

Kansas

Kansas' electricity generation comes predominantly from coal-fired power plants, producing 29.7 billion kilowatthours (74.6 percent of the utility share) in 1996. Over 85 percent of the electric utility coal purchases is mined in the Powder River Basin in Wyoming.¹ Very little coal comes from within the State. Although Kansas coal has a relatively high heat content, averaging more than 21 million Btu per short ton, its use is constrained by its high sulfur content, which averages about 4 percent by weight.² Given the State's large coal purchases, it follows that three of the four largest plants in Kansas, including Jeffrey EC, the largest, are coal-fired plants. The three plants are located in the eastern part of the State close to the capital, Topeka. The largest utility in the State, KPL, operates two of the four largest plants, including Jeffrey EC.

The five largest utilities with capability within the State—KPL, the Kansas City Power and Light Company, the Wolf Creek Nuclear Operating Corporation, KGE, and the city of Kansas City—operated over 80 percent of the net summer capability. These utilities, along with three investor-owned utilities, 119 public utilities, and 33 cooperatives, serve a population of about 2.5 million. The average retail price was 6.52 cents per kilowatthour, which was twenty-second lowest in the Nation. Over the 11-year period examined in this report, the fuel mix and capability and generation shares in Iowa remained quite stable.

In 1996, utilities generated 39.9 billion kilowatthours of electricity. The commercial sector accounted for over 35 percent of retail sales in 1996, while the residential sector accounted for 34 percent and the industrial sector accounted for 30 percent. From 1986 to 1996, utility retail

sales have increased at an average annual rate of 2.8 percent, reaching 31.3 billion kilowatthours in 1996. Kansas is an exporter of electricity with a net difference of 8.3 billion kilowatthours between generation and sales.

In spite of its largely coal-based generation, Kansas also produces a significant amount of nuclear power generation, 8.2 billion kilowatthours (20.6 percent of the utility share) in 1996. This power is produced by the State's only nuclear plant, Wolf Creek, which is operated by Wolf Creek Nuclear Operating Corporation. Wolf Creek's capacity factor was higher than the national average 10 of the 11 years examined, posting a capacity factor of 80.5 percent in 1996.

The Clean Air Act Amendments of 1990 cited 158 megawatts of nameplate capacity at the City of Kansas City's Quindaro plant to begin compliance with stricter emissions standards for sulfur dioxide (SO₂) and nitrogen oxides (NO_x). Emissions of SO₂, NO_x, and carbon dioxide (CO₂) from Kansas generators ranked twenty-sixth, twenty-fifth, and twenty-fifth nationally in 1996. The concentration of these pollutants per square mile in Kansas ranked thirty-third, thirty-fourth and thirty-sixth, respectively. Emissions of SO₂ in Kansas rose slightly from 1986 to 1991, and then rose more sharply to the 1996 levels. NO_x and CO₂ emissions also increased substantially over both periods.

The Kansas State legislature did not act on a restructuring bill that was proposed in February, 1998 by the Retail Wheeling Task Force. Legislation will likely be introduced again in the 1999 session. The bill that was proposed by the Task Force called for retail access after July 2001.³

¹ Energy Information Administration, *Cost and Quality of Fuels for Electric Utility Plants 1997 Tables*, DOE/EIA-0191(97) (Washington, DC, May 1998), p. 31.

² Energy Information Administration, *State Coal Profiles*, DOE/EIA-0576 (Washington, DC, January 1994), p. 39.

³ Energy Information Administration, Status of State Electric Utility Deregulation Activity, http://www.eia.doe.gov/cneaf/electricity/chg_str/tab5rev.html.

