New York

The history of the State of New York is full of major milestones in the development of the electric power industry. The first practical generator in the United States began operation in Ithaca in 1875 and was used to provide lighting for Cornell University.[1] On September 4, 1882, three years after the invention of the incandescent lamp,[2] Thomas Edison opened the Pearl Street Station in downtown New York City,[3] an event which marked the beginning of the electric utility industry. In 1896, the AC transmission line from Niagara Falls to Buffalo opened, providing the blue print for future development of U.S. transmission and distribution systems and marking the beginning of the hydroelectric power industry.

New York had the third largest population and the fifth largest utility generating capability in 1996. New York's electricity capability, generation, and consumption encompass a diverse mixture of fuel sources. The largest share of electricity generated in New York comes from nuclear plants. The largest share of capability (38 percent) is fired by oil, while the largest share of utility generation and energy consumed at electric utilities (33 percent) comes from nuclear plants. The State is also reliant upon their rapidly growing nonutility generation. Two of the four largest plants in the State, oil-fired Ravenswood and Astoria, are found within New York City. Both of these plants are operated by Consolidated Edison, the largest utility in the State. The average price of electricity in New York, 11.13 cents per kilowatthour, was the third highest in the Nation.

The Clean Air Act Amendments of 1990 specified 2,408 megawatts of nameplate capacity at five New York plants to begin compliance with stricter emissions standards for sulfur dioxide (SO_2) and nitrogen oxides (NO_x). As a result, emissions of SO_2 in 1996 were lower than they were in 1986. It is likely that New York will need to design a State implementation plan for reducing ground-level ozone in response to a proposal released by the Environmental Protection Agency (EPA) in October 1998. The EPA proposal does not mandate which sources must reduce pollution. However, EPA states that utilities would be one of the most likely sources of NO_x emissions reductions. New York is also part of the Ozone Transport Commission (OTC).[4] Each of the thirteen States of the OTC is responsible for enacting regulations in order to achieve region-wide NO_x reductions in a consistent, enforceable manner and for allocating its NO_x Budget Program allowances among NO_x sources in the State. The targets in this program are large industrial boilers and all electricity generating facilities with a rated output of 15 megawatts or more.

In May 1996, the New York Public Service Commission (PSC) issued its decision to restructure New York's electric power industry. In its Competitive Opportunities Case, the PSC expressed their desire to have a competitive wholesale market by 1997, and a competitive retail market by early 1998. Electric utilities were required to submit restructuring plans by October 1996. The Case also had the provision that utilities should have a reasonable opportunity to recover stranded costs which, in the State of New York, are very high due mostly to the number of nuclear plants. In February 1998, a bill was introduced to provide an alternative deregulation plan to the PSC, arguing that the PSC plan as written does not go far enough to protect consumers. In June 1998, the PSC set rules for a systems benefit charge to fund research and development related to energy service, storage, generation, renewables, pilot programs for energy management for low-income consumers, and environmental protection.[5] The New York Power Pool (NYPP) has filed with the Federal Energy Regulatory Commission to form an independent system operator (ISO) and a power exchange to serve the competitive wholesale market in New York. The NYPP ISO and marketplace will be tested beginning January 5, 1999 through the end of March. They are hoping to be officially up and running by April 1999.

