Carl L. Newman
Vice President

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Regulatory File Cy

July 2, 1976

Re: Indian Point Unit No. 3

50-286

George W. Knighton, Chief
Environmental Projects Branch 1
Division of Site Safety and
Environmental Analysis
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Dear Mr. Knighton

Consolidated Edison Company of New York, Inc., and Power Authority of the State of New York, as co-licensees, submit herewith a response to Questions 9, 10, 11 and 12 specified in your letter dated March 26, 1976.

The following responses to these questions are based on Con Edison cost data. The Power Authority intends to enter into agreements with governmental entities and public authorities for the sale of approximately 75% of the capacity of Indian Point 3. A portion of the remainder of the capacity of the unit will be sold to Con Edison in the form of firm capability. In addition, energy remaining after meeting certain other commitments of the Power Authority will be available to Con Edison. Con Edison cost data properly measures the economic impact of a derating because (a) Con Edison will be required to replace the power that it will not receive from Indian Point 3 with power from its other sources and (b) the Power Authority will probably replace capacity for its other Indian Point customers in large part with purchases from Con Edison. The Power Authority might be able to replace energy lost at Indian Point 3 with energy generated at its Astoria 6 Plant (purchased from Con Edison) or from its upstate power plants. It is not possible to estimate at this time the extent to which such energy would be available.

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July 2, 1976

Similarly, the economic impact of the cut-in outage is also properly measured by Con Edison cost data for the same reasons.

This submission, together with the document sent to you on May 21, 1976, constitute our complete reply to your request of March 26, 1976 with respect to cooling alternatives of Indian Point Unit No. 3.

Sincerely yours,

Carl L Newman

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Question 9: Section 5.3.3 "Cost of Replacing Deficient Energy," states "...an incremental operating cost of approximately 31 mills per kilowatt hour for fuel in 1982, escalating in future years." Provide escalation rate or rates used for subsequent years and the basis (cite appropriate references) for such rates. In addition, provide fuel cost in mills per kilowatt hour for most recent experience (preferably both 1975 and 1976 average) and methodology used to approximate 1982 fuel costs (state escalation rates used).

Response: a) Escalation Rates for the Post-1980 Period

Residual Oil 5%/yr., compounded

Basis = Studies at Con Edison (See the forecast in item (c) below.

b) Fuel Costs for most recent experience

(Residual Oil, $/MMBTU)

1974	Average	$2.18
1975	Average	$2.13
1976	(First Quarter)	$2.10
1976	(March)	$2.13

c) Estimate of 1980 Fuel Cost 1974 -- 1980:

4.95%/yr., Compounded escalation

	No. 6 Oil $/MMBTU	% Escalation
1974	2.18 (Actual)	
1975	2.18	0
1976	2.29	5.0
1977	2.43	6.1
1978	2.63	8.2
1979	2.77	5.3
1980	2.91	5.1

After 1980 a rate of 5%/year, compounded, was used. The fuel costs experienced by Con Edison reflect its specific posture. Con Edison depends heavily on imported oil, the price of which is fixed by OPEC. Con Edison is further constrained in its procurement options by local regulations requiring the usage of 0.3% sulfur oil. Within these constraints, aggresive procurement has resulted in somewhat lower costs than originally expected. It should be noted that the cost of the average derating was conservatively estimated, using a 9600 BTU/Kwhr, heat rate (which led to 31 mills/Kwhr). This is representative of Con Edison's best baseload units, rather than of Con Edison's average experience.

Question 10: In section 5.3.4, Replacement Turbine Capacity, expand the justification for need to install new capacity to replace loss of peak generating capacity. Provide peak load, installed capability, capacity purchases, and capacity sales forecast for summer programs. Estimate system reserve margin and loss of

load probability with and without installation of gas turbines, for subsequent years.

Response: a) The attached Table I gives the Capacity, Load and Reserve situation for the 1982-1985 period and shows the impact of the cooling tower derating. It illustrates that this derating, unless compensated for by equivalent capacity, will result in a decrease of the system's overall reliability. It is proper that in a Cost/Benefit Analysis, this loss of reliability be reflected. This was done by assuming that gas turbines would provide this replacement capacity. This approach results in a conservative (low) value for the cost of the lost reliability, as the energy not provided by the nuclear unit is assumed to be replaced by operation of the system's base load units. New capacity will be required in the future to meet load growth and to compensate for retirement of older units, and it may or may not be in the form of gas turbines. It is only for the purpose of conducting a conservative cost-benefit analysis that gas turbines were assumed.

