

# Oklahoma

Oklahoma ranks in the middle of the States in both population and generating capability. Most of the electricity in Oklahoma is generated at coal-fired plants. Only 5 percent of the coal distributed to Oklahoma electric utilities in 1996 was mined in the State. The State's coal deposits are all bituminous in rank and contain a high sulfur content averaging about 3 percent by weight.<sup>1</sup> The remaining 95 percent of coal distributed to electric utilities in Oklahoma was low-sulfur bituminous coal from the Powder River Basin in Wyoming.<sup>2</sup> Four of the five largest plants are coal-fired, three of which are in northeastern Oklahoma near Tulsa. The largest coal-fired generating units, totaling 1,699 megawatts, are at the Muskogee plant of Oklahoma Gas and Electric Company in Muskogee County. Oklahoma Gas and Electric is also the largest utility in the State.

Gas-fired power also plays a significant role due to the State's proximity to Texas, the Nation's largest producer of natural gas. The second-largest plant in the State, Seminole, is gas-fired and is also owned by Oklahoma Gas and Electric Company. There is no nuclear capability but there is hydroelectric power, which accounted for approximately 9 percent of capability in 1996. The average price of electricity in Oklahoma, 5.56 cents per kilowatthour, was well below the national average price of 6.86 cents per kilowatthour.

Although Oklahoma is heavily reliant on coal-fired generation, emissions of sulfur dioxide, nitrogen oxides, and carbon dioxide are relatively low. This can be attributed to the use of low-sulfur Wyoming coal. However, emissions of all three pollutants have increased steadily in the period 1986 to 1996.

Utility generation of electricity in 1996 was 47.5 megawatthours while retail sales were 43.3 megawatthours, making Oklahoma a net exporter of electricity. Compared to other States, the residential sector's share of retail sales is rather high at 40 percent, while the

"other" sector is relatively low at 5.3 percent. The other sector includes sales for public street and highway lighting, other sales to public authorities, sales to railroads and railways, and interdepartmental sales. As mentioned earlier, the average price of electricity to all sectors was 5.56 cents per kilowatthour. The average price in Oklahoma for the residential sector was 6.71, for the commercial sector was 5.80, for the industrial sector was 3.78, and for the other sector was 5.08 cents per kilowatthour. Utility retail sales to all sectors experienced a positive annual growth rate from 1986 to 1996, averaging out to almost a 2 percent annual growth rate for total retail sales.<sup>3</sup>