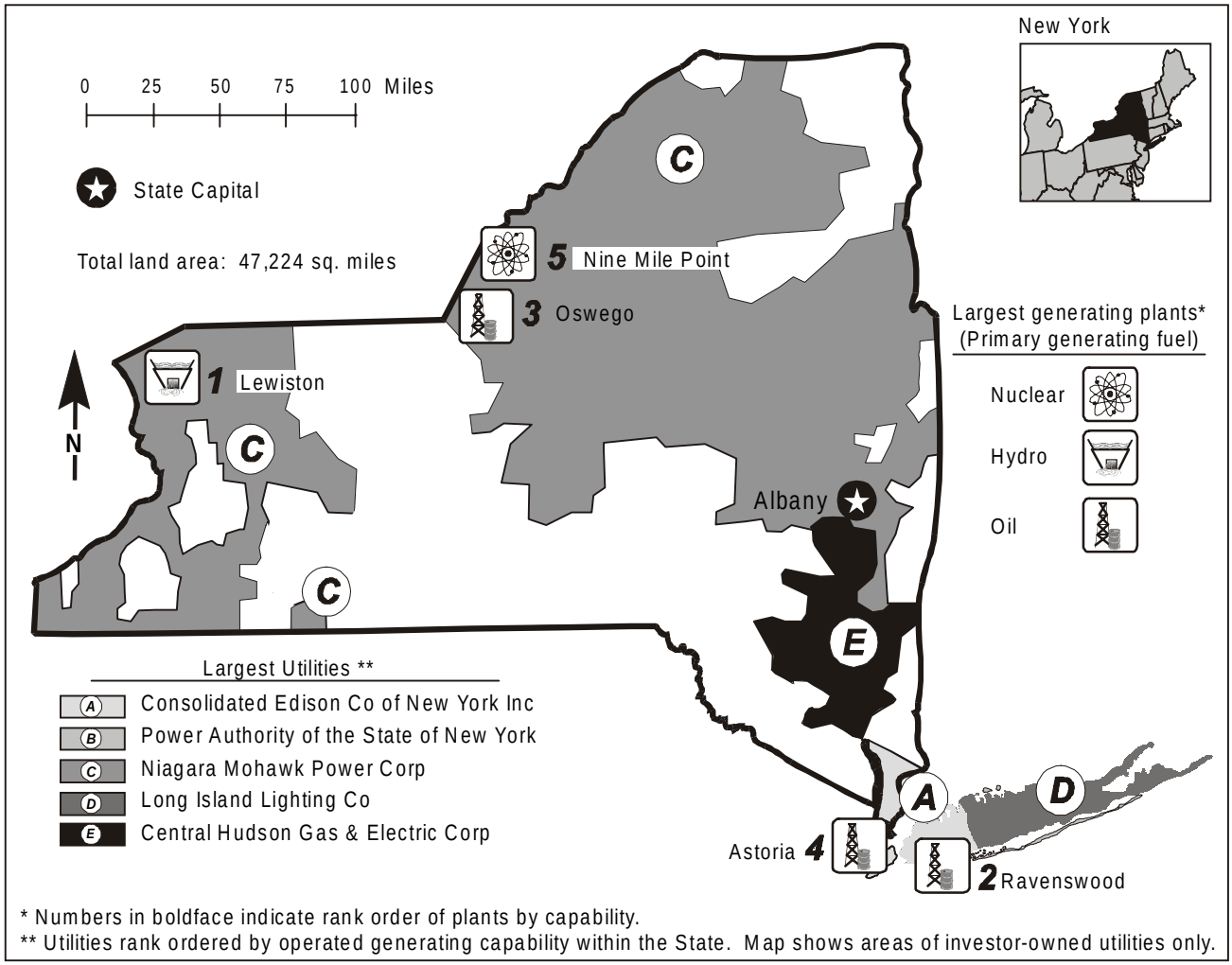
[1] Jack Riley, *Carolina Power and Light Company, 1908-1958*, Edwards and Broughton (Raleigh, NC, 1977), p. 4.

[2] *1995 World Almanac*, St. Martin's Press (Mahwah, NJ, 1994), p. 175.

[3] Energy Information Administration, *The Changing Structure of the Electric Power Industry*, DOE/EIA-0562(96) (Washington, DC, December 1996), p. 105.

[4] The Ozone Transport Region comprises the States of Maine, New Hampshire, Vermont, Massachusetts, Connecticut, Rhode Island, New York, New Jersey, Pennsylvania, Maryland, Delaware, the northern counties of Virginia, and the District of Columbia.

[5] Energy Information Administration, Status of State Electric Utility Deregulation Activity, http://www.eia.doe.gov/cneaf/electricity/chg_str/tab5rev.html.



* Numbers in boldface indicate rank order of plants by capability.
** Utilities rank ordered by operated generating capability within the State. Map shows areas of investor-owned utilities only.

