

Illinois

Illinois' electricity generation comes predominantly from coal-fired power plants which produced 71.5 billion kilowatthours of utility generated electricity (49.6 percent share) in 1996. Four of the five largest power plants in Illinois are nuclear powered, while the largest plant, Collins, is gas-fired. All five plants are operated by the second largest utility in the United States, Commonwealth Edison Company (ComEd). ComEd, along with Illinois Power, Central Illinois Public Service, Central Illinois Light, and Electric Energy Inc, operate more than 90 percent of the net summer capability. Combined, Illinois utilities generated 144.1 billion kilowatthours of electricity in 1996 for a population of almost 12 million, twice that of its neighbor Indiana, with a population of 5.8 million.

Illinois' generation mix is significantly different from its neighboring States—Indiana, Iowa, Kentucky, Missouri, and Wisconsin. Whereas these States use coal almost exclusively, ComEd began ordering nuclear power units in the late 1960's and early 1970's.¹ This early commitment has made Illinois the nuclear capital of the United States. In 1997, Illinois had more nuclear units (11) than any other State in the Nation, with a combined net capability of more than 11 gigawatts.² The nuclear plants each have two nuclear reactors and are located in northern Illinois, serving the most densely populated areas in and around Chicago.

ComEd's purchase of so many nuclear plants has been met with much public opposition because of cost and safety concerns. The average price of electricity is much higher than neighboring States, at 7.69 cents per kilowatthour. Missouri, the State with the second highest cost among the five States that border Illinois, has an average electricity cost that is 1.5 cents lower per kilowatthour than Illinois. This difference in cost can be attributed partly to the State's expensive nuclear plants, of which all but one (Clinton, operated by Illinois Power) are operated by ComEd. In 1998, ComEd paid more

than \$6 million in fines for problems at its nuclear plants. The plants at Dresden, LaSalle and Zion are or have been on the Nuclear Regulatory Commission's watch list because of safety and maintenance problems.³ Over the past 11 years, Illinois' annual aggregate nuclear capacity factor was below the national average 8 times, posting an average of 63.2 percent in 1996 as compared to a national average of 76.5. As a result of poor performance and deregulation plans, ComEd announced the permanent shutdown of its Zion nuclear plant in 1998.⁴

Although a large coal bed underlies most of the State, the coal is high in sulfur content and must be cleaned to meet air quality standards. Still, the sulfur content remains relatively high after cleaning, averaging 2 to 3 percent (by weight).⁵ As a result, Illinois ranks sixth in sulfur dioxide (SO₂) emissions. The Clean Air Act Amendments of 1990 cited 6,010 megawatts of nameplate capacity at eight Illinois plants to begin complying with stricter emissions standards for SO₂ and nitrogen oxides in 1995. Recently, Illinois utilities have begun to purchase low sulfur coal from Wyoming. Since 1991, SO₂ emissions have been reduced by an average annual rate of 2.7 percent.

High electricity generation costs have been the main reason Illinois has embraced electric utility restructuring while its neighbors have moved at a much slower pace. In December 1997, a bill was enacted that provides rate cuts for ComEd and Illinois Power customers and accords residential customers full choice for their generation supplier by May 2002. Customers who choose an alternative supplier will pay transition charges until 2006. In June 1998, the Illinois Commerce Commission issued a ruling that prohibits utility affiliates from exploiting the name, reputation, or logo of the utility in advertising or marketing campaigns. The rule will protect ratepayers from cross-subsidization of utility affiliates.⁶

¹ Energy Information Administration, *Nuclear Power Generation and Fuel Cycle Report*, DOE/EIA-0436(97) (Washington, DC, January 1994), pp. 61-69.

² *Ibid.*, pp. 81-84.

³ <http://www.sddt.com/files/librarywire/98/01/16/fd.html>.

