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BEFORE
THE POWER SITING COMMISSION
OF
THE STATE OF OHIO

In Re:)
)
OHIO EDISON COMPANY)
Erie Nuclear Power Plant)
Units 1 and 2)

Case No. 01-00003

SUPPLEMENTAL TESTIMONY OF
LYNN FIRESTONE

August 28, 1978

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SUPPLEMENTAL TESTIMONY OF

LYNN FIRESTONE

Q. Has the CAPCO forecast of energy and peak demand been revised since it was submitted in the 1978 Ten Year Forecast Reports to the Ohio Department of Energy?

A. Yes. As I indicated in my earlier testimony, each of the CAPCO companies reviews its own forecast on at least an annual basis, and the composite of the forecasts of the individual companies becomes the CAPCO forecast. All of the CAPCO companies have had their forecasts under review since the compilation of the 1978 Ten Year Forecast Reports. In view of the additional experience gained throughout this year with respect to loads--particularly the prolonged coal strike and the lower than anticipated energy sales so far this year--each company has reviewed its forecast to determine if revisions are warranted. Because the review has resulted in a generally downward revision in projected loads, we thought it appropriate to present the indicated forecast revisions now, before the hearing record closes, rather than wait until it would be presented on a more formal basis in next Ten Year Forecast Reports.

Q. What factors were taken into consideration in reviewing the forecast?

A. All of the factors which are normally considered were, of course, reviewed. The downward revisions resulted generally from increased recognition of the effects of the following factors:

- Expectation of somewhat increased natural gas availability over that previously anticipated.

- Expected improvement in appliance efficiency.

- Price-related and non-price related conservation.

-Judgements about the economic outlook for Ohio and the U. S.

-Commercial air conditioning saturation.

Q. How does the new CAPCO forecast differ from the earlier forecast?

A. A comparison is shown on the table presented in Attachment 1. As noted from this table, the reduction in the load demand ranges from 631 MW starting in 1979 and gradually increasing to 1483 MW in 1988. In terms of the compound annual percent growth rate change over the period, this represents a five-tenths percentage point lower annual growth rate than the previous CAPCO load demand forecast.

The forecast of net energy for load over the same period is given in Attachment 2.

Q. Has the impact that these load changes will have on the CAPCO systems' reliability been computed?

A. Yes. The CAPCO systems' reliability with the revised load forecast has been computed using generating capacity average unavailability rates of both 27% and 23%. As you may recall from my earlier testimony, the 27% unavailability rate is the average unavailability currently experienced in ECAR. The 23% unavailability rate is the value agreed upon by the CAPCO planners.

Q. What are the results of these evaluations?

A. Attachment 3 shows a table of the results of the previous CAPCO capacity evaluations (Attachment 8, P.1 of my previous testimony), together with the results of the new CAPCO evaluation, each assuming the Erie units installed on schedule in 1986 and 1988. These evaluations each use a generating capacity average unavailability rate of 23%. Under this assumption, the reliability index is 0.64

negative days and 0.33 negative days for 1986 and 1988, respectively. This shows capacity requirements of 210 MW and 565 MW in excess of the one negative day standard in 1986 and 1988, respectively.

Attachment 4 shows the relationship of the timing of the Erie units to the one negative day standard. As can be seen from the table, Erie Unit #1 can be delayed by three months to nearly meet the CAPCO reserve standard of one negative day, and Erie Unit #2 can be delayed seven months to meet the one negative day standard. In other words, delays of greater than three months and seven months will mean that the reliability standard would not be met.

The results of the updated evaluations using a 27% average unavailability rate for the CAPCO generating capacity is presented in Attachment 5. In 1986 the reliability index with the one unit in service is 7.34 negative days and the capacity requirement is 1260 MW. This indicates that in addition to the Erie unit coming into service, additional capacity is needed in 1986 to achieve CAPCO's reliability criterion. In 1988 with both units on schedule, the index is at 4.21 negative days and there is a capacity requirement of 965 MW. Again, this reflects that additional capacity beyond Erie Units #1 and #2 will be required to meet the one negative day standard.

Q. What are your conclusions from these stated results?

A. Under either assumption for generating capacity unavailability, the revised forecast does not change the conclusion that Erie Units #1 and #2 will be required in 1986 and 1988.

Q. You testified previously about the economic impact of a delay in the Erie project. Would your economic analysis of the delay change as a result of the revision in the forecast?

A. Yes it would. The revised figures, which can be compared to Attachment 10 of my previous testimony, are given in Attachment 6 of this testimony for both 23% and 27%. The new analysis shows that a two-year delay would result in neither a significant cost increase nor decrease. The four-year delay would still result in a significant increase in CAPCO revenue requirements.

CAPCO ANNUAL PEAK LOAD FORECASTS

<u>Year</u>	(A) <u>Previous Forecast</u>	(B) <u>Current Forecast</u>	(A-B) <u>Difference</u>
1978	11,683	11,323	(360)
1979	12,376	11,745	(631)
1980	13,021	12,365	(656)
1981	13,698	12,979	(719)
1982	14,349	13,576	(773)
1983	15,003	14,123	(880)
1984	15,682	14,735	(947)
1985	16,473	15,360	(1,113)
1986	17,164	15,976	(1,188)
1987	17,936	16,622	(1,314)
1988	18,752	17,269	(1,483)

Average Compound %
 Growth Rate
 Over Period

4.8

4.3

(.5)

