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- Oxygenate data
  Updated approximately the 25th of the month.
- *Weekly Petroleum Status Report*
  Updated on Wednesdays (Thursdays in the event of a holiday) at 9 a.m.
- *Petroleum Supply Monthly*
  Updated between the 23rd and 26th of the month.
- *Petroleum Marketing Monthly*
  Updated on the 20th of the month.
- *Natural Gas Monthly*
  Updated on the 20th of the month.
- *Weekly Coal Production*
  Updated on Fridays by noon.
- *Quarterly Coal Report*
  Updated 40 days after the end of the quarter.
- *Electric Power Monthly*
  Updated during the first week of the month.
- *Monthly Energy Review*
  Updated the last week of the month.
- *Short-Term Energy Outlook*
  Updated 60 days after the end of the quarter.
- *Electric Power Annual*
  Updated annually.

Office of Coal, Nuclear, Electric and Alternate Fuels
Electric Power Industry Related Data: Available in Electronic Form

(as of June 1996)

	Internet			CD-ROM	EPUB	Diskette
	Portable Document Format (PDF)	Executable Data Files	Hypertext Markup Language (HTML)			
Surveys:						
Form EIA-412: Annual Report of Public Electric Utilities		X				X
Form EIA-759: Monthly Power Plant Report		X		X		X
Form EIA-767: Steam-Electric Operation and Design Report		X				X
Form EIA-826: Monthly Electric Utility Sales and Revenue Report with State Distributions		X		X		X
Form EIA-860: Annual Electric Generator Report		X		X		X
Form EIA-861: Annual Electric Utility Report		X		X		X
FERC Form 1: Annual Report of Major Electric Utilities, Licensees, and Others		X				X
FERC Form 423: Monthly Report of Cost and Quality of Fuels for Electric Plants		X				X
Publications:						
Electric Power Monthly	X			X	X	
Electric Power Annual Volume I	X		X	X	X	
Electric Power Annual Volume II	X		X	X	X	
Inventory of Power Plants in the United States	X			X		
Electric Sales and Revenue	X		X	X	X	
Financial Statistics of Major U.S. Investor Owned Electric Utilities	X			X	X	
Financial Statistics of Major U.S. Publicly Owned Electric Utilities	X			X	X	

Note: If you have any questions and/or need additional information, please contact the National Energy Information Center at (202) 586-8800.

Preface

The *Electric Power Annual* presents a summary of electric power industry statistics at national, regional, and State levels. The objective of the publication is to provide industry decisionmakers, government policymakers, analysts, and the general public with data that may be used in understanding U.S. electricity markets. The *Electric Power Annual* is prepared by the Coal and Electric Data and Renewables Division; Office of Coal, Nuclear, Electric and Alternate Fuels; Energy Information Administration (EIA); U.S. Department of Energy.

In the private sector, the majority of the users of the *Electric Power Annual* are researchers and analysts and, ultimately, individuals with policy- and decisionmaking responsibilities in electric utility companies. Financial and investment institutions, economic development organizations interested in new power plant construction, special interest groups, lobbyists, electric power associations, and the news media will find data in the *Electric Power Annual* useful.

In the public sector, users include analysts, researchers, statisticians, and other professionals with regulatory, policy, and program responsibilities for Federal, State, and local governments. The Congress and other legislative bodies may also be interested in general trends related to electricity at State and national levels. Much of the data in these reports can be used in analytic studies to evaluate new legislation. Public service commissions and other special government groups share an interest in State-level statistics. These groups can also compare the statistics for their States with those of other jurisdictions.

Volume 1--with a focus on U.S. electric utilities--contains final 1995 data on net generation and fossil fuel consumption, stocks, receipts, and cost. Volume 1 also contains preliminary 1995 data on generating unit capability, as well as *estimates* of retail sales of electricity, associated revenue, and the average revenue per kilowatthour of electricity sold. These estimates are based on a **monthly sample** (Form EIA-826, "Monthly Electric Utility Sales and Revenue Report with State Distributions"). Additionally, information on net generation from renewable energy sources and on the associated generating capability is included in Volume 1 of the EPA. Data published in the *Electric Power Annual Volume 1* are compiled from three statistical forms filed monthly and one form filed annually by electric utilities. These forms are described in detail in the Technical Notes.

Volume 2--expected to be available in November 1996--will present other annual data. The second volume will present annual 1995 summary statistics for the electric power industry, including information on nonutility power producers. Included in the latter volume will be preliminary data for electric utility retail sales of electricity, associated revenue, and average revenue per kilowatthour of electricity sold (based on the **annual census**--Form EIA-861, "Annual Electric Utility Report") and statistics on electric utility financial and environmental aspects, power transactions, and demand-side management. Preliminary 1995 data for U.S. nonutility power producers on installed capacity and gross generation, as well as supply and disposition information, will also be provided in Volume 2 of the EPA.

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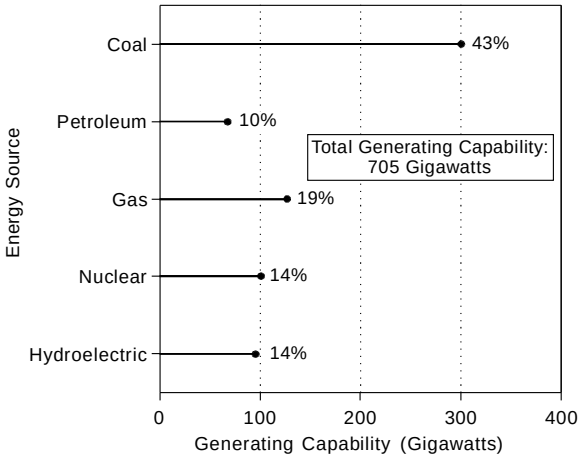
A Review of U.S. Electric Utility Statistics, 1995

Generating Capability

As of year-end 1995, electric utility generating capability in the United States totaled 705,328 megawatts.[1] Based on primary energy source, coal-fired capability totaled 301,484 megawatts; gas-fired, 135,749 megawatts; nuclear, 99,148 megawatts; renewables, 77,130 megawatts; petroleum, 70,043 megawatts; and hydroelectric (pumped storage only), 21,773 megawatts. Total capability included 3,186 megawatts of newly added capability. Of this 3,186 megawatts of capability that entered service in 1995, 1,702 was gas-fired capability (53 percent); coal-fired capability additions represented 15 percent; hydroelectric capability additions represented 19 percent; and petroleum-fired capability additions represented 12 percent. No new nuclear units started operation in 1995.

Figure 1. Generating Capability at U.S. Electric Utilities by Energy Source, 1995



Notes: ●The total generating capability value includes renewable generating capability (excluding hydroelectric) that is less than 1 percent of the total. ●Data are preliminary. ●Preliminary 1995 data are based on final 1994 data and changes (including additions, retirements, and modifications) that occurred in 1995 that were followed up and verified by telephone using the respondents' proposed ten-year changes reported as of December 31, 1994. No updates from responses submitted on Form EIA-860 with data as of January 1, 1996 are included. ●Totals may not equal sum of components because of independent rounding.

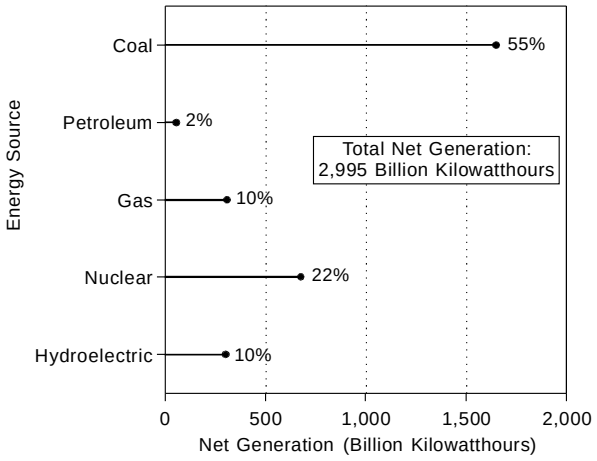
Source: Energy Information Administration, Form EIA-860, "Annual Electric Generator Report."

[1] Data on capability for 1995 are preliminary.

Net Generation

In 1995, a record level of net generation was set when 2,995 billion kilowatthours of electricity were produced—an increase of 3 percent from last year. Generation from nuclear power and coal were also at record levels. Net generation of electricity from nuclear power was 673 billion kilowatthours, an increase of 5 percent from 1994. The annual capacity factor for nuclear units was 77.5 percent in 1995, eclipsing the previous record of 73.8 percent set in 1994. Also, nuclear power supplied 22.5 percent of the total U.S. electricity production in 1995, more than in any previous year, surpassing the 1992 record of 22.1 percent.

Figure 2. U.S. Electric Utility Net Generation by Energy Source, 1995



Notes: ●The total net generation value includes renewable energy sources (excluding hydroelectric), that is less than 1 percent of total generation. ●Data are final. ●Totals may not equal sum of components because of independent rounding.

Source: Energy Information Administration, Form EIA-759, "Monthly Power Plant Report."

Although a record was set when 1,653 billion kilowatthours of electricity were produced from coal-fired plants in 1995, this level was only slightly higher (1 percent) than the level during the previous year. Coal-fired generation, however, continued to be the largest contributor to the supply of electricity, providing 55 percent of total utility generation. Gas-fired generation rose 6 percent to 307 billion kilowatthours, the highest level since 1981. This increase can be attributed to the higher price of petroleum and an abundant supply of low-cost gas that was available to electric utilities.

The energy source with the largest quantitative increase in generation from the prior year was hydroelectric power. Generation from hydroelectric plants during 1995 was 294 billion kilowatthours, 50 billion kilowatthours (20 percent) higher than in 1994. Heavy precipitation in the western United States (particularly in California and the Pacific Northwest) contributed to this substantial increase in hydroelectric generation.

Fossil Fuel Receipts and Costs

In 1995, electric utilities received 827 million short tons of coal, 84 million barrels of petroleum, and 3,023 billion cubic feet (Bcf) of gas at a total delivered cost of approximately 30 billion dollars.[2]

Coal accounted for 82 percent of the total Btu content of fossil fuels delivered in 1995, while gas and petroleum accounted for 15 and 3 percent, respectively.

Coal. Despite record coal consumption by electric utilities, coal received at electric utilities in 1995 fell 5 million short tons shy of the record 832 million short tons received in 1994. This decrease in receipts of coal was primarily due to the higher level of stocks on hand at electric utilities at the start of the year as compared to stock levels in 1994.

Receipts of coal were indirectly affected by (1) a substantial increase in hydroelectric generation in the western United States; (2) higher nuclear generation; (3) abundant supplies of low-cost natural gas which, at some electric utilities, allowed gas to edge out coal as the lowest cost fuel for electric generation; and (4) an intense summer heatwave.

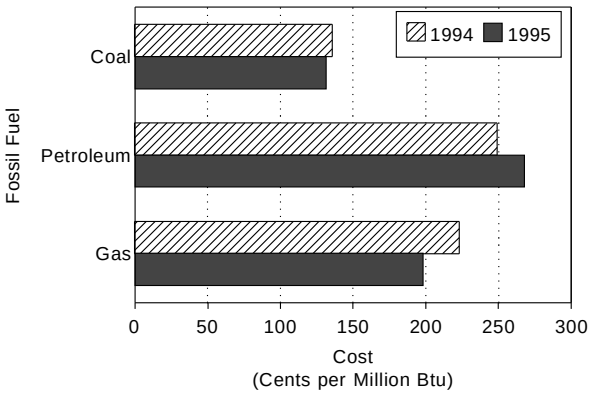
Continuing the downward trend of the last 10 years, the average delivered cost of coal decreased to $1.32 per million Btu, down from the $1.36 per million Btu reported for 1994.[3] Contributing to this lower cost of coal were an increase in receipts of low-cost subbituminous coal from Wyoming; the continuing expiration of and renegotiation of older high-priced contracts; improved efficiency in coal production and transportation; and an oversupply of coal that was available to endusers which resulted in a "buyers" market.

The average sulfur content (measured as percent sulfur by weight) of coal delivered in 1995 was 1.08 percent, down from 1.17 in 1994. This decrease in sulfur content was a direct result of the start of the Clean Air Act Amendments

[2] Federal Energy Regulatory Commission (FERC) Form 423, "Monthly Report of Cost and Quality of Fuels for Electric Plants." This survey covers over 99 percent of the coal and approximately 95 percent of the petroleum and gas delivered to electric utilities.

[3] The delivered cost of fossil fuels includes all costs (i.e., transportation, taxes, etc.) incurred by the electric utility for delivery of the fuel to the plant. It does not include unloading charges.

Figure 3. Average Cost of Fossil Fuels at U.S. Electric Utilities, 1994 and 1995



Notes: ●Data are final. ●Data are for electric generating plants with a total steam-electric and combined-cycle nameplate capacity of 50 or more megawatts. ●Totals may not equal sum of components because of independent rounding. ● Data do not include petroleum coke.

Source: Federal Energy Regulatory Commission, FERC Form 423, "Monthly Report of Cost and Quality of Fuels for Electric Plants."

of 1990 (CAAA90).[4] Electric utilities reduced their receipts of high-sulfur coal from Illinois, Indiana, western Kentucky, and Ohio, and increased their use of low sulfur coal from the Appalachian and Western Regions. Receipts of coal from Wyoming totaled a record 254 million short tons, up from 226 million short tons in 1994. Rail congestion problems that affected western coal deliveries during 1994 improved in 1995, due to the completion of several doubletracking and track restoration projects.[5] Work on these projects coupled with higher demand for western coal had greatly increased cycle times (the time it takes for a unit train to deliver its coal and return to the mine) from the Powder River Basin.

The average Btu content of coal received in 1995 was 10,248 per pound, down from 10,338 per pound in 1994. This decrease was due to an increase in use of Wyoming coal, which on average contains approximately 8,600 Btu per pound. This compares with Appalachian and Interior (Illinois, Indiana, western Kentucky) Region coal, which contain approximately 12,500 and 11,300 Btu per pound, respectively.

Petroleum. Receipts of petroleum delivered to electric utilities totaled 84 million barrels, down from the 143 million barrels reported in 1994. This substantial decrease in receipts was due to competition from abundant supplies of low-cost natural gas; increases in nuclear and coal-fired generation; and an on-going shift away from petroleum as a baseload fuel for electric generation. Florida, New York, and Massachusetts reported the highest receipts of petroleum, though totals for each State were down considerably from 1994, due primarily to an increase in the use of gas. On a dollars-per-million-Btu basis, the average cost of petroleum was $2.68 per million Btu compared with $2.49 per million Btu in 1994. Higher petroleum costs were due, in part, to the higher cost of crude oil in 1995 as compared to 1994.[6] Based on a weighted average, fuel oil was the most expensive fossil fuel delivered to electric utilities in 1995.

Gas. Receipts of gas totaled 3,023 Bcf in 1995, up from the 2,864 Bcf reported in 1994. This nationwide increase in receipts of gas occurred despite the fact that high levels of hydroelectric generation greatly reduced the use of gas by electric utilities in California. Receipts of gas were higher due, in part, to an abundant supply of low-cost gas that was available to electric utilities; to an increase in pipeline capacity; and to the newly enacted CAAA90, which promotes the use of cleaner-burning fuels like gas.

All Census divisions in the eastern United States reported increases in receipts of gas, with the largest increase occurring in the South Atlantic Census Division. This was due, in part, to higher pipeline capacity into Florida that allowed electric utilities in the State to receive more gas. The Florida Gas Transmission system, a major gas supply system to the eastern and southern parts of Florida, completed a project that increased pipeline capacity from 943 million cubic feet (MMcf) per day at the end of 1994 to 1,475 MMcf per day in March 1995.[7] The CAAA90, which became effective on January 1, 1995, had a positive affect on the use of gas by electric utilities. Title IV of the CAAA90 placed new emission restrictions on many electric utilities. To comply with these restrictions, some electric utilities chose to fire boilers with clean-burning gas as a means of reducing emissions and ensuring compliance with the new regulations.

On a dollars-per-million-Btu basis, the average cost of gas was $1.98 per million Btu, compared with $2.23 per

[4] Title IV of the Clean Air Act Amendments of 1990 established an Acid Rain Program designed to reduce emissions from utility boilers in a two-phase approach. Starting on January 1, 1995, Phase I set emission restrictions on 110 mostly coal-burning plants in the eastern and midwestern United States. Phase II begins in the year 2000 and places additional emission restrictions on approximately 1,000 electric plants. To comply with Phase I, it is expected that many electric utilities will increase purchases of low-sulfur coal while reducing purchases of high-sulfur coal.

[5] Intertec Publishing, *Coal*, Vol. 100, No.12, December 1995.

[6] Energy Information Administration, *Monthly Energy Review (MER)*, DOE/EIA-0035(96/03), Table 9.1.

[7] Energy Information Administration, *Energy Policy Act Transportation Study - Interim Report on Natural Gas Flows and Rates*, DOE/EIA-0602 (Washington DC, October 1995), pp. 94-95.

million Btu in 1994. This is the lowest annual average cost of gas delivered to electric utilities since 1979. The decrease in the average cost was due to an oversupply of gas caused primarily by lower than expected consumption in the residential sector, as a result of predominantly mild weather across the Nation from August 1994 through May 1995. Marketers and producers were quick to entice electric utilities to purchase gas, often at prices that undercut coal as the least cost fuel for electric generation.

Nuclear Generation Affect on Receipts. In 1995, nuclear-powered plants generated a record 673,402 gigawatthours of electricity, up 5 percent from 1994. This increase in nuclear generation reduced fossil fuels requirements of electric utilities.[8] States with a 20-percent or more increase in nuclear generation included New Hampshire, Michigan, Ohio, Tennessee, Louisiana, and Texas. States with substantial decreases in nuclear generation include Maine, New Jersey, New York, California, and Arkansas.

Weather Conditions Influence Receipts. Weather that influenced the level and timing of fossil fuels received during 1995 included the second warmest winter on record; an intense summer heatwave that included the fourth hottest August on record; and above normal winter precipitation in the western United States.[9]

The winter of December 1994 through February 1995 was the second warmest on record for the Nation as a whole. In the past 100 years, only the winter of December 1991 through February 1992 was warmer. The warm winter reduced demand for fossil fuels, especially coal by electric utilities and gas by the residential sector. Prices for both fuels softened as supply was more than adequate to meet demand. The mild weather persisted through May 1995, resulting in stocks of coal being above targeted levels at many electric utilities. Stocks of bituminous coal for May 1995 rose to a 2-year high of 137 million short tons.[10]

Summer brought a quick end to the moderate weather that had prevailed over much of the United States since August 1994. An intense heatwave sizzled the Nation in July and August resulting in record coal consumption in both months. Demand for electricity broke records throughout the eastern two-thirds of the country. The Tennessee Valley Authority's summer peak demand exceeded winter peak demand for the first time in the agency's history.[11] More than adequate stocks of coal at electric utilities at the start of the summer limited the heatwave's affect on the steam-coal market. However, by the end of August, stocks of bituminous coal had fallen to the 111 million short ton level. September through December brought cooler-than-normal weather to the eastern half of the Nation and was in part responsible for record coal consumption in each month. Receipts of coal were at record levels during September through November, as electric utilities replenished stockpiles.

Heavy precipitation fell in the western United States (in particular California and the Pacific Northwest) during the winter months of December 1994 through March 1995. The area usually receives most of its precipitation during this period at which time a deep snowpack accumulates in the mountains. The subsequent melting during the spring and summer helps maintain reservoir levels throughout the year and is then the source of hydroelectric generation. The result was the highest level of hydroelectric generation in the Pacific Contiguous Census Division since 1984. For the year, hydroelectric generation in this Census division rose 43 percent from 1994's unusually low level.[12] The affect of higher levels of hydroelectric generation on fossil fuel receipts was two-fold. First, receipts of gas to California plummeted 34 percent to 390 Bcf as hydroelectric plants ran at nearly full capacity. Second, receipts of coal to the Mountain and Pacific Contiguous Census Divisions fell as California required less coal-by-wire (coal-fired generation produced in neighboring States and sold over the transmission grid to electric utilities located in California.)

In the northeastern and southern United States a widespread drought reduced streamflow and consequently hydroelectric generation. This had an impact on consumption and receipts of coal and gas as electric utilities turned to fossil-fired, as well as nuclear-powered, generation to make up for the shortfall.

Estimated Retail Sales

Estimated total retail sales of electricity to all ultimate consumers in the United States in 1995 reached 3,009 billion kilowatthours, an increase of 88 billion kilowatthours, or 3 percent, compared with 1994 (Table 1). In 1995, sales increased in all major end-use sectors. The residential sector led with an increase of 38 billion kilowatthours (4 percent). The commercial sector

[8] Due to their relatively lower operating cost, nuclear plants are baseload plants that are usually dispatched to meet electric system load ahead of fossil fuel plants. Without an increase in nuclear generation, fossil fuel plants would have had to meet a higher percentage of electric demand.

[9] U.S. Department of Agriculture, *Weekly Weather and Crop Bulletin*, Vol. 83, No. 3, January 23, 1996.

[10] Energy Information Administration, *Electric Power Monthly*, DOE/EIA-0226 (96/04), Table 21.

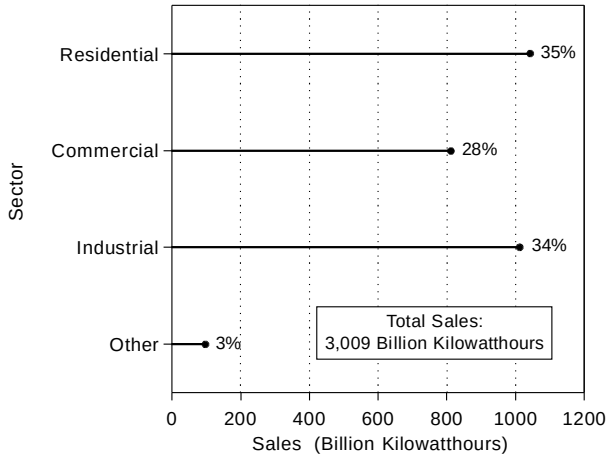
[11] King Publishing Corp., *King's Western Coal* Issue 1030, July 18, 1995, p. 8.

[12] Energy Information Administration, *Electric Power Monthly*, DOE/EIA-0226(96/03), Table 15.

followed, increasing by 27 billion kilowatthours (3 percent). Lastly, the industrial sector increased by 21 billion kilowatthours or 2 percent.

respectively. However, average revenue per kilowatthour in the residential sector increased by $0.01, less than 1 percent.

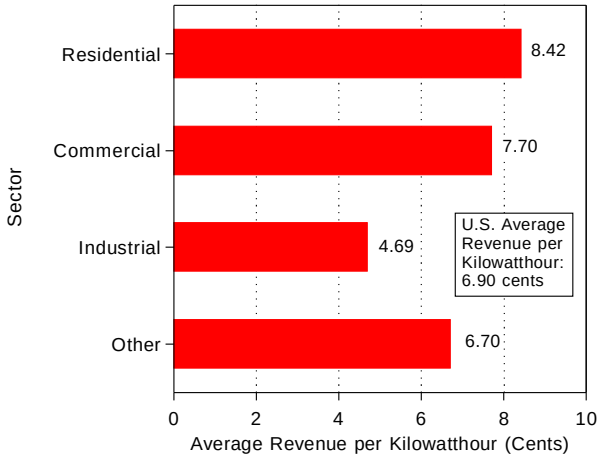
Figure 4. Estimated U.S. Electric Utility Retail Sales to Ultimate Consumers by Sector, 1995



Notes: ●Other includes public street and highway lighting, other sales to public authorities, sales to railroads and railways, and interdepartmental sales. ●Totals may not equal sum of components because of independent rounding.