Table 1. 1996 Summary Statistics

Item	Value	U.S. Rank
NERC Region(s)		NPCC
Net Exporter or Importer		Importer
State Primary Generating Fuel		Nuclear
Population (as of 7/96)	18,134,226	3
Average Revenue (cents/kWh)	11.13	[a]49
Industry		
Capability (MWe)	35,712	[b]5
Generation (MWh)	135,820,641	[b]7
Capability/person (KWe/person)	1.97	[b]40
Generation/person (MWh/person)	7.49	[b]40
Sulfur Dioxide Emissions (Thousand Short Tons)	242	18
Nitrogen Oxide Emissions (Thousand Short Tons)	148	20
Carbon Dioxide Emissions (Thousand Short Tons)	62,070	15
Sulfur Dioxide/sq. mile (Tons)	5.13	23
Nitrogen Oxides/sq. mile (Tons)	3.14	24
Carbon Dioxide/sq. mile (Tons)	1,314.38	22

Item	Value	U.S. Rank
Utility		
Capability (MWe)	30,060	6
Generation (MWh)	104,360,081	10
Average Age of Coal Plants	35 years	
Average Age of Oil-fired Plants	26 years	
Average Age of Gas-fired Plants	30 years	
Average Age of Nuclear Plants	20 years	
Average Age of Hydroelectric Plants	37 years	
Average Age of Other Plants	--	
Nonutility[c]		
Capability (MWe)	5,652	3
Percentage Share of Capability	15.8	8
Generation (MWh)	31,460,560	3
Percentage Share of Generation	23.2	8

-- = Not applicable.

Table 2. Five Largest Utility Plants, 1996

Plant Name	Type	Operating Utility	Net Capability (MWe)
1. Lewiston	Hydro	Power Authority of State of NY	2,400
2. Ravenswood	Oil/Gas	Consolidated Edison Co-NY Inc	2,170
3. Oswego	Oil	Niagara Mohawk Power Corp	1,724
4. Astoria	Oil/Gas	Consolidated Edison Co-NY Inc	1,709
5. Nine Mile Point	Nuclear	Niagara Mohawk Power Corp	1,662

Table 3. Top Five Utilities with Largest Generating Capability, and Type, Within the State, 1996
(Megawatts Electric)

Utility	Net Summer Capability	Net Coal Capability	Net Oil Capability	Net Gas Capability	Net Nuclear Capability	Net Hydro/Other Capability
A. Consolidated Edison Co-NY Inc	7,158	--	4,752	1,475	931	--
B. Power Authority of State of NY	7,021	--	825	136	1,790	4,270
C. Niagara Mohawk Power Corp	5,731	1,344	1,726	385	1,662	615
D. Long Island Lighting Co	4,061	--	2,100	1,961	--	--
E. Central Hudson Gas & Elec Corp	1,795	364	1,385	--	--	46
Total	25,766	1,708	10,788	3,957	4,383	4,931
Percentage of Industry Capability	72.1	--	--	--	--	--

-- = Not applicable.