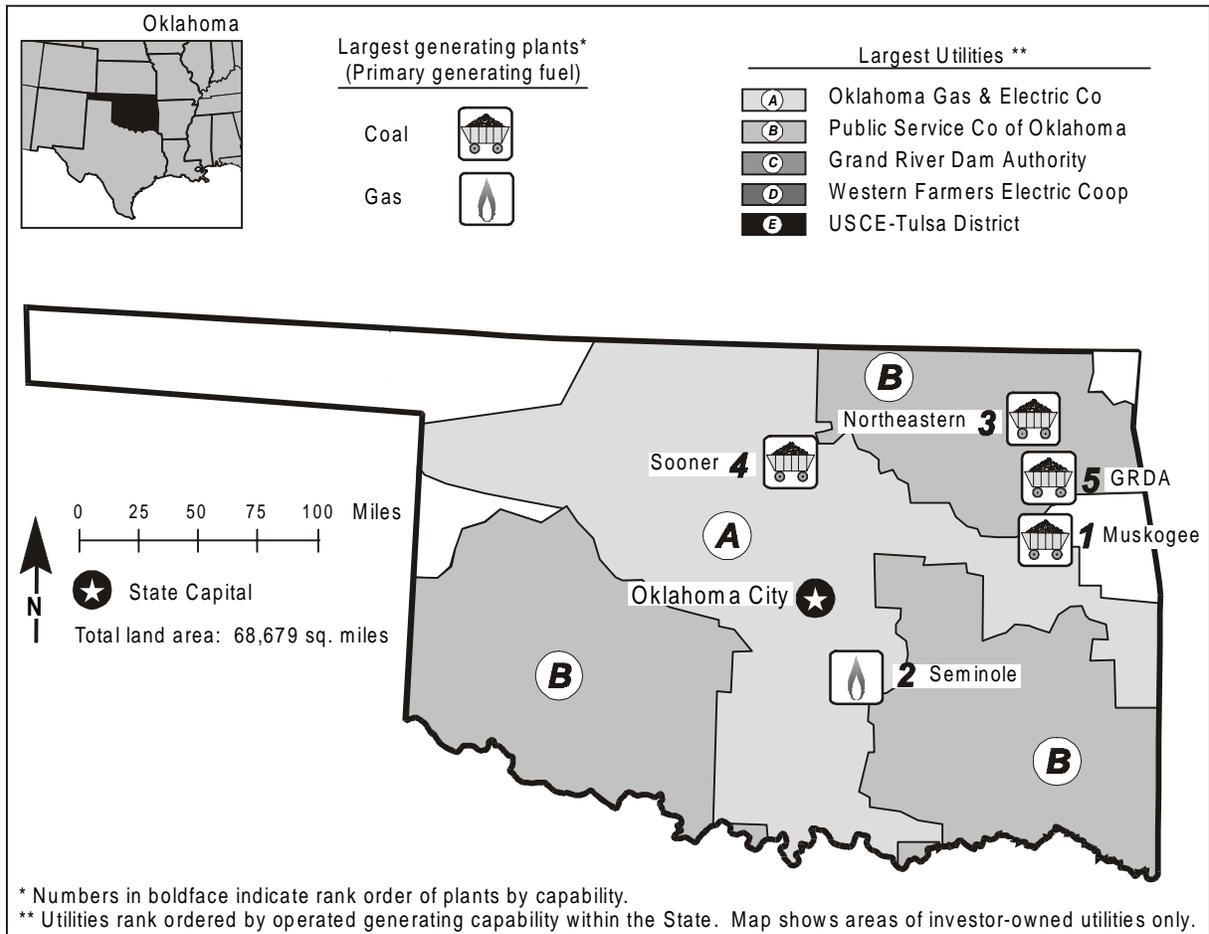
The Oklahoma State legislature passed a bill in April 1997 that would allow retail competition by July 2002. It also directed the State Corporation Commission to undertake a study of all relevant issues relating to restructuring the electricity industry in the State and to develop a framework for the restructuring. The bill stated that each concerned entity must propose a recovery plan for stranded costs and that transition charges would be collected over a 3- to 7-year period. In addition, the transition charges were not to cause the total price for electric power to exceed the cost per kilowatthour paid by consumers when the law was enacted during the transition period. Another bill was enacted in June 1998 which will allow some retail competition to begin as early as 1999. It will also speed up the time line for restructuring and requires that a task force conduct and complete studies regarding the rules for customer choice, reliability, and unbundling by October 1, 1999, along with a feasibility study regarding levying an across-the-board consumption tax to fund the transition to competition. The bill also contains a reciprocity agreement requiring out-of-State electric service companies to provide equal access to transmission and distribution facilities to Oklahoma facilities as a condition for competing in Oklahoma.<sup>4</sup>

<sup>1</sup> Energy Information Administration, *State Coal Profiles*, DOE/EIA-0576 (Washington, DC, January 1994), p. 75.

<sup>2</sup> Energy Information Administration, *Coal Distribution Report January-December 1996*, DOE/EIA-0125(96/4Q) (Washington, DC), Table 34.

<sup>3</sup> Energy Information Administration, *Electric Power Annual 1996 Volume II*, DOE/EIA-0348(96)/2 (Washington, DC, December 1997), Table 7.

<sup>4</sup> Energy Information Administration, Status of State Electric Utility Deregulation Activity, [http://www.eia.doe.gov/cneaf/electricity/chg\\_str/tab5rev.html](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	<b>Utility</b>		
Net Exporter or Importer . . . .		Exporter	Capability (MWe) . . . . .	13,091	23
State Primary Generating Fuel		Coal	Generation (MWh) . . . . .	47,544,649	24
Population (as of 7/96) . . . .	3,295,315	27	Average Age of Coal Plants . . . .	16 years	
Average Revenue (cents/kWh)	5.56	<sup>a</sup> 15	Average Age of Oil-fired Plants	32 years	
<b>Industry</b>			Average Age of Gas-fired Plants	27 years	
Capability (MWe) . . . . .	13,863	<sup>b</sup> 21	Average Age of Nuclear Plants	--	
Generation (MWh) . . . . .	52,036,045	<sup>b</sup> 21	Average Age of		
Capability/person			Hydroelectric Plants . . . . .	31 years	
(KWe/person) . . . . .	4.21	<sup>b</sup> 7	Average Age of Other Plants . . .	--	
Generation/person			<b>Nonutility<sup>c</sup></b>		
(MWh/person) . . . . .	15.79	<sup>b</sup> 16	Capability (MWe) . . . . .	772	18
Sulfur Dioxide Emissions			Percentage Share of Capability	5.6	26
(Thousand Short Tons) . . . .	126	23	Generation (MWh) . . . . .	4,491,396	17
Nitrogen Oxide Emissions			Percentage Share of Generation	8.6	19
(Thousand Short Tons) . . . .	161	18	-- = Not applicable.		
Carbon Dioxide Emissions					
(Thousand Short Tons) . . . .	47,650	19			
Sulfur Dioxide/sq. mile (Tons)	1.83	31			
Nitrogen Oxides/sq. mile (Tons)	2.34	29			
Carbon Dioxide/sq. mile (Tons)	693.81	29			