Source: Energy Information Administration, Form EIA-826, "Monthly Electric Utility Sales and Revenue Report with State Distributions."

Figure 5. Estimated U.S. Electric Utility Average Revenue per Kilowatthour by Sector, 1995



Notes: ●Other includes sales to public street and highway lighting, other sales to public authorities, sales to railroads and railways, and interdepartmental sales. ●Estimates represent weighted values and are calculated by dividing total revenue by total sales.

Source: Energy Information Administration, Form EIA-826, "Monthly Electric Utility Sales and Revenue Report with State Distributions."

Estimated Revenue from the sale of electricity to all ultimate consumers in the United States in 1995 reached $208 billion, an increase of 6 billion dollars (3 percent), compared with the level in 1994. Electricity revenue in the residential and commercial sectors increased by 3 billion and 2 billion dollars (4 and 3 percent), respectively. Revenue from sales of electricity in the industrial sector increased by 1 billion dollars (2 percent).

Estimated Average Revenue per Kilowatthour[13] of electricity sold to ultimate consumers in 1995 was 6.90 cents, a decrease of $0.02 from 1994. In the commercial and industrial sectors, average revenue per kilowatthour decreased by $0.05 and $0.03 (6 and 1 percent),

In 1995, estimated U.S. total retail sales of electricity (3,009 billion kilowatthours) exceeded total net generation at U.S. electric utilities by 14 billion kilowatthours (less than 1 percent). The major factors contributing to this difference were 1) a 7-percent increase from 1994 in electric utility purchases of electricity from nonutilities (these purchases totaled 220 billion kilowatthours) and 2) net imports of electricity that totaled 37 billion kilowatthours. Note: EIA estimate based on preliminary data from the National Energy Board of Canada and Department of Energy, Fossil Energy.

[13] Estimated average revenue per kilowatthour is the ratio of estimated revenue to estimated retail sales.

Table 1. U.S. Electric Utility Summary Statistics, 1994 and 1995

Item	1994	1995	Percent Change
Generating Capability (megawatts)[1]	**702,658**	**705,328**	**0.4**
Coal	301,098	301,484	.1
Petroleum	69,919	70,043	.2
Gas	133,854	135,749	1.4
Nuclear	99,148	99,148	.0
Hydroelectric Pumped Storage	21,168	21,773	2.9
Renewable			
Hydroelectric (conventional)	75,196	74,856	–.5
Geothermal	1,747	1,747	.0
Biomass[2]	515	515	.0
Wind	8	8	.0
Solar Thermal	0	0	.0
Photovoltaic	4	4	.0
Net Generation (million kilowatthours)	**2,910,712**	**2,994,529**	**2.9**
Coal	1,635,493	1,652,914	1.1
Petroleum[3]	91,039	60,844	–33.2
Gas	291,115	307,306	5.6
Nuclear	640,440	673,402	5.1
Hydroelectric Pumped Storage[4]	–3,378	–2,725	–19.3
Renewable			
Hydroelectric (conventional)	247,071	296,378	20.0
Geothermal	6,941	4,745	–31.6
Biomass[2]	1,988	1,649	–17.1
Wind	*	11	3,566.7
Solar Thermal	0	0	.0
Photovoltaic	3	4	33.3
Consumption			
Coal (million short tons)	817	829	1.5
Petroleum (million barrels)[5]	151	102	–32.5
Gas (billion cubic feet)	2,987	3,197	7.0
Stocks (Year End)			
Coal (million short tons)	127	126	–.8
Petroleum (million barrels)[6]	63	50	–20.6
Receipts			
Coal (million short tons)	832	827	–.6
Petroleum (million barrels)[7]	143	84	–41.3
Gas (billion cubic feet)[8]	2,864	3,023	5.6
Cost (cents per million Btu)[9]			
Coal	135.5	131.8	–2.7
Petroleum[10]	248.8	267.9	7.7
Gas	223.0	198.4	–11.0
Estimated Retail Sales (million kilowatthours)	**2,920,860**	**3,008,641**	**3.0**
Residential	1,005,804	1,043,304	3.7
Commercial	827,309	854,682	3.3
Industrial	992,422	1,013,107	2.1
Other[11]	95,326	97,547	2.3
Estimated Revenue from Retail Sales (billion dollars)	**202**	**208**	**3.0**
Residential	85	88	3.5
Commercial	64	66	3.1
Industrial	47	48	2.1
Other[11]	6	7	16.7
Estimated Average Revenue per Kilowatthour (cents)	**6.92**	**6.90**	**–.30**
Residential	8.41	8.42	.1
Commercial	7.75	7.70	–.6
Industrial	4.72	4.69	–.6
Other[11]	6.79	6.70	–1.3

1 Net summer capability based on primary energy source; waste heat, waste gases, and waste steam are included in the original primary energy source (i.e., coal, petroleum, or gas); historical data have been revised to reflect this change. Preliminary 1995 data are based on final 1994 data and respondent's proposed 1995 changes (additions,retirements, and modifications) reported as of December 31, 1994, and verified by telephone. No updates from responses submitted on Form EIA-860 with data as of January 1, 1996 are included.

2 Includes wood, wood waste, peat, wood liquors, railroad ties, pitch, wood sludge, municipal solid waste, agricultural waste, straw, tires, landfill gases, fish oils, and/or other waste.

3 Includes petroleum coke.

4 Represents total pumped storage facility production minus energy used for pumping. Negative generation denotes that electric power consumed for plant use exceeds gross generation.

5 Does not include petroleum coke consumption of 761 million short tons in 1995 and 875 million short tons in 1994.

6 Does not include petroleum coke stocks of 65 million short tons at year end 1995 and 69 million shorts tons at year end 1994.

7 Does not include petroleum coke receipts of 1.123 million short tons in 1995 and 1.263 million short tons in 1994.

8 Includes small amounts of coke-oven, refinery, and blast furnace gas.

9 Average cost of fuel delivered to electric generating plants with a total steam-electric nameplate capacity of 50 or more megawatts; average cost values are weighted by Btu.

10 Does not include petroleum coke cost of 65.2 cents per million Btu in 1995 and 68.9 cents per million Btu in 1994.

11 Includes public street and highway lighting, other sales to public authorities, sales to railroads and railways, and interdepartmental sales.

Notes: •Data for net summer capability are preliminary for 1995, other data in this table are final. •See technical notes for estimation methodology. •Totals may not equal sum of components because of independent rounding. •Percent change is calculated before rounding. • * = less than 0.5 megawatts.

Sources: •Energy Information Administration, Form EIA-759, ''Monthly Power Plant Report''; Form EIA-860, ''Annual Electric Generator Report'' and Form EIA-826, ''Monthly Electric Utility Sales Report with State Distributions''; •Federal Energy Regulatory Commission FERC Form 423, ''Monthly Report of Cost and Quality of Fuels for Electric Plants.''

Generating Capability at U.S. Electric Utilities

More than one-third of the primary energy in the Nation is used to generate electricity.[14] Consumers expect electricity to be instantly available; that is, at the flick of a switch. In fact, electricity is so important to the functioning of our society that its unavailability is newsworthy. The U.S. electric power industry is organized to ensure that an adequate supply of electricity is available to meet all demand requirements at any given instant, both now and in the future. This chapter provides an inventory of the capability of various methods for converting energy into electricity, and information regarding industry plans for building additional capability in the future.

The generating units operated by an electric utility vary by intended usage; that is, by the three major types of load (generally categorized as base, intermediate, and peak) requirements the utility must meet. A *baseload generating unit* is normally used to satisfy all or part of the minimum or base load of the system and, as a consequence, produces electricity at an essentially constant rate and runs continuously. Baseload units are generally the newest, largest, and most efficient[15] of the three types of units. A *peakload generating unit*, normally the least efficient of the three unit types, is used to meet requirements during the periods of greatest or peak load on the system. *Intermediate-load generating units* meet system requirements that are greater than base load but less than peak load. Intermediate-load units are used during the transition between baseload and peak load requirements. Utilities also have reserve or standby generating units, which are available to the system in the event of an unexpected increase in load or an unexpected outage within the system. Consequently, an inventory of net capability must account for reserve or standby capability, as well as generating units that are not available to the system for various reasons (such as routine maintenance).

Net capability in this report, unless otherwise stated, refers to that which is *operable* and includes both active and inactive capability. Once a new generator has been declared available to generate power to the electrical grid, it is considered a part of the operable capability of the utility until it is retired from service. Generating units that are used for standby service, cold standby, and generators that are out of service for an extended period (exceeding 1 year) comprise the inactive operable capability.[16] Active operable capability includes generators that are generating or available to generate; this includes generators that may be down for scheduled maintenance, refueling, or forced outages.

An electric utility plant (station) contains generating units and auxiliary equipment that are used to convert various types of energy into electric energy. A fossil-fueled generating unit may be designed to use (burn) one or more fossil fuels to produce electricity. A generating unit capable of burning more than one fossil fuel is referred to as a dual-fired unit. Some dual-fired units can only burn one fuel at a time (that is, the fuels are fired sequentially), while others can burn more than one fuel simultaneously (concurrent firing of different fuels). A sequentially fired unit generally uses one fossil fuel as its primary energy source, but can switch to a second fossil fuel as an alternate energy source. Unless stated otherwise, information regarding generating capability in this report is based on the primary energy source.

[14] Energy Information Administration, *Monthly Energy Review*, DOE/EIA-0035(96/04) (Washington, DC, April 1996), pp. 7 and 33.

[15] The *operating efficiency* of a generating unit is a function of the amount of net heat that it can extract from the energy source for use in the production of electricity.

[16] As of the year-end 1995, about 2 percent of the operable capability was inactive, based on preliminary data from the Energy Information Administration, Form EIA-860, "Annual Electric Generator Report."

Prime Movers

Electric utilities use a variety of prime movers based on the loads, availability of fuels, and energy requirements of the utility. The most common prime movers are the steam turbine, internal-combustion engine, gas combustion turbine, water turbine, and wind turbine.[17] Most prime movers used to produce electricity today are turbines. The energy sources most often used with prime movers are the fossil fuels--coal, petroleum, and natural gas.

Steam-Turbine Generating Units. Most of the electricity in the United States is produced in steam turbines. In a *fossil-fueled* steam turbine, the fuel is burned in a boiler to produce steam. The resulting steam then turns the turbine blades that turn the shaft of the generator to produce electricity. In a *nuclear-powered* steam turbine, the boiler is replaced by a reactor containing a core of nuclear fuel (primarily enriched uranium). Heat produced in the reactor by fission of the uranium is used to make steam. The steam is then passed through the turbine generator to produce electricity, as in the fossil-fueled steam turbine. Steam-turbine generating units are used primarily to serve the base load of electric utilities. Fossil-fueled steam-turbine generating units range in size (nameplate capacity) from 1 megawatt to more than 1,000 megawatts. The size of nuclear-powered steam-turbine generating units in operation today ranges from 75 megawatts to more than 1,400 megawatts.

Gas Turbine Generating Units. In a gas turbine (combustion-turbine) unit, hot gases produced from the combustion of natural gas and distillate oil in a high-pressure combustion chamber are passed directly through the turbine, which spins the generator to produce electricity. Gas turbines are commonly used to serve the peak loads of the electric utility. Gas-turbine units can be installed at a variety of site locations, because their size is generally less than 100 megawatts. Gas-turbine units also have a quick startup time, compared with steam-turbine units. As a result, gas-turbine units are suitable for peaking, emergency, and reserve-power requirements.

The gas turbine, as is typical with peaking units, has a lower efficiency than the steam turbine used for baseload power. The efficiency of the gas turbine is increased when coupled with a steam turbine in a *combined-cycle* operation. In this operation, hot gases (which have already been used to spin one turbine generator) are moved to a waste-heat recovery steam boiler where the water is heated to produce steam that, in turn, produces electricity by running a second steam-turbine generator. In this way, two generators produce electricity from one initial fuel input. All or part of the heat required to produce steam may come from the exhaust of the gas turbine. Thus, the steam-turbine generator may be supplementarily fired in addition to the waste heat. Combined-cycle generating units generally serve intermediate loads.

Internal-Combustion Engines. These prime movers have one or more cylinders in which the combustion of fuel takes place. The engine, which is connected to the shaft of the generator, provides the mechanical energy to drive the generator to produce electricity. Internal-combustion (or diesel) generators can be easily transported, can be installed upon short notice, and can begin producing electricity nearly at the moment they start. Thus, like gas turbines, they are usually operated during periods of high demand for electricity. They are generally about 5 megawatts in size.

Hydroelectric Generating Units. Hydroelectric power is the result of a process in which flowing water is used to spin a turbine connected to a generator. The two basic types of hydroelectric systems are those based on *falling water* and those based on *natural river current.* In the first system, water accumulates in reservoirs created by the use of dams. This water then falls through conduits (penstocks) and applies pressure against the turbine blades to drive the generator to produce electricity. In the second system, called a *run-of-the-river* system, the force of the river current (rather than falling water) applies pressure to the turbine blades to produce electricity. Since run-of-the-river systems do not usually have reservoirs and cannot store substantial quantities of water, power production from this type of system depends on seasonal changes and stream flow. These conventional hydroelectric generating units range in size from less than 1 megawatt to 700 megawatts. Because of their ability to start quickly and make rapid changes in power output, hydroelectric generating units are suitable for serving peak loads and providing spinning reserve power, as well as serving baseload requirements.

Another kind of hydroelectric power generation is the *pumped storage* hydroelectric system. Pumped storage hydroelectric plants use the same principle for generation of power as the conventional hydroelectric operations based on falling water and river current. However, in a pumped storage operation, low-cost off-peak energy is used to pump water to an upper reservoir where it is stored as potential energy. The water is then released to flow back down through the turbine generator to produce electricity during periods of high demand for electricity.

Other Generating Units. Other methods of electric power generation, which presently contribute only small amounts to total power production, have potential for expansion. These include *geothermal, solar, wind,* and *biomass* (wood, municipal solid waste, agricultural waste, etc.). *Geothermal* power comes from heat energy buried beneath the surface of the earth. Although most of this heat is at depths beyond current drilling methods, in some areas of the country,

[17] A turbine converts the kinetic energy of a moving fluid (liquid or gas) to mechanical energy. Turbines have a series of blades mounted on a shaft against which fluids are forced, thus rotating the shaft connected to the generator. The fluids most commonly used in turbines are steam, hot air, or combustion products, and water.

magma[18] flows close enough to the surface of the earth to produce steam. That steam can then be harnessed for use in conventional steam-turbine plants. *Solar power* is derived from the energy (both light and heat) of the sun. *Photovoltaic conversion* generates electric power directly from the light of the sun; whereas, *solar-thermal* electric generators use the heat from the sun to produce steam to drive turbines. *Wind power* is derived from the conversion of the energy contained in wind into electricity. A wind turbine is similar to a typical wind mill. However, because of the intermittent nature of sunlight and wind, high capacity utilization factors cannot be achieved for these plants. Several electric utilities have incorporated *wood* and *waste* (for example, municipal waste, corn cobs, and oats) as energy sources for producing electricity at their power plants. These sources replace fossil fuels in the boiler. The combustion of wood and waste creates steam that is typically used in conventional steam-electric plants.

Generator Rating

The rating of a generator is a measure of its ability to produce electricity. Generators are rated by nameplate capacity. The *nameplate capacity* is the full-load continuous rating of the generator under specified conditions, as designated by the manufacturer, and is usually indicated on a metal plate attached to the generator. *Net capability* is the steady hourly output that the generating unit is expected to supply to the system load, as demonstrated by test procedures. The capability of the generating unit in the summer is generally less than in the winter due to high ambient-air and cooling-water temperatures, which cause generating units to be less efficient. The measure used in this publication for electric utilities is net summer capability. The nameplate capacity of a generator is generally greater than its net capability.

Data Sources

The following tables contain a summary of the number of electric generators and the amount of electric generating capability in the United States at national, regional, and State levels for the period 1991 through 1995. During the past year, several updates were made for these data. These changes include the installation of new generators; the retirement of existing generators; the use of a primary energy source for dual-fired units different from that which has been reported in the past; and the modification of generators, such as the rewinding of stators or the retrofitting of associated generator equipment. Respondents that did not meet the reporting requirements of Form EIA-860 were deleted. The capacity of generators sold to nonutilities was also deleted. The inclusion of new respondents also resulted in data changes.

Estimates of net summer capability and net winter capability are made for operable nonnuclear electric generating units with no reported capability. These estimates are calculated using a statistical relationship that exists between the capability (summer and winter) and installed generator nameplate capacity for units that were in commercial operation as of the end of 1992. For a description of the estimation formula, see the technical notes.

Data in the tables were obtained from the Form EIA-860, “Annual Electric Generator Report.” Data are reported annually on the Form EIA-860 by approximately 900 electric utilities in the United States that operate power plants.

Data from the Form EIA-860 for 1995 are preliminary, based on final 1994 data and respondents' proposed 1995 changes (additions, retirements, and modifications) reported as of December 31, 1994, and verified by telephone. This presentation differs from prior years in that updates from responses submitted on Form EIA-860 with data as of January 1, 1996 are not included due to insufficient data availability. Consequently, information regarding electric utility 10-year plans are also unavailable for this report. Final data, as well as more detailed statistics on operable capacity and planned capability additions, are published in the *Inventory of Power Plants in the United States.*[19]

[18] Magma is the molten matter under the earth's crust from which igneous rock is formed by cooling.
[19] Energy Information Administration, *Inventory of Power Plants in the United States,* DOE/EIA-0095.

Table 2. Generating Capability at U.S. Electric Utilities by Prime Mover and Primary Energy Source, End of Year 1991 Through 1995

(Megawatts)

Prime Mover/Primary Energy Source	1991	1992	1993	1994	1995[3]
Fossil Steam	**446,575**	**446,201**	**446,315**	**445,296**	**445,627**
Coal-Fired	299,611	300,547	300,795	301,098	301,484
Petroleum-Fired	45,711	44,472	41,905	41,151	41,106
Gas-Fired	101,253	101,182	103,614	103,047	103,262
Gas Turbine/Internal Combustion	**52,790**	**54,291**	**56,494**	**59,575**	**61,424**
Petroleum-Fired	27,235	27,381	27,614	28,768	28,937
Gas-Fired	25,555	26,910	28,881	30,807	32,486
Nuclear	**99,589**	**98,985**	**99,041**	**99,148**	**99,148**
Hydroelectric Pumped Storage	**18,414**	**21,190**	**21,146**	**21,168**	**21,773**
Renewable					
Hydroelectric (conventional)	**73,617**	**72,185**	**74,763**	**75,196**	**74,856**
Geothermal	1,563	1,739	1,747	1,747	1,747
Biomass[1]	464	464	459	515	515
Wind	*	*	1	[2] 8	8
Solar Thermal	0	0	0	0	0
Photovoltaic	3	3	4	4	4
U.S. Total	**693,016**	**695,059**	**699,971**	**702,658**	**705,328**

1 Includes wood, wood waste, peat, wood liquors, railroad ties, pitch, wood sludge, municipal solid waste, agricultural waste, straw, tires, landfill gases, fish oils, and/or other waste.

2 Includes the addition in 1994 of a 6.8-megawatt unit at the Sacramento Municipal Utility District, Solano Plant.

3 Preliminary 1995 data are based on final 1994 data and respondent's proposed 1995 changes (additions,retirements, and modifications) reported as of December 31, 1994, and verified by telephone. No updates from responses submitted on Form EIA-860 with data as of January 1, 1996 are included.

* =Value less than 0.5.

Notes: •Waste heat, waste gases, and waste steam are included in the original primary energy source category (i.e., coal, petroleum, or gas). •Data for 1995 are preliminary; prior-year data are final. •Totals may not equal sum of components because of independent rounding. •Generating capability is net summer capability.

Source: Energy Information Administration, Form EIA-860, ''Annual Electric Generator Report.''

Table 3. Summary of Capability Additions, Retirements, and Total Operable Capability at U.S. Electric Utilities by Energy Source, End of Year 1995

Primary Energy Source	Added		Retired		Operable	
	Number of Generators	Capability[1] (megawatts)	Number of Generators	Capability[1] (megawatts)	Number of Generators	Capability[1] (megawatts)
Coal	**2**	**471**	**I**	**I**	**1,220**	**301,484**
Petroleum	**18**	**393**	**I**	**I**	**3,367**	**70,043**
Gas	**25**	**1,702**	**I**	**I**	**2,177**	**135,749**
Nuclear	**0**	**0**	**I**	**I**	**109**	**99,148**
Hydroelectric Pumped Storage	**2**	**565**	**I**	**I**	**149**	**21,773**
Renewable						
Hydroelectric (conventional)	4	55	I	I	3366	74,856
Geothermal	0	0	I	I	29	1,747
Biomass[2]	0	0	I	I	25	515
Wind	0	0	I	I	21	8
Solar Thermal	0	0	I	I	0	0
Photovoltaic	0	0	I	I	9	4
U.S. Total	**51**	**3,186**	**I**	**I**	**10,472**	**705,328**

1 Net summer capability.

2 Includes wood, wood waste, peat, wood liquors, railroad ties, pitch, wood sludge, municipal solid waste, agricultural waste, straw, tires, landfill gases, fish oils, and/or other waste.

I=Insufficient data as yet; see the upcoming issue of the Energy Information Administration, *Inventory of Power Plants in the United States 1995*(DOE/EIA - 0096(95))

Notes: •Data are preliminary. •Preliminary 1995 data are based on final 1994 data and respondent's proposed 1995 changes (additions,retirements, and modifications) reported as of December 31, 1994, and verified by telephone. No updates from responses submitted on Form EIA-860 with data as of January 1, 1996 are included. •Totals may not equal sum of components because of independent rounding. •Total capability cannot be calculated from the prior year's capability by adjusting for retirements and newly added capability because capability ratings for independent generators change each year and generators are purchased from or sold to nonutilities. •Waste heat, waste gases, and waste steam are included in the original primary energy source category (i.e., coal, petroleum, or gas).

Source: Energy Information Administration, Form EIA-860, ''Annual Electric Generator Report.''

