

UNITED STATES OF AMERICA  
NUCLEAR REGULATORY COMMISSION

Before the Commission

\_\_\_\_\_  
In the Matter of )  
 )  
 )

LONG ISLAND LIGHTING COMPANY )

(Shoreham Nuclear Power Station, )  
Unit 1) )  
 )  
 )  
\_\_\_\_\_ )

Docket No. 50-322-OL-4

AFFIDAVIT OF EUGENE J. GLEASON, DIRECTOR, NEW YORK  
STATE ENERGY OFFICE, BUREAU OF PLANNING

EUGENE J. GLEASON, being duly sworn, deposes and says:

1. I am Eugene J. Gleason. I have prepared this affidavit for use in Case Docket #50-322 which is presently pending before the Nuclear Regulatory Commission.

2. I am presently employed by the New York State Energy Office as Director, Bureau of Planning, a position I have held since December, 1980.

3. As part of my official duties for the State Energy Office, I am responsible for the management of electricity supply planning studies.

4. A part of the analytical work that is conducted in electricity supply planning studies is the development and review of electricity reserve margin calculations.

5. Electricity reserve margin calculations are a measure of the relative reliability of the electricity system's ability to provide electricity. Reserve margins are calculated by dividing net electricity generation capability less peak electricity demand by peak electricity demand. To calculate electricity reserve margins for future years it is necessary to estimate the availability of electricity capability and peak electricity demand in those future years. Electricity reserve margins can be calculated either for an integrated electricity system which consists of several electric utility companies, such as the member systems of the New York Power Pool (NYPP), or for a single electric utility service territory, such as the Long Island Lighting Company. A NYPP minimum reserve margin of 22 percent is generally considered appropriate for the purposes of ensuring the reliability of electricity supply on a statewide basis within New York State. An individual electric utility minimum reserve margin of 18 percent is generally considered appropriate for the purposes of ensuring the reliability of electricity supply for an individual electric utility service territory within New York State.

6. It is my professional opinion that the electricity capacity represented by the Shoreham nuclear power plant does not appear to be needed to meet anticipated near term electricity demand, either on a statewide or individual electric service territory basis.

7. My conclusion is based upon three analyses performed by the electricity planning staff of the State Energy Office under my supervision. My conclusion is further supported by analyses which were conducted by the Long Island Lighting Company (LILCO) and Energy Systems Research Group (ESRG) and reviewed by the members of the New York State Fact Finding Panel On The Shoreham Nuclear Power Facility, chaired by Dr. John Marburger (The Marburger Commission).

8. Exhibit EJG-1, which is attached, shows statewide reserve margin calculations developed by the electric planning staff of the State Energy Office under my supervision for the second State Energy Master Plan (SEMP II) and the 1983 update of the State Energy Master Plan (draft SEMF III). Each statewide reserve margin calculation was developed for the final year of the planning period in each plan, 1996 for SEMF II and 1999 for draft SEMF III, respectively.

9. The SEMF II statewide reserve margin calculations reported in Table 1 are based upon the electricity capability data contained in Figure IV-D-58 of Volume 2 of SEMF II (p. 188). A copy of Figure IV-D-58 is attached to Exhibit EJG-1. The draft SEMF III statewide reserve margin calculations reported in Table 2 are based upon the electricity capability data contained in Figure IV-D-11 of Volume 2 of draft SEMF III (p. 378). A copy of Figure IV-D-11 is attached to Exhibit EJG-1.

10. The data reported in Table 1 is based upon the electricity peak demand forecast developed by the State Energy Office and adopted by the Energy Planning Board for SEMF II. The SEMF II forecast projects total statewide electricity peak demand to increase at an annual average rate of 1.5 percent and projects LILCO's electricity peak demand to increase at an annual average rate of 1.4 percent. The electricity peak demand forecast data is presented in Figure III-8 of Volume 1 of SEMF II (p. 15). A copy of Figure III-8 is attached to Exhibit EJG-1.