Figure 1. Utility Generating Capability by Primary Energy Source, 1996

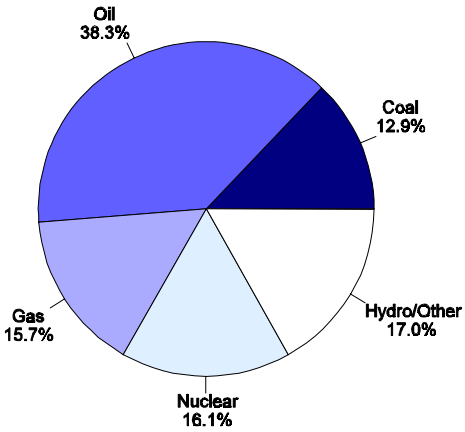


Figure 2. Utility Generation by Primary Energy Source, 1996

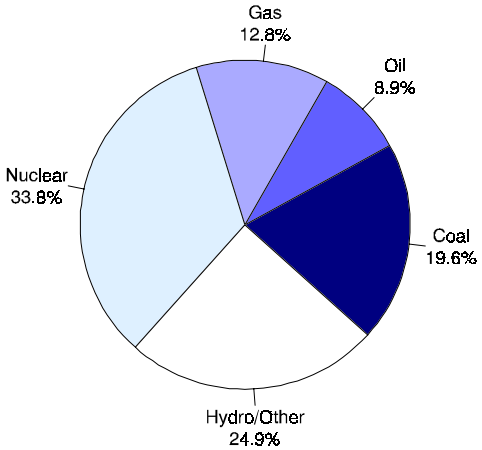


Figure 3. Energy Consumed at Electric Utilities by Primary Energy Source, 1996

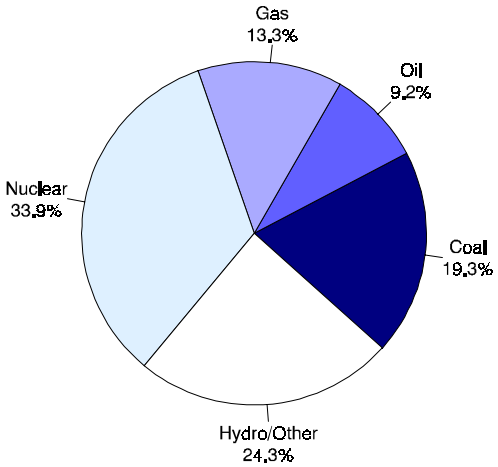


Table 4. Electric Power Industry Generating Capability by Primary Energy Source, 1986, 1991, and 1996
(Megawatts Electric)

Fuel	1986	1991	1996	Percentage Share 1986	Percentage Share 1991	Percentage Share 1996
Coal	3,077	3,897	3,891	10.1	11.8	10.9
Oil	12,087	9,869	11,500	39.8	29.9	32.2
Gas	5,813	7,634	4,718	19.1	23.1	13.2
Nuclear	3,694	4,866	4,853	12.1	14.7	13.6
Hydro/Other	5,105	5,084	5,097	16.8	15.4	14.3
Total Utility	29,776	31,349	30,060	97.9	95.0	84.2
Total Nonutility	628	1,646	5,652	2.1	5.0	15.8
Industry	30,404	32,995	35,712	100.0	100.0	100.0

Table 5. Electric Power Industry Generation of Electricity by Primary Energy Source, 1986, 1991, and 1996
(Thousand Kilowatthours)

Fuel	1986	1991	1996	Percentage Share 1986	Percentage Share 1991	Percentage Share 1996
Coal	15,349,131	24,938,199	20,444,407	13.4	18.6	15.1
Oil	31,910,616	27,753,893	9,324,758	27.8	20.7	6.9
Gas	12,470,911	20,030,696	13,355,011	10.9	14.9	9.8
Nuclear	22,084,475	28,448,293	35,225,806	19.3	21.2	25.9
Hydro/Other	29,479,739	24,905,749	26,010,099	25.7	18.6	19.2
Total Utility	111,294,872	126,076,830	104,360,081	97.1	94.0	76.8
Total Nonutility	3,378,274	8,020,630	31,460,560	2.9	6.0	23.2
Industry	114,673,146	134,097,460	135,820,641	100.0	100.0	100.0

Table 6. Electric Power Industry Consumption by Primary Energy Source, 1986, 1991, and 1996
(Quadrillion Btu)

Fuel	1986	1991	1996	Percentage Share 1986	Percentage Share 1991	Percentage Share 1996
Coal	0.160	0.254	0.213	13.1	17.6	14.8
Oil	0.335	0.287	0.101	27.4	19.9	7.0
Gas	0.138	0.218	0.147	11.3	15.1	10.2
Nuclear	0.238	0.306	0.374	19.5	21.2	26.0
Hydro/Other	0.308	0.258	0.268	25.2	17.9	18.6
Total Utility	1.181	1.323	1.103	96.4	91.6	76.6
Total Nonutility	0.044	0.121	0.338	3.6	8.4	23.4
Industry	1.224	1.444	1.441	100.0	100.0	100.0