Table 4. Generating Capability at U.S. Electric Utilities by Census Division and State, End of Year 1994 and 1995

Census Division State	1994		1995[1]	
	Number of Generators	Capability[2] (megawatts)	Number of Generators	Capability[2] (megawatts)
New England	**668**	**22,192**	**670**	**22,197**
Connecticut	83	6,733	83	6,733
Maine	190	2,433	190	2,433
Massachusetts	197	9,287	199	9,292
New Hampshire	44	2,500	44	2,500
Rhode Island	19	148	19	148
Vermont	135	1,093	135	1,093
Middle Atlantic	**947**	**79,866**	**940**	**79,785**
New Jersey	114	13,500	111	13,415
New York	597	32,826	595	32,834
Pennsylvania	236	33,540	234	33,536
East North Central	**1,685**	**114,531**	**1,695**	**115,093**
Illinois	330	32,952	332	32,969
Indiana	159	20,710	160	20,850
Michigan	566	22,413	567	22,415
Ohio	239	27,192	240	27,262
Wisconsin	391	11,264	396	11,597
West North Central	**1,872**	**55,342**	**1,879**	**55,524**
Iowa	399	8,217	402	8,220
Kansas	416	9,715	416	9,684
Minnesota	337	8,951	339	8,955
Missouri	354	15,488	355	15,586
Nebraska	251	5,518	252	5,626
North Dakota	46	4,488	46	4,488
South Dakota	69	2,965	69	2,965
South Atlantic	**1,365**	**136,604**	**1,364**	**137,948**
Delaware	30	2,269	30	2,269
District of Columbia	4	806	4	806
Florida	368	35,487	370	35,541
Georgia	212	22,039	218	22,929
Maryland	104	10,837	107	10,984
North Carolina	195	20,007	184	20,063
South Carolina	216	16,691	216	16,691
Virginia	180	13,958	179	14,154
West Virginia	56	14,510	56	14,510
East South Central	**477**	**59,148**	**475**	**59,301**
Alabama	147	19,878	151	20,198
Kentucky	112	15,507	112	15,507
Mississippi	53	7,114	53	7,114
Tennessee	165	16,649	159	16,482
West South Central	**806**	**103,531**	**807**	**103,630**
Arkansas	106	9,674	106	9,674
Louisiana	109	16,873	109	16,873
Oklahoma	154	12,898	155	12,937
Texas	437	64,087	437	64,147
Mountain	**827**	**50,386**	**837**	**50,647**
Arizona	123	15,058	127	15,098
Colorado	170	6,675	170	6,675
Idaho	110	2,500	111	2,558
Montana	95	4,907	95	4,907
Nevada	69	5,478	70	5,556
New Mexico	55	5,078	55	5,078
Utah	148	4,816	151	4,822
Wyoming	57	5,874	58	5,954
Pacific Contiguous	**1,147**	**77,718**	**1,150**	**77,863**
California	672	43,297	675	43,443
Oregon	194	10,166	194	10,166
Washington	281	24,255	281	24,255
Pacific Noncontiguous	**654**	**3,339**	**655**	**3,340**
Alaska	557	1,737	558	1,738
Hawaii	97	1,602	97	1,602
U.S. Total	**10,448**	**702,658**	**10,472**	**705,328**

1 Preliminary 1995 data are based on final 1994 data and respondent's proposed 1995 changes (additions,retirements, and modifications) reported as of December 31, 1994, and verified by telephone. No updates from responses submitted on Form EIA-860 with data as of January 1, 1996 are included.

2 Net summer capability.

Notes: •Data for 1995 are preliminary; prior-year data are final. •Totals in this table include two gas-fired fuel cells totaling 0.4 megawatts. •Totals may not equal sum of components because of independent rounding.

Source: Energy Information Administration, Form EIA-860, ''Annual Electric Generator Report.''

Table 5. Coal-Fired, Nuclear, Hydroelectric, and Renewable Generating Capability at U.S. Electric Utilities by Census Division and State, End of Year 1995

Census Division State	Coal		Nuclear		Hydroelectric		Renewable[1]	
	Number of Generators	Capability[2] (megawatts)	Number of Generators	Capability[2] (megawatts)	Number of Generators	Capability[2] (megawatts)	Number of Generators	Capability[2] (megawatts)
New England	**15**	**2,638**	**8**	**6,375**	**379**	**3,134**	**14**	**144**
Connecticut	1	385	4	3,194	35	137	2	64
Maine	0	0	1	870	142	422	1	32
Massachusetts	9	1,675	1	665	64	1,861	8	*
New Hampshire	5	578	1	1,150	32	283	0	0
Rhode Island	0	0	0	0	1	1	0	0
Vermont	0	0	1	496	105	430	3	47
Middle Atlantic	**98**	**23,005**	**19**	**17,481**	**372**	**9,558**	**0**	**0**
New Jersey	7	1,634	4	3,862	3	380	0	0
New York	32	3,879	6	4,831	324	7,246	0	0
Pennsylvania	59	17,492	9	8,788	45	1,932	0	0
East North Central	**381**	**76,465**	**23**	**20,112**	**483**	**2,846**	**10**	**194**
Illinois	58	15,090	13	12,609	16	12	0	0
Indiana	78	19,107	0	0	21	69	0	0
Michigan	77	11,928	5	3,967	234	2,201	0	0
Ohio	119	23,158	2	2,037	7	124	3	90
Wisconsin	49	7,182	3	1,499	205	440	7	104
West North Central	**198**	**35,214**	**8**	**5,608**	**159**	**3,909**	**13**	**85**
Iowa	51	5,975	1	515	25	125	1	*
Kansas	19	5,220	1	1,160	0	0	2	*
Minnesota	50	5,742	3	1,564	54	142	10	85
Missouri	48	10,811	1	1,115	29	1,110	0	0
Nebraska	15	3,112	2	1,254	20	167	0	0
North Dakota	12	3,867	0	0	5	545	0	0
South Dakota	3	488	0	0	26	1,820	0	0
South Atlantic	**217**	**65,554**	**27**	**23,689**	**439**	**12,256**	**3**	*****
Delaware	5	931	0	0	0	0	0	0
District of Columbia	0	0	0	0	0	0	0	0
Florida	29	10,037	5	3,822	6	47	0	0
Georgia	39	13,164	4	3,840	120	3,418	0	0
Maryland	15	4,631	2	1,675	13	530	0	0
North Carolina	45	12,438	5	4,639	84	1,600	0	0
South Carolina	25	5,352	7	6,364	125	3,448	0	0
Virginia	25	4,608	4	3,349	70	3,108	3	*
West Virginia	34	14,393	0	0	21	105	0	0
East South Central	**140**	**36,413**	**8**	**8,195**	**199**	**7,430**	**0**	**0**
Alabama	39	11,494	5	4,835	89	2,959	0	0
Kentucky	58	14,075	0	0	30	802	0	0
Mississippi	6	2,228	1	1,143	0	0	0	0
Tennessee	37	8,615	2	2,217	80	3,668	0	0
West South Central	**57**	**31,373**	**8**	**8,482**	**131**	**3,014**	**1**	*****
Arkansas	5	3,817	2	1,694	43	1,325	0	0
Louisiana	6	3,343	2	2,006	0	0	0	0
Oklahoma	10	4,868	0	0	38	1,035	0	0
Texas	36	19,345	4	4,782	50	653	1	*
Mountain	**104**	**28,870**	**3**	**3,810**	**431**	**10,548**	**9**	**48**
Arizona	14	5,119	3	3,810	45	2,833	0	0
Colorado	31	4,953	0	0	53	1,130	0	0
Idaho	0	0	0	0	107	2,416	0	0
Montana	6	2,260	0	0	84	2,514	2	13
Nevada	8	2,717	0	0	17	1,046	0	0
New Mexico	13	3,901	0	0	6	58	0	0
Utah	12	4,273	0	0	89	257	7	35
Wyoming	20	5,647	0	0	30	292	0	0
Pacific Contiguous	**5**	**1,898**	**5**	**5,396**	**864**	**43,579**	**31**	**1,804**
California	0	0	4	4,310	427	13,504	28	1,723
Oregon	1	508	0	0	177	9,021	2	35
Washington	4	1,390	1	1,086	260	21,054	1	47
Pacific Noncontiguous	**5**	**54**	**0**	**0**	**58**	**356**	**3**	*****
Alaska	5	54	0	0	54	353	3	*
Hawaii	0	0	0	0	4	3	0	0
U.S. Total	**1,220**	**301,484**	**109**	**99,148**	**3,515**	**96,629**	**84**	**2,275**

1 Includes geothermal, biomass, wind, solar thermal, and photovoltaic (excludes hydroelectric).
2 Net summer capability.
* =Value less than 0.5.

Notes: •Data are preliminary. •Preliminary 1995 data are based on final 1994 data and respondent's proposed 1995 changes (additions,retirements, and modifications) reported as of December 31, 1994, and verified by telephone. No updates from responses submitted on Form EIA-860 with data as of January 1, 1996 are included. •Totals may not equal sum of components because of independent rounding. •Waste heat, waste gases, and waste steam are included in the original primary energy source category (i.e., coal, petroleum, or gas).

Source: Energy Information Administration, Form EIA-860, ''Annual Electric Generator Report.''

Table 6. Petroleum-, Gas-, and Dual-Fired Steam Generating Capability at U.S. Electric Utilities by Census Division and State, End of Year 1995

Census Division State	Petroleum		Gas		Dual-Fired Petroleum/Gas		Total Petroleum and Gas	
	Number of Generators	Capability[1] (megawatts)	Number of Generators	Capability[1] (megawatts)	Number of Generators	Capability[1] (megawatts)	Number of Generators	Capability[1] (megawatts)
New England	**35**	**4,993**	**6**	**1,053**	**16**	**2,243**	**57**	**8,289**
Connecticut	13	1,840	2	214	2	528	17	2,582
Maine	13	1,041	0	0	0	0	13	1,041
Massachusetts	8	2,071	4	839	11	1,225	23	4,135
New Hampshire	0	0	0	0	1	406	1	406
Rhode Island	1	41	0	0	2	84	3	125
Vermont	0	0	0	0	0	0	0	0
Middle Atlantic	**42**	**8,182**	**41**	**9,188**	**9**	**2,011**	**92**	**19,381**
New Jersey	14	1,263	11	1,591	1	72	26	2,926
New York	15	3,654	29	7,396	8	1,939	52	12,989
Pennsylvania	13	3,265	1	201	0	0	14	3,466
East North Central	**19**	**2,791**	**25**	**2,582**	**10**	**1,875**	**54**	**7,248**
Illinois	9	1,469	12	1,835	6	334	27	3,638
Indiana	5	188	4	345	0	0	9	533
Michigan	4	1,070	3	300	4	1,541	11	2,911
Ohio	1	64	1	17	0	0	2	81
Wisconsin	0	0	5	86	0	0	5	86
West North Central	**5**	**72**	**67**	**2,433**	**5**	**60**	**77**	**2,564**
Iowa	3	22	5	99	0	0	8	120
Kansas	0	0	35	1,787	3	22	38	1,809
Minnesota	2	50	10	137	0	0	12	187
Missouri	0	0	5	90	2	38	7	128
Nebraska	0	0	11	257	0	0	11	257
North Dakota	0	0	0	0	0	0	0	0
South Dakota	0	0	1	64	0	0	1	64
South Atlantic	**38**	**5,445**	**58**	**5,035**	**41**	**10,992**	**137**	**21,472**
Delaware	1	84	1	175	4	580	6	839
District of Columbia	2	550	0	0	0	0	2	550
Florida	19	2,948	46	4,286	33	8,350	98	15,583
Georgia	2	115	8	290	1	118	11	523
Maryland	7	700	2	215	2	1,224	11	2,139
North Carolina	2	28	1	68	0	0	3	96
South Carolina	2	92	0	0	0	0	2	92
Virginia	3	929	0	0	1	720	4	1,649
West Virginia	0	0	0	0	0	0	0	0
East South Central	**2**	**58**	**35**	**3,541**	**2**	**94**	**39**	**3,692**
Alabama	0	0	4	92	0	0	4	92
Kentucky	2	58	1	115	0	0	3	173
Mississippi	0	0	30	3,334	2	94	32	3,427
Tennessee	0	0	0	0	0	0	0	0
West South Central	**2**	**196**	**315**	**55,679**	**0**	**0**	**317**	**55,875**
Arkansas	0	0	16	2,515	0	0	16	2,515
Louisiana	2	196	72	11,036	0	0	74	11,232
Oklahoma	0	0	33	6,110	0	0	33	6,110
Texas	0	0	194	36,018	0	0	194	36,018
Mountain	**0**	**0**	**71**	**3,851**	**0**	**0**	**71**	**3,851**
Arizona	0	0	21	1,509	0	0	21	1,509
Colorado	0	0	12	244	0	0	12	244
Idaho	0	0	0	0	0	0	0	0
Montana	0	0	1	70	0	0	1	70
Nevada	0	0	11	904	0	0	11	904
New Mexico	0	0	24	964	0	0	24	964
Utah	0	0	2	160	0	0	2	160
Wyoming	0	0	0	0	0	0	0	0
Pacific Contiguous	**0**	**0**	**105**	**19,816**	**7**	**924**	**112**	**20,740**
California	0	0	104	19,668	7	924	111	20,592
Oregon	0	0	1	148	0	0	1	148
Washington	0	0	0	0	0	0	0	0
Pacific Noncontiguous	**26**	**1,170**	**2**	**85**	**0**	**0**	**28**	**1,255**
Alaska	0	0	2	85	0	0	2	85
Hawaii	26	1,170	0	0	0	0	26	1,170
U.S. Total	**169**	**22,908**	**725**	**103,262**	**90**	**18,198**	**984**	**144,368**

[1] Net summer capability.

Notes: •Data are preliminary. •Preliminary 1995 data are based on final 1994 data and respondent's proposed 1995 changes (additions,retirements, and modifications) reported as of December 31, 1994, and verified by telephone. No updates from responses submitted on Form EIA-860 with data as of January 1, 1996 are included. •Totals may not equal sum of components because of independent rounding. •Waste heat, waste gases, and waste steam are included in the original primary energy source category (i.e., coal, petroleum, or gas).

Source: Energy Information Administration, Form EIA-860, ''Annual Electric Generator Report.''

Table 7. Petroleum-, Gas-, and Dual-Fired Gas Turbine/Internal Combustion Generating Capability at U.S. Electric Utilities by Census Division and State, End of Year 1995

Census Division State	Petroleum		Gas		Dual-Fired Petroleum/Gas		Total Petroleum and Gas	
	Number of Generators	Capability[1] (megawatts)	Number of Generators	Capability[1] (megawatts)	Number of Generators	Capability[1] (megawatts)	Number of Generators	Capability[1] (megawatts)
New England	**174**	**1,134**	**9**	**114**	**14**	**369**	**197**	**1,617**
Connecticut	24	370	0	0	0	0	24	370
Maine	33	68	0	0	0	0	33	68
Massachusetts	72	489	9	114	13	352	94	955
New Hampshire	4	66	0	0	1	17	5	83
Rhode Island	15	21	0	0	0	0	15	21
Vermont	26	120	0	0	0	0	26	120
Middle Atlantic	**223**	**5,173**	**124**	**5,110**	**12**	**76**	**359**	**10,359**
New Jersey	25	1,524	45	3,066	1	23	71	4,613
New York	104	2,037	66	1,798	11	53	181	3,888
Pennsylvania	94	1,612	13	246	0	0	107	1,858
East North Central	**397**	**2,944**	**269**	**4,827**	**78**	**457**	**744**	**8,228**
Illinois	77	483	115	974	26	164	218	1,620
Indiana	27	287	19	838	6	16	52	1,142
Michigan	149	569	69	782	22	57	240	1,408
Ohio	61	806	37	929	9	38	107	1,773
Wisconsin	83	799	29	1,304	15	183	127	2,286
West North Central	**619**	**3,582**	**427**	**3,695**	**378**	**867**	**1,424**	**8,144**
Iowa	164	494	55	748	97	243	316	1,485
Kansas	53	301	140	904	163	290	356	1,495
Minnesota	127	886	46	217	37	133	210	1,235
Missouri	146	1,273	73	1,023	51	126	270	2,422
Nebraska	79	303	101	494	24	40	204	836
North Dakota	27	67	2	10	0	0	29	77
South Dakota	23	257	10	300	6	36	39	593
South Atlantic	**279**	**6,451**	**178**	**6,299**	**84**	**2,226**	**541**	**14,977**
Delaware	15	124	3	336	1	39	19	499
District of Columbia	2	256	0	0	0	0	2	256
Florida	115	3,352	108	2,488	9	212	232	6,052
Georgia	22	942	16	876	6	167	44	1,984
Maryland	42	720	22	1,281	2	7	66	2,009
North Carolina	22	572	8	218	17	500	47	1,290
South Carolina	10	195	16	700	31	541	57	1,436
Virginia	50	279	5	400	18	761	73	1,440
West Virginia	1	12	0	0	0	0	1	12
East South Central	**31**	**1,221**	**27**	**1,045**	**31**	**1,306**	**89**	**3,571**
Alabama	1	18	5	430	8	370	14	818
Kentucky	8	76	10	330	3	50	21	456
Mississippi	2	31	12	285	0	0	14	316
Tennessee	20	1,096	0	0	20	886	40	1,982
West South Central	**54**	**281**	**205**	**4,535**	**34**	**71**	**293**	**4,886**
Arkansas	20	206	9	105	11	11	40	322
Louisiana	1	16	25	257	1	19	27	292
Oklahoma	11	30	47	866	16	28	74	924
Texas	22	29	124	3,307	6	13	152	3,348
Mountain	**96**	**356**	**102**	**2,792**	**21**	**373**	**219**	**3,521**
Arizona	3	97	37	1,727	4	3	44	1,827
Colorado	42	141	20	125	12	80	74	346
Idaho	2	6	2	136	0	0	4	142
Montana	0	0	2	50	0	0	2	50
Nevada	20	48	9	551	5	290	34	889
New Mexico	6	24	6	132	0	0	12	155
Utah	15	25	26	71	0	0	41	97
Wyoming	8	15	0	0	0	0	8	15
Pacific Contiguous	**46**	**649**	**79**	**3,393**	**6**	**404**	**131**	**4,446**
California	37	558	62	2,455	4	301	103	3,314
Oregon	1	3	10	348	2	103	13	454
Washington	8	88	7	590	0	0	15	678
Pacific Noncontiguous	**530**	**960**	**30**	**677**	**1**	**38**	**561**	**1,675**
Alaska	463	532	30	677	1	38	494	1,247
Hawaii	67	428	0	0	0	0	67	428
U.S. Total	**2,449**	**22,750**	**1,450**	**32,486**	**659**	**6,187**	**4,558**	**61,424**

[1] Net summer capability.

Notes: •Data are preliminary. •Preliminary 1995 data are based on final 1994 data and respondent's proposed 1995 changes (additions,retirements, and modifications) reported as of December 31, 1994, and verified by telephone. No updates from responses submitted on Form EIA-860 with data as of January 1, 1996 are included. •Totals may not equal sum of components because of independent rounding. •Waste heat, waste gases, and waste steam are included in the original primary energy source category (i.e., coal, petroleum, or gas).

Source: Energy Information Administration, Form EIA-860, ''Annual Electric Generator Report.''

Net Generation from U.S. Electric Utilities

This chapter provides summary statistics on the amount of electricity produced by electric utilities in the United States. The different energy sources used by electric utilities to produce electric power are also discussed in this chapter.

The production of electricity is generally referred to as generation and is measured in kilowatthours. Gross generation is the amount of power produced by an electric power plant (station), measured at the terminals of the plant (that is, prior to the point at which the power leaves the station and is available to the system). Some of the electric power generated at a power plant is used to operate equipment at the plant. Power used at the plant generally ranges between 1 percent (for hydroelectric units) and 7 percent (for steam-electric units). Net generation is the power available to the system (gross generation less use at the plant); however, it is greater than that available to consumers due to losses during transmission and distribution (approximately 8 percent to 9 percent). Net generation is the measure used for electric power production by electric utilities in this report.

Generation from Fossil Fuels

Coal. Historically, most generation of electricity in the United States has been from coal. Coal-fired generation became even more important following the Arab oil embargo of 1973 due to concerns over the availability of petroleum imports, increasing petroleum costs, and curtailments of natural gas. In 1978, the passage of the Powerplant and Industrial Fuel Use Act and the Natural Gas Policy Act encouraged further use of coal by electric utilities. Although both Federal and State environmental laws and regulations existed during the 1970's, renewed interest in environmental issues raised concerns about electric power plant emissions, particularly from those plants burning coal. The Clean Air Act Amendments of 1990 established a goal of a 10-million-ton reduction in sulfur dioxide emissions and a 2-million-ton reduction in nitrogen oxide emissions by 2000 from 1980 levels. Coal-fired generation continues to provide more than one-half the total net generation of electricity by electric utilities in the Nation. Most of the electricity production from coal by electric utilities occurs in the East North Central and South Atlantic Census Divisions where substantial amounts of coal are mined.

Petroleum. During the early 1970's, electric utilities used petroleum extensively to generate electricity. However, after the 1973 embargo by the Organization of Petroleum Exporting Countries (OPEC) on petroleum exports to the United States, petroleum prices rose sharply. Further price increases occurred in 1979 and 1980 following the Iranian revolution and subsequent reductions in Iranian petroleum exports. Consequently during the past decade, utilities have not built large, petroleum-fired steam units. In addition, many utilities have either converted steam units to coal or switched fuels where dual-fired capability exists. Most of the utilities that still rely heavily on petroleum to generate electricity are located along the eastern seaboard.

Gas. The demand for gas (primarily natural gas) to heat homes and serve business and industry has historically taken priority over demand from electric utilities under both Federal and State regulations. In the 1970's, many utilities were on occasion denied gas when available pipelines reached capacity in serving heating demand during the months from November to March (the peak heating season). By the middle 1970's, curtailments to electric utilities also occasionally occurred during the nonheating season as producers conserved supply in preparation for heating season demand. In the face of an attractive interstate price structure, but deprived of supplies during many months of the year, utilities in the 1970's used relatively less expensive gas when it was available, then switched to other more expensive fuels when gas supplies were curtailed. Gas became more available to utilities with the passage of the Natural Gas Policy Act of 1978 and more frequent exemptions from the gas-use restrictions of the Powerplant and Industrial Fuel Use Act (Fuel Use Act) of 1978. Amendments to the Fuel Use Act in 1987 created potential for additional use of gas. These amendments eased restrictions on the use of gas by removing a legal requirement to obtain an exemption for the construction of new gas-fired generating capability. The West South Central Census Division, where most of the gas production in the Nation occurs, supplies more than half of the gas-fired generation in the country.

Nuclear-Powered Generation

Generation from nuclear power has generally increased since the 1950's, and this trend continues. Since 1984, nuclear plants have provided the second largest share of total U.S. generation of electricity, after coal-fired plants. Although no new nuclear units have been ordered since 1978 and units ordered after 1974 were not built, many units that were under construction have either been completed and entered service or will enter service in the near future. Licensing delays, questions about radioactive waste disposal, and concern about nuclear plant safety have slowed these units from entering service and are still major obstacles to additional growth in the use of this

energy source for generating electricity. Most of the nuclear-powered generation comes from the Middle Atlantic, East North Central, and South Atlantic Census Divisions (where over 60 percent of the nuclear units in the country are located).

Generation from Renewable Fuels

Hydroelectric. Water is currently the leading renewable energy source used by electric utilities to generate electric power. Hydroelectric plants operate where suitable waterways are available; many of the best of these sites have already been developed. Generating electricity using water has several advantages. The major advantage is that water, a renewable resource, is a source of cheap power. In addition, because there is no fuel combustion, there is little air pollution in comparison with fossil fuel plants and limited thermal pollution compared with nuclear plants. Like other energy sources, the use of water for generation has limitations, including environmental impacts caused by damming rivers and streams, which affects the habitats of the local plant, fish, and animal life. Nearly 60 percent of the hydroelectric power in the United States is generated in the Pacific and Rocky Mountain States.

Other Sources. Other renewable resources--geothermal (heat energy beneath the surface of the earth), wood, waste, wind, and the sun (solar)--are energy sources that are constantly replenished. These energy sources have received increased attention in recent years, but a limited number of such generating facilities are in use today. Currently, renewable resources (other than water) supply less than 1 percent of the electricity generated by electric utilities. Most of the electricity produced from this category is from geothermal power. Electric utilities currently operate geothermal plants in two States (California and Utah). The Geysers, operated by the Pacific Gas and Electric Company, is the largest geothermal plant in the Nation. Only a few utilities operate units that produce electricity from wind and solar energy. Wood and waste resources can be used to replace fossil fuels in utility boilers. To date, just a few electric generating units have been built that use wood or waste products as a primary fuel.