11. The data reported in Table 2 is based upon the electricity peak demand forecast developed by the State Energy Office and reported in draft SEMF III. The draft SEMF III forecast projects total statewide electricity peak demand to increase at an annual average rate of 0.9 percent and projects LILCO's electricity peak demand to increase at an annual average

rate of 1.1 percent. The electricity peak demand forecast data is presented in Figure III-5 of Volume 1 of draft SEMP III (p. 25). A copy of Figure III-5 is attached to Exhibit EJG-1.

12. Table 1 shows that the statewide electricity reserve margin would be adequate through 1996 if the Shoreham nuclear power plant were not in commercial operation. Without operation of the Shoreham nuclear power plant, the statewide reserve margin would be 33.13 percent in 1996 according to the SEMP II analysis. A minimum statewide reserve margin of 22 percent is generally considered appropriate to meet statewide electricity requirements, as stated earlier.

13. Table 2 shows that the statewide electricity reserve margin would be adequate through 1999 if the Shoreham nuclear power plant were not in commercial operation. Without operation of the Shoreham nuclear power plant, the statewide reserve margin would be 42.19 percent in 1999 according to the draft SEMP III analysis. A minimum statewide reserve margin of 22 percent is generally considered appropriate to meet statewide electricity requirements, as stated earlier.

14. Exhibit EJG-2, which is attached, is a reproduction of Table 7 which was prepared by the electric planning staff of the State Energy Office under my supervision as part of the STAFF ANALYSES performed by the combined staffs of the Energy Office, Department of Public Service and Consumer Protection Board for the Marburger Commission. The entire STAFF ANALYSES conducted for the Marburger Commission is reported in Appendix 6a, titled "Staff Report on Economics" of the REPORT OF THE NEW YORK STATE FACT FINDING PANEL ON THE SHOREHAM NUCLEAR POWER PLANT, dated December, 1983.

15. Exhibit EJG-2 shows that the electricity reserve margin for the LILCO electric service territory would be adequate through 1997 without commercial operation of the Shoreham nuclear power plant. The Exhibit shows that LILCO's electricity reserve margin would generally exceed 18 percent without commercial operation of the Shoreham nuclear power plant through 1997. A minimum reserve margin of 18 percent is generally considered appropriate when estimating electricity capacity requirements on the basis of a single electric service territory within New York State, as stated earlier. The data presented in Exhibit EJG-2 incorporates an annual average peak electricity demand growth rate of 1.1 percent for the LILCO electric service territory.

16. Analyses conducted by LILCO and ESRG and reviewed by the Marburger Commission also, support my conclusion that the electricity capacity represented by the Shoreham nuclear power plant does not appear to be necessary to meet anticipated near term peak electricity demand in the LILCO electric service territory.

17. LILCO prepared a study, entitled Shoreham Operation Verses Abandonment (An Economic Analysis) in June, 1983. Studies were also prepared by Energy Systems Research Group (ESRG), a consultant to Suffolk County. The LILCO and ESRG studies were reviewed by the members of the Marburger Commission.

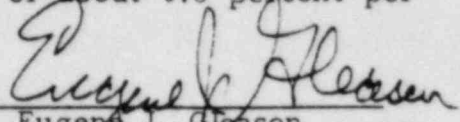
18. With respect to the findings of the LILCO and ESRG studies, the Marburger Commission report states:

"None of the projections done by LILCO, Suffolk County or the Commission staff indicate a near term need for Shoreham to meet demand.



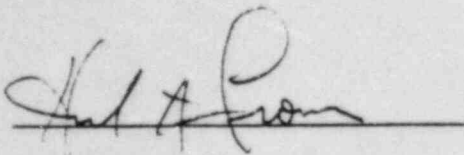
LILCO projects that two 400 Mw coal units would be necessary, one in 1994 and another in 1996, if Shoreham is abandoned, using their load forecast of approximately 1.6 percent per year growth in peak demand.

ESRG, a consultant to Suffolk County, projects that the first replacement coal unit, presuming Shoreham is abandoned, will not be needed until 1998 using a forecasted peak load growth rate of about 0.8 percent per year." (p. 33)

  
Eugene J. Gleason

Sworn to before me this

30<sup>th</sup> day of November, 1984.