**Table 2. Five Largest Utility Plants, 1996**

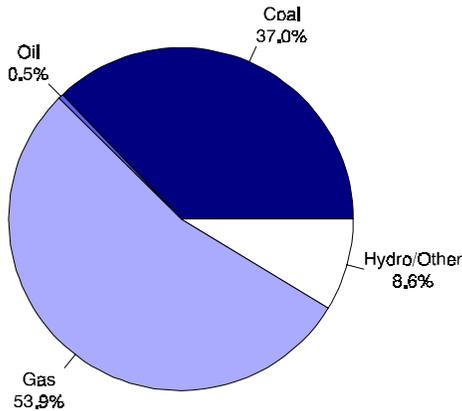
Plant Name	Type	Operating Utility	Net Capability (MWe)
1. Muskogee .....	Coal/Gas	Oklahoma Gas & Electric Co	1,699
2. Seminole .....	Gas	Oklahoma Gas & Electric Co	1,556
3. Northeastern .....	Coal/Gas	Public Service Co of Oklahoma	1,541
4. Sooner .....	Coal	Oklahoma Gas & Electric Co	1,015
5. GRDA .....	Coal	Grand River Dam Authority	1,010

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

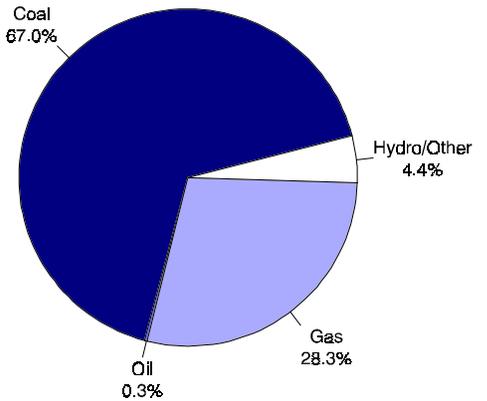
Utility	Net Summer Capability	Net Coal Capability	Net Oil Capability	Net Gas Capability	Net Nuclear Capability	Net Hydro/Other Capability
A. Oklahoma Gas & Electric Co .....	5,827	2,530	--	3,297	--	--
B. Public Service Co of Oklahoma ..	3,792	900	25	2,867	--	--
C. Grand River Dam Authority .....	1,566	1,010	--	--	--	556
D. Western Farmers Elec Coop Inc	1,091	408	--	683	--	--
E. USCE-Tulsa District .....	539	--	--	--	--	539
Total .....	12,815	4,848	25	6,847	--	1,095
Percentage of Industry Capability	92.4	--	--	--	--	--

-- = Not applicable.

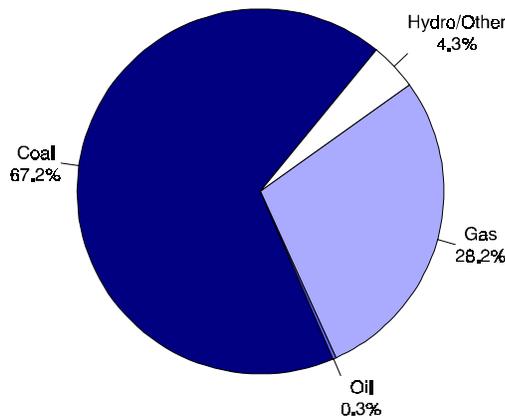
**Figure 1. Utility Generating Capability by Primary Energy Source, 1996**



**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	4,830	4,865	4,848	36.8	35.7	35.0
Oil	54	58	64	0.4	0.4	0.5
Gas	6,903	6,922	7,059	52.6	50.8	50.9
Nuclear	--	--	--	--	--	--
Hydro/Other	994	1,003	1,121	7.6	7.4	8.1
Total Utility	12,782	12,848	13,091	97.3	94.2	94.4
Total Nonutility	352	790	772	2.7	5.8	5.6
Industry	13,134	13,638	13,863	100.0	100.0	100.0

-- = Not applicable.