Question 11: In support of section 5.3.5 Replacing Energy for Plant Downtime, provide the following:

a. per kilowatt hour cost of replacing energy by "additional operation of other plants on the Edison system" and per kilowatt hour cost of replacing energy by "some increase in the dispatch of capacity already under firm purchase contract,"

b. the proportion of the IP-3 outage which is expected to be replaced by additional operation of plants on the Con Edison system and the proportion expected to be replaced by increased firm purchases.

c. per kilowatt hour fuel and O&M cost of IP-3 not incurred during the cooling tower cut-in outage.

Response: a) Cost of replacing energy for plant downtime by "additional operation of other plants on the Con Edison System":

Based on the System simulation used to prepare the report, this cost (net of the avoided nuclear fuel cost), was 29.5 mills/Kwhr, and 97.6% of the replacement energy comes from this source.

b) The corresponding numbers for energy from capacity under firm purchase contracts are 15.9 mills/Kwhr and 2.4%.

c) The avoided IP-3 fuel costs would be 7.7 mills/Kwhr, based on current nuclear fuel cost estimates. No O&M costs on IP-3 were avoided.

Question 12: Section 5.3.6

a. Provide a system reliability impact analysis in support of the following statement made in Section 5.3.6:

"The scheduling of the cut-in outage ... avoids the summer peak loads. Nevertheless ... the outage reduces the reliability of service that would otherwise be afforded to electric customers.

Include peak load, installed capability, capacity purchases, and capacity sales forecast for the outage period. Estimate

system reserve margin and loss of load probability with and without the IP-3 cut-in outage.

b. The following statement is made on page 5-17 (Section 5.3.5):

"The economic impact of this rescheduling is included in the cost tabulated in Tables 5-7 through 5-11.

Identify the costs referred to in this statement by providing a separate cost estimate of the economic impact of rescheduling.

Response: a) Table II gives capacity, load and reserve situation of the Con Edison system with and without Indian Point 3 over the cut-in period. The impact of the loss of this capacity over this period is to reduce the reliability of the system, both over the cut-in period itself and in subsequent months, as it constrains the Company's ability flexibly to schedule its maintenance activities. This can be expected to result in lower availability for the units the maintenance of which would be postponed. The outage of Indian Point No. 3 will have an impact on reliability in the entire maintenance period from 10/81 to 6/82 as-well as in future periods.

b) The costs of maintenance are integrated into the total costs of running the system as they impact on the dispatch of available units. It is not possible to isolate them specifically in a dispatch simulation.

TABLE I

CONSOLIDATED EDISON COMPANY OF NEW YORK, INC.

CAPACITY, LOAD AND RESERVE 1982-1985 SUMMER

WITH AND WITHOUT INDIAN POINT #3 COOLING TOWER DERATING

(Megawatts)

	1982	1983	1984	1985
Installed Capacity	9,942	9,822	9,822	9,498
Purchases (1) (2)	2,451	3,211	3,614	3,756
Total Capacity for Load	12,393	13,033	13,436	13,254
Peak Load Forecast (3)	9,975	10,300	10,650	11,000
Reserve - MW	2,418	2,733	2,786	2,254
- %	24.2	26.5	26.2	20.5
Days of Negative Reserve/ Summer	.9	.5	.5	1.3
Cooling Tower Derating (4)	-78	-78	-78	-78
Reserve - MW	2,340	2,655	2,708	2,176
- %	23.5	25.8	25.4	19.8
Days of Negative Reserve/Summer	1.0	.6	.6	1.5

(1) Assumes a delayed schedule (1976-149b Exhibit 7-0) for new units.
(2) Reflects reserve credit associated with load supplied in the Con Edison area by, and reserve credit on, Firm Purchases from PASNY where applicable.
(3) Includes load to be supplied by PASNY in the Con Edison service area.
(4) Natural Draft Wet Cooling Tower.

TABLE II

CONSOLIDATED EDISON COMPANY OF NEW YORK, INC.

CAPACITY, LOAD AND RESERVE 1981-82 WINTER

WITH AND WITHOUT INDIAN POINT #3
(Megawatts)

	1981-82
INSTALLED CAPACITY	10621
PURCHASES (1)	1792
SALES	- 340
TOTAL CAPACITY FOR LOAD	12073
PEAK LOAD FORECAST (2)	6875
RESERVE - MW	5198
- %	75.6
WITHOUT INDIAN POINT #3	-1033
RESERVE - MW	4165
- %	60.5

(1) Reflects a reserve credit associated with load supplied in the Con Edison area by PASNY, and reserve credit on firm purchases from PASNY where applicable.

(2) Includes load to be supplied by PASNY in the Con Edison service area.