⁴ Energy Information Administration, *Challenges of Electric Power Industry Restructuring for Fuel Suppliers*, DOE/EIA-0623 (Washington, DC, September 1998), Chapter 2.

⁵ Energy Information Administration, *State Coal Profiles*, DOE/EIA-0576 (Washington, DC, January 1994), p. 27.

⁶ Energy Information Administration, Status of State Electric Utility Deregulation Activity, http://www.eia.doe.gov/cneaf/electricity/chg_str/tab5rev.html.

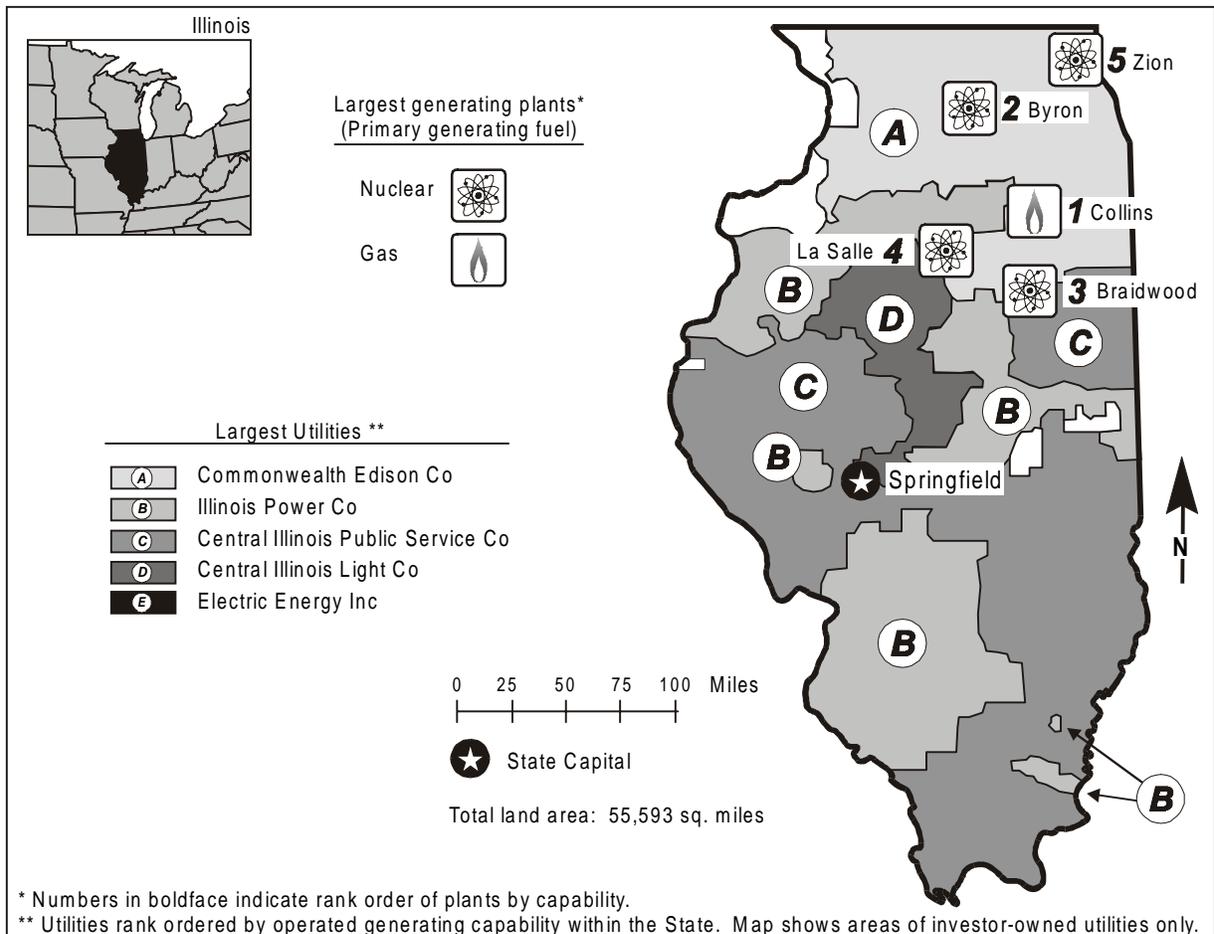


Table 1. 1996 Summary Statistics

Item	Value	U.S. Rank	Item	Value	U.S. Rank
NERC Region(s)		MAIN/MAPP	Utility		
Net Exporter or Importer		Exporter	Capability (MWe)	33,164	5
State Primary Generating Fuel		Coal	Generation (MWh)	144,116,009	4
Population (as of 7/96)	11,845,316	6	Average Age of Coal Plants	29 years	
Average Revenue (cents/kWh)	7.69	^a 39	Average Age of Oil-fired Plants	28 years	
Industry			Average Age of Gas-fired Plants	24 years	
Capability (MWe)	33,927	^b 6	Average Age of Nuclear Plants	15 years	
Generation (MWh)	148,006,659	^b 5	Average Age of Hydroelectric Plants	20 years	
Capability/person (KWe/person)	2.86	^b 25	Average Age of Other Plants	--	
Generation/person (MWh/person)	12.49	^b 24	Nonutility^c		