Figure 4. Utility Generation of Electricity by Primary Energy Source, 1986-1996

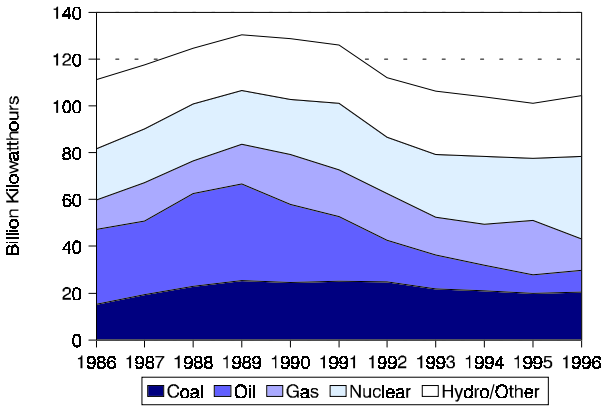


Figure 5. Utility Delivered Fuel Prices for Coal, Oil, and Gas, 1986-1996
(1996 Dollars)

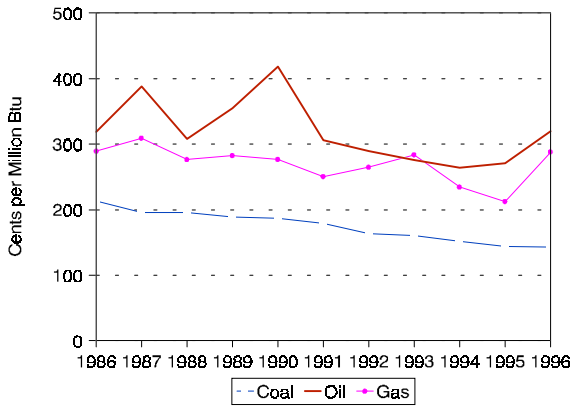


Table 7. Utility Delivered Fuel Prices for Coal, Oil, and Gas, 1986, 1991, and 1996
(Cents per Million Btu, 1996 Dollars)

Fuel	1986	1991	1996	Annual Growth Rate 1986-1996 (Percent)
Coal	212.9	179.1	142.8	-3.9
Oil	318.9	305.6	319.2	0.0
Gas	289.1	250.4	287.9	(s)

(s) = Nonzero percentage less than 0.05.

Table 8. Electric Power Industry Emissions Estimates, 1986, 1991, and 1996
(Thousand Short Tons)

Emission Type	1986	1991	1996	Annual Growth Rate 1986-1996 (Percent)
Sulfur Dioxide	379	404	242	-4.4
Nitrogen Oxides[d] . .	115	169	148	2.6
Carbon Dioxide[d] . . .	54,502	74,109	62,070	1.3