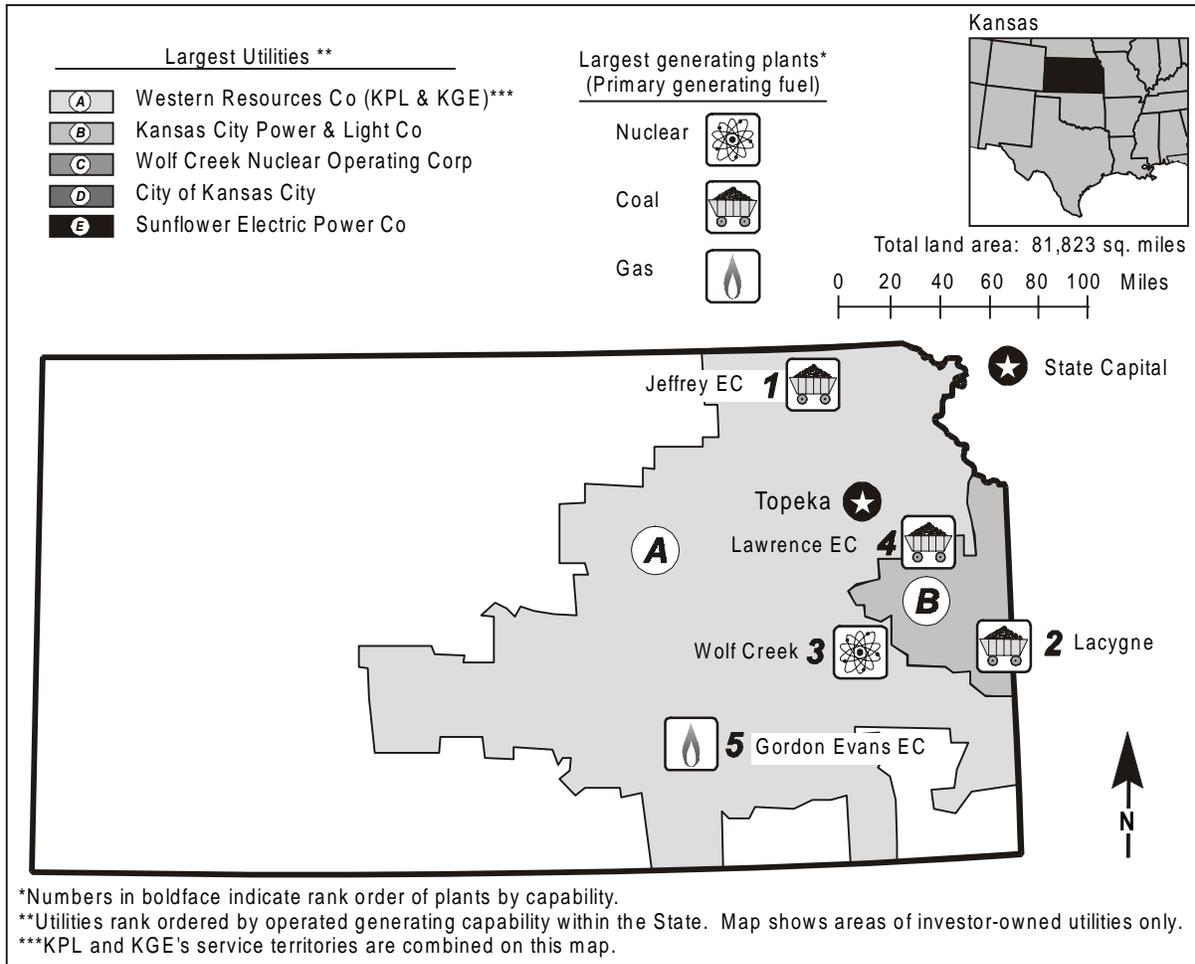


Table 1. 1996 Summary Statistics

Item	Value	U.S. Rank	Item	Value	U.S. Rank
NERC Region(s)		SPP/MAPP	Utility		
Net Exporter or Importer		Exporter	Capability (MWe)	9,694	27
State Primary Generating Fuel		Coal	Generation (MWh)	39,874,544	29
Population (as of 7/96)	2,579,149	32	Average Age of Coal Plants	21 years	
Average Revenue (cents/kWh)	6.52	^a 30	Average Age of Oil-fired Plants . .	23 years	
Industry			Average Age of Gas-fired Plants	29 years	
Capability (MWe)	9,743	^b 28	Average Age of Nuclear Plants . .	11 years	
Generation (MWh)	39,945,525	^b 26	Average Age of		
Capability/person			Hydroelectric Plants	--	
(KWe/person)	3.78	^b 12	Average Age of Other Plants	--	
Generation/person			Nonutility^c		
(MWh/person)	15.49	^b 17	Capability (MWe)	49	43
Sulfur Dioxide Emissions			Percentage Share of Capability . .	0.5	43
(Thousand Short Tons)	103	26	Generation (MWh)	70,981	43
Nitrogen Oxide Emissions			Percentage Share of		
(Thousand Short Tons)	133	25	Generation	0.2	43
Carbon Dioxide Emissions			-- = Not applicable.		
(Thousand Short Tons)	36,154	25			
Sulfur Dioxide/sq. mile (Tons)	1.25	33			
Nitrogen Oxides/sq. mile (Tons)	1.62	34			
Carbon Dioxide/sq. mile (Tons)	441.85	36			