Data Sources

The data in the following tables are aggregated at national, regional, and State levels for the period 1991 through 1995. Data in the tables were obtained from the Form EIA-759, "Monthly Power Plant Report," which is used to collect monthly data from all operators of electric utilities (approximately 700) in the United States. More detailed statistics from the Form EIA-759 are published in the *Electric Power Monthly*.[20]

Table 8. Net Generation from U.S. Electric Utilities by Energy Source, 1991 through 1995
(Million Kilowatthours)

Energy Source	1991	1992	1993	1994	1995
Coal	**1,551,167**	**1,575,895**	**1,639,151**	**1,635,493**	**1,652,914**
Petroleum[1]	**111,463**	**88,916**	**99,539**	**91,039**	**60,844**
Steam	108,176	86,046	96,070	86,469	56,265
Gas Turbine/Internal Combustion	3,287	2,871	3,469	4,570	4,579
Gas	**264,172**	**263,872**	**258,915**	**291,115**	**307,306**
Steam	245,880	245,612	237,345	259,554	267,686
Gas Turbine/Internal Combustion	18,291	18,260	21,570	31,560	39,620
Hydroelectric Pumped Storage[2]	**–4,541**	**–4,177**	**–4,036**	**–3,378**	**–2,725**
Nuclear	**612,565**	**618,776**	**610,291**	**640,440**	**673,402**
Renewable					
Hydroelectic (conventional)	280,061	243,736	269,098	247,071	296,378
Geothermal	8,087	8,104	7,571	6,941	4,745
Wind	*	*	*	*	11
Biomass[3]	2,046	2,093	1,990	1,988	1,649
Solar Thermal	—	—	—	—	—
Photovoltaic	3	3	4	3	4
U.S. Total	**2,825,023**	**2,797,219**	**2,882,525**	**2,910,712**	**2,994,529**

1 Includes petroleum coke.
2 Negative generation denotes that electric power consumed for plant use exceeds gross generation.
3 Includes wood, wood waste, peat, wood liquors, railroad ties, pitch, wood sludge, municipal solid waste, agricultural waste, straw, tires, landfill gases, fish oils, and/or other waste.
* =Value less than 0.5.
Notes: •Data are final. •Totals may not equal sum of components because of independent rounding.
Source: Energy Information Administration, Form EIA-759, ''Monthly Power Plant Report.''

[20] Energy Information Administration, *Electric Power Monthly*, DOE/EIA-0226.

Table 9. Net Generation from U.S. Electric Utilities by Selected Prime Mover, Census Division, and State, 1994 and 1995

(Million Kilowatthours)

Census Division State	Total		Fossil Steam		Gas Turbine/Internal Combustion	
	1994	1995	1994	1995	1994	1995
New England	**80,934**	**76,001**	**34,639**	**35,267**	**489**	**919**
Connecticut	27,201	26,932	6,176	7,454	14	32
Maine	9,016	2,668	700	806	1	6
Massachusetts	27,466	26,972	23,050	21,791	457	851
New Hampshire	11,888	13,936	4,648	4,568	1	4
Rhode Island	69	653	58	640	11	13
Vermont	5,294	4,840	6	7	5	13
Middle Atlantic	**304,724**	**297,190**	**156,831**	**159,906**	**2,769**	**3,699**
New Jersey	31,932	27,088	8,703	8,759	1,266	1,618
New York	103,763	101,161	48,069	49,490	1,252	1,702
Pennsylvania	169,029	168,942	100,059	101,658	251	379
East North Central	**503,410**	**531,705**	**389,816**	**395,667**	**780**	**1,424**
Illinois	137,746	145,165	64,932	66,418	114	151
Indiana	103,485	105,189	102,926	104,543	152	179
Michigan	83,721	92,479	68,758	67,077	94	199
Ohio	129,021	137,860	117,640	120,459	240	405
Wisconsin	49,437	51,012	35,561	37,170	180	490
West North Central	**230,624**	**242,569**	**176,239**	**184,682**	**690**	**1,074**
Iowa	31,964	33,502	26,665	28,652	110	109
Kansas	37,284	38,230	28,450	27,746	305	422
Minnesota	40,917	42,503	27,400	27,933	48	75
Missouri	61,519	65,400	49,521	54,991	141	289
Nebraska	21,946	25,279	14,220	16,245	59	107
North Dakota	29,004	28,842	27,146	26,384	1	1
South Dakota	7,991	8,812	2,837	2,731	26	71
South Atlantic	**589,168**	**606,944**	**391,402**	**395,315**	**12,895**	**15,422**
Delaware	8,501	8,324	6,717	6,059	1,784	2,265
District of Columbia	274	189	255	174	19	15
Florida	141,791	147,157	106,911	108,618	7,923	9,568
Georgia	98,753	102,016	64,881	66,193	88	479
Maryland	43,766	44,659	29,892	29,504	629	775
North Carolina	91,455	96,110	53,387	55,844	116	341
South Carolina	74,194	78,440	27,299	26,389	82	143
Virginia	52,732	52,727	24,721	25,606	2,254	1,837
West Virginia	77,703	77,322	77,340	76,928	*	*
East South Central	**280,344**	**294,424**	**211,112**	**226,876**	**1,364**	**1,962**
Alabama	95,171	99,589	63,185	68,920	77	416
Kentucky	84,097	86,162	80,055	82,671	29	67
Mississippi	26,222	26,395	15,616	17,210	991	1,171
Tennessee	74,854	82,278	52,256	58,075	267	307
West South Central	**400,239**	**414,746**	**330,628**	**334,794**	**6,402**	**8,821**
Arkansas	39,548	39,527	22,153	24,643	9	8
Louisiana	60,170	65,555	46,701	49,134	690	735
Oklahoma	45,381	47,955	39,946	41,637	2,970	3,603
Texas	255,141	261,709	221,828	219,380	2,733	4,474
Mountain	**263,866**	**258,329**	**209,720**	**193,145**	**2,436**	**2,808**
Arizona	71,204	68,967	39,226	32,664	1,137	840
Colorado	33,324	32,674	31,742	30,568	42	5
Idaho	7,303	10,063	—	—	*	*
Montana	24,705	25,411	16,556	14,693	11	20
Nevada	20,519	19,997	17,663	16,382	991	1,693
New Mexico	30,018	29,432	29,663	29,022	142	146
Utah	34,455	32,101	33,431	30,931	113	104
Wyoming	42,337	39,684	41,440	38,885	0	0
Pacific Contiguous	**246,587**	**261,584**	**75,406**	**45,528**	**4,573**	**4,107**
California	126,749	121,881	61,781	38,112	1,612	1,466
Oregon	37,490	44,031	3,819	1,531	2,755	2,086
Washington	82,348	95,671	9,806	5,885	206	555
Pacific Noncontiguous	**10,817**	**11,038**	**5,721**	**5,686**	**3,732**	**3,963**
Alaska	4,762	4,847	839	736	2,577	2,739
Hawaii	6,055	6,191	4,882	4,950	1,154	1,224
U.S. Total	**2,910,712**	**2,994,529**	**1,981,516**	**1,976,865**	**36,130**	**44,199**

* =Value less than 0.5 million kilowatthours.

Notes: •Data are final. •Totals may not equal sum of components because of independent rounding.

Source: Energy Information Administration, Form EIA-759, ''Monthly Power Plant Report.''

Table 10. Net Generation from U.S. Electric Utilities by Energy Source, Census Division, and State, 1994 and 1995

(Million Kilowatthours)

Census Division State	Coal		Petroleum[1]		Gas	
	1994	1995	1994	1995	1994	1995
New England	**15,495**	**16,223**	**15,009**	**11,126**	**4,624**	**8,837**
Connecticut	2,104	2,269	3,354	3,397	732	1,820
Maine	—	—	702	812	—	—
Massachusetts	10,210	10,587	9,561	5,849	3,736	6,206
New Hampshire	3,182	3,367	1,353	1,004	115	201
Rhode Island	—	—	34	50	35	603
Vermont	—	—	6	13	6	7
Middle Atlantic	**119,457**	**121,848**	**17,837**	**11,792**	**22,306**	**29,965**
New Jersey	4,647	5,105	1,656	885	3,666	4,386
New York	20,859	19,943	10,998	7,835	17,464	23,414
Pennsylvania	93,952	96,800	5,182	3,072	1,176	2,165
East North Central	**383,432**	**388,842**	**2,617**	**2,234**	**4,547**	**6,014**
Illinois	61,214	62,736	1,208	888	2,624	2,944
Indiana	102,043	103,775	209	213	826	734
Michigan	67,539	65,425	656	687	657	1,163
Ohio	117,354	120,043	372	298	153	523
Wisconsin	35,283	36,864	172	147	287	649
West North Central	**171,915**	**179,863**	**1,575**	**1,392**	**3,439**	**4,500**
Iowa	26,498	28,426	78	58	199	277
Kansas	26,489	25,897	83	74	2,183	2,198
Minnesota	26,400	26,821	597	485	452	703
Missouri	48,593	53,582	731	682	338	1,015
Nebraska	14,002	16,080	18	27	259	245
North Dakota	27,100	26,336	47	49	*	–1
South Dakota	2,833	2,721	21	17	8	63
South Atlantic	**335,386**	**341,974**	**42,452**	**25,996**	**26,459**	**42,767**
Delaware	4,754	4,227	1,620	917	2,127	3,180
District of Columbia	—	—	274	189	—	—
Florida	60,770	61,864	33,330	21,583	20,734	34,738
Georgia	64,728	65,880	161	219	80	573
Maryland	25,394	27,370	4,134	1,408	993	1,501
North Carolina	53,234	55,698	199	234	69	253
South Carolina	26,994	25,802	108	130	279	600
Virginia	22,449	24,443	2,374	1,120	2,152	1,881
West Virginia	77,063	76,690	251	197	25	40
East South Central	**203,688**	**218,325**	**1,678**	**509**	**7,111**	**10,005**
Alabama	62,768	68,553	121	102	373	680
Kentucky	79,897	82,539	155	131	31	68
Mississippi	8,890	9,260	1,106	24	6,612	9,098
Tennessee	52,132	57,972	296	253	95	158
West South Central	**190,028**	**192,324**	**1,097**	**383**	**145,906**	**150,908**
Arkansas	19,781	21,506	96	53	2,285	3,092
Louisiana	20,125	18,954	680	49	26,586	30,867
Oklahoma	27,454	29,714	11	78	15,451	15,448
Texas	122,668	122,149	310	203	101,584	101,501
Mountain	**202,183**	**185,800**	**422**	**250**	**9,551**	**9,903**
Arizona	38,072	31,710	128	64	2,162	1,729
Colorado	31,401	30,276	9	10	374	287
Idaho	—	—	*	*	—	—
Montana	16,488	14,656	18	25	61	32
Nevada	15,325	13,972	166	27	3,162	4,077
New Mexico	26,752	26,121	23	23	3,030	3,023
Utah	32,764	30,260	30	34	750	741
Wyoming	41,380	38,805	47	68	13	13
Pacific Contiguous	**13,614**	**7,405**	**1,874**	**502**	**64,491**	**41,728**
California	—	—	1,863	489	61,530	39,090
Oregon	3,814	1,528	5	4	2,755	2,084
Washington	9,800	5,877	6	9	206	554
Pacific Noncontiguous	**295**	**309**	**6,477**	**6,661**	**2,681**	**2,679**
Alaska	295	309	441	487	2,681	2,679
Hawaii	—	—	6,036	6,175	—	—
U.S. Total	**1,635,493**	**1,652,914**	**91,039**	**60,844**	**291,115**	**307,306**

See notes and footnotes at end of table.

Table 10. Net Generation from U.S. Electric Utilities by Energy Source, Census Division, and State, 1994 and 1995 (Continued)

(Million Kilowatthours)

Census Division State	Nuclear		Hydroelectric[2]		Renewable[3]	
	1994	1995	1994	1995	1994	1995
New England	**41,170**	**35,670**	**4,125**	**3,614**	**511**	**531**
Connecticut	20,160	18,749	412	293	439	404
Maine	6,632	198	1,682	1,658	—	*
Massachusetts	3,859	4,486	100	−156	—	—
New Hampshire	6,204	8,379	1,036	984	—	—
Rhode Island	—	—	0	0	—	—
Vermont	4,316	3,859	895	834	72	127
Middle Atlantic	**118,568**	**109,603**	**26,545**	**23,969**	**11**	**12**
New Jersey	22,129	16,806	−167	−95	—	—
New York	29,231	26,336	25,200	23,620	11	12
Pennsylvania	67,207	66,462	1,512	444	—	—
East North Central	**109,267**	**130,667**	**3,280**	**3,594**	**265**	**353**
Illinois	72,654	78,481	45	48	—	68
Indiana	—	—	407	467	—	—
Michigan	14,144	24,448	725	755	—	—
Ohio	10,952	16,768	189	227	—	—
Wisconsin	11,516	10,970	1,914	2,097	265	285
West North Central	**41,212**	**42,763**	**12,025**	**13,561**	**458**	**490**
Iowa	4,107	3,730	1,053	991	28	20
Kansas	8,529	10,062	—	—	*	*
Minnesota	12,224	13,243	831	823	414	429
Missouri	10,006	8,242	1,844	1,854	7	25
Nebraska	6,345	7,485	1,312	1,426	9	16
North Dakota	—	—	1,856	2,457	—	—
South Dakota	—	—	5,129	6,010	—	—
South Atlantic	**169,086**	**182,558**	**15,785**	**13,649**	*	*
Delaware	—	—	—	—	—	—
District of Columbia	—	—	—	—	—	—
Florida	26,682	28,741	274	231	—	—
Georgia	28,927	30,661	4,857	4,684	—	—
Maryland	11,235	12,938	2,010	1,442	—	—
North Carolina	32,346	35,910	5,606	4,014	—	—
South Carolina	44,466	49,173	2,347	2,734	—	—
Virginia	25,429	25,135	329	149	*	*
West Virginia	—	—	363	394	—	—
East South Central	**42,027**	**44,474**	**25,841**	**21,111**	**—**	**—**
Alabama	20,480	20,752	11,429	9,502	—	—
Kentucky	—	—	4,014	3,423	—	—
Mississippi	9,615	8,013	—	—	—	—
Tennessee	11,932	15,708	10,399	8,186	—	—
West South Central	**55,448**	**63,495**	**7,457**	**7,636**	**303**	*
Arkansas	13,924	11,658	3,462	3,218	—	—
Louisiana	12,779	15,686	—	—	—	—
Oklahoma	—	—	2,465	2,715	—	—
Texas	28,745	36,151	1,530	1,703	303	*
Mountain	**23,171**	**26,985**	**28,302**	**35,252**	**237**	**140**
Arizona	23,171	26,985	7,670	8,478	—	—
Colorado	—	—	1,540	2,101	0	0
Idaho	—	—	7,303	10,063	—	—
Montana	—	—	8,096	10,698	42	0
Nevada	—	—	1,866	1,922	—	—
New Mexico	—	—	213	264	—	—
Utah	—	—	716	926	195	140
Wyoming	—	—	897	799	—	—
Pacific Contiguous	**40,492**	**37,188**	**118,968**	**169,879**	**7,147**	**4,883**
California	33,752	30,246	22,852	47,436	6,752	4,622
Oregon	—	—	30,916	40,415	0	0
Washington	6,740	6,942	65,200	82,028	396	261
Pacific Noncontiguous	**—**	**—**	**1,364**	**1,388**	**0**	**—**
Alaska	—	—	1,345	1,372	0	—
Hawaii	—	—	19	16	—	—
U.S. Total	**640,440**	**673,402**	**243,693**	**293,653**	**8,933**	**6,409**

[1] Includes petroleum coke.

[2] Station losses include energy used for pumped storage. Energy used in 1995 for pumping was 26,230 million kilowatthours and in 1994 was 24,769 million kilowatthours.

[3] Includes geothermal, biomass, wind, solar thermal, and photovoltaic (excludes hydroelectric).

* =Value less than 0.5 million kilowatthours.

Notes: •Data are final. •Negative generation denotes that electric power consumed for plant use exceeds gross generation. •Totals may not equal sum of components because of independent rounding.

Source: Energy Information Administration, Form EIA-759, ''Monthly Power Plant Report.''

Table 11. Petroleum-Fired Net Generation from U.S. Electric Utilities by Selected Prime Mover, Census Division, and State, 1994 and 1995

(Million Kilowatthours)

Census Division State	Total[1]		Steam		Gas Turbine/Internal Combustion	
	1994	1995	1994	1995	1994	1995
New England	**15,009**	**11,126**	**14,721**	**10,770**	**288**	**355**
Connecticut	3,354	3,397	3,340	3,365	14	32
Maine	702	812	700	806	1	6
Massachusetts	9,561	5,849	9,305	5,561	256	288
New Hampshire	1,353	1,004	1,352	1,000	1	4
Rhode Island	34	50	23	38	11	13
Vermont	6	13	*	*	5	13
Middle Atlantic	**17,837**	**11,792**	**17,076**	**11,008**	**761**	**784**
New Jersey	1,656	885	1,431	758	225	126
New York	10,998	7,835	10,676	7,422	322	413
Pennsylvania	5,182	3,072	4,969	2,827	213	245
East North Central	**2,617**	**2,234**	**2,313**	**2,004**	**304**	**231**
Illinois	1,208	888	1,146	844	62	44
Indiana	209	213	187	201	23	12
Michigan	656	687	623	651	33	36
Ohio	372	298	239	210	133	88
Wisconsin	172	147	119	97	53	50
West North Central	**1,575**	**1,392**	**1,433**	**1,198**	**142**	**194**
Iowa	78	58	40	28	38	30
Kansas	83	74	63	42	20	32
Minnesota	597	485	581	457	16	27
Missouri	731	682	691	612	39	70
Nebraska	18	27	8	8	10	19
North Dakota	47	49	46	48	1	1
South Dakota	21	17	3	3	18	15
South Atlantic	**42,452**	**25,996**	**41,276**	**24,952**	**1,176**	**1,044**
Delaware	1,620	917	1,544	870	75	48
District of Columbia	274	189	255	174	19	15
Florida	33,330	21,583	32,885	21,108	445	476
Georgia	161	219	91	98	70	121
Maryland	4,134	1,408	3,838	1,230	295	178
North Carolina	199	234	139	124	60	110
South Carolina	108	130	58	101	50	29
Virginia	2,374	1,120	2,214	1,051	160	69
West Virginia	251	197	251	197	*	*
East South Central	**1,678**	**509**	**1,450**	**317**	**227**	**192**
Alabama	121	102	92	96	29	6
Kentucky	155	131	130	94	25	37
Mississippi	1,106	24	1,105	23	1	*
Tennessee	296	253	124	103	172	149
West South Central	**1,097**	**383**	**1,079**	**363**	**18**	**19**
Arkansas	96	53	88	45	9	8
Louisiana	680	49	679	48	1	*
Oklahoma	11	78	11	77	1	1
Texas	310	203	302	193	7	10
Mountain	**422**	**250**	**407**	**246**	**16**	**4**
Arizona	128	64	126	64	2	*
Colorado	9	10	9	11	*	–1
Idaho	*	*	—	—	*	*
Montana	18	25	18	24	*	1
Nevada	166	27	157	25	10	1
New Mexico	23	23	22	22	1	1
Utah	30	34	27	33	3	1
Wyoming	47	68	47	68	0	0
Pacific Contiguous	**1,874**	**502**	**1,830**	**456**	**44**	**46**
California	1,863	489	1,820	446	43	43
Oregon	5	4	5	3	*	2
Washington	6	9	5	7	1	1
Pacific Noncontiguous	**6,477**	**6,661**	**4,883**	**4,952**	**1,594**	**1,710**
Alaska	441	487	1	1	440	485
Hawaii	6,036	6,175	4,882	4,950	1,154	1,224
U.S. Total	**91,039**	**60,844**	**86,469**	**56,265**	**4,570**	**4,579**

[1] Includes petroleum coke.

* =Value less than 0.5 million kilowatthours.

Notes: •Data are final. •Totals may not equal sum of components because of independent rounding.

Source: Energy Information Administration, Form EIA-759, ''Monthly Power Plant Report.''

Table 12. Gas-Fired Net Generation from U.S. Electric Utilities by Selected Prime Mover, Census Division, and State, 1994 and 1995

(Million Kilowatthours)

Census Division State	Total		Steam		Gas Turbine/Internal Combustion	
	1994	1995	1994	1995	1994	1995
New England	**4,624**	**8,837**	**4,423**	**8,273**	**201**	**564**
Connecticut	732	1,820	732	1,820	—	—
Maine	—	—	—	—	—	—
Massachusetts	3,736	6,206	3,535	5,643	201	563
New Hampshire	115	201	114	201	*	1
Rhode Island	35	603	35	603	—	—
Vermont	6	7	6	7	—	—
Middle Atlantic	**22,306**	**29,965**	**20,298**	**27,051**	**2,008**	**2,915**
New Jersey	3,666	4,386	2,626	2,895	1,041	1,491
New York	17,464	23,414	16,534	22,124	930	1,290
Pennsylvania	1,176	2,165	1,138	2,031	38	134
East North Central	**4,547**	**6,014**	**4,071**	**4,821**	**477**	**1,193**
Illinois	2,624	2,944	2,573	2,838	52	106
Indiana	826	734	697	567	130	167
Michigan	657	1,163	596	1,001	61	163
Ohio	153	523	46	206	107	318
Wisconsin	287	649	160	210	127	439
West North Central	**3,439**	**4,500**	**2,892**	**3,621**	**548**	**880**
Iowa	199	277	127	198	72	79
Kansas	2,183	2,198	1,898	1,807	286	390
Minnesota	452	703	420	655	32	47
Missouri	338	1,015	237	797	101	219
Nebraska	259	245	210	157	49	88
North Dakota	*	–1	*	–1	*	*
South Dakota	8	63	*	7	8	56
South Atlantic	**26,459**	**42,767**	**14,740**	**28,389**	**11,719**	**14,378**
Delaware	2,127	3,180	419	963	1,708	2,217
District of Columbia	—	—	—	—	—	—
Florida	20,734	34,738	13,257	25,645	7,478	9,092
Georgia	80	573	62	215	18	358
Maryland	993	1,501	659	904	333	597
North Carolina	69	253	13	21	56	231
South Carolina	279	600	247	487	32	114
Virginia	2,152	1,881	58	113	2,094	1,768
West Virginia	25	40	25	40	—	—
East South Central	**7,111**	**10,005**	**5,974**	**8,235**	**1,136**	**1,770**
Alabama	373	680	325	271	48	410
Kentucky	31	68	27	37	4	31
Mississippi	6,612	9,098	5,622	7,927	990	1,171
Tennessee	95	158	0	0	95	158
West South Central	**145,906**	**150,908**	**139,521**	**142,106**	**6,384**	**8,802**
Arkansas	2,285	3,092	2,285	3,092	*	*
Louisiana	26,586	30,867	25,897	30,132	689	735
Oklahoma	15,451	15,448	12,481	11,846	2,970	3,602
Texas	101,584	101,501	98,858	97,037	2,725	4,465
Mountain	**9,551**	**9,903**	**7,130**	**7,098**	**2,421**	**2,804**
Arizona	2,162	1,729	1,028	890	1,134	840
Colorado	374	287	331	281	42	6
Idaho	—	—	—	—	—	—
Montana	61	32	50	13	11	19
Nevada	3,162	4,077	2,181	2,385	981	1,691
New Mexico	3,030	3,023	2,888	2,879	142	145
Utah	750	741	639	638	111	103
Wyoming	13	13	13	13	—	—
Pacific Contiguous	**64,491**	**41,728**	**59,962**	**37,667**	**4,529**	**4,061**
California	61,530	39,090	59,961	37,666	1,569	1,423
Oregon	2,755	2,084	0	0	2,755	2,084
Washington	206	554	1	1	205	554
Pacific Noncontiguous	**2,681**	**2,679**	**544**	**425**	**2,137**	**2,254**
Alaska	2,681	2,679	544	425	2,137	2,254
Hawaii	—	—	—	—	—	—
U.S. Total	**291,115**	**307,306**	**259,554**	**267,686**	**31,560**	**39,620**

* =Value less than 0.5 million kilowatthours.

