the cost and energy supply consequences of a moratorium on the operation of the Indian Point nuclear plants.

Economic Consequences

If Indian Point were shut down, its generation would have to be replaced, at least for the next decade, largely

by existing oil-fired capacity on the Con Edison and PASNY systems. Based upon current 0.3% sulfur residual oil prices of $30 per barrel, the increased cost to consumers of replacing the generation from Indian Point would be about $600 million per year, including related taxes.

A further economic consequence of the shutdown of Indian Point would be its impact on oil prices in the New York area and nationwide. The precarious world oil supply demand balance which currently exists results in volatile oil prices which are affected by even slight changes in demand. The shutdown of Indian Point would result in the need for an additional 20 million barrels of oil per year. This represents two percent of total United States residual oil consumption. More significantly, it would represent about a 12 percent increase in Atlantic Coast low sulfur (up to 0.5 percent) residual oil demand. Such a demand increment could provoke a substantial increase in the price of all low sulfur residual oil, perhaps 20 percent or more. The impact of such a further price increase on electricity and steam prices in New York City and Westchester County would be on the order of $400 million per year, bringing

the annual cost to utility customers of an Indian Point shutdown to $1 billion. The total impact, including electricity, steam and other residual oil uses, such as heating and industrial uses in New York City and Westchester County, could be as much as $1.3 billion.

The cost of replacing the Indian Point capacity with new coal plants, the siting of which for serving loads in New York City and Westchester County would be extremely difficult and couldn't be accomplished before the early 1990's, would exceed $3 billion. Taking into account both the carrying charges on this additional capital expenditure, as well as the cost of coal relative to nuclear fuel, the replacement of Indian Point 2 and 3 with new coal fired plants of equal capacity would add an estimated $1 billion per year to consumer costs.

Consequences Of Capacity Loss

The loss of Indian Point would cause an 1800 Mw reduction in generating capability. While this loss would not of itself create an immediate capacity crisis in the Con Edison Service Area or in New York State, it would adversely impact the reliability of electric supply if other planned additions of generating capacity are not completed on schedule.

Based upon current forecasted load growth in the State, if Indian Point is shutdown and if the new capacity presently scheduled for operation in the next few years in the State is delayed, capacity shortages would start in 1987. If, in addition to a shutdown of Indian Point, all nuclear plants in the State were shutdown, capacity shortages would begin as early as 1983.

Of importance beyond the availability of electric generating capacity is the type of capacity. If Indian Point is shutdown the Con Edison service area dependence on oil-fired generation would immediately skyrocket to almost 90% of its electric energy requirements. Even after the completion of Con Edison's planned conversion to coal burning of three of its generating units, New York City and Westchester would still be dependent on oil for almost 70% of their electricity without Indian Point, clearly an unacceptable level. It compares with the State's current oil dependency (without Indian Point) of about 45% and the nation's oil and gas dependency for electricity of about 30%.

Consequences Of Concurrent Oil Supply Curtailment

Indian Point offers consumers protection against unforeseen curtailments in oil supply.

In light of recent events in Iran and Afghanistan and the general political instability in the Middle East, a complete cutoff of Persian Gulf oil must be considered as a real possibility in any rational planning process. Such a curtailment would reduce free world oil supplies by more than 20 million barrels per day, almost 40 percent. An allocation of the shortage among the industrial nations of the western world and Japan could result in supplies in the United States equivalent to only two-thirds of normal demand and require allocation by the Federal Government of all oil products and natural gas. For purposes of this discussion, a proportional allocation to utilities (one-third less than normal requirements) is assumed -- following such an event which is assumed to occur in Mid-1980.

Because of the heavy dependence of the NYPP and neighboring power pools on oil, there would be a negligible amount of energy available for import from outside the Con Edison service area. This analysis does, however, assume the availability of non-oil fired energy from the Ontario Hydro system in Canada. A recent study done by the Northeast Power Coordinating Council, of which Ontario Hydro is a member, indicated that during an oil curtail-

ment additional energy equivalent to four million barrels of oil per year could be made available to the New York Power Pool from that source. This study assumes that Con Edison would receive half of this replacement energy and continue to receive the energy it is currently importing from Hydro Quebec. Although Hydro Quebec's James Bay complex is now coming into commercial operation, which will result in excess Canadian power for several years, import of this power into the New York Power Pool is currently limited by existing transmission facilities. No new transmission facilities between the NYPP and Canada will be operational by the early 1980's.

If the Indian Point plants are in service at the time of the oil curtailment, consumers likely would not experience service disruptions in 1980. Further, if as a result of the oil curtailment the Company was allowed to convert the Ravenswood 3 and Arthur Kill 3 units to coal burning on an emergency basis, the Company would be able to supply load with no interruptions for the duration of the oil curtailment.