HOWARD A. FROMER  
Notary Public, State of New York  
No. 4517477  
Qualified in Albany County  
Commission Expires March 30, 1986

TABLE 1

NEW YORK STATE ELECTRICITY RESERVE MARGIN CALCULATION  
 BASED ON FINAL SEMP II (1996)

	<u>With Shoreham</u>	<u>Without Shoreham</u>
Capacity (Mw)	36,618	35,805
Out of State Sales (Mw)	173	173
Net Capacity (Mw)	36,445	35,632
Peak Load (Mw)	26,765	26,765
Reserve Margin (Mw)	9,680	8,867
Reserve Margin (%)	36.17	33.13

TABLE 2

NEW YORK STATE ELECTRICITY RESERVE MARGIN CALCULATION  
 BASED ON DRAFT SEMP III (1999)

	<u>With Shoreham</u>	<u>Without Shoreham</u>
Capacity (Mw)	35,063	34,254
Out of State Purchases (Mw)	800	800
Out of State Sales (Mw)	168	168
Net Capability (Mw)	35,695	34,886
Peak Load (Mw)	24,534	24,534
Margin (Mw)	11,161	10,352
Reserve Margin (%)	45.49	42.19

**FIGURE IV-D-58**  
**CAPACITY ADDITION AND RESERVE MARGINS FOR THE ELECTRICITY SUPPLY PLAN**

	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996
Indian Pt.			110														
Shoreham				813													
Hudson Ave.				17													
Somerset						625											
9 Mile Pt.2								1,080									
Pump Store								1,000									
Arthur Kill								700									
Jamesport												800					
Lake Erie										850							
Hydro	3	9	8	89	27	65	47	51	11	86	86	18	27	51	26	16	105
Cogenerator	27		45	50	32	41	36	24	26	11	10	17	10	15	10	10	10
Solid Waste	32		3		38	69	28	154				30		42			
Wind	0	0	0	0	0	0	4	0	0	0	0	8	1	1	1	1	43
Oil Convert				-12	-2	-4	16		-64								
Retirements			-93	-38	-61		-70	-284	-40	-112	-68	-33			-170	-74	-39
Net Added	62	9	72	919	34	797	61	2,725	-67	835	29	840	37	108	-133	-48	69
Capacity	30,393	30,340	30,412	31,331	31,365	32,162	32,222	34,948	34,881	35,716	35,745	36,584	36,622	36,730	36,597	36,549	36,618
Purchases	800	800	800	800	800	800	800	0	0	0	0	0	0	0	0	0	0
Sales	173	173	173	173	173	173	173	173	173	173	173	173	173	173	173	173	173
Net Capability	31,020	30,967	31,039	31,958	31,992	32,789	32,849	34,775	34,708	35,543	35,572	36,411	36,449	36,557	36,424	36,376	36,445
Peak Load	20,801	20,938	21,076	21,216	21,356	21,497	21,638	22,008	22,385	22,768	23,157	23,553	24,163	24,789	25,431	26,089	26,765
Res. Margin	10,219	10,028	9,963	10,743	10,636	11,292	11,211	17,766	12,323	12,776	12,415	12,859	12,286	11,768	10,993	10,287	9,680
% Reserve	49.13	47.90	47.27	50.54	49.81	52.53	51.81	58.01	55.05	56.11	53.61	54.59	50.85	47.47	43.23	39.43	36.17