Table 2. Five Largest Utility Plants, 1996

Plant Name	Type	Operating Utility	Net Capacity (MWe)
1. Jeffrey EC	Coal	KPL	2,136
2. Lacygne	Coal	Kansas City Power & Light Co	1,350
3. Wolf Creek	Nuclear	Wolf Creek Nuclear Oper Corp	1,163
4. Lawrence EC	Coal	KPL	565
5. Gordon Evans EC	Gas/Oil	KGE	517

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. KPL	3,534	2,867	81	1,462	--	--
B. Kansas City Power & Light Co	1,350	1,350	--	--	--	--
C. Wolf Creek Nuclear Oper Corp	1,163	--	--	--	1,163	--
D. KGE	920	--	3	917	--	--
E. City of Kansas City	676	572	90	14	--	--
Total	7,643	4,789	174	2,393	1,163	--
Percentage of Industry Capability	78.4	--	--	--	--	--

-- = Not applicable.

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

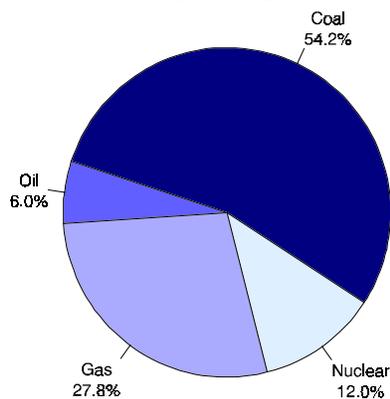


Figure 2. Utility Generation by Primary Energy Source, 1996

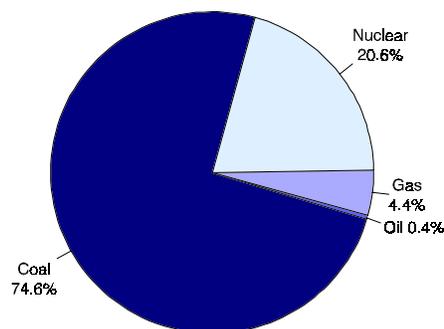


Figure 3. Energy Consumed at Electric Utilities by Primary Energy Source, 1996

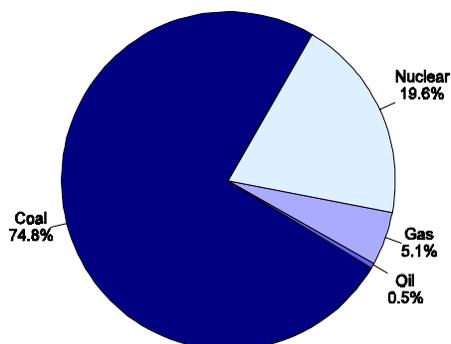


Table 4. Electric Power Industry Generating Capability by Primary Energy Source, 1986, 1991, and 1996
(Megawatts Electric)

Fuel	1986	1991	1996	Percentage Share 1986	Percentage Share 1991	Percentage Share 1996
Coal	5,010	5,091	5,256	53.0	53.0	54.2
Oil	578	602	578	6.1	6.3	6.0
Gas	2,750	2,784	2,697	29.1	29.0	27.8
Nuclear	1,117	1,131	1,163	11.8	11.8	12.0
Hydro/Other	2	--	--	(s)	--	--
Total Utility	9,457	9,609	9,694	100.0	100.0	100.0
Total Nonutility	W	W	49	--	--	--

-- = Not applicable. W = Withheld. (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	21,362,084	23,435,008	29,742,722	72.3	72.5	74.6
Oil	84,497	52,702	158,472	0.3	0.2	0.4
Gas	1,117,308	2,959,358	1,768,482	3.8	9.2	4.4
Nuclear	6,958,726	5,858,613	8,204,868	23.6	18.1	20.6
Hydro/Other	8,376	9,144	--	(s)	(s)	--
Total Utility	29,530,991	32,314,825	39,874,544	100.0	100.0	100.0
Total Nonutility	W	W	70,981	--	--	--

-- = Not applicable. W = Withheld. (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	0.246	0.266	0.333	73.0	72.8	74.8
Oil	0.001	0.001	0.002	0.3	0.2	0.5
Gas	0.015	0.035	0.023	4.4	9.7	5.1
Nuclear	0.075	0.063	0.087	22.3	17.2	19.6
Hydro/Other	(s)	(s)	--	--	--	--
Total Utility	0.338	0.366	0.445	100.0	100.0	100.0
Total Nonutility	W	W	0.002	--	--	--

-- = Not applicable. W = Withheld. (s) = Nonzero value less than 0.0005.