If the Indian Point plants were not available, the situation would change dramatically. Without emergency

coal burning the Company would be unable to supply its full load without interruption after only three months. Even with emergency coal burning at Ravenswood 3 and Arthur Kill 3, the Company would be unable to supply its load without interruptions after about five months. The deficiency in oil supplies would be about six million barrels per year until Arthur Kill 2 is converted to coal burning and three million barrels per year thereafter. Without Arthur Kill 2 on coal, the amount of unserved energy would be about 10 percent of the service area's requirements. Such curtailments would require much more than voluntary actions by consumers.

In 1979, world oil prices more than doubled as a result of a ten percent loss of world productive capacity for a few months. The impact of larger and more extended oil supply curtailments would be unprecedented; the economy and well-being of the entire free world could be shattered. It would be foolhardy to compound the risk of such dire consequences with the further adverse impacts on power supply and energy costs of a shutdown of Indian Point.

POWER AUTHORITY OF THE STATE OF NEW YORK

10 COLUMBUS CIRCLE NEW YORK, N. Y. 10019

(212) 397-6200

TRUSTEES

JOHN S. DYSON
CHAIRMAN

GEORGE L. INGALLS
VICE CHAIRMAN

RICHARD M. FLYNN

ROBERT I. MILLONZI

FREDERICK R. CLARK

GEORGE T. BERRY
PRESIDENT & CHIEF OPERATING OFFICER

JOHN W. BOSTON
EXECUTIVE VICE PRESIDENT & DIRECTOR OF POWER OPERATIONS

JOSEPH SCHMIEDER
EXECUTIVE VICE PRESIDENT & CHIEF ENGINEER

LEROY W. SINCLAIR
SENIOR VICE PRESIDENT & CHIEF FINANCIAL OFFICER

THOMAS R. FREY
SENIOR VICE PRESIDENT & GENERAL COUNSEL

May 7, 1980

Mr. Bard Jackson
Division of Power Supply and Reliability
Economic Regulatory Administration
U. S. Department of Energy
2000 M Street, N.W.
Washington, D.C. 20461

Dear Mr. Jackson:

Enclosed is some information in response to Mr. Jim Brown's request for information concerning the effect of a shutdown of the Indian Point 2 and 3 nuclear units.

Very truly yours,

H. Kenneth Haase
Manager - System Planning

Enclosure

DOE Inquiry Concerning
The Effect of Shutting-Down
The Indian Point Nuclear Plants

This will respond to Mr. Jim Brown's request of April 28, 1980 for information concerning the effect of a shut-down of the Indian Point No. 2 and 3 Nuclear Units for a ten-week period beginning June 1, 1980 and the superseding letter requesting information on the effect of a complete or 50% shut-down of these units for a three-month period and for a twelve-month period.

Following is the information which we have been able to gather to meet this request:

1. Load and Capacity Analysis - Projected reserve margins without Indian Point 2 and 3 in service are attached hereto and have been prepared for the Con Edison-Power Authority service area on a weekly basis for the three-month period beginning June 1, 1980 and on a monthly basis for the twelve-month period beginning June 1, 1980. In view of the time restraints imposed by your request, it has not been possible to develop precise data concerning the resultant reliability of the system without Indian Point 2 and 3. For example, the attached schedules include purchases and transmission capacity from adjacent areas in excess of transmission need for firm purchases as a part of the resources available to carry Metropolitan area loads. Of course, transmission capacity is required in order to share the reserves among adjacent areas. It is only on that basis that reserve requirements are calculated to be in the nature of 20%. This is especially true when the area supply includes a few large units. There is of course no assurance that the generation in the adjacent areas would be available to fully utilize such transmission capacity. In particular, PJM may need to import power from NYPP because of the Three Mile Island outage which has reduced their reserves. Moreover, we understand that PJM is experiencing transmission transfer limitations due to insufficient voltage support.

Con Edison provided to the Authority most of the data used in the attached schedules. Of the remaining generation in the southeastern New York area: two of these generating plants are large units (Ravenswood No. 3 at 928 MW and Astoria No. 6 at 775 MW), both of which have a history of extended outages. The attached schedules illustrate the effect of Ravenswood No. 3 not being available for service during the two periods of concern. On the basis of the projected reserve margins, it is concluded that there exists a high probability of inadequate reserves at the time of system peak during the assumed 3-month summer outage. Furthermore, in lieu of the Ravenswood No. 3 outage, if a critical transmission facility were to be out of service for

an extended period of time during the summer months, the reserve deficiency would be worse.

2. Fuel Availability - The Indian Point units are the only significant non-oil burning electric generating plants in southeastern New York, including Long Island. Outage of these plants will make this area almost entirely dependent upon the use of oil. Although there is at present sufficient oil available, such supplies could be interrupted at any time.