Notes: •Data are final. •Totals may not equal sum of components because of independent rounding.

Source: Energy Information Administration, Form EIA-759, ''Monthly Power Plant Report.''

U.S. Electric Utility Fossil Fuel Statistics

This chapter contains statistics on consumption of fossil fuels by U.S. electric utilities to generate electricity, and end-of-year fossil fuel stocks for all U.S. electric utility plants. Statistics are also included for receipts and costs of fossil fuels at power plants with a steam-electric and combined-cycle nameplate capacity of 50 or more megawatts, approximately 86 percent of the total capability at U.S. electric utilities. These data are aggregated to national, Census division, and State levels.

Various sources of energy are used by electric utilities to produce electricity; however, fossil fuels supply about 70 percent of the energy sources for the generation requirements of the Nation. Coal, petroleum, and gas are currently the dominant fossil fuels used by the industry.[21] Statistics on consumption, purchases (receipts), and stocks of fossil fuels at electric utilities are interdependent. That is, the stocks on site at the utility at the end of the current year result from the stocks that were available at the end of the prior year, the amount of fuel purchased during the current year, and the amount of fuel consumed during the year.

Fossil Fuel Consumption and Stocks

Coal, the energy source used by electric utilities to generate more than one-half of the electricity needed in the Nation, is consumed extensively throughout the United States (particularly in the East North Central, West North Central, West South Central, and the South Atlantic Census Divisions). The use of petroleum for generation is not as common on a national level as during the early 1970's; however, some areas of the country (such as in the New England, Middle Atlantic, and South Atlantic Census Divisions) continue to use it extensively. Consumption of gas occurs mostly in areas of the country where it is readily accessible, particularly in the West South Central Census Division, and in dual-fired generator units, which use gas and petroleum as substitute fuels.

The purposes of on-site storage are to provide an uninterrupted supply, to allow bulk shipments, and to take advantage of favorable market conditions. Electric utilities maintain stockpiles of coal and petroleum to minimize the effect of an interruption or curtailment in fuel availability (for example, railroad strikes, coal-mine strikes, or oil embargoes). Since gas is generally not stored, there are no stocks of gas.

Fossil Fuel Receipts and Costs

Statistics on electric utility receipts provide information regarding the delivery of fossil fuels to steam-electric plants. The costs include all costs incurred by an electric utility in the purchase and delivery of fuel to the plant. The type of contract under which a fuel is purchased has a significant effect on the cost of the fuel delivered and can be used as a good indicator of market conditions. Transactions where petroleum and coal are obtained by the utility under purchase orders or contracts with a duration of 1 year or more are referred to as *contract purchases.* Shipments of petroleum and coal under purchase orders or contracts of less than 1-year duration are considered *spot purchases.* Transactions that are conducted under a contract with uninterrupted delivery to secure gas are identified as *firm purchases. Interruptible purchases* are those in which the gas is received under a contract that permits curtailment of service under certain circumstances. For example, under both Federal and State regulations, requirements for gas to heat homes and serve industry have priority over requirements of the electric power industry. Consequently, a contract under which gas is purchased is most generally one that allows for an interruption in its accessibility.

Coal. Coal is obtained from three major coal-producing areas in the United States. *Appalachian coal* is mined in both surface and underground mines located in Pennsylvania, Maryland, Virginia, West Virginia, eastern Kentucky, Tennessee, Alabama, and Ohio. This coal is bituminous in rank and of low-to-medium sulfur content. Its heat content in British Thermal Units (Btu) averages over 12,000 Btu per pound. The coal is transported primarily by train, barge, and truck to electric utility plants throughout the Eastern United States. *Interior coal* is mined in both surface and underground mines located primarily in Illinois, Indiana and western Kentucky. It is bituminous coal with a high percentage of sulfur and contains approximately 11,000 Btu per pound. Most of this coal is delivered to plants in the Central and Southeastern United States. *Western coal* is mined in Montana, Wyoming, Colorado, Utah, North Dakota, Arizona, and New Mexico. It is delivered to plants throughout the Western and Central United States. Over one-half of the coal in this region is subbituminous coal that is low in sulfur content (less than 0.5 percent) and contains approximately 9,000 Btu per pound. Most of this coal originates in the Powder River basin of northeast Wyoming and southeast Montana. Coal from this region is delivered by unit train to plants as far east as Indiana and Georgia.

[21] Other fossil fuels include petroleum coke, refinery gas, coke oven gas, blast furnace gas, and liquified petroleum gas.

The cost of coal delivered to electric utilities can vary significantly from State to State. Coal delivered to the New England Census Division from the Appalachian coal fields may cost as much as $60 per short ton due to transportation costs and the higher cost of producing eastern coal (generally in underground mines). Environmental restrictions within a State may require electric utilities to burn only the more expensive, low-sulfur coal resulting in a higher delivered cost. In the West, especially in the Mountain Census Division, coal-burning plants are often built close to the mine thus reducing transportation costs. In addition, the cost of mining coal from large surface mines located in the Western United States is significantly less than that of underground eastern mines, resulting in a delivered cost of under $15 per short ton for States such as Montana and Wyoming. The cost of coal delivered to electric utilities in States such as North Dakota, South Dakota, and Texas is well below the national average because of the lower cost of low-grade lignite.

Petroleum. Although nationwide receipts at electric utilities are less than one-half the volume of the 1970's, several electric utilities in the New England area, New York, Florida, and Hawaii still depend on petroleum for a significant portion of their fossil fuel requirements. Receipts can vary widely from year to year at electric utilities due to changes in the cost of petroleum. Fuel oil numbers 4, 5, and 6 (heavy oil) constitute the majority of all petroleum receipts at electric utilities. Smaller amounts of fuel oil number 2 (light oil) are also used by electric utilities primarily for start-up and flame stabilization of the boilers.

The cost of petroleum delivered to electric utilities varies considerably from State to State. The most important factor in determining cost is the type of fuel oil that is being delivered. States receiving only low-grade heavy oil will show a delivered cost much lower than a State receiving only light oil. Most of the petroleum delivered to the New England, Middle Atlantic, and South Atlantic Census Divisions, California, and Hawaii for use by electric utilities is the number 6 fuel oil. The cost of fuel oil can also vary because of its sulfur content. Electric utilities that are required to meet stringent environmental standards must purchase low-sulfur fuel oil at premium prices.

Gas. Gas is used extensively as a primary fuel throughout areas of the country where it is readily accessible (for example, the West South Central Census Division and in California). Large volumes of gas are also transported by pipeline to the Middle Atlantic and South Atlantic Census Divisions. Gas receipts in these Census divisions and in California can vary considerably from year to year because some electric utilities switch between use of petroleum and gas in dual-fired generating units. The highest volume of gas receipts at electric utilities occurs during the summer months when demand for electricity peaks and when there is a greater amount available to electric utilities because of lower demands from residential and commercial consumers. In some northern parts of the United States, receipts of gas at electric utilities are limited during the winter months due to the priority for residential heating and industry needs. Many electric utilities have the capability of burning either petroleum or gas. The cost of the fuel is usually the determining factor. One major advantage of gas over all other fossil fuels is that it is a clean burning fuel. Therefore, some electric utilities use gas in order to comply with environmental regulations.

Data Sources

Data in the following tables were obtained from two sources. The first is the Form EIA-759, "Monthly Power Plant Report," which is used to collect monthly data from all operators of power plants (approximately 700) in the United States. More detailed statistics on stocks and consumption are published in the *Electric Power Monthly*.[22] The second source is the Federal Energy Regulatory Commission (FERC) Form 423, "Monthly Report of Cost and Quality of Fuels for Electric Plants," which is a restricted census used to collect data from approximately 230 electric utilities.

[22] Energy Information Administration, *Electric Power Monthly*, DOE/EIA-0226.

Caution should be used in comparing stocks, receipts, and consumption data since all operators of power plants are surveyed by the Form EIA-759, while the FERC Form 423 is limited to operators of power plants with a fossil-fueled steam-electric and combined-cycle nameplate capacity of 50 or more megawatts.

Table 13. Consumption of Fossil Fuels and Year-End Stocks of Coal and Petroleum at U.S. Electric Utilities, 1991 through 1995

Item	1991	1992	1993	1994	1995
Consumption					
Coal (thousand short tons)	772,268	779,860	813,508	817,270	829,007
Petroleum (thousand barrels)[1]	184,886	147,335	162,454	151,004	102,150
Gas (million cubic feet)	2,789,014	2,765,608	2,682,440	2,987,146	3,196,507
Stocks					
Coal (thousand short tons)	157,876	154,130	111,341	126,897	126,304
Petroleum (thousand barrels)[1]	74,993	71,849	62,443	62,986	50,495

1 Does not include petroleum coke.
Notes: •Data are final. •Totals may not equal sum of components because of independent rounding.
Source: Energy Information Administration, Form EIA-759, ''Monthly Power Plant Report.''

Table 14. Receipts and Average Delivered Cost of Fossil Fuels at U.S. Electric Utilities, 1991 Through 1995

Item	1991	1992	1993	1994	1995
Receipts					
Coal (thousand short tons)	769,923	775,963	769,152	831,929	826,860
Petroleum (thousand barrels)	169,625	144,390	147,902	142,940	84,292
Gas (million cubic feet)	2,630,818	2,637,678	2,574,523	2,863,904	3,023,327
Cost (dollars)					
Coal (per short ton)	**30.02**	**29.36**	**28.58**	**28.03**	**27.01**
Contract	30.55	29.89	28.93	28.53	27.51
Spot	27.02	26.64	27.19	26.26	24.89
Petroleum (per barrel)[1]	**16.09**	**16.15**	**15.42**	**15.70**	**16.93**
Contract	16.12	16.17	15.74	15.86	16.94
Spot	16.04	16.07	14.89	15.48	16.90
Gas (per thousand cubic feet)	**2.20**	**2.38**	**2.62**	**2.28**	**2.02**
Firm	2.19	2.37	2.59	2.33	2.10
Interruptible[2]	2.22	2.40	2.66	2.25	1.96

1 Does not include petroleum coke.
2 Includes spot-market purchases.
Notes: •Data are final. •Data are for electric generating plants with a total steam-electric and combined-cycle nameplate capacity of 50 or more megawatts. •Totals may not equal sum of components because of independent rounding.
Source: Federal Energy Regulatory Commission, FERC Form 423, ''Monthly Report of Cost and Quality of Fuels for Electric Plants.''

Table 15. Consumption of Fossil Fuels at U.S. Electric Utilities by Census Division and State, 1994 and 1995

Census Division State	Coal (thousand short tons)		Petroleum[1] (thousand barrels)		Gas (million cubic feet)	
	1994	1995	1994	1995	1994	1995
New England	**5,945**	**6,272**	**25,043**	**18,903**	**48,558**	**91,321**
Connecticut	821	881	5,689	5,720	8,002	19,310
Maine	—	—	1,294	1,490	—	—
Massachusetts	3,845	4,044	15,514	9,755	38,567	64,623
New Hampshire	1,279	1,346	2,442	1,816	1,277	2,248
Rhode Island	0	0	82	83	546	5,002
Vermont	—	—	23	39	166	138
Middle Atlantic	**48,326**	**49,357**	**30,773**	**20,128**	**237,862**	**316,859**
New Jersey	1,887	2,054	3,229	1,704	42,625	45,897
New York	8,395	8,051	18,664	13,398	182,521	246,265
Pennsylvania	38,044	39,252	8,880	5,026	12,716	24,697
East North Central	**183,282**	**187,490**	**5,547**	**4,238**	**68,371**	**100,024**
Illinois	32,599	33,463	2,611	1,552	34,505	39,143
Indiana	50,554	52,089	412	342	9,009	8,349
Michigan	31,106	31,165	1,433	1,509	18,218	35,784
Ohio	49,326	49,785	872	642	2,818	7,459
Wisconsin	19,696	20,987	220	194	3,821	9,289
West North Central	**111,672**	**116,720**	**923**	**936**	**43,374**	**56,671**
Iowa	16,565	17,785	183	148	2,696	3,614
Kansas	16,989	16,345	142	151	27,279	27,945
Minnesota	17,046	17,282	108	133	5,826	8,292
Missouri	26,375	30,440	282	296	4,351	12,830
Nebraska	8,879	10,048	45	61	3,061	3,059
North Dakota	23,248	22,680	112	99	3	1
South Dakota	2,570	2,137	50	48	159	931
South Atlantic	**133,984**	**138,134**	**69,722**	**43,340**	**235,179**	**399,117**
Delaware	2,007	1,816	2,727	1,495	17,399	27,010
District of Columbia	—	—	664	477	—	—
Florida	24,758	25,200	53,369	35,071	180,697	318,854
Georgia	27,293	29,280	358	494	1,028	7,834
Maryland	9,717	10,141	7,621	2,789	12,718	18,833
North Carolina	20,624	21,424	447	505	871	3,146
South Carolina	10,597	10,074	277	268	3,005	6,615
Virginia	8,670	9,543	3,837	1,903	19,219	16,414
West Virginia	30,318	30,657	423	338	243	410
East South Central	**85,622**	**92,262**	**2,789**	**966**	**87,745**	**121,527**
Alabama	25,817	28,759	220	181	3,834	7,377
Kentucky	34,564	35,707	317	282	350	866
Mississippi	3,989	4,319	1,733	48	82,541	111,229
Tennessee	21,253	23,477	519	455	1,019	2,055
West South Central	**131,168**	**132,633**	**1,198**	**723**	**1,504,407**	**1,557,062**
Arkansas	12,250	13,216	176	109	24,977	32,750
Louisiana	13,479	12,930	434	91	277,116	322,923
Oklahoma	16,961	18,130	25	129	153,109	154,114
Texas	88,479	88,358	563	393	1,049,205	1,047,274
Mountain	**108,651**	**101,013**	**765**	**490**	**102,719**	**103,926**
Arizona	18,853	16,021	224	119	23,716	18,846
Colorado	16,596	16,222	26	30	4,881	3,798
Idaho	—	—	*	1	—	—
Montana	10,513	9,373	42	53	632	388
Nevada	7,772	7,084	287	54	32,246	40,134
New Mexico	15,297	15,137	47	44	32,214	31,924
Utah	14,269	13,325	53	61	8,900	8,707
Wyoming	25,350	23,850	86	128	129	128
Pacific Contiguous	**8,349**	**4,834**	**2,982**	**865**	**629,883**	**420,191**
California	—	—	2,959	835	601,290	394,698
Oregon	2,333	977	11	12	26,132	19,136
Washington	6,016	3,857	12	18	2,461	6,356
Pacific Noncontiguous	**271**	**293**	**11,263**	**11,561**	**29,048**	**29,809**
Alaska	271	293	854	849	29,048	29,809
Hawaii	—	—	10,409	10,713	—	—
U.S. Total	**817,270**	**829,007**	**151,004**	**102,150**	**2,987,146**	**3,196,507**

[1] Does not include petroleum coke. Petroleum coke consumption in 1995 was 761 thousand short tons and in 1994 was 875 thousand short tons.

* =Value less than 0.5 thousand barrels or 0.5 million cubic feet.

Notes: •Data are final. •Totals may not equal sum of components because of independent rounding.

Source: Energy Information Administration, Form EIA-759, ''Monthly Power Plant Report.''

Table 16. Petroleum Consumption at U.S. Electric Utilities by Selected Prime Mover, Census Division, and State, 1994 and 1995

(Thousand Barrels)

Census Division State	Total		Steam		Gas Turbine/Internal Combustion	
	1994	1995	1994	1995	1994	1995
New England	**25,043**	**18,903**	**24,454**	**18,144**	**589**	**759**
Connecticut	5,689	5,720	5,651	5,634	38	86
Maine	1,294	1,490	1,287	1,475	6	15
Massachusetts	15,514	9,755	15,005	9,166	510	589
New Hampshire	2,442	1,816	2,439	1,804	3	12
Rhode Island	82	83	65	63	16	20
Vermont	23	39	7	1	16	37
Middle Atlantic	**30,773**	**20,128**	**28,803**	**18,084**	**1,970**	**2,044**
New Jersey	3,229	1,704	2,656	1,359	573	345
New York	18,664	13,398	17,837	12,347	828	1,051
Pennsylvania	8,880	5,026	8,311	4,378	569	648
East North Central	**5,547**	**4,238**	**4,673**	**3,559**	**874**	**680**
Illinois	2,611	1,552	2,418	1,414	193	138
Indiana	412	342	349	300	63	41
Michigan	1,433	1,509	1,335	1,392	98	117
Ohio	872	642	506	402	366	240
Wisconsin	220	194	65	51	155	143
West North Central	**923**	**936**	**513**	**386**	**410**	**549**
Iowa	183	148	77	52	106	96
Kansas	142	151	94	80	48	71
Minnesota	108	133	49	43	59	90
Missouri	282	296	162	101	121	195
Nebraska	45	61	16	16	29	45
North Dakota	112	99	109	88	3	11
South Dakota	50	48	7	5	44	42
South Atlantic	**69,722**	**43,340**	**66,968**	**40,822**	**2,754**	**2,518**
Delaware	2,727	1,495	2,562	1,388	164	107
District of Columbia	664	477	603	424	62	52
Florida	53,369	35,071	52,366	33,971	1,003	1,100
Georgia	358	494	187	206	170	288
Maryland	7,621	2,789	6,962	2,347	659	442
North Carolina	447	505	241	209	206	296
South Carolina	277	268	107	175	170	93
Virginia	3,837	1,903	3,518	1,763	320	141
West Virginia	423	338	423	338	*	*
East South Central	**2,789**	**966**	**2,352**	**626**	**437**	**340**
Alabama	220	181	161	168	59	13
Kentucky	317	282	258	228	59	54
Mississippi	1,733	48	1,724	47	9	1
Tennessee	519	455	209	183	311	272
West South Central	**1,198**	**723**	**1,152**	**673**	**46**	**49**
Arkansas	176	109	153	86	23	23
Louisiana	434	91	429	89	4	2
Oklahoma	25	129	23	128	2	2
Texas	563	393	547	370	16	23
Mountain	**765**	**490**	**723**	**470**	**42**	**20**
Arizona	224	119	218	117	6	2
Colorado	26	30	22	27	4	3
Idaho	*	1	—	—	*	1
Montana	42	53	41	52	1	2
Nevada	287	54	265	48	22	6
New Mexico	47	44	45	41	2	3
Utah	53	61	47	57	6	4
Wyoming	86	128	86	128	0	0
Pacific Contiguous	**2,982**	**865**	**2,874**	**757**	**107**	**108**
California	2,959	835	2,855	735	104	100
Oregon	11	12	10	9	1	3
Washington	12	18	9	13	2	5
Pacific Noncontiguous	**11,263**	**11,561**	**8,394**	**8,610**	**2,869**	**2,951**
Alaska	854	849	3	4	851	844
Hawaii	10,409	10,713	8,391	8,606	2,018	2,107
U.S. Total	**151,004**	**102,150**	**140,907**	**92,131**	**10,097**	**10,019**

* =Value less than 0.5.

Notes: •Data are final. •Totals may not equal sum of components because of independent rounding. •Does not include petroleum coke. Petroleum coke consumption in 1995 was 761 thousand short tons and in 1994 was 875 thousand short tons.

Source: Energy Information Administration, Form EIA-759, ''Monthly Power Plant Report.''

Table 17. Gas Consumption at U.S. Electric Utilities by Selected Prime Mover, Census Division, and State, 1994 and 1995

(Million Cubic Feet)

Census Division State	Total		Steam		Gas Turbine/Internal Combustion	
	1994	1995	1994	1995	1994	1995
New England	**48,558**	**91,321**	**46,547**	**85,931**	**2,011**	**5,390**
Connecticut	8,002	19,310	8,002	19,310	—	—
Maine	—	—	—	—	—	—
Massachusetts	38,567	64,623	36,557	59,241	2,010	5,382
New Hampshire	1,277	2,248	1,275	2,240	1	8
Rhode Island	546	5,002	546	5,002	—	—
Vermont	166	138	166	138	—	—
Middle Atlantic	**237,862**	**316,859**	**215,485**	**284,087**	**22,377**	**32,772**
New Jersey	42,625	45,897	30,213	28,119	12,413	17,778
New York	182,521	246,265	173,043	232,809	9,477	13,456
Pennsylvania	12,716	24,697	12,229	23,159	487	1,538
East North Central	**68,371**	**100,024**	**61,150**	**82,270**	**7,221**	**17,754**
Illinois	34,505	39,143	33,595	37,006	910	2,138
Indiana	9,009	8,349	7,349	6,097	1,661	2,252
Michigan	18,218	35,784	17,430	33,766	788	2,018
Ohio	2,818	7,459	592	2,599	2,226	4,860
Wisconsin	3,821	9,289	2,185	2,803	1,636	6,486
West North Central	**43,374**	**56,671**	**35,552**	**44,027**	**7,822**	**12,645**
Iowa	2,696	3,614	1,580	2,389	1,116	1,225
Kansas	27,279	27,945	23,328	22,463	3,951	5,481
Minnesota	5,826	8,292	5,322	7,574	504	718
Missouri	4,351	12,830	2,850	9,540	1,501	3,290
Nebraska	3,061	3,059	2,441	1,915	620	1,144
North Dakota	3	1	1	1	2	*
South Dakota	159	931	31	145	127	786
South Atlantic	**235,179**	**399,117**	**138,511**	**275,419**	**96,668**	**123,697**
Delaware	17,399	27,010	4,581	10,362	12,818	16,649
District of Columbia	—	—	—	—	—	—
Florida	180,697	318,854	121,272	243,950	59,425	74,904
Georgia	1,028	7,834	779	3,152	249	4,682
Maryland	12,718	18,833	8,591	11,470	4,127	7,363
North Carolina	871	3,146	0	0	871	3,146
South Carolina	3,005	6,615	2,470	4,972	535	1,644
Virginia	19,219	16,414	575	1,104	18,644	15,310
West Virginia	243	410	243	410	—	—
East South Central	**87,745**	**121,527**	**62,643**	**85,975**	**25,101**	**35,553**
Alabama	3,834	7,377	3,385	2,817	450	4,560
Kentucky	350	866	285	400	66	466
Mississippi	82,541	111,229	58,974	82,758	23,567	28,471
Tennessee	1,019	2,055	0	0	1,019	2,055
West South Central	**1,504,407**	**1,557,062**	**1,434,782**	**1,459,446**	**69,625**	**97,615**
Arkansas	24,977	32,750	24,975	32,750	2	*
Louisiana	277,116	322,923	268,956	313,427	8,160	9,496
Oklahoma	153,109	154,114	123,928	121,879	29,181	32,235
Texas	1,049,205	1,047,274	1,016,922	991,390	32,283	55,885
Mountain	**102,719**	**103,926**	**77,264**	**75,996**	**25,455**	**27,930**
Arizona	23,716	18,846	11,929	10,246	11,788	8,600
Colorado	4,881	3,798	4,325	3,682	557	115
Idaho	—	—	—	—	—	—
Montana	632	388	488	127	145	262
Nevada	32,246	40,134	22,385	24,517	9,861	15,617
New Mexico	32,214	31,924	30,536	30,156	1,677	1,768
Utah	8,900	8,707	7,473	7,140	1,427	1,568
Wyoming	129	128	129	128	—	—
Pacific Contiguous	**629,883**	**420,191**	**585,132**	**379,742**	**44,751**	**40,450**
California	601,290	394,698	585,116	379,733	16,173	14,966
Oregon	26,132	19,136	2	0	26,130	19,136
Washington	2,461	6,356	14	9	2,447	6,347
Pacific Noncontiguous	**29,048**	**29,809**	**0**	**0**	**29,048**	**29,809**
Alaska	29,048	29,809	0	0	29,048	29,809
Hawaii	—	—	—	—	—	—
U.S. Total	**2,987,146**	**3,196,507**	**2,657,068**	**2,772,893**	**330,078**	**423,614**

* =Value less than 0.5.