FIGURE IV-D-11

## SUMMER NYPP RESERVE AND CAPACITY TABLE UNDER ELECTRICITY SUPPLY PLAN

Plant Name	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999
Mitchell Gardens		32															
Shoreham			809														
Somerset			625														
Nine Mile Point 2					1080												
Prattville								1000									
NYPA Wood							20										
Solid Waste			60.8	54.5	106.6	95.5			21	30		42		42	19		20
Small Hydro	13	37.5	75.6	78.5	77.8	125.2	161.6	53	83.5	37.1	34.9	50	25	25	122.2	25	25
Cogeneration		47.8	57.8	56	51.8	121.6	33.6	73.8	73.1	63.1	48.2	46.4	41.5	41.4	48.5	47.7	24.9
Wind Generation	0.3	4.1	4.1	6	5.2	12.3	19.6	23.6	28.1	25.6	30.6	46	61	61	61	66	
Landfill Gas	3.1	2.5	1.5	7	4	3	1	1	5			5					
Coal Conversion			-12		7		3										
Plant Updatings	25	199															
Retire & Derate	-79				-149	-29	-74	-61	-6			-48		-48	-6	-814	-312
Total Additions	-38	323	1622	202	1183	329	165	1090	205	156	114	141	128	121	245	-675	-242
Capability	29957	30280	31902	32104	33288	33616	33781	34781	35076	35232	35346	35487	35614	35736	35981	35305	35063
Purchases	800	800	800	800	800	800	800	800	800	800	800	800	800	800	800	800	800
Sales	173	173	168	168	168	168	168	168	168	168	168	168	168	168	168	168	168
Total Capability	30584	30907	32514	32736	33920	34248	34471	35503	35708	35864	35978	36119	36246	36368	36613	35937	35695
Peak Load	21295	21456	21610	21708	21826	21966	22111	22356	22669	22926	23181	23361	23664	23840	24058	24242	24534
Margin	9289	9451	10924	11028	12094	12282	12511	13147	13039	12938	12797	12758	12582	12528	12555	11695	11161
Z Reserve Margin	43.6	44.0	50.6	50.8	55.4	55.9	55	58.8	57.5	56.4	55.2	54.6	53.2	52.5	52.2	48.2	45.5

**FIGURE III-8**  
**NEW YORK STATE ELECTRICITY PEAK DEMANDS AND GROWTH RATES BY UTILITY, 1980-1996<sup>a/</sup>**

	Summer Peak (MW)			Winter Peak (MW)			System Peak Growth 1980-96
	1980	1996	Growth Rate (%) 1981-1996	1980	1996	Growth Rate (%) 1981-1996	
CHE&G	640	867	1.9	641	904	2.2	2.2
CON ED	6,980	7,140	0.1	5,005	4,968	0.0	0.1
LILCO	2,975	3,717	1.4	2,504	3,407	1.9	1.4
NYSEG	1,830	2,788	2.7	2,170	3,776	3.6	3.6
NMPC	4,844	6,067	1.4	5,444	7,808	2.3	2.3
O&R	690	963	2.1	519	805	2.8	2.1
RG&E	1,001	1,512	2.6	946	1,854	4.3	3.9
PASNY	2,403	3,430	2.2	2,602	3,941	2.6	2.6
NYPP Coincident Peak <sup>b/</sup>	20,889	25,618	1.3	19,381	26,657	2.0	1.5

a/Based upon weather normalized 1980 peak demands where available.

b/Includes the Village of Freeport and City of Jamestown; these loads are included in the PASNY forecast beginning in the winter of 1984-85.

**FIGURE III-9**  
**NEW YORK STATE NATURAL GAS CONSUMPTION (SALES) BY SECTOR, 1980-1996**

Sector	Trillion BTU		Average Annual Percent Change
	1980	1996	1980-1996
Residential	324.7	248.9	-1.6
Commercial	144.5	146.8	0.1
Industrial	123.4	145.9	1.1
Total Natural Gas Consumption	592.6	541.6	-0.6

**FIGURE III-10**  
**NEW YORK STATE END-USE PETROLEUM PRODUCT CONSUMPTION BY SECTOR, 1980-1996**

Sector	Trillion BTU		Average Annual Percent Change
	1980	1996	1980-1996
Residential	299.1	179.8	-3.1
Commercial	243.4	182.0	-1.8
Industrial	195.4	266.8	2.0
Transportation	1,045.3	1,011.1	-0.2
Total End-Use Petroleum Product Consumption	1,783.2	1,639.7	-0.5

**FIGURE III-11**  
**NEW YORK STATE INDUSTRIAL COAL CONSUMPTION, 1980-1996**

Sector	Trillion BTU		Average Annual Percent Change
	1980	1996	1980-1996
Industrial	60.2	83.3	2.1