**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	18,696,283	26,027,968	31,876,730	44.2	53.0	61.3
Oil	35,257	18,533	124,951	0.1	0.0	0.2
Gas	19,390,913	16,946,803	13,464,787	45.8	34.5	25.9
Nuclear	--	--	--	--	--	--
Hydro/Other	2,950,993	1,856,785	2,078,181	7.0	3.8	4.0
Total Utility	41,073,446	44,850,089	47,544,649	97.0	91.4	91.4
Total Nonutility	1,265,444	4,239,159	4,491,396	3.0	8.6	8.6
Industry	42,338,890	49,089,248	52,036,045	100.0	100.0	100.0

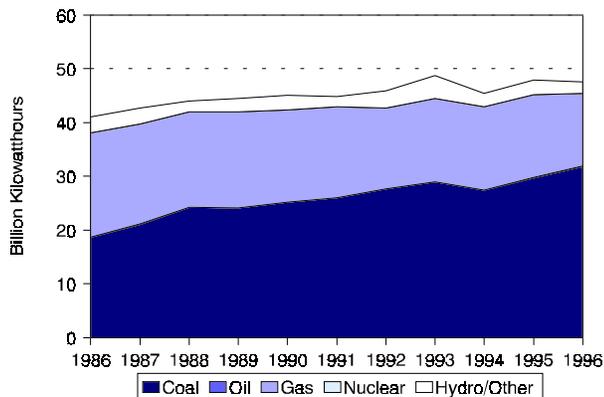
-- = Not applicable.

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

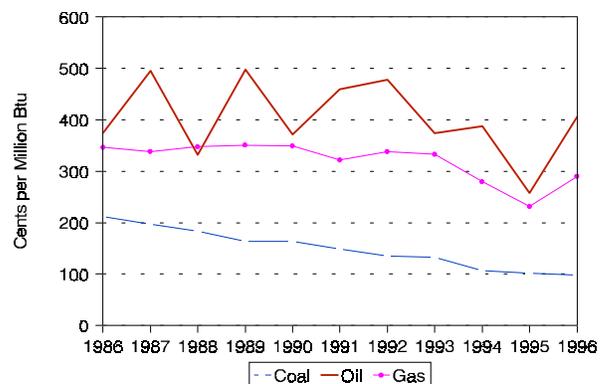
Fuel	1986	1991	1996	Percentage Share 1986	Percentage Share 1991	Percentage Share 1996
Coal	0.202	0.275	0.334	40.8	51.4	58.3
Oil	0.001	(s)	0.001	0.1	--	0.2
Gas	0.205	0.174	0.140	41.5	32.5	24.4
Nuclear	--	--	--	--	--	--
Hydro/Other	0.031	0.019	0.021	6.2	3.6	3.7
Total Utility	0.439	0.469	0.496	88.7	87.5	86.7
Total Nonutility	0.056	0.067	0.076	11.3	12.5	13.3
Industry	0.494	0.536	0.573	100.0	100.0	100.0

-- = Not applicable. (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)



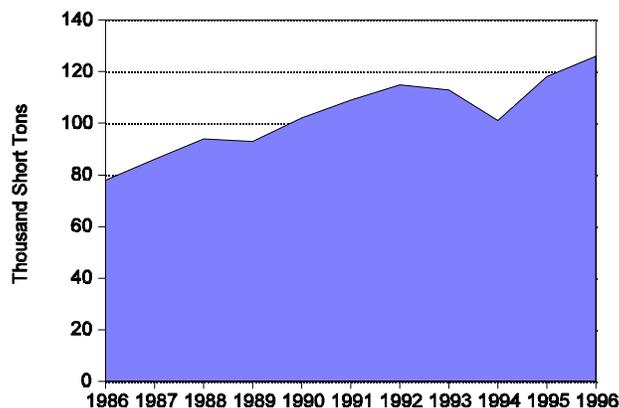
**Table 7. Utility Delivered Fuel Prices for Coal, Oil, and Gas, 1986, 1991, and 1996**  
(Cents per Million Btu, 1996 Dollars)

Fuel	1986	1991	1996	Annual Growth Rate 1986-1996 (Percent)
Coal . . . . .	211.3	148.1	97.6	-7.4
Oil . . . . .	373.8	459.4	406.7	0.8
Gas . . . . .	346.3	322.0	290.1	-1.8