Notes: •Data are final. •Totals may not equal sum of components because of independent rounding.

Source: Energy Information Administration, Form EIA-759, ''Monthly Power Plant Report.''

Table 18. Coal and Petroleum Stocks at U.S. Electric Utilities by Census Division and State, as of December 31, 1994 and 1995

Census Division State	Coal (thousand short tons)		Petroleum[1] (thousand barrels)	
	1994	1995	1994	1995
New England	**1,079**	**908**	**4,706**	**3,757**
Connecticut	202	164	1,777	1,153
Maine	—	—	382	323
Massachusetts	629	425	2,213	1,712
New Hampshire	248	319	267	513
Rhode Island	0	0	36	24
Vermont	—	—	31	33
Middle Atlantic	**12,687**	**11,064**	**12,974**	**9,965**
New Jersey	688	804	2,180	2,082
New York	999	1,015	8,038	6,031
Pennsylvania	11,000	9,244	2,756	1,852
East North Central	**32,088**	**30,505**	**2,871**	**2,617**
Illinois	4,526	5,331	1,193	1,109
Indiana	10,449	8,435	138	123
Michigan	6,505	7,708	884	786
Ohio	7,499	5,661	424	379
Wisconsin	3,109	3,371	232	220
West North Central	**16,739**	**17,732**	**1,640**	**1,405**
Iowa	3,642	3,923	185	165
Kansas	2,610	3,850	582	542
Minnesota	2,134	1,898	133	110
Missouri	4,410	4,641	383	334
Nebraska	1,276	1,409	218	136
North Dakota	2,406	1,858	49	41
South Dakota	259	153	91	76
South Atlantic	**23,226**	**18,851**	**15,981**	**11,817**
Delaware	470	363	860	437
District of Columbia	—	—	90	119
Florida	3,813	3,204	9,177	6,318
Georgia	4,699	3,657	556	515
Maryland	1,306	1,038	2,138	2,119
North Carolina	4,139	2,715	278	399
South Carolina	2,255	2,033	304	311
Virginia	2,064	1,098	2,407	1,454
West Virginia	4,479	4,744	172	145
East South Central	**10,317**	**10,148**	**2,083**	**1,955**
Alabama	3,652	3,282	175	236
Kentucky	4,466	4,472	171	214
Mississippi	690	724	1,025	1,026
Tennessee	1,509	1,670	712	480
West South Central	**15,520**	**20,195**	**7,624**	**7,307**
Arkansas	1,751	2,790	266	236
Louisiana	1,872	2,659	1,384	1,340
Oklahoma	2,319	4,118	609	509
Texas	9,578	10,628	5,365	5,222
Mountain	**14,559**	**14,562**	**1,267**	**1,126**
Arizona	3,197	2,998	502	448
Colorado	3,118	3,622	180	168
Idaho	—	—	*	*
Montana	517	511	18	12
Nevada	1,034	1,356	395	380
New Mexico	1,462	967	107	76
Utah	2,753	2,250	30	20
Wyoming	2,476	2,857	34	21
Pacific Contiguous	**681**	**2,340**	**12,527**	**9,725**
California	—	—	11,954	9,157
Oregon	150	399	230	230
Washington	531	1,941	344	338
Pacific Noncontiguous	**2**	**1**	**1,313**	**820**
Alaska	2	1	230	212
Hawaii	—	—	1,082	608
U.S. Total	**126,897**	**126,304**	**62,986**	**50,495**

[1] Does not include petroleum coke. Petroleum coke stocks at the end of 1995 were 65 thousand short tons and in 1994 were 69 thousand short tons.

* =Value less than 0.5.

Notes: •Data are final. •Totals may not equal sum of components because of independent rounding.

Source: Energy Information Administration, Form EIA-759, ''Monthly Power Plant Report.''

Table 19. Fossil Fuel Receipts at U.S. Electric Utilities by Census Division and State, 1994 and 1995

Census Division State	Coal (thousand short tons)		Petroleum[1] (thousand barrels)		Gas (million cubic feet)	
	1994	1995	1994	1995	1994	1995
New England	**6,245**	**6,072**	**24,173**	**17,881**	**48,618**	**92,244**
Connecticut	863	841	6,019	4,970	8,009	19,277
Maine	—	—	964	1,414	—	—
Massachusetts	4,127	3,859	14,742	9,299	38,595	64,350
New Hampshire	1,255	1,372	2,319	2,104	1,275	2,564
Rhode Island	—	—	121	92	572	5,914
Vermont	—	—	8	2	167	138
Middle Atlantic	**49,187**	**48,188**	**34,891**	**18,110**	**225,983**	**300,502**
New Jersey	2,115	2,160	5,451	2,154	36,154	37,601
New York	8,244	7,575	19,732	12,372	177,846	239,247
Pennsylvania	38,828	38,453	9,709	3,584	11,983	23,654
East North Central	**186,864**	**184,018**	**5,192**	**3,578**	**61,161**	**79,583**
Illinois	32,936	33,905	2,615	1,333	34,188	38,666
Indiana	53,540	49,676	354	440	7,309	6,134
Michigan	31,435	31,214	1,587	1,295	17,203	28,540
Ohio	49,311	47,768	541	420	842	3,394
Wisconsin	19,641	21,456	94	90	1,618	2,848
West North Central	**114,255**	**117,821**	**545**	**424**	**33,313**	**41,390**
Iowa	17,005	18,095	108	50	1,582	2,484
Kansas	17,653	17,812	98	58	22,203	21,093
Minnesota	17,770	16,862	47	41	3,504	5,283
Missouri	27,250	30,819	196	176	3,517	10,650
Nebraska	8,894	10,063	17	14	2,435	1,752
North Dakota	23,366	22,294	79	85	46	1
South Dakota	2,317	1,877	—	—	26	127
South Atlantic	**138,382**	**132,902**	R **67,296**	**36,261**	**220,663**	**369,271**
Delaware	2,284	1,720	2,950	1,028	17,396	27,012
District of Columbia	—	—	653	422	—	—
Florida	24,948	24,202	51,596	31,059	171,834	305,896
Georgia	28,761	28,490	222	240	1,078	3,196
Maryland	9,623	9,901	7,795	2,008	8,684	11,659
North Carolina	21,330	19,792	271	195	548	1,020
South Carolina	11,188	9,771	107	68	2,584	5,325
Virginia	9,270	8,624	3,314	937	18,200	14,656
West Virginia	30,978	30,402	R 387	305	338	506
East South Central	**89,150**	**93,394**	**2,394**	**601**	**64,255**	**89,399**
Alabama	27,160	28,131	155	176	3,235	2,412
Kentucky	36,301	36,891	311	234	406	428
Mississippi	4,299	4,271	1,733	28	60,614	86,559
Tennessee	21,389	24,100	196	163	—	—
West South Central	**131,655**	**136,806**	**499**	**362**	**1,474,719**	**1,524,483**
Arkansas	11,847	14,082	143	70	22,782	29,696
Louisiana	13,408	13,409	208	82	257,290	313,325
Oklahoma	17,191	19,713	10	10	147,382	150,892
Texas	89,210	89,602	139	200	1,047,265	1,030,570
Mountain	**107,799**	**101,149**	**466**	**387**	**93,950**	**96,760**
Arizona	18,427	15,762	69	113	21,731	17,954
Colorado	16,242	16,503	6	4	2,154	1,478
Idaho	—	—	—	—	—	—
Montana	10,310	9,313	18	34	518	123
Nevada	7,627	7,422	222	29	31,440	39,118
New Mexico	15,316	14,671	45	47	30,540	30,833
Utah	14,253	13,524	27	31	7,436	7,126
Wyoming	25,624	23,955	79	129	131	128
Pacific Contiguous	**8,394**	**6,510**	**387**	**33**	**621,342**	**411,515**
California	—	—	370	—	595,291	390,482
Oregon	2,223	1,200	3	13	26,041	21,026
Washington	6,171	5,310	14	20	11	8
Pacific Noncontiguous	**—**	**—**	**7,096**	**6,654**	**19,900**	**18,180**
Alaska	—	—	—	—	19,900	18,180
Hawaii	—	—	7,096	6,654	—	—
U. S. Total	**831,929**	**826,860**	R **142,940**	**84,292**	**2,863,904**	**3,023,327**

[1] Does not include petroleum coke. Petroleum coke receipts in 1995 were 1.123 million short tons and in 1994 were 1.263 million short tons.
R = Revised data from prior publication.

Notes: •Data are final. •Data are for electric generating plants with a total steam-electric and combined-cycle nameplate capacity of 50 or more megawatts. •Totals may not equal sum of components because of independent rounding.

Source: Federal Energy Regulatory Commission, FERC Form 423, ''Monthly Report of Cost and Quality of Fuels for Electric Plants.''

Table 20. Average Delivered Cost of Fossil Fuel Receipts at U.S. Electric Utilities by Census Division and State, 1994 and 1995

Census Division State	Coal			Petroleum[1]			Gas		
	1994	1995		1994	1995		1994	1995	
	(cents per 10^6 Btu)	(cents per 10^6 Btu)	($ per short ton)	(cents per 10^6 Btu)	(cents per 10^6 Btu)	($ per barrel)	(cents per 10^6 Btu)	(cents per 10^6 Btu)	($ per Mcf)
New England	**166.0**	**168.7**	**43.34**	**252.0**	**258.0**	**16.50**	**219.2**	**198.5**	**2.03**
Connecticut	177.4	188.1	49.33	253.1	264.0	16.99	196.0	197.8	2.01
Maine	—	—	—	213.8	260.6	16.48	—	—	—
Massachusetts	167.8	167.9	42.63	262.4	258.7	16.48	224.1	200.6	2.06
New Hampshire	152.2	158.9	41.67	199.5	232.6	15.08	209.7	182.6	1.86
Rhode Island	—	—	—	253.5	412.5	24.18	222.5	184.9	1.90
Vermont	—	—	—	453.5	411.7	23.84	231.5	195.3	1.95
Middle Atlantic	**145.2**	**138.8**	**34.63**	**262.3**	**270.2**	**16.97**	**221.6**	**207.7**	**2.13**
New Jersey	181.7	177.6	47.17	290.2	286.2	17.95	209.6	211.8	2.18
New York	145.2	141.2	36.86	251.7	265.5	16.70	223.6	208.0	2.14
Pennsylvania	143.1	135.9	33.48	268.3	276.8	17.32	229.1	198.1	2.04
East North Central	**141.0**	**139.0**	**29.67**	**307.5**	**321.5**	**19.62**	**219.8**	**186.7**	**1.46**
Illinois	160.6	163.4	32.58	283.0	301.4	18.81	200.0	168.0	1.71
Indiana	127.2	125.5	25.94	389.9	401.1	23.14	265.9	244.1	2.49
Michigan	150.6	144.9	30.95	295.6	292.1	18.10	240.2	199.5	.73
Ohio	143.9	142.0	34.44	403.8	390.9	22.60	374.5	227.7	2.34
Wisconsin	120.9	113.5	21.23	397.9	385.0	22.54	263.4	220.7	2.23
West North Central	**98.8**	**95.7**	**16.10**	**355.5**	**364.6**	**21.53**	**201.4**	**171.7**	**1.70**
Iowa	99.0	98.7	17.13	392.3	409.0	23.64	316.2	271.0	2.72
Kansas	102.5	102.1	17.83	396.8	369.1	21.56	192.1	161.0	1.58
Minnesota	113.9	114.0	20.12	419.8	406.7	23.71	213.1	176.1	1.77
Missouri	110.1	98.4	18.14	278.4	313.0	18.83	189.7	168.1	1.69
Nebraska	76.5	74.8	12.86	401.8	415.0	23.99	205.1	165.8	1.66
North Dakota	70.4	73.3	9.65	407.2	417.5	24.41	375.7	349.4	3.73
South Dakota	108.3	102.9	14.35	—	—	—	272.3	157.8	1.58
South Atlantic	**159.9**	**155.2**	**38.25**	**232.7**	**255.0**	**16.20**	**222.2**	**224.8**	**2.28**
Delaware	162.0	161.5	42.27	259.3	260.9	16.66	234.2	227.2	2.35
District of Columbia	—	—	—	326.4	309.5	18.59	—	—	—
Florida	177.8	178.6	43.93	226.2	249.5	15.91	215.5	223.6	2.26
Georgia	169.1	166.8	38.62	396.3	378.1	22.17	320.8	272.1	2.79
Maryland	155.3	150.4	39.00	244.5	274.7	17.32	246.6	215.7	2.24
North Carolina	168.2	162.8	40.57	383.8	381.5	22.14	325.7	232.8	2.40
South Carolina	156.0	151.2	38.86	409.7	411.1	23.83	167.1	160.3	1.64
Virginia	145.0	144.8	36.90	216.2	250.9	15.41	256.6	259.1	2.67
West Virginia	139.2	127.3	31.61	442.4	438.9	25.62	400.1	357.6	3.58
East South Central	**136.2**	**127.4**	**30.08**	**230.0**	**401.9**	**23.39**	**192.6**	**172.3**	**1.79**
Alabama	167.2	156.0	37.00	402.0	375.6	21.81	234.3	197.7	2.01
Kentucky	116.2	110.6	25.71	433.3	428.1	24.98	287.2	294.1	3.01
Mississippi	157.1	153.3	34.40	164.1	374.3	21.93	189.8	171.0	1.78
Tennessee	125.6	115.2	27.94	414.9	397.4	23.08	—	—	—
West South Central	**134.8**	**133.6**	**20.66**	**300.6**	**373.1**	**21.80**	**218.5**	**190.5**	**1.96**
Arkansas	160.3	161.1	27.99	358.9	417.5	24.15	182.3	169.7	1.74
Louisiana	153.9	154.9	25.13	269.3	348.1	20.69	207.4	180.6	1.88
Oklahoma	102.0	99.4	17.00	370.3	252.9	15.06	266.7	226.5	2.34
Texas	135.0	133.7	19.65	285.5	374.4	21.78	215.2	188.9	1.93
Mountain	**111.9**	**110.4**	**21.51**	**389.1**	**470.0**	**27.59**	**202.6**	**168.5**	**1.73**
Arizona	137.4	139.4	28.65	428.1	510.2	29.98	217.7	172.9	1.77
Colorado	105.6	104.8	20.73	458.1	477.2	27.65	212.5	173.0	1.74
Idaho	—	—	—	—	—	—	—	—	—
Montana	69.3	67.3	11.47	462.9	490.7	29.06	114.9	358.1	3.84
Nevada	143.3	131.0	29.02	328.7	337.2	20.77	192.4	165.8	1.71
New Mexico	140.9	141.7	25.59	464.9	490.4	28.01	194.5	154.5	1.57
Utah	113.6	109.4	25.27	467.4	504.6	29.53	231.6	214.5	2.26
Wyoming	80.3	81.8	14.29	444.5	444.6	26.01	561.4	797.8	8.32
Pacific Contiguous	**128.4**	**136.2**	**22.83**	**227.3**	**462.3**	**27.19**	**245.7**	**217.7**	**2.23**
California	—	—	—	216.3	—	—	248.4	222.3	2.28
Oregon	107.3	105.8	18.79	465.4	426.7	25.12	183.0	129.8	1.31
Washington	136.5	143.6	23.74	472.0	484.9	28.50	471.2	438.2	4.60
Pacific Noncontiguous	**—**	**—**	**—**	**271.2**	**298.0**	**18.70**	**112.9**	**128.6**	**1.29**
Alaska	—	—	—	—	—	—	112.9	128.6	1.29
Hawaii	—	—	—	271.2	298.0	18.70	—	—	—
U. S. Total	**135.5**	**131.8**	**27.01**	**248.8**	**267.9**	**16.93**	**223.0**	**198.4**	**2.02**

[1] Does not include petroleum coke. Petroleum coke cost in 1995 was 65.2 cents per million Btu and in 1994 was 68.9 cents per million Btu.
Mcf = thousand cubic feet.

Notes: •Data are final. •Data are for electric generating plants with a total steam-electric and combined-cycle nameplate capacity of 50 or more megawatts. •Totals may not equal sum of components because of independent rounding.

Source: Federal Energy Regulatory Commission, FERC Form 423, ''Monthly Report of Cost and Quality of Fuels for Electric Plants.''

Estimated U.S. Electric Utility Retail Sales, Revenue, and Average Revenue per Kilowatthour

This chapter provides estimates on the sale of electricity to ultimate consumers by U.S. electric utilities, its associated revenue, and the average revenue per kilowatthour sold[23] at the national, Census, and State levels.

These estimates are derived from data collected on the Form EIA-826, "Monthly Electric Utility Sales and Revenue Report with State Distributions." Respondents to the Form EIA-826 are based on a statistically chosen sample and include 252 U.S. electric utilities from a universe of approximately 3,250 utilities. The sample was designed to obtain estimates of electricity sales, average revenue, and revenue per kilowatthour for all U.S. electric utilities by end-use sector. Estimates of coefficients of variation, which indicate possible error caused by sampling, are also published at each level.

Preliminary census-based statistics on retail sales of electricity, associated revenue, and average revenue per kilowatthour based on information collected on the Form EIA-861, "Annual Electric Utility Report," will be published in the *Electric Power Annual 1995,* Volume II. **Final** census-based statistics for retail sales of electricity, associated revenue, and average revenue per kilowatthour based on information collected on the Form EIA-861 will be published in the *Electric Sales and Revenue,* DOE/EIA-0540.

Because electricity cannot be stored, it must be generated, transmitted to the consumer, and consumed instantaneously. Electric utility companies were formed to provide these services. U.S. electric utilities are high-investment businesses and historically have been treated as monopolies because duplicate facilities, particularly transmission and distribution lines, would be inefficient. Thus, franchises are granted to electric utilities for given geographical areas by regulatory officials. To obtain a franchise, electric utilities must provide service to all consumers in their territories at a reasonable cost. The service territory of an electric utility is usually composed of many combinations of consumers. Electric utilities classify their consumers within end-use sector based on factors such as demand, rate schedule, and Standard Industrial Classification (SIC) code.

Private households and apartment buildings, where energy is consumed primarily for space heating, water heating, air conditioning, lighting, refrigeration, cooking, and clothes drying are classified as residential consumers. Nonmanufacturing business establishments (including hotels, motels, restaurants, wholesale businesses, retail stores, health, social, and educational institutions) are generally classified as commercial. However, demand or annual usage may be the determining factor used by the electric utility to classify a consumer as commercial. Manufacturing, construction, mining, agriculture, fishing, and forestry establishments (SIC codes 1-39) are included as industrial consumers. Again, electric utilities may instead classify industrial service based on demand or annual usage. Public street and highway lighting, railroads and railways, municipalities, divisions or agencies of State and Federal governments under special contracts or agreements, and other utility departments as defined by the pertinent regulatory agency and/or electric utility within this report are classified as other sales.

The average revenue per kilowatthour of electricity sold by electric utilities is calculated by dividing total annual revenue by total annual retail sales for each sector and State. The resulting measurement is the cost (per kilowatthour of electricity sold) for providing service to a sector, given the rate schedule of the electric utility for that particular sector. The average revenue per kilowatthour is calculated for all consumers and for each sector (residential, commercial, industrial, and other sales). Utilities typically employ a number of rate schedules within a single sector. These alternative rate schedules reflect the varying consumption levels and patterns of these customers and their associated impact on the cost to the electric utility for providing electrical service. The average revenue per kilowatthour by sector reported in this publication represents a weighted average of revenue and sales within and across sectors for all consumers.

To derive the average revenue per kilowatthour, the operating revenue[24] reported by the electric utility is used. Utility operating revenues cover--among other costs of service--State and federal income taxes and

[23] Estimated average revenue per kilowatthour is the ratio of estimated revenue to estimated retail sales.

[24] Includes energy charges, demand charges, consumer service charges, environmental surcharges, fuel adjustments, and other miscellaneous charges.

taxes other than income taxes paid by the utility. The federal component of these taxes are, for the most part, "payroll" taxes. State and local authorities will tax the value of plant (property taxes), the amount of revenues (gross receipts taxes), purchases of materials and services (sales and use taxes), and a potentially long list of other taxes that vary extensively by taxing authority. Taxes deducted from an employee's pay, such as federal income taxes and the employee's share of social security taxes, are not a part of the utility's "tax costs," but are paid to the taxing authorities in the name of the employees. These taxes are included in the utility's cost of service (for example, revenue requirements) and are included in the amounts recovered from the customer in rates and reported in operating revenues.

Electric utilities, like many other business enterprises, are required by various taxing authorities to collect and remit taxes assessed on its customers. In this regard, the utility serves as an agent for the taxing authority. Taxes assessed on the consumer, such as a gross receipts tax or sales tax, are referred to as "pass through" taxes. These taxes do not represent a cost of the utility and are not recorded in the operating revenues of the utility. However, taxing authorities differ regarding whether a specific tax is assessed on the utility or on the consumer. That decision, in turn, determines whether or not the tax is included in the electric utility's operating revenue.

Average revenue per kilowatthour from residential consumers is generally higher than for any other sector, in part due to the higher costs associated with serving many consumers who use relatively small amounts of electricity. These higher costs include direct-load costs (such as those for distribution lines) in addition to consumer or administrative costs. The industrial sector, which generally has the highest use of electricity, has the lowest average revenue per kilowatthour.

Data Sources

Summary estimates on retail sales of electricity by electric utilities and average revenue are provided in the following tables. These data were obtained from the Form EIA-826, "Monthly Electric Utility Sales and Revenue Report with State Distributions."

Table 21. Estimated Retail Sales by U.S. Electric Utilities to Ultimate Consumers and Associated Revenue by Sector, 1991 Through 1995

Item	1991	1992	1993	1994	1995
Retail Sales (million kilowatthours)					
Residential	957,801	934,044	994,380	1,005,804	1,043,304
Commercial	765,476	763,664	790,225	827,309	854,682
Industrial	944,684	965,356	984,111	992,422	1,013,107
Other[1]	96,513	94,003	96,065	95,326	97,547
U.S. Total	**2,764,474**	**2,757,067**	**2,864,782**	**2,920,860**	**3,008,641**
Revenue (million dollars)					
Residential	77,142	76,907	82,900	84,538	87,800
Commercial	57,471	58,273	61,030	64,142	65,837
Industrial	45,803	46,770	47,828	46,825	47,528
Other	6,207	6,260	6,587	6,472	6,532
U.S. Total	**186,624**	**188,209**	**198,345**	**201,978**	**207,698**

[1] Includes public street and highway lighting, other sales to public authorities, sales to railroads and railways, and interdepartmental sales.

Notes: •See technical notes for estimation methodology. •Weather-related phenomena, reclassification of retail sales, changes in number of customers, prior period adjustments, and changes in billing procedures may contribute to substantial year-to-year changes in the data in this table. •Totals may not equal sum of components because of independent rounding.

Source: Energy Information Administration, Form EIA-826, ''Monthly Electric Utility Sales and Revenue Report with State Distributions.''

Table 22. Estimated Average Revenue per Kilowatthour for U.S. Electric Utilities by Sector, 1991 Through 1995 (Cents)

Sector	1991	1992	1993	1994	1995
Residential	8.05	8.23	8.34	8.41	8.42
Commercial	7.51	7.63	7.72	7.75	7.70
Industrial	4.85	4.84	4.86	4.72	4.69
Other[1]	6.43	6.66	6.86	6.79	6.70
All Sectors	**6.75**	**6.83**	**6.92**	**6.92**	**6.90**

[1] Includes public street and highway lighting, other sales to public authorities, sales to railroads and railways, and interdepartmental sales.