Figure III-5

NEW YORK STATE ELECTRICITY PEAK DEMAND AND GROWTH RATES BY UTILITY,  
1982-1999

Utility	Summer Peak (Mw)			Winter Peak (Mw)			System Peak Growth 1982-99
	1982	1999	Growth Rate (%) 1982-1999	1982	1999	Growth Rate (%) 1983-1999	
CHE&G	666	833	1.3	630	883	2.0	1.7
CON ED	7326	7044	-0.2	4920	4895	0.1	-0.2
LILCO	3045	3646	1.1	2471	2921	1.0	1.1
NYSEG	1771	2645	2.4	2090	3396	2.9	2.9
NMPC	4708	5513	0.9	5223	6493	1.3	1.3
O&R	712	850	1.0	509	662	1.6	1.1
RG&E	996	1420	2.1	945	1354	2.1	2.1
NYPA	2377	3108	1.6	2488	3410	1.9	1.9
NYPP Coincident Peak <sup>a/</sup>	21252	24543	0.9	19320	23862	1.3	0.9

a/ Includes the Village of Freeport and City of Jamestown; these loads are included in the NYPA forecast beginning in September, 1988.

TABLE 7

CAPACITY EXPANSION PLAN  
NEW CAPACITY ADDITIONS (Mw) SHOREHAM-OUT

<u>Year</u>	<u>New Capacity Additions (Mw)</u>		<u>Total Capability (Mw)</u>	<u>Peak Load</u>	<u>Reserve Margin</u>	<u>Excess Deficit Capacity</u>
	<u>Baseload</u>	<u>Peaking</u>				
1983			3782	3154	19.9%	60
1984			3847	3204	20.1%	67
1985			3860	3198	20.7%	86
1986			3877	3159	22.7%	149
1987			4101	3123	31.3%	416
1988			4125	3048	35.3%	528
1989			4136	3057	35.3%	529
1990			4149	3097	34.0%	495
1991			4161	3156	31.8%	437
1992			4211	3216	30.9%	416
1993			4184	3278	27.6%	316
1994			4168	3330	25.2%	239
1995			4134	3402	21.5%	120
1996			4146	3460	19.8%	63
1997			4055	3477	16.6%	-48
1998	400		4347	3536	22.9%	174
1999			4232	3555	19.1%	38
2000			4171	3515	17.4%	-94
2001	400		4366	3676	18.8%	29
2002			4238	3737	13.4%	-173
2003	400		4454	3800	17.2%	-30
2004			4454	3864	15.3%	-105
2005	400	5-50	4764	3929	21.3%	129
2006		3-50	4718	3994	18.1%	5
2007		50	4770	4061	17.5%	-22
2008	400		4983	4129	20.7%	111
2009		3-50	4955	4198	18.0%	2
2010			4972	4268	16.5%	-64
2011			4975	4339	14.7%	-145
2012		10-50	5009	4412	13.5%	-197
2013	<u>400</u>	<u>9-50</u>	5491	4485	22.4%	199
2014			5495	4560	20.5%	114
TOTAL	2400	1750				



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Docket No. 50-322-OL-4  
(Low Power)

OFFICE OF SECRETARY  
DOCKETING & SERVICE  
BRANCH

CERTIFICATE OF SERVICE

I hereby certify that copies of NEW YORK STATE AND SUFFOLK COUNTY SUPPLEMENTARY AFFIDAVIT IN SUPPORT OF COMMENTS FILED NOVEMBER 29 AND REQUEST FOR ORAL ARGUMENT FILED NOVEMBER 29, dated December 5, 1984, have been served to the following this 5th day of December 1984 by U.S. mail, first class, except as otherwise indicated.

Judge Marshall E. Miller, Chairman  
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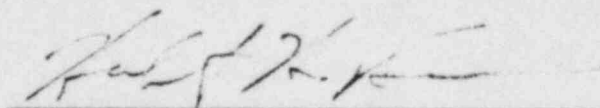
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DATE: December 5, 1984