Sulfur Dioxide Emissions (Thousand Short Tons)	748	6	Capability (MWe)	763	19
Nitrogen Oxide Emissions (Thousand Short Tons)	369	5	Percentage Share of Capability	2.2	39
Carbon Dioxide Emissions (Thousand Short Tons)	84,753	9	Generation (MWh)	3,890,650	22
Sulfur Dioxide/sq. mile (Tons)	13.46	9	Percentage Share of Generation	2.6	39
Nitrogen Oxides/sq. mile (Tons)	6.63	12			
Carbon Dioxide/sq. mile (Tons)	1,524.53	18			

-- = Not applicable.

Table 2. Five Largest Utility Plants, 1996

Plant Name	Type	Operating Utility	Net Capability (MWe)
1. Collins	Gas/Oil	Commonwealth Edison Co	2,698
2. Byron	Nuclear	Commonwealth Edison Co	2,240
3. Braidwood	Nuclear	Commonwealth Edison Co	2,180
4. La Salle	Nuclear	Commonwealth Edison Co	2,096
5. Zion	Nuclear	Commonwealth Edison Co	2,080

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. Commonwealth Edison Co	21,939	6,450	1,600	2,210	11,679	--
B. Illinois Power Co	4,571	2,936	253	452	930	--
C. Central Illinois Pub Serv Co	2,859	2,688	171	--	--	--
D. Central Illinois Light Co	1,152	1,106	--	46	--	--
E. Electric Energy Inc	1,014	1,014	--	--	--	--
Total	31,535	14,194	2,024	2,708	12,609	--
Percentage of Industry Capability	92.9	--	--	--	--	--

-- = Not applicable.