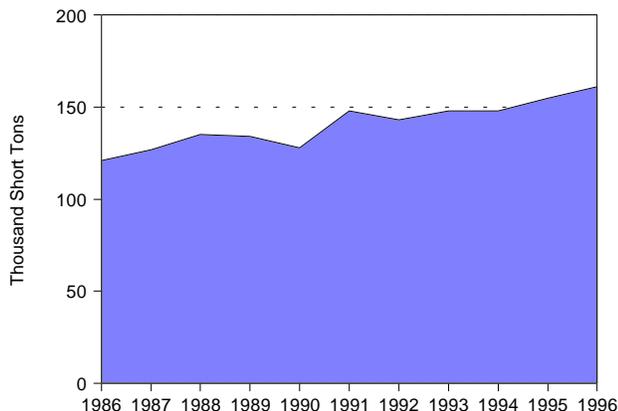
**Table 8. Electric Power Industry Emissions Estimates, 1986, 1991, and 1996**  
(Thousand Short Tons)

Emission Type	1986	1991	1996	Annual Growth Rate 1986-1996 (Percent)
Sulfur Dioxide . . . .	78	109	126	4.9
Nitrogen Oxides <sup>d</sup> . .	121	148	161	2.9
Carbon Dioxide <sup>d</sup> . . .	32,591	41,483	47,650	3.9

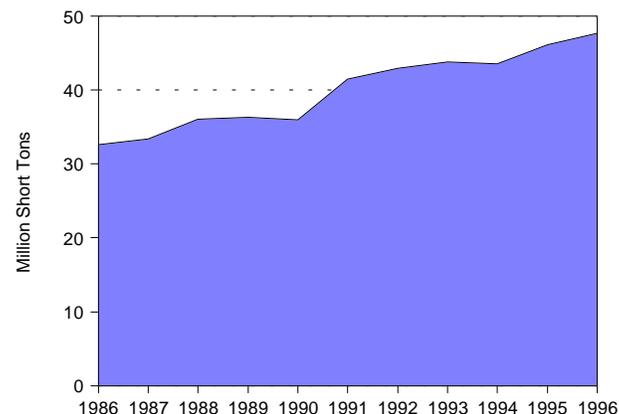
**Figure 6. Estimated Sulfur Dioxide Emissions, 1986-1996**



**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 . .	13,903,115	15,324,941	17,302,792	2.2	38.9	38.9	40.0
Commercial	9,669,015	10,586,713	11,552,577	1.8	27.0	26.9	26.7
Industrial . . .	10,206,306	11,414,862	12,160,194	1.8	28.5	29.0	28.1
Other . . . . .	1,980,745	2,077,881	2,275,740	1.4	5.5	5.3	5.3
Total . . . . .	35,759,175	39,404,397	43,291,303	1.9	100.0	100.0	100.0

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

Item	Investor-Owned Utility	Public	Federal	Cooperative	Total
	1986				
Number of Utilities .....	4	63	--	32	99
Number of Retail Customers .....	1,053,008	178,385	--	341,237	1,572,630
Retail Sales (MWh) .....	27,027,151	3,601,147	--	5,130,877	35,759,175
Percentage of Retail Sales .....	75.6	10.1	--	14.4	100.0
Revenue from Retail Sales (thousand 1996 \$) <sup>e</sup> .....	2,037,822	267,076	--	474,896	2,779,793
Percentage of Revenue .....	73.3	9.6	--	17.1	100.0
<b>1991</b>					
Number of Utilities .....	4	63	--	31	98
Number of Retail Customers .....	1,057,098	162,875	--	354,226	1,574,199
Retail Sales (MWh) .....	30,307,182	3,576,931	--	5,520,284	39,404,397
Percentage of Retail Sales .....	76.9	9.1	--	14.0	100.0
Revenue from Retail Sales (thousand 1996 \$) <sup>e</sup> .....	1,870,361	235,172	--	454,607	2,560,140
Percentage of Revenue .....	73.1	9.2	--	17.8	100.0
<b>1996</b>					
Number of Utilities .....	4	62	--	30	96
Number of Retail Customers .....	1,111,908	173,675	--	382,296	1,667,879
Retail Sales (MWh) .....	33,049,270	4,061,305	--	6,180,728	43,291,303
Percentage of Retail Sales .....	76.3	9.4	--	14.3	100.0
Revenue from Retail Sales (thousand 1996 \$) <sup>e</sup> .....	1,731,433	239,645	--	433,902	2,404,980
Percentage of Revenue .....	72.0	10.0	--	18.0	100.0

-- = Not applicable.