() indicated Reduction

CAPCO ANNUAL ENERGY FORECAST

Megawatt Hours/Year

<u>Year</u>	<u>(1) Previous 1978 Forecast</u>	<u>(1) Current 1978 Forecast</u>
1978	67,380,059	66,046,359
1979	71,258,093	68,335,893
1980	75,222,677	72,636,877
1981	78,649,610	75,898,210
1982	82,008,581	79,067,081
1983	85,399,144	82,323,944
1984	88,861,037	85,551,537
1985	92,765,770	89,148,870
1986	96,553,596	92,655,996
1987	100,654,305	96,355,105
1988	104,832,936	100,128,736

(1) Net Energy for Load

RELIABILITY EVALUATION OF CAPCO CAPACITY PROGRAM

<u>Previous CAPCO Evaluation (1978)</u>				<u>Current CAPCO Evaluation (1978)</u>			
<u>Year</u>	<u>Percent Reserves</u>	<u>Negative Days</u>	<u>Additional Requirements (1) Mw</u>	<u>Percent Reserves</u>	<u>Negative Days</u>	<u>Additional Requirements Mw</u>	
1982	25.8	2.31	375	32.9	0.58	(230)	(2)
1983	28.2	1.86	750	36.2	1.14	55	(1)
1984	22.8	10.37	1185	30.7	2.42	410	(1)
1985	22.4	4.70	800	31.3	0.85	(80)	(2)
1986	24.8	4.33	795	34.1	0.64	(210)	(2)
1987	24.4	9.31	1270	34.3	1.42	180	(1)
1988	25.7	3.16	665	36.5	0.33	(565)	(2)
1989	20.4	11.45	1510	30.9	1.37	175	(1)

(1) Additional requirements assuming capacity having 100% availability. Generating unit additions to satisfy these requirements must be greater to compensate for generating unit unavailability.

(2) Requirements, assuming capacity having 100% availability, in excess of the one negative day/calendar year standard.

RELIABILITY EVALUATION OF CAPCO CAPACITY PROGRAM
CAPCO UPDATED EVALUATION (1978)

Timing of Erie Units #1 and #2 to one negative day/calendar year

<u>Unit</u>	<u>I. In Service Dates</u>		<u>Year</u>	<u>II. Reliability</u>		
	<u>Presently Proposed In Service Dates</u>	<u>Adjusted In Service Date For 1 Negative Day</u>		<u>Percent Reserves</u>	<u>Negative Days</u>	<u>Additional (1) Requirements (Mw)</u>
Erie #1	4/1/86	7/1/86	1986	34.1	1.08	35
Erie #2	4/1/88	11/1/88	1988	29.3	1.00	0

- (1) Additional requirements assuming capacity having 100% availability. Generating unit additions to satisfy these requirements must be greater to compensate for generating unit unavailability.

RELIABILITY EVALUATION OF CAPCO CAPACITY PROGRAM

Ohio Edison Evaluation (1978)

(27% Capacity Unavailability Rate)

<u>Year</u>	<u>Percent Reserves</u>	<u>Negative Days</u>	<u>Additional Requirements (1)</u> MW
1982	32.9	9.54	1,245
1983	36.2	9.60	1,300
1984	30.7	15.16	1,645
1985	31.3	10.12	1,440
1986	34.1	7.34	1,260
1987	34.3	11.31	1,575
1988	36.5	4.21	965
1989	30.9	11.79	1,740

(1) Additional requirements assuming capacity having 100% availability. Generating unit additions to satisfy these requirements must be greater to compensate for generating unit unavailability.

ESTIMATED REVENUE REQUIREMENT DIFFERENCES
ASSOCIATED WITH TWO-YEAR AND FOUR-YEAR
DELAYS OF ERIE NUCLEAR PLANT

MILLIONS OF DOLLARS

Ohio Edison Evaluation of Capacity Unavailability

<u>Year</u>	<u>Two-Year Delay</u>			<u>Four-Year Delay</u>		
	<u>F.C.</u>	<u>O.C.</u>	<u>Total</u>	<u>F.C.</u>	<u>O.C.</u>	<u>Total</u>
1986	(186.2)	72.1	(114.1)	(186.2)	72.1	(114.1)
1987	(248.3)	97.7	(150.6)	(248.3)	97.7	(150.6)
1988	(240.3)	96.0	(144.3)	(455.5)	191.4	(264.1)
1989	(237.5)	107.1	(130.4)	(524.5)	275.5	(249.0)
1990	1.9	35.0	36.9	(275.8)	145.1	(130.7)
1991-2020	<u>2451.0</u>	<u>(74.0)</u>	<u>2377.0</u>	<u>4818.9</u>	<u>(8.2)</u>	<u>4810.7</u>
Total	1540.6	333.9	1874.5	3128.6	773.6	3902.2
Present Worth to 1985			(2.5)			29.9

CAPCO Evaluation of Capacity Unavailability

1986	(186.2)	72.4	(113.8)	(186.2)	72.4	(113.8)
1987	(248.3)	94.7	(153.6)	(248.3)	94.7	(153.6)
1988	(240.3)	98.3	(142.0)	(455.5)	194.3	(261.2)
1989	(237.5)	109.7	(127.8)	(524.5)	253.7	(270.8)
1990	1.9	38.2	40.1	(275.8)	183.9	(91.9)
1991-2020	<u>2451.0</u>	<u>(80.8)</u>	<u>2370.2</u>	<u>4818.9</u>	<u>75.8</u>	<u>4894.7</u>
Total	1540.6	332.5	1873.1	3128.6	874.8	4003.4
Present Worth to 1985			(0.9)			75.7

F.C. - Fixed Costs
O.C. - Operating Costs
() - Decrease in cost

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CERTIFICATE OF SERVICE

This is to certify that copies of the foregoing "Supplemental
Testimony of Lynn Firestone" were served, either by first class mail or
hand delivered, to those on the attached Service List this 28th day of
August, 1978.

Thomas A. Kayuha

August 28, 1978

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Case No. 01-00003

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