Figure 6. Estimated Sulfur Dioxide Emissions, 1986-1996

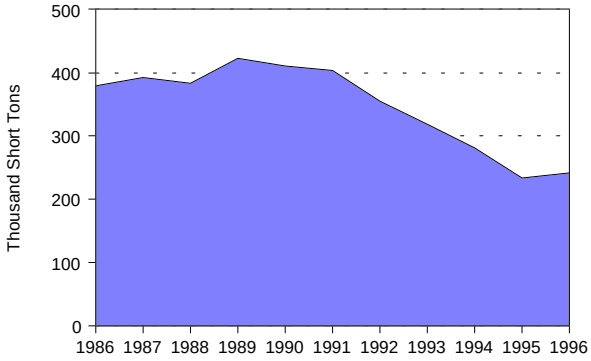


Figure 7. Estimated Nitrogen Oxide Emissions, 1986-1996

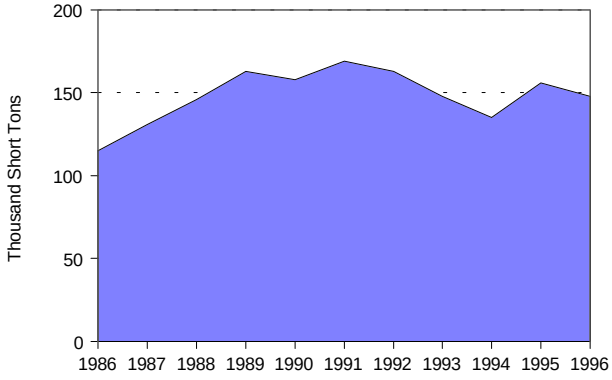


Figure 8. Estimated Carbon Dioxide Emissions, 1986-1996

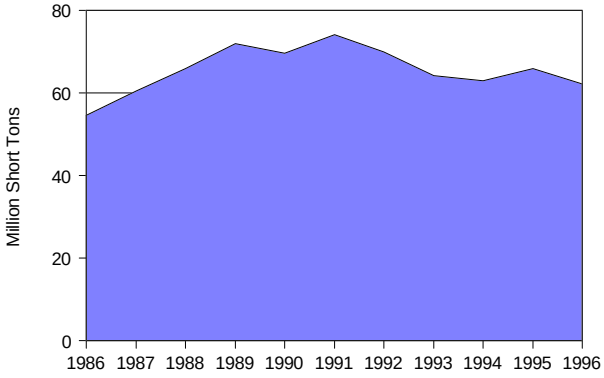


Table 9. Utility Retail Sales by Sector, 1986, 1991, and 1996
(Megawatthours)

Sector	1986	1991	1996	Annual Growth Rate 1986-1996 (Percent)	Percentage Share 1986	Percentage Share 1991	Percentage Share 1996
Residential . .	33,771,097	39,177,425	40,284,542	1.8	29.4	30.3	30.6
Commercial	42,201,589	46,981,962	52,915,305	2.3	36.7	36.3	40.2
Industrial . . .	28,106,715	31,111,530	25,947,477	-0.8	24.5	24.0	19.7
Other	10,828,958	12,140,050	12,379,862	1.3	9.4	9.4	9.4
Total	114,908,359	129,410,967	131,527,186	1.4	100.0	100.0	100.0

Figure 9. Nuclear Power Capacity Factor Comparison, 1986-1996

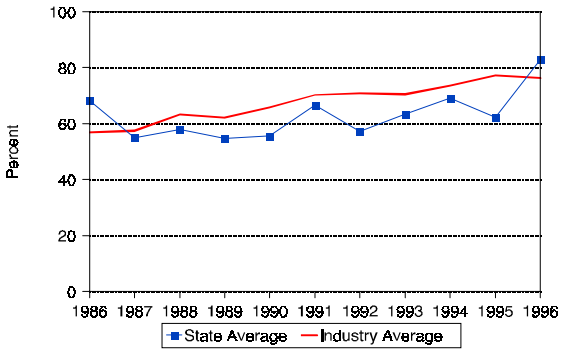


Table 10. Utility Retail Sales Statistics, 1986, 1991, and 1996

Item	Investor-Owned Utility	Public	Federal	Cooperative	Total
			1986		
Number of Utilities	12	49	--	4	65
Number of Retail Customers	6,632,032	144,166	--	11,584	6,787,782
Retail Sales (MWh)	99,086,706	15,701,661	--	119,992	114,908,359
Percentage of Retail Sales	86.2	13.7	--	0.1	100.0
Revenue from Retail Sales (thousand 1996 $)[e]	12,180,966	891,713	--	9,751	13,082,430
Percentage of Revenue	93.1	6.8	--	0.1	100.0
			1991		
Number of Utilities	10	48	--	4	62
Number of Retail Customers	7,006,005	151,649	--	13,311	7,170,965
Retail Sales (MWh)	112,596,079	16,675,281	--	139,607	129,410,967
Percentage of Retail Sales	87.0	12.9	--	0.1	100.0
Revenue from Retail Sales (thousand 1996 $)[e]	13,325,742	896,791	--	12,355	14,234,888
Percentage of Revenue	93.6	6.3	--	0.1	100.0
			1996		
Number of Utilities	10	48	--	4	62
Number of Retail Customers	7,197,479	157,451	--	15,126	7,370,056
Retail Sales (MWh)	114,383,703	16,983,839	--	159,644	131,527,186
Percentage of Retail Sales	87.0	12.9	--	0.1	100.0
Revenue from Retail Sales (thousand 1996 $)[e]	13,676,640	944,007	--	12,845	14,633,492
Percentage of Revenue	93.5	6.5	--	0.1	100.0

-- = Not applicable.