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

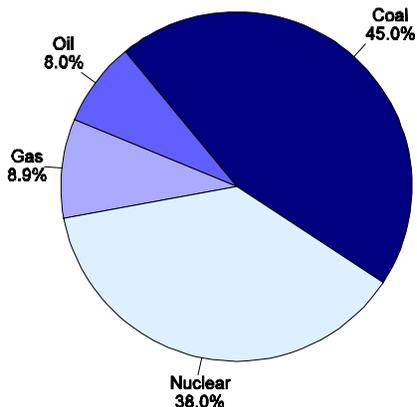


Figure 2. Utility Generation by Primary Energy Source, 1996

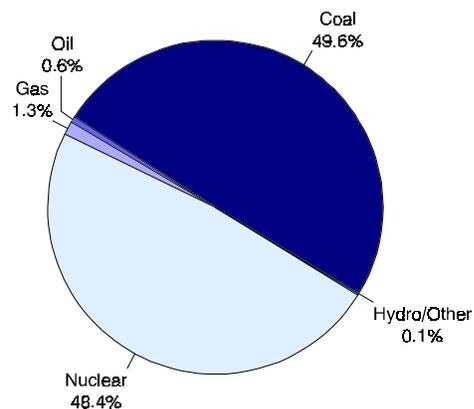


Figure 3. Energy Consumed at Electric Utilities by Primary Energy Source, 1996

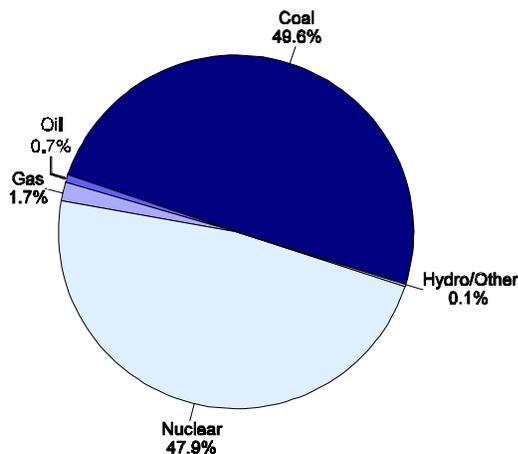


Table 4. Electric Power Industry Generating Capability by Primary Energy Source, 1986, 1991, and 1996
(Megawatts Electric)

Fuel	1986	1991	1996	Percentage Share 1986	Percentage Share 1991	Percentage Share 1996
Coal	15,112	14,916	14,931	51.7	45.0	44.0
Oil	4,541	4,207	2,648	15.5	12.7	7.8
Gas	999	901	2,963	3.4	2.7	8.7
Nuclear	8,379	12,609	12,609	28.6	38.1	37.2
Hydro/Other	14	10	13	(s)	(s)	(s)
Total Utility	29,044	32,643	33,164	99.3	98.6	97.8
Total Nonutility	207	475	763	0.7	1.4	2.2
Industry	29,251	33,118	33,927	100.0	100.0	100.0

(s) = Nonzero percentage less than 0.05.

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	61,634,155	53,955,009	71,514,607	57.2	41.4	48.3
Oil	2,036,181	905,501	795,771	1.9	0.7	0.5
Gas	483,287	1,072,070	1,875,248	0.4	0.8	1.3
Nuclear	42,613,603	71,866,091	69,774,356	39.6	55.2	47.1
Hydro/Other	124,371	52,704	156,027	0.1	(s)	0.1
Total Utility	106,891,597	127,851,375	144,116,009	99.2	98.1	97.4
Total Nonutility	850,812	2,429,238	3,890,650	0.8	1.9	2.6
Industry	107,742,409	130,280,613	148,006,659	100.0	100.0	100.0

(s) = Nonzero percentage less than 0.05.

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	0.659	0.595	0.768	52.0	40.4	46.1
Oil	0.029	0.019	0.011	2.3	1.3	0.6
Gas	0.006	0.013	0.026	0.5	0.9	1.6
Nuclear	0.460	0.772	0.741	36.3	52.4	44.5
Hydro/Other	0.001	0.001	0.002	0.1	(s)	0.1
Total Utility	1.156	1.400	1.548	91.1	95.1	92.9
Total Nonutility	0.000	0.072	0.119	0.0	4.9	7.1
Total Industry	1.156	1.472	1.667	100.0	100.0	100.0

(s) = Nonzero percentage less than 0.0005.