Notes: •See technical notes for estimation methodology. •Estimates represent weighted values. •Weather-related phenomena, reclassification of retail sales, changes in number of customers, prior period adjustments, and changes in billing procedures may contribute to substantial year-to-year changes in the data in this table. •Totals may not equal sum of components because of independent rounding.

Source: Energy Information Administration, Form EIA-826, ''Monthly Electric Utility Sales and Revenue Report with State Distributions.''

Table 23. Estimated Retail Sales by U.S. Electric Utilities to Ultimate Consumers by Sector, Census Division, and State, 1994 and 1995

(Million Kilowatthours)

Census Division and State	All Sectors		Residential		Commercial		Industrial		Other[1]	
	1994	1995	1994	1995	1994	1995	1994	1995	1994	1995
New England	**105,934**	**106,555**	**38,525**	**38,087**	**39,840**	**41,655**	**25,790**	**25,280**	**1,780**	**1,533**
Connecticut	27,887	27,850	10,969	10,760	10,827	10,937	5,720	5,773	371	380
Maine	11,527	11,386	3,698	3,627	2,823	2,850	4,857	4,772	149	137
Massachusetts	45,674	46,750	15,937	15,910	19,359	20,425	9,454	9,724	924	691
New Hampshire	9,235	8,914	3,425	3,366	2,707	3,244	2,988	2,183	115	120
Rhode Island	6,570	6,547	2,456	2,438	2,562	2,594	1,378	1,351	174	163
Vermont	5,041	5,109	2,039	1,984	1,563	1,606	1,392	1,477	47	42
Middle Atlantic	**321,443**	**322,294**	**104,983**	**104,857**	**115,364**	**116,726**	**86,571**	**86,367**	**14,525**	**14,344**
New Jersey	66,318	66,693	22,177	22,435	29,078	29,447	14,567	14,309	496	504
New York	131,459	129,995	40,452	39,797	52,968	52,903	25,344	24,854	12,696	12,442
Pennsylvania	123,665	125,605	42,354	42,626	33,318	34,376	46,660	47,205	1,333	1,398
East North Central	**503,286**	**524,605**	**146,295**	**156,436**	**130,450**	**137,278**	**211,783**	**215,795**	**14,759**	**15,096**
Illinois	121,696	126,387	35,825	38,661	35,845	37,260	41,861	42,022	8,165	8,444
Indiana	84,814	87,928	25,019	26,656	17,267	18,026	42,027	42,723	502	522
Michigan	88,213	94,863	26,186	28,696	29,097	31,634	32,028	33,651	901	882
Ohio	153,349	157,807	41,601	43,762	33,892	35,306	73,292	74,129	4,564	4,609
Wisconsin	55,215	57,621	17,663	18,662	14,348	15,051	22,575	23,270	628	638
West North Central	**207,270**	**220,434**	**75,290**	**79,378**	**56,097**	**59,697**	**70,548**	**75,464**	**5,334**	**5,896**
Iowa	32,663	37,970	11,214	11,961	7,247	8,766	13,039	15,651	1,163	1,591
Kansas	29,596	30,356	10,197	10,389	10,135	10,315	8,900	9,301	365	351
Minnesota	50,981	53,980	16,109	17,211	8,961	9,367	25,262	26,706	650	696
Missouri	59,322	61,901	23,905	25,364	20,427	21,312	14,064	14,311	925	913
Nebraska	19,898	20,894	7,464	7,714	5,784	5,957	5,317	5,723	1,333	1,501
North Dakota	7,666	7,908	3,255	3,410	1,874	1,976	2,007	2,025	530	497
South Dakota	7,143	7,425	3,146	3,329	1,670	2,005	1,959	1,746	368	346
South Atlantic	**593,364**	**618,889**	**237,443**	**250,998**	**176,998**	**184,167**	**159,909**	**164,259**	**19,014**	**19,465**
Delaware	9,299	9,518	3,113	3,166	2,692	2,804	3,433	3,491	60	57
District of Columbia	10,295	10,316	1,572	1,608	8,093	8,079	267	262	363	366
Florida	159,698	166,820	81,133	85,543	57,843	59,332	15,729	16,826	4,993	5,119
Georgia	89,079	95,277	32,343	35,473	25,852	27,420	29,827	31,149	1,058	1,235
Maryland	55,030	56,539	21,618	22,363	13,376	13,846	19,223	19,579	813	751
North Carolina	101,597	105,191	37,071	39,096	27,338	28,790	35,277	35,378	1,912	1,927
South Carolina	61,291	64,291	19,712	21,112	13,323	14,084	27,444	28,274	813	820
Virginia	82,123	84,953	32,214	33,467	22,942	23,949	18,060	18,438	8,906	9,099
West Virginia	24,951	25,985	8,667	9,168	5,539	5,863	10,649	10,862	96	91
East South Central	**254,657**	**261,135**	**87,659**	**92,580**	**40,978**	**42,134**	**120,815**	**120,843**	**5,206**	**5,578**
Alabama	67,267	70,394	22,930	24,674	12,283	12,595	31,394	32,462	659	663
Kentucky	68,674	67,501	19,387	20,606	10,055	10,485	36,365	33,399	2,867	3,010
Mississippi	36,694	37,925	13,607	14,275	7,707	7,820	14,775	15,195	605	634
Tennessee	82,023	85,315	31,735	33,024	10,933	11,234	38,281	39,787	1,074	1,270
West South Central	**398,750**	**409,919**	**139,726**	**144,971**	**99,696**	**103,205**	**142,840**	**144,482**	**16,487**	**17,260**
Arkansas	31,314	33,974	11,650	12,338	6,772	7,108	12,319	13,895	573	633
Louisiana	69,919	72,385	22,715	23,835	14,911	15,483	29,867	30,685	2,427	2,382
Oklahoma	41,136	41,288	16,141	16,261	11,116	11,203	11,711	11,599	2,168	2,224
Texas	256,380	262,272	89,221	92,536	66,897	69,411	88,944	88,303	11,319	12,021
Mountain	**179,750**	**182,487**	**56,760**	**56,851**	**54,918**	**55,621**	**60,874**	**63,024**	**7,198**	**6,990**
Arizona	47,453	48,295	18,229	18,047	15,685	16,364	11,562	11,786	1,978	2,098
Colorado	33,639	34,869	10,911	11,271	12,714	13,012	9,124	9,710	890	877
Idaho	19,941	19,389	6,198	6,162	5,649	5,308	7,702	7,621	391	298
Montana	13,237	13,567	3,559	3,629	3,124	3,160	6,016	6,298	538	481
Nevada	20,067	20,582	6,830	6,613	4,590	4,702	7,829	8,468	819	798
New Mexico	15,703	16,230	4,115	4,134	5,090	5,095	4,972	5,480	1,526	1,521
Utah	17,860	18,358	5,031	5,056	5,561	5,503	6,322	7,018	945	781
Wyoming	11,850	11,196	1,887	1,940	2,504	2,477	7,348	6,644	111	136
Pacific Contiguous	**342,953**	**348,541**	**114,897**	**114,837**	**108,266**	**109,286**	**109,012**	**113,259**	**10,777**	**11,160**
California	211,531	213,693	68,718	68,502	75,845	76,263	60,721	61,824	6,247	7,104
Oregon	44,695	45,526	16,367	16,200	12,639	12,624	14,916	16,134	772	568
Washington	86,727	89,322	29,812	30,134	19,782	20,399	33,375	35,301	3,758	3,488
Pacific Noncontiguous	**13,453**	**13,781**	**4,227**	**4,309**	**4,702**	**4,913**	**4,278**	**4,333**	**246**	**226**
Alaska	4,514	4,621	1,679	1,702	2,162	2,198	485	552	188	169
Hawaii	8,939	9,160	2,548	2,607	2,540	2,715	3,794	3,781	58	58
U.S. Total	**2,920,860**	**3,008,641**	**1,005,804**	**1,043,304**	**827,309**	**854,682**	**992,422**	**1,013,107**	**95,326**	**97,547**

[1] Includes public street and highway lighting, other sales to public authorities, sales to railroads and railways, and interdepartmental sales.

Notes: •See technical notes for estimation methodology. •Weather-related phenomena, reclassification of retail sales, changes in number of customers, prior period adjustments, and changes in billing procedures may contribute to substantial year-to-year changes in the data in this table. •Totals may not equal sum of components because of independent rounding.

Source: Energy Information Administration, Form EIA-826, ''Monthly Electric Utility Sales and Revenue Report with State Distributions.''

Table 24. Estimated Coefficients of Variation for U.S. Electric Utility Retail Sales of Electricity by Census Division and State, 1994 and 1995

(Percent)

Census Division and State	All Sectors		Residential		Commercial		Industrial		Other[1]	
	1994	1995	1994	1995	1994	1995	1994	1995	1994	1995
New England	**0.2**	**0.1**	**0.2**	**0.2**	**0.2**	**0.7**	**0.2**	**0.2**	**2.5**	**0.8**
Connecticut	.1	.1	.2	.1	.1	.1	.2	.2	.4	.3
Maine	.1	.1	.2	.2	.1	.1	.1	.3	1.7	1.6
Massachusetts	.4	.3	.4	.3	.3	1.5	.6	.4	4.9	1.8
New Hampshire	.3	.2	.4	.3	2.0	.2	.9	1.4	.2	.5
Rhode Island	—	—	.1	.1	.1	.1	.1	.1	.2	.2
Vermont	.2	.2	.8	.4	.3	.2	.7	.6	.3	1.1
Middle Atlantic	**.4**	**.3**	**.8**	**.5**	**.2**	**.2**	**.5**	**.4**	**.5**	**.3**
New Jersey	.2	.1	.4	.2	.2	.1	.1	.1	.2	.2
New York	.6	.4	1.5	.8	.4	.4	1.3	.7	.4	.2
Pennsylvania	.6	.5	1.3	1.1	.5	.4	.6	.6	3.7	2.2
East North Central	**.1**	**.1**	**.2**	**.2**	**.4**	**.3**	**.4**	**.5**	**.3**	**.2**
Illinois	.2	.2	.6	.5	1.2	.2	.6	.3	.1	.1
Indiana	.3	.3	.6	.7	.4	.4	.4	.4	4.4	1.2
Michigan	.3	.3	.1	.2	1.0	1.0	2.7	2.6	1.6	1.4
Ohio	.2	.3	.3	.4	.2	.2	.3	.5	.5	.6
Wisconsin	.2	.3	.5	.7	.2	.4	.3	.3	1.6	1.6
West North Central	**.2**	**.2**	**.3**	**.4**	**.2**	**.2**	**.2**	**.2**	**1.9**	**3.1**
Iowa	.3	.4	.6	.6	.6	1.3	.3	.7	.6	1.5
Kansas	.2	.2	.8	.6	.4	.4	.4	.2	1.8	1.7
Minnesota	.5	.4	.8	.9	.5	.5	.4	.4	2.6	1.9
Missouri	.3	.3	.6	.8	.3	.2	.4	.4	1.4	1.2
Nebraska	.6	.8	1.0	1.1	.5	.7	.8	.7	7.4	12.2
North Dakota	.5	.5	.8	.7	.6	.6	.3	.4	1.2	1.1
South Dakota	.5	.6	.8	1.0	.5	.5	.4	.6	2.6	2.1
South Atlantic	**.2**	**.1**	**.3**	**.2**	**.1**	**.1**	**.2**	**.2**	**.3**	**.2**
Delaware	.2	.1	.2	.1	.2	.1	.3	.3	.6	.4
District of Columbia	—	—	—	—	—	—	—	—	—	—
Florida	.4	.3	.6	.4	.3	.3	.9	.9	.6	.6
Georgia	.4	.4	.8	.9	.2	.3	.2	.2	.7	2.0
Maryland	.2	.2	.4	.3	.9	.9	.8	.8	.7	1.5
North Carolina	.4	.4	.7	.8	.4	.4	.4	.3	1.0	1.0
South Carolina	.3	.2	.7	.6	.3	.3	.4	.2	.4	.4
Virginia	.4	.3	.7	.6	.2	.2	.4	.4	.5	.2
West Virginia	.2	.1	.5	.3	.2	.1	.2	.1	1.3	.9
East South Central	**.4**	**.4**	**.6**	**.6**	**.3**	**.4**	**.5**	**.5**	**.6**	**1.1**
Alabama	.6	.5	1.2	1.2	.5	1.2	.3	.4	.8	.8
Kentucky	.8	1.3	1.2	1.5	.4	.4	.7	1.5	.5	.2
Mississippi	.6	.7	.7	.7	.6	.6	.4	.6	1.3	1.2
Tennessee	.9	.8	.9	1.0	.9	.6	1.3	1.0	2.4	4.8
West South Central	**.3**	**.3**	**.5**	**.7**	**.2**	**.2**	**.4**	**.6**	**.4**	**.5**
Arkansas	.3	.4	.6	.6	.3	.4	.4	.4	1.3	1.7
Louisiana	.3	.3	.6	.8	.3	.3	.2	.2	1.8	1.5
Oklahoma	.5	.6	1.0	1.4	.5	.8	.5	.4	.2	.2
Texas	.5	.5	.8	1.0	.3	.3	.7	1.0	.3	.6
Mountain	**.1**	**.1**	**.2**	**.2**	**.3**	**.3**	**.2**	**.2**	**.6**	**.9**
Arizona	.2	.2	.3	.3	.2	.2	.4	.5	.9	1.7
Colorado	.3	.3	.3	.4	1.1	1.0	.5	.4	3.1	1.8
Idaho	.5	.5	.5	.8	1.4	1.2	1.2	.7	2.2	1.8
Montana	.8	.5	.7	.7	.4	.5	.5	.4	2.0	1.7
Nevada	.6	.6	1.0	1.0	.3	.3	.3	.3	1.1	.8
New Mexico	.5	.6	.9	.7	.8	.6	.7	1.0	1.1	1.3
Utah	.2	.3	.3	.3	.3	.5	.1	.4	.9	4.9
Wyoming	.7	.7	.7	.6	.8	1.0	.7	1.0	5.7	4.4
Pacific Contiguous	**.4**	**.2**	**.3**	**.3**	**.6**	**.6**	**.8**	**.8**	**2.3**	**1.7**
California	.3	.3	.5	.5	.9	.9	1.2	1.3	3.9	2.6
Oregon	.8	.4	.8	.7	.4	.5	1.8	.8	1.1	5.6
Washington	1.2	.7	.6	.6	.3	.3	1.4	.5	.8	1.0
Pacific Noncontiguous	**.1**	**.1**	**.1**	**.1**	**.1**	**.2**	**.2**	**.2**	**2.6**	**2.6**
Alaska	.2	.3	.2	.2	.3	.3	.8	1.0	3.4	3.5
Hawaii	.1	.1	.2	.1	.1	.2	.2	.2	.6	.3
U.S. Total	**.1**	**.1**	**.1**	**.1**	**.1**	**.1**	**.2**	**.2**	**.3**	**.3**

[1] Includes public street and highway lighting, other sales to public authorities, sales to railroads and railways, and interdepartmental sales.

Notes: •For an explanation of coefficients of variation, see the technical notes. •See technical notes for estimation methodology. •Estimates represent weighted values. •It should be noted such things as large changes in retail sales, reclassification of retail sales, or changes in billing procedures can contribute to unusually high coefficient of variations.

Sources: Energy Information Administration, Form EIA-826, ''Monthly Electric Utility Sales and Revenue Report with State Distributions.''

Table 25. Estimated Revenue from Retail Sales by U.S. Electric Utilities to Ultimate Consumers by Sector, Census Division, and State, 1994 and 1995

(Million Dollars)

Census Division and State	All Sectors		Residential		Commercial		Industrial		Other[1]	
	1994	1995	1994	1995	1994	1995	1994	1995	1994	1995
New England	**10,793**	**11,058**	**4,434**	**4,510**	**3,983**	**4,268**	**2,138**	**2,064**	**239**	**217**
Connecticut	2,858	2,938	1,258	1,288	1,086	1,131	463	465	52	54
Maine	1,118	1,093	456	456	287	294	353	320	22	22
Massachusetts	4,641	4,801	1,794	1,815	1,900	2,053	826	835	122	98
New Hampshire	1,045	1,053	449	456	308	368	270	211	17	19
Rhode Island	675	689	278	284	255	265	122	122	20	19
Vermont	456	485	199	211	146	158	105	111	6	6
Middle Atlantic	**30,558**	**31,329**	**12,073**	**12,385**	**11,842**	**12,237**	**5,291**	**5,331**	**1,352**	**1,376**
New Jersey	6,677	6,971	2,563	2,688	2,864	3,022	1,162	1,170	88	91
New York	14,218	14,424	5,476	5,555	6,234	6,358	1,396	1,382	1,112	1,129
Pennsylvania	9,663	9,934	4,033	4,142	2,744	2,857	2,733	2,778	153	156
East North Central	**32,192**	**34,080**	**12,262**	**13,369**	**9,545**	**10,099**	**9,414**	**9,611**	**971**	**1,000**
Illinois	9,001	9,758	3,554	4,019	2,743	2,944	2,162	2,221	542	574
Indiana	4,398	4,618	1,691	1,826	1,018	1,074	1,641	1,670	47	49
Michigan	6,250	6,682	2,183	2,409	2,315	2,489	1,708	1,738	45	46
Ohio	9,532	9,883	3,582	3,775	2,628	2,723	3,030	3,098	292	287
Wisconsin	3,012	3,138	1,253	1,340	841	869	872	883	46	45
West North Central	**12,427**	**13,164**	**5,540**	**5,850**	**3,515**	**3,728**	**3,083**	**3,246**	**288**	**341**
Iowa	1,903	2,223	911	984	458	551	506	612	28	75
Kansas	1,948	1,990	803	821	675	690	437	447	32	32
Minnesota	2,902	3,053	1,186	1,261	564	591	1,104	1,151	48	51
Missouri	3,703	3,873	1,737	1,847	1,260	1,312	642	648	64	65
Nebraska	1,081	1,112	473	491	322	325	208	215	79	81
North Dakota	444	448	206	211	122	125	95	93	21	20
South Dakota	446	465	225	236	115	133	90	79	17	16
South Atlantic	**38,837**	**40,623**	**18,617**	**19,735**	**11,685**	**12,174**	**7,306**	**7,491**	**1,229**	**1,223**
Delaware	630	659	277	288	189	199	157	165	7	7
District of Columbia	733	735	117	123	578	577	12	11	24	23
Florida	11,176	11,761	6,326	6,697	3,686	3,833	816	870	348	360
Georgia	5,874	6,294	2,509	2,759	1,905	2,013	1,368	1,418	93	104
Maryland	3,846	4,002	1,814	1,892	962	1,006	1,001	1,037	68	67
North Carolina	6,579	6,811	3,007	3,161	1,781	1,858	1,658	1,660	133	133
South Carolina	3,482	3,647	1,478	1,588	849	888	1,106	1,123	49	48
Virginia	5,209	5,325	2,535	2,631	1,412	1,454	764	767	499	473
West Virginia	1,309	1,388	553	597	324	344	423	438	9	9
East South Central	**13,058**	**13,395**	**5,452**	**5,742**	**2,567**	**2,622**	**4,734**	**4,711**	**305**	**320**
Alabama	3,657	3,810	1,525	1,639	825	842	1,268	1,290	39	39
Kentucky	2,955	2,980	1,108	1,170	529	554	1,183	1,115	136	141
Mississippi	2,219	2,239	955	983	549	543	664	659	51	53
Tennessee	4,227	4,365	1,864	1,950	664	682	1,620	1,647	79	87
West South Central	**25,293**	**24,634**	**11,069**	**10,974**	**6,950**	**6,762**	**6,156**	**5,800**	**1,118**	**1,097**
Arkansas	2,032	2,159	938	994	466	485	589	638	38	42
Louisiana	4,261	4,148	1,741	1,725	1,079	1,041	1,267	1,217	173	165
Oklahoma	2,410	2,263	1,134	1,096	679	634	484	425	113	109
Texas	16,591	16,063	7,255	7,160	4,726	4,603	3,816	3,520	794	780
Mountain	**11,172**	**11,082**	**4,397**	**4,349**	**3,720**	**3,686**	**2,650**	**2,656**	**404**	**392**
Arizona	3,861	3,697	1,744	1,647	1,348	1,317	657	621	113	112
Colorado	2,064	2,155	808	849	767	793	418	441	70	72
Idaho	793	792	313	327	245	237	217	213	18	15
Montana	591	628	208	219	161	168	199	218	23	22
Nevada	1,280	1,264	490	474	321	319	426	432	42	40
New Mexico	1,124	1,089	376	367	426	399	235	235	87	88
Utah	957	974	346	348	328	328	241	264	42	35
Wyoming	501	485	112	119	124	126	257	231	8	9
Pacific Contiguous	**26,235**	**26,834**	**10,189**	**10,348**	**9,831**	**9,724**	**5,678**	**6,225**	**537**	**537**
California	20,725	21,060	7,854	7,973	8,283	8,106	4,228	4,611	361	371
Oregon	2,037	2,119	867	889	617	638	514	558	39	34
Washington	3,472	3,654	1,468	1,486	931	980	935	1,056	137	132
Pacific Noncontiguous	**1,413**	**1,500**	**505**	**537**	**503**	**538**	**376**	**395**	**29**	**30**
Alaska	459	466	189	190	207	208	41	45	22	23
Hawaii	953	1,034	316	347	296	330	335	350	6	7
U.S. Total	**201,978**	**207,698**	**84,538**	**87,800**	**64,142**	**65,837**	**46,825**	**47,528**	**6,472**	**6,532**

[1] Includes public street and highway lighting, other sales to public authorities, sales to railroads and railways, and interdepartmental sales.

Notes: •See technical notes for estimation methodology. •Weather-related phenomena, reclassification of retail sales, changes in number of customers, prior period adjustments, and changes in billing procedures may contribute to substantial year-to-year changes in the data in this table. •Totals may not equal sum of components because of independent rounding.

Source: Energy Information Administration, Form EIA-826, ''Monthly Electric Utility Sales and Revenue Report with State Distributions.''