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

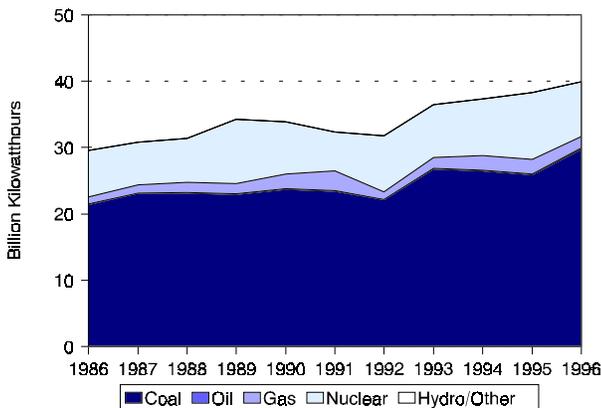


Figure 5. Utility Delivered Fuel Prices for Coal, Oil, and Gas, 1986-1996
(1996 Dollars)

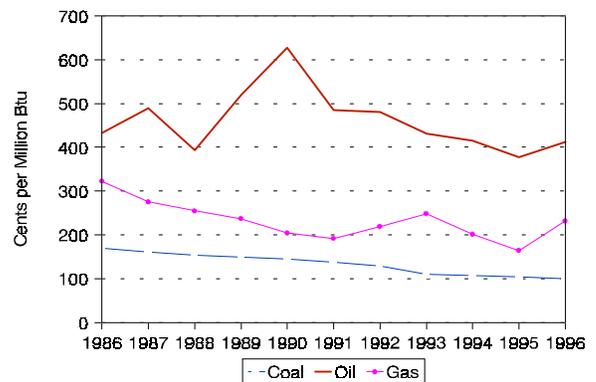


Table 7. Utility Delivered Fuel Prices for Coal, Oil, and Gas, 1986, 1991, and 1996
(Cents per Million Btu, 1996 Dollars)

Fuel	1986	1991	1996	Annual Growth Rate 1986-1996 (Percent)
Coal	170.3	137.8	99.2	-5.3
Oil	433.4	485.2	412.2	-0.5
Gas	322.7	191.9	231.8	-3.3

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	70	76	103	3.8
Nitrogen Oxides ^d . .	77	115	133	5.6
Carbon Dioxide ^d . .	21,081	29,870	36,154	5.5