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

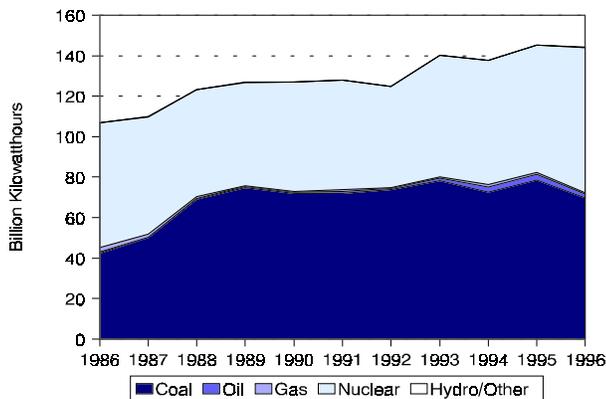


Figure 5. Utility Delivered Fuel Prices for Coal, Oil, and Gas, 1986-1996
(1996 Dollars)

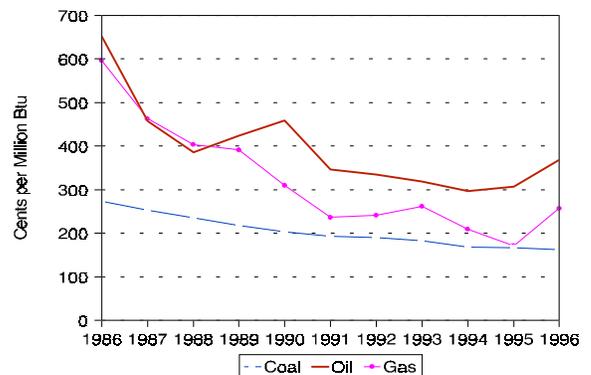


Table 7. Utility Delivered Fuel Prices for Coal, Oil, and Gas, 1986, 1991, and 1996
(Cents per Million Btu, 1996 Dollars)

Fuel	1986	1991	1996	Annual Growth Rate 1986-1996 (Percent)
Coal	273.9	192.7	162.7	-5.1
Oil	651.0	347.1	368.1	-5.5
Gas	596.5	236.5	257.2	-8.1

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	998	873	748	-2.8
Nitrogen Oxides ^d . .	326	295	369	1.2
Carbon Dioxide ^d . .	69,847	65,370	84,753	2.0