3. Replacement Energy - The upstate to downstate transmission system is presently being used virtually to its capacity on a daily basis to minimize system production costs. Therefore, replacement of energy from the Indian Point units would have to come predominantly from local high cost oil burning units. We have estimated that the outage of the Indian Point 3 unit alone would result in a direct cost penalty of $97 million for the three month period beginning June 1, 1980 and a cost penalty of $370 million for the 12 month period beginning June 1, 1980. During these outages it is expected that an additional 3.4 million barrels and 12.8 million barrels of foreign oil, respectively, would have to be burned to replace the energy that would otherwise have been generated by the Indian Point 3 Plant. It is expected that a 12 month outage of Indian Point 2 and 3 combined would result in a cost penalty of up to $700 million and cause the burning of an additional 20 million barrels of oil. The economic, political and legal consequences for New York City, the Power Authority and its customers extend far beyond the concern that can be expressed in this brief analysis of the impact of shut-down of the two nuclear plants.

DATA SHEET

Con Edison/PASNY Service Area
MW - Available Capacity, Load & Reserves
In the Event Of Indian Point 2 & 3 Outage
Period - June 1980 to May 1981 (Monthly Summary)

Date Month	Installed Capacity	Purch.	Incremental Transmis. Capacity	Schd. Outage	Misc.(1) Reduct.	Exclude IP2,3	Operating Reserve	Net Total	Peak load	Generation Reserve Margin	%	Reserve W/O(2)(3) Rav 3	%
June	11155	740	1300	573	1475	1823	609	8715	8020	695	8.7	-108	-1.3
July	11155	912	1125	445	1475	1823	609	8840	8020	820	10.2	17	0.2
Aug	11155	912	1125	445	1475	1823	609	8840	8020	820	10.2	17	0.2
Sept	11155	912	1125	1172	1425	1823	609	8163	8020	143	1.8	-660	-8.2
Oct	11155	912	1125	1550	1425	1823	609	7785	6420	1365	21.3	562	8.8
Nov	11835	58	2800	1225	1500	1823	712	9433	5950	3483	58.5	2680	45.0
Dec	11835	58	2800	1504	1275	1823	712	9379	6130	3249	53.0	2574	42.0
Jan	11835	58	2800	1343	1275	1823	712	9540	6100	3440	56.4	2765	45.3
Feb	11835	58	2800	1748	1275	1823	712	9135	5800	3335	57.5	2660	45.9
Mar	11835	58	2800	951	1090	1823	712	10117	5670	4447	78.4	3644	64.3
Apr	11835	798	2050	1390	1050	1823	712	9708	5820	3888	66.8	3085	53.0
May	11155	893	1150	1541	1000	1823	609	8225	6870	1355	19.7	552	8.0

(1) Includes forced outages and daily unavailable (partial outages). Does not include maintenance outages which historically average ≐ 400 MW.

(2) During scheduled outage of Rav 3 (Dec.,Jan. and Feb), reserve w/o Astoria 6.

(3) As adjusted for capacity included in Misc. Reductions.

prepared: 5/7/80

DATA SHEET

Con Edison/PASNY Service Area
MW - Available Capacity, Load & Reserves
In the Event Of Indian Point 2 & 3 Outage
Period - June 1 - August 30, 1980 (Weekly Summary)

Date Month	Installed Capacity	Purch.	Incremental Transmis. Capacity	Schd. Outage	Misc.(1) Reduct.	Exclude IP2,3	Operating Reserve	Net Total	Peak load	Generation Reserve Margin	%	Reserve W/O(2) Rav 3	%
June 1	11155	740	1300	573	1475	1823	609	8715	6900	1815	26.3	1012	14.7
June 8	11155	740	1300	573	1475	1823	609	8715	7220	1495	20.7	692	9.6
June 15	11155	740	1300	514	1475	1823	609	8774	8020	754	9.4	-49	-.6
June 22	11155	740	1300	514	1475	1823	609	8774	8020	754	9.4	-49	-.6
June 29	11155	740	1300	514	1475	1823	609	8774	8020	754	9.4	-49	-.6
July 6	11155	912	1125	503	1475	1823	609	8782	8020	762	9.5	-41	-.5
July 13	11155	912	1125	503	1475	1823	609	8782	8020	762	9.5	-41	-.5
July 20	11155	912	1125	444	1475	1823	609	8841	8020	821	10.2	18	.2
July 27	11155	912	1125	444	1475	1823	609	8841	8020	821	10.2	18	.2
Aug [illegible]	11155	912	1125	445	1475	1823	609	8840	8020	820	10.2	17	.2
Aug 10	11155	912	1125	445	1475	1823	609	8840	8020	820	10.2	17	.2
Aug 17	11155	912	1125	445	1475	1823	609	8840	8020	820	10.2	17	.2
Aug 24	11155	912	1125	445	1475	1823	609	8840	7940	900	11.3	97	1.2

(1) Includes forced outages and daily unavailable (partial outages). Does not include maintenance outages which historically average ≐ 400 MW.

(2) As adjusted for capacity included in Misc. Reductions.

prepared: 5/7/80