Figure 6. Estimated Sulfur Dioxide Emissions, 1986-1996

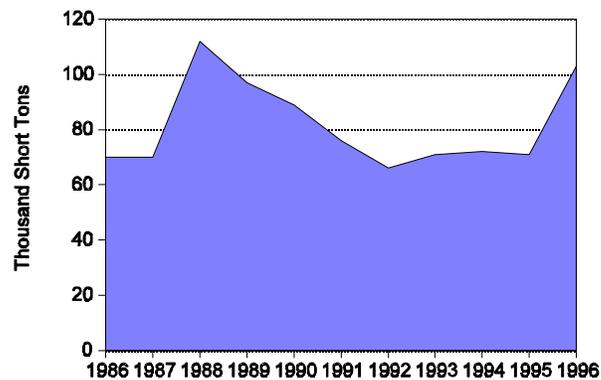


Figure 7. Estimated Nitrogen Oxide Emissions, 1986-1996

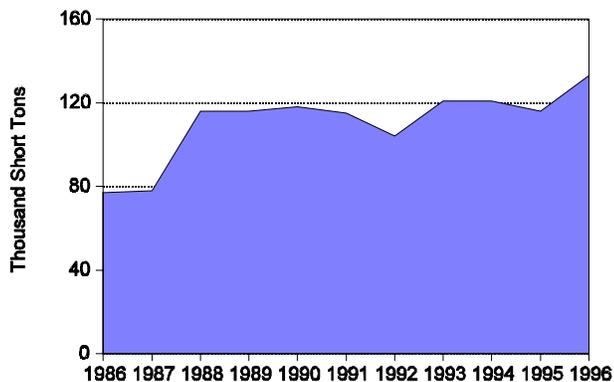


Figure 8. Estimated Carbon Dioxide Emissions, 1986-1996

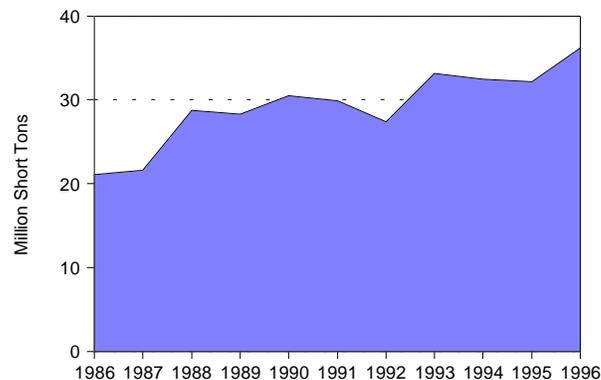


Table 9. Utility Retail Sales by Sector, 1986, 1991, and 1996
(Megawatthours)

Sector	1986	1991	1996	Annual Growth Rate 1986-1996 (Percent)	Percentage Share 1986	Percentage Share 1991	Percentage Share 1996
Residential . . .	8,345,769	9,933,309	10,672,347	2.5	35.0	35.3	34.1
Commercial . .	7,930,925	9,551,120	11,004,916	3.3	33.3	33.9	35.2
Industrial	7,127,850	8,283,739	9,230,522	2.6	29.9	29.4	29.5
Other	429,893	384,056	382,841	-1.2	1.8	1.4	1.2
Total	23,834,430	28,152,224	31,290,626	2.8	100.0	100.0	100.0

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

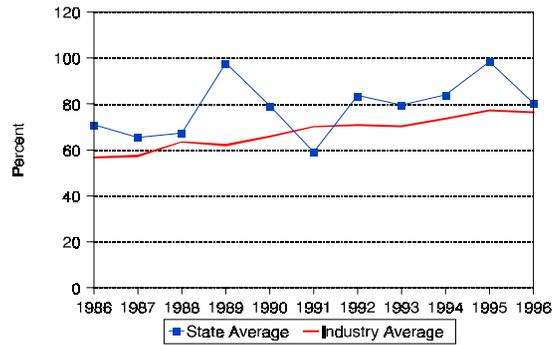


Table 10. Utility Retail Sales Statistics, 1986, 1991, and 1996

Item	Investor-Owned Utility	Public	Federal	Cooperative	Total
	1986				
Number of Utilities	6	123	--	36	165
Number of Retail Customers	752,442	236,860	--	172,541	1,161,843
Retail Sales (MWh)	16,954,619	4,155,606	--	2,724,205	23,834,430
Percentage of Retail Sales	71.1	17.4	--	11.4	100.0
Revenue from Retail Sales (thousand 1996 \$) ^e	1,530,925	330,907	--	309,566	2,171,397
Percentage of Revenue	70.5	15.2	--	14.3	100.0
1991					
Number of Utilities	7	121	--	33	161
Number of Retail Customers	867,370	222,986	--	176,208	1,266,564
Retail Sales (MWh)	20,429,447	4,804,204	--	2,918,573	28,152,224
Percentage of Retail Sales	72.6	17.1	--	10.4	100.0
Revenue from Retail Sales (thousand 1996 \$) ^e	1,475,950	325,048	--	279,206	2,080,205
Percentage of Revenue	71.0	15.6	--	13.4	100.0
1996					
Number of Utilities	6	119	--	33	158
Number of Retail Customers	863,966	227,604	--	187,060	1,278,630
Retail Sales (MWh)	22,867,348	5,252,006	--	3,171,272	31,290,626
Percentage of Retail Sales	73.1	16.8	--	10.1	100.0
Revenue from Retail Sales (thousand 1996 \$) ^e	1,443,845	320,405	--	276,591	2,040,841
Percentage of Revenue	70.8	15.7	--	13.6	100.0

-- = Not applicable.