Figure 6. Estimated Sulfur Dioxide Emissions, 1986-1996

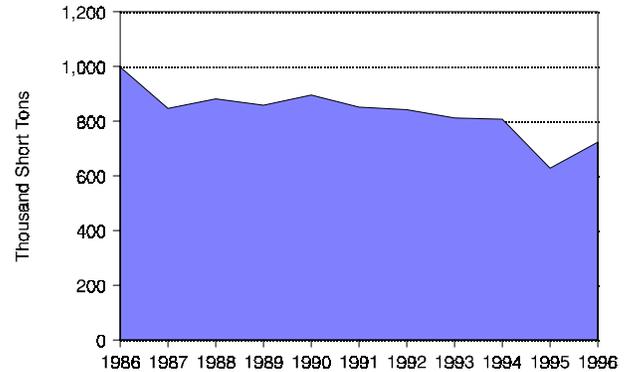


Figure 7. Estimated Nitrogen Oxide Emissions, 1986-1996

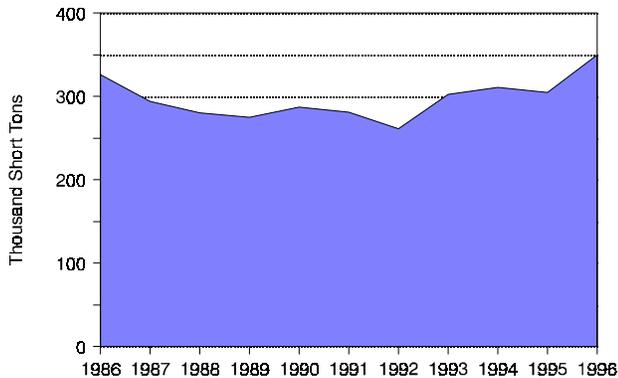


Figure 8. Estimated Carbon Dioxide Emissions, 1986-1996

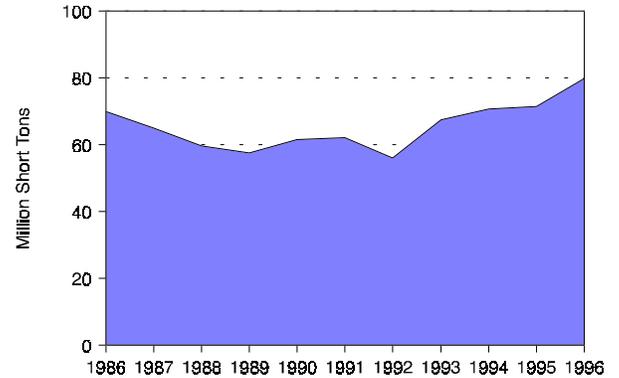


Table 9. Utility Retail Sales by Sector, 1986, 1991, and 1996
(Megawatthours)

Sector	1986	1991	1996	Annual Growth Rate 1986-1996 (Percent)	Percentage Share 1986	Percentage Share 1991	Percentage Share 1996
Residential . . .	30,964,794	35,963,792	37,534,693	1.9	30.4	30.8	29.9
Commercial . .	27,146,337	33,118,784	37,431,971	3.3	26.7	28.3	29.8
Industrial	36,785,563	39,712,089	42,050,306	1.3	36.2	34.0	33.5
Other	6,860,921	8,073,893	8,572,154	2.3	6.7	6.9	6.8
Total	101,757,613	116,868,558	125,589,124	2.1	100.0	100.0	100.0

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

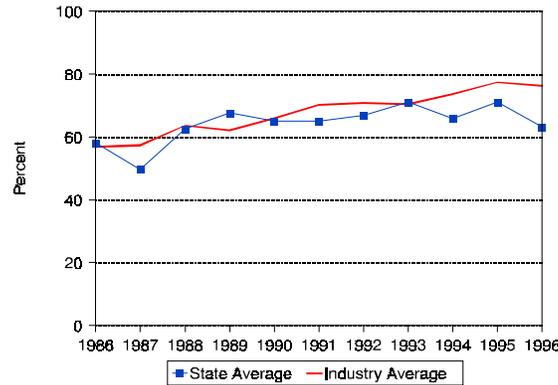


Table 10. Utility Retail Sales Statistics, 1986, 1991, and 1996

Item	Investor-Owned Utility	Public	Federal	Cooperative	Total
	1986				
Number of Utilities	9	41	--	28	78
Number of Retail Customers	4,244,199	188,340	--	207,405	4,639,944
Retail Sales (MWh)	95,141,405	3,538,742	--	3,077,466	101,757,613
Percentage of Retail Sales	93.5	3.5	--	3.0	100.0
Revenue from Retail Sales (thousand 1996 \$) ^e	9,331,827	306,660	--	357,514	9,996,001
Percentage of Revenue	93.4	3.1	--	3.6	100.0
1991					
Number of Utilities	9	41	--	28	78
Number of Retail Customers	4,454,148	207,104	--	216,964	4,878,216
Retail Sales (MWh)	108,976,259	4,447,207	--	3,445,092	116,868,558
Percentage of Retail Sales	93.3	3.8	--	3.0	100.0
Revenue from Retail Sales (thousand 1996 \$) ^e	9,339,113	325,513	--	353,924	10,018,549
Percentage of Revenue	93.2	3.3	--	3.5	100.0
1996					
Number of Utilities	9	41	--	28	78
Number of Retail Customers	4,637,874	228,426	--	232,649	5,098,949
Retail Sales (MWh)	116,451,934	5,257,382	--	3,879,808	125,589,124
Percentage of Retail Sales	92.7	4.2	--	3.1	100.0
Revenue from Retail Sales (thousand 1996 \$) ^e	8,974,676	329,778	--	350,827	9,655,281
Percentage of Revenue	93.0	3.4	--	3.6	100.0

-- = Not applicable.