Table 26. Estimated Coefficients of Variation of Revenue from Retail Sales by U.S. Electric Utilities by Census Division and State, 1994 and 1995

(Percent)

Census Division and State	All Sectors		Residential		Commercial		Industrial		Other[1]	
	1994	1995	1994	1995	1994	1995	1994	1995	1994	1995
New England	**0.4**	**0.4**	**0.2**	**0.3**	**0.5**	**0.9**	**0.5**	**0.4**	**1.1**	**0.9**
Connecticut	.2	.1	.2	.2	.1	.2	.2	.2	.3	.2
Maine	.3	.1	.2	.1	.2	.1	.4	.4	.7	.7
Massachusetts	.8	.9	.5	.7	1.1	1.9	1.1	1.0	2.2	1.9
New Hampshire	.4	.3	.6	.3	1.7	.1	.7	.9	.4	3.8
Rhode Island	.1	.1	.1	.2	.1	.1	.2	.1	.2	.3
Vermont	.7	.6	.7	.8	.9	.5	1.0	1.1	.4	.9
Middle Atlantic	**.5**	**.4**	**.8**	**.5**	**.4**	**.3**	**.5**	**.4**	**.4**	**.4**
New Jersey	.3	.2	.4	.2	.2	.1	.2	.2	.1	.1
New York	.9	.6	1.2	.6	.6	.5	1.4	.8	.5	.5
Pennsylvania	.9	.7	1.6	1.3	.6	.6	.7	.6	1.8	1.3
East North Central	**.2**	**.2**	**.3**	**.3**	**.4**	**.3**	**.5**	**.5**	**.3**	**.3**
Illinois	.3	.3	.6	.4	1.0	.3	.6	.4	.3	.1
Indiana	.3	.5	.7	.8	.4	.4	.4	.5	1.9	.8
Michigan	.8	.4	.3	.1	1.2	1.1	2.6	2.5	1.8	2.0
Ohio	.5	.3	.6	.5	.4	.3	.5	.3	.7	.8
Wisconsin	.3	.4	.5	2.1	.4	.5	.3	.4	2.2	1.0
West North Central	**.4**	**.4**	**.4**	**.5**	**.3**	**.3**	**.4**	**.4**	**1.4**	**1.7**
Iowa	.7	.6	1.2	1.0	.5	.7	.7	.7	1.3	.6
Kansas	.3	.3	.8	.6	.5	.6	.5	.4	1.8	2.1
Minnesota	1.0	.8	1.3	1.1	.8	.7	.9	.5	.9	.8
Missouri	.8	.9	.8	1.1	.7	.8	1.4	1.3	1.3	1.5
Nebraska	.8	.9	1.2	1.2	.6	.8	1.1	1.4	5.0	7.0
North Dakota	.5	.4	.5	.6	.6	.5	.5	.5	.8	.9
South Dakota	.7	.8	.9	1.1	.6	.8	.6	.7	2.6	2.6
South Atlantic	**.2**	**.3**	**.3**	**.4**	**.3**	**.2**	**.3**	**.2**	**.5**	**.3**
Delaware	.3	.1	.2	.1	.3	.2	.8	.4	.3	.2
District of Columbia	—	—	—	—	—	—	—	—	—	—
Florida	.7	.7	.8	.8	.6	.6	1.6	1.2	1.2	.8
Georgia	.6	.6	1.0	1.2	.4	.3	.3	.2	1.1	1.7
Maryland	.6	.5	.7	.7	1.3	1.2	.9	1.0	.8	1.0
North Carolina	.4	.5	.7	.8	.5	.4	.5	.5	1.1	1.0
South Carolina	.5	.3	1.0	.9	.5	.3	.5	.3	.5	.4
Virginia	.4	.5	.7	.8	.2	.2	.4	.6	.6	.2
West Virginia	.3	.2	.5	.3	.3	.2	.4	.1	.4	.6
East South Central	**.4**	**.5**	**.6**	**.6**	**.3**	**.5**	**.6**	**.8**	**.6**	**.8**
Alabama	.6	.8	1.2	1.3	.4	1.2	.4	.5	1.0	.9
Kentucky	.8	1.2	1.5	1.7	.7	.7	.8	1.8	.5	.4
Mississippi	.7	.9	.8	1.1	.6	.8	.7	.9	1.2	1.3
Tennessee	1.0	.9	.9	.9	.8	.7	1.6	1.8	2.1	2.8
West South Central	**.7**	**.7**	**.8**	**.7**	**.6**	**.7**	**.5**	**.8**	**1.4**	**.7**
Arkansas	.3	.5	.5	.5	.3	.5	.7	1.0	1.4	1.8
Louisiana	.5	.5	.6	.9	.5	.6	.4	.3	.7	.7
Oklahoma	1.2	1.2	1.3	1.6	1.2	1.4	2.3	1.6	.6	.7
Texas	1.0	1.0	1.2	1.0	.9	1.0	.8	1.4	2.0	1.0
Mountain	**.2**	**.2**	**.2**	**.2**	**.3**	**.2**	**.3**	**.3**	**.6**	**.7**
Arizona	.5	.4	.4	.3	.5	.4	.4	.7	1.2	1.2
Colorado	.4	.3	.4	.3	1.1	.8	.9	.4	1.8	1.3
Idaho	.6	.6	.5	.6	1.4	1.3	1.6	1.2	1.6	2.1
Montana	.5	1.1	.6	.5	.6	.5	.5	1.1	3.3	2.1
Nevada	1.0	.9	1.1	1.1	.7	.4	1.1	1.0	.8	.4
New Mexico	.7	.7	.9	.8	.7	.6	1.2	1.1	1.3	1.2
Utah	.2	.3	.3	.3	.2	.4	.2	.7	1.3	4.8
Wyoming	.6	.8	.7	1.2	1.1	.9	.6	.8	4.6	2.3
Pacific Contiguous	**.3**	**.4**	**.4**	**.5**	**.6**	**.7**	**1.4**	**1.1**	**1.7**	**1.2**
California	.4	.5	.5	.6	.7	.8	1.8	1.5	2.5	1.7
Oregon	.4	.4	.9	.9	.4	.5	.9	1.2	.8	2.5
Washington	.7	.7	1.0	.7	.6	.5	.7	1.2	.8	.6
Pacific Noncontiguous	**.2**	**.2**	**.2**	**.2**	**.3**	**.2**	**.2**	**.4**	**1.7**	**1.5**
Alaska	.4	.4	.3	.3	.6	.5	1.0	1.6	2.2	1.9
Hawaii	.2	.2	.2	.2	.1	.2	.2	.4	.9	.4
U.S. Total	**.1**	**.1**	**.2**	**.2**	**.2**	**.2**	**.2**	**.2**	**.3**	**.2**

[1] Includes public street and highway lighting, other sales to public authorities, sales to railroads and railways, and interdepartmental sales.

Notes: •See technical notes for estimation methodology. •Estimates represent weighted values. •It should be noted such things as large changes in retail sales, reclassification of retail sales, or changes in billing procedures can contribute to unusually high coefficient of variations. •For an explanation of coefficient of variation, see the technical notes.

Source: Energy Information Administration, Form EIA-826, ''Monthly Electric Utility Sales and Revenue Report with State Distributions.''

Table 27. Estimated Average Revenue per Kilowatthour for U.S. Electric Utilities by Sector, Census Division, and State, 1994 and 1995

(Cents)

Census Division and State	All Sectors		Residential		Commercial		Industrial		Other[1]	
	1994	1995	1994	1995	1994	1995	1994	1995	1994	1995
New England	**10.2**	**10.4**	**11.5**	**11.8**	**10.0**	**10.2**	**8.3**	**8.2**	**13.4**	**14.2**
Connecticut	10.2	10.5	11.5	12.0	10.0	10.3	8.1	8.1	14.0	14.3
Maine	9.7	9.6	12.3	12.6	10.2	10.3	7.3	6.7	14.8	15.8
Massachusetts	10.2	10.3	11.3	11.4	9.8	10.0	8.7	8.6	13.2	14.2
New Hampshire	11.3	11.8	13.1	13.5	11.4	11.3	9.0	9.6	14.9	15.5
Rhode Island	10.3	10.5	11.3	11.6	10.0	10.2	8.9	9.0	11.3	11.5
Vermont	9.0	9.5	9.7	10.6	9.4	9.8	7.5	7.5	13.3	14.2
Middle Atlantic	**9.5**	**9.7**	**11.5**	**11.8**	**10.3**	**10.5**	**6.1**	**6.2**	**9.3**	**9.6**
New Jersey	10.1	10.5	11.6	12.0	9.8	10.3	8.0	8.2	17.7	18.1
New York	10.8	11.1	13.5	14.0	11.8	12.0	5.5	5.6	8.8	9.1
Pennsylvania	7.8	7.9	9.5	9.7	8.2	8.3	5.9	5.9	11.5	11.2
East North Central	**6.4**	**6.5**	**8.4**	**8.5**	**7.3**	**7.4**	**4.4**	**4.5**	**6.6**	**6.6**
Illinois	7.4	7.7	9.9	10.4	7.7	7.9	5.2	5.3	6.6	6.8
Indiana	5.2	5.3	6.8	6.8	5.9	6.0	3.9	3.9	9.4	9.4
Michigan	7.1	7.0	8.3	8.4	8.0	7.9	5.3	5.2	5.0	5.2
Ohio	6.2	6.3	8.6	8.6	7.8	7.7	4.1	4.2	6.4	6.2
Wisconsin	5.5	5.4	7.1	7.2	5.9	5.8	3.9	3.8	7.3	7.1
West North Central	**6.0**	**6.0**	**7.4**	**7.4**	**6.3**	**6.2**	**4.4**	**4.3**	**5.4**	**5.8**
Iowa	5.8	5.9	8.1	8.2	6.3	6.3	3.9	3.9	2.4	4.7
Kansas	6.6	6.6	7.9	7.9	6.7	6.7	4.9	4.8	8.9	9.1
Minnesota	5.7	5.7	7.4	7.3	6.3	6.3	4.4	4.3	7.3	7.3
Missouri	6.2	6.3	7.3	7.3	6.2	6.2	4.6	4.5	7.0	7.2
Nebraska	5.4	5.3	6.3	6.4	5.6	5.5	3.9	3.8	5.9	5.4
North Dakota	5.8	5.7	6.3	6.2	6.5	6.3	4.7	4.6	4.0	4.0
South Dakota	6.2	6.3	7.1	7.1	6.9	6.7	4.6	4.5	4.5	4.7
South Atlantic	**6.5**	**6.6**	**7.8**	**7.9**	**6.6**	**6.6**	**4.6**	**4.6**	**6.5**	**6.3**
Delaware	6.8	6.9	8.9	9.1	7.0	7.1	4.6	4.7	11.1	12.0
District of Columbia	7.1	7.1	7.5	7.6	7.1	7.1	4.6	4.4	6.7	6.3
Florida	7.0	7.1	7.8	7.8	6.4	6.5	5.2	5.2	7.0	7.0
Georgia	6.6	6.6	7.8	7.8	7.4	7.3	4.6	4.6	8.8	8.4
Maryland	7.0	7.1	8.4	8.5	7.2	7.3	5.2	5.3	8.4	8.9
North Carolina	6.5	6.5	8.1	8.1	6.5	6.5	4.7	4.7	7.0	6.9
South Carolina	5.7	5.7	7.5	7.5	6.4	6.3	4.0	4.0	6.0	5.8
Virginia	6.3	6.3	7.9	7.9	6.2	6.1	4.2	4.2	5.6	5.2
West Virginia	5.2	5.3	6.4	6.5	5.8	5.9	4.0	4.0	9.1	9.4
East South Central	**5.1**	**5.1**	**6.2**	**6.2**	**6.3**	**6.2**	**3.9**	**3.9**	**5.9**	**5.7**
Alabama	5.4	5.4	6.7	6.6	6.7	6.7	4.0	4.0	5.8	5.8
Kentucky	4.3	4.4	5.7	5.7	5.3	5.3	3.3	3.3	4.7	4.7
Mississippi	6.0	5.9	7.0	6.9	7.1	6.9	4.5	4.3	8.5	8.4
Tennessee	5.2	5.1	5.9	5.9	6.1	6.1	4.2	4.1	7.4	6.8
West South Central	**6.3**	**6.0**	**7.9**	**7.6**	**7.0**	**6.6**	**4.3**	**4.0**	**6.8**	**6.4**
Arkansas	6.5	6.4	8.1	8.1	6.9	6.8	4.8	4.6	6.7	6.7
Louisiana	6.1	5.7	7.7	7.2	7.2	6.7	4.2	4.0	7.1	6.9
Oklahoma	5.9	5.5	7.0	6.7	6.1	5.7	4.1	3.7	5.2	4.9
Texas	6.5	6.1	8.1	7.7	7.1	6.6	4.3	4.0	7.0	6.5
Mountain	**6.2**	**6.1**	**7.7**	**7.6**	**6.8**	**6.6**	**4.4**	**4.2**	**5.6**	**5.6**
Arizona	8.1	7.7	9.6	9.1	8.6	8.0	5.7	5.3	5.7	5.3
Colorado	6.1	6.2	7.4	7.5	6.0	6.1	4.6	4.5	7.9	8.2
Idaho	4.0	4.1	5.0	5.3	4.3	4.5	2.8	2.8	4.7	5.0
Montana	4.5	4.6	5.8	6.0	5.1	5.3	3.3	3.5	4.3	4.6
Nevada	6.4	6.1	7.2	7.2	7.0	6.8	5.4	5.1	5.2	5.0
New Mexico	7.2	6.7	9.1	8.9	8.4	7.8	4.7	4.3	5.7	5.8
Utah	5.4	5.3	6.9	6.9	5.9	6.0	3.8	3.8	4.4	4.5
Wyoming	4.2	4.3	5.9	6.1	5.0	5.1	3.5	3.5	7.1	6.4
Pacific Contiguous	**7.6**	**7.7**	**8.9**	**9.0**	**9.1**	**8.9**	**5.2**	**5.5**	**5.0**	**4.8**
California	9.8	9.9	11.4	11.6	10.9	10.6	7.0	7.5	5.8	5.2
Oregon	4.6	4.7	5.3	5.5	4.9	5.1	3.4	3.5	5.0	6.0
Washington	4.0	4.1	4.9	4.9	4.7	4.8	2.8	3.0	3.7	3.8
Pacific Noncontiguous	**10.5**	**10.9**	**11.9**	**12.5**	**10.7**	**10.9**	**8.8**	**9.1**	**11.7**	**13.3**
Alaska	10.2	10.1	11.2	11.2	9.6	9.5	8.4	8.1	11.9	13.8
Hawaii	10.7	11.3	12.4	13.3	11.6	12.1	8.8	9.3	11.1	12.1
U.S. Average	**6.92**	**6.90**	**8.41**	**8.42**	**7.75**	**7.70**	**4.72**	**4.69**	**6.79**	**6.70**

[1] Includes public street and highway lighting, other sales to public authorities, sales to railroads and railways, and interdepartmental sales.

Notes: •See technical notes for estimation methodology. •Estimates represent weighted values. •Weather-related phenomena, reclassification of retail sales, changes in number of customers, prior period adjustments, and changes in billing procedures may contribute to substantial year-to-year changes in the data in this table. •The average revenue per kilowatthour of electricity sold is calculated by dividing revenue by sales. •Totals may not equal sum of components because of independent rounding.

Source: Energy Information Administration, Form EIA-826, ''Monthly Electric Utility Sales and Revenue Report with State Distributions.''

Table 28. Estimated Coefficients of Variation for Average Revenue per Kilowatthour for U.S. Electric Utilities by Sector, Census Division, and State, 1994 and 1995

(Percent)

Census Division and State	All Sectors		Residential		Commercial		Industrial		Other	
	1994	1995	1994	1995	1994	1995	1994	1995	1994	1995
New England	**0.3**	**0.4**	**0.2**	**0.3**	**0.5**	**0.5**	**0.4**	**0.4**	**1.5**	**0.5**
Connecticut	.1	.1	.1	.1	.1	.1	.1	.2	.4	.2
Maine	.3	.2	.2	.1	.2	.1	.4	.3	1.1	1.0
Massachusetts	.7	.9	.4	.7	.9	1.1	1.1	1.1	2.9	.9
New Hampshire	.3	.3	.5	.3	.4	.2	.4	.5	.6	4.1
Rhode Island	.1	.1	.1	.2	.1	.1	.1	.2	.2	.3
Vermont	.8	.5	1.1	.7	.7	.5	.7	.7	.3	.7
Middle Atlantic	**.2**	**.2**	**.3**	**.2**	**.2**	**.2**	**.3**	**.2**	**.3**	**.4**
New Jersey	.1	.1	.1	.1	.1	—	.2	.2	.3	.2
New York	.4	.3	.6	.4	.4	.3	.8	.7	.2	.4
Pennsylvania	.4	.3	.5	.4	.5	.4	.5	.2	2.6	.9
East North Central	**.2**	**.1**	**.2**	**.2**	**.2**	**.1**	**.2**	**.2**	**.2**	**.2**
Illinois	.2	.2	.3	.3	.3	.2	.3	.4	.2	.1
Indiana	.3	.4	.4	.4	.3	.3	.3	.4	2.6	.9
Michigan	.7	.4	.2	.1	.3	.1	.4	.4	1.4	1.2
Ohio	.4	.3	.5	.3	.4	.3	.4	.4	.6	.5
Wisconsin	.2	.3	.2	1.9	.2	.3	.3	.4	2.4	1.3
West North Central	**.3**	**.3**	**.4**	**.4**	**.3**	**.3**	**.3**	**.3**	**1.2**	**1.6**
Iowa	.9	.9	1.1	1.4	.6	.9	.7	.7	1.3	.9
Kansas	.2	.2	.4	.3	.3	.2	.3	.2	2.1	2.3
Minnesota	.6	.6	.7	.5	.6	.5	.5	.5	3.4	1.3
Missouri	.8	.8	.8	.8	.7	.7	1.2	1.0	.5	1.3
Nebraska	.6	.8	.6	.7	.5	.7	.7	1.4	3.5	3.5
North Dakota	.4	.3	.4	.6	.4	.3	.4	.3	1.2	1.1
South Dakota	.4	.5	.5	.5	.3	.5	.3	.5	2.2	2.0
South Atlantic	**.3**	**.2**	**.4**	**.3**	**.2**	**.2**	**.2**	**.1**	**.3**	**.2**
Delaware	.2	.1	.1	.1	.3	.1	.6	.2	.3	.3
District of Columbia	—	—	—	—	—	—	—	—	—	—
Florida	.9	.6	.9	.7	.7	.5	1.0	.6	.7	.5
Georgia	.4	.2	.6	.5	.2	.1	.3	.1	.9	.5
Maryland	.6	.5	.6	.5	.6	.5	.3	.2	1.3	.7
North Carolina	.2	.2	.3	.4	.3	.3	.3	.4	.4	.5
South Carolina	.4	.3	.6	.4	.5	.3	.3	.2	.4	.3
Virginia	.2	.2	.2	.2	.1	.1	.3	.3	.2	.2
West Virginia	.2	.2	.2	.3	.2	.2	.3	.1	1.3	1.0
East South Central	**.2**	**.3**	**.2**	**.2**	**.1**	**.2**	**.3**	**.5**	**.3**	**.4**
Alabama	.2	.4	.2	.4	.1	.1	.3	.5	.3	.5
Kentucky	.6	.7	.4	.5	.4	.5	.5	1.0	.5	.3
Mississippi	.5	.7	.7	.9	.3	.5	.7	.8	.4	.9
Tennessee	.3	.4	.1	.1	.2	.1	.7	1.1	.8	1.5
West South Central	**.5**	**.5**	**.5**	**.6**	**.5**	**.7**	**.5**	**.5**	**1.1**	**1.0**
Arkansas	.3	.5	.3	.4	.4	.6	.4	.8	.6	1.2
Louisiana	.4	.4	.4	.4	.4	.5	.3	.3	1.8	1.6
Oklahoma	1.1	.9	.5	.5	1.0	1.1	2.5	1.9	.5	.4
Texas	.7	.8	.7	.9	.7	1.0	.7	.7	1.5	1.4
Mountain	**.2**	**.1**	**.1**	**.1**	**.2**	**.1**	**.2**	**.2**	**.4**	**.5**
Arizona	.3	.2	.3	.2	.4	.3	.5	.5	1.0	1.4
Colorado	.2	.2	.3	.2	.3	.3	.4	.2	1.8	1.5
Idaho	.3	.2	.4	.5	.1	.2	.5	.5	2.1	2.4
Montana	1.0	.8	.6	.4	.7	.8	.7	.9	2.0	.9
Nevada	.5	.3	.3	.2	.6	.2	.9	.7	1.2	.9
New Mexico	.4	.5	.4	.4	.7	.3	.7	.9	.8	.8
Utah	.1	.1	.1	.2	.1	.2	.1	.3	.5	.9
Wyoming	.5	.4	.5	.9	.6	.6	.4	.2	1.8	2.3
Pacific Contiguous	**.4**	**.4**	**.2**	**.3**	**.5**	**.4**	**1.0**	**.8**	**1.1**	**1.1**
California	.4	.4	.2	.3	.6	.6	1.1	1.1	2.0	1.6
Oregon	.6	.5	.5	.7	.2	.4	1.1	1.1	.6	3.8
Washington	.9	.8	.7	.6	.4	.4	1.0	1.3	1.0	1.3
Pacific Noncontiguous	**.1**	**.1**	**.1**	**.1**	**.2**	**.2**	**.2**	**.2**	**1.7**	**2.2**
Alaska	.4	.3	.3	.2	.4	.3	.7	.8	2.2	3.3
Hawaii	.1	.2	.1	.1	.1	.1	.1	.2	.3	.2
U.S. Average	**.1**	**.1**	**.1**	**.1**	**.1**	**.1**	**.2**	**.1**	**.3**	**.3**

Notes: •For an explanation of coefficient of variation and estimation methodology see the technical notes.•Estimates represent weighted values.
Source: Energy Information Administration, Form EIA-826, ''Monthly Electric Utility Sales and Revenue Report with State Distributions.''

Appendix A

Technical Notes

Appendix A. Technical Notes

Data Sources

The *Electric Power Annual* is prepared by the Coal and Electric Data and Renewables Division; Office of Coal, Nuclear, Electric and Alternate Fuels; Energy Information Administration (EIA); U.S. Department of Energy (DOE). Data published in the *Electric Power Annual Volume 1* (EPA) are compiled from three statistical forms filed monthly and one form filed annually by electric utilities. Those forms are: the Form EIA-759, "Monthly Power Plant Report"; the Federal Energy Regulatory Commission (FERC) Form 423, "Monthly Report of Cost and Quality of Fuels for Electric Plants"; the Form EIA-826, "Monthly Electric Utility Sales and Revenue Report with State Distributions"; and the Form EIA-860, "Annual Electric Generator Report." Each form is summarized below.

Form EIA-759

The Form EIA-759 is a mandatory census of all operators of electric utility plants producing electric power for public use. The Form EIA-759 is used to collect monthly data on net generation, consumption of coal, petroleum, and natural gas; and end-of-the-month stocks of coal and petroleum for each plant by prime mover and fuel-type combination. Summary data from the Form EIA-759 are also published in the *Electric Power Monthly (EPM)*, the *Monthly Energy Review (MER)*, and the *Annual Energy Review (AER)*. These reports present aggregated data for electric utilities at the U.S., Census division, and North American Electric Reliability Council Region (NERC) levels.

Instrument and Design History. Prior to 1936, the Bureau of the Census and the U.S. Geological Survey collected, compiled, and published data on the electric power industry. In 1936, the Federal Power Commission (FPC) assumed all data collection and publication responsibilities for the electric power industry and implemented the FPC Form 4. The Federal Power Act, Sections 311 and 312, and FPC Order 141 define the legislative authority to collect power production data. The Form EIA-759 replaced the FPC Form 4 in January 1982.

Data Processing. The Form EIA-759, along with a return envelope, is mailed to respondents approximately 4 working days before the end of the month. The respondents names are obtained from a computerized mailing address file. The completed forms are to be returned to the EIA by the 10th working day after the end of the reporting month. After receipt, data from the completed forms are manually logged in and edited before being keypunched for automatic data processing. An edit program checks the data for errors not found during manual editing. The electric utility companies are telephoned to obtain data in cases of missing reports and to verify data when questions arise during editing. Following EIA approval, the data are made available for public use.

FERC Form 423

The FERC Form 423, a restricted census, is a monthly record of delivered-fuel purchases, submitted by approximately 230 electric utilities for each plant with a total steam-electric and combined-cycle nameplate capacity of 50 or more megawatts. Summary data from the FERC Form 423 are also published in the *EPM* and the *MER*. These reports present aggregated data on electric utilities at the U.S. and Census division level.

Instrument and Design History. On July 7, 1972, the FPC issued Order Number 453 enacting the New Code of Federal Regulations, Section 141.61, legally creating the Form 423. Originally, the form was used to collect data only on fossil-steam plants, but was amended in 1974 to include data on internal combustion and combustion turbines. The FERC Form 423 replaced the FPC Form 423 in January 1983. Peaking units were eliminated from the FERC Form 423. In addition, the nameplate capacity threshold was changed from 25 megawatts to 50 megawatts. This reduction in coverage eliminated approximately 50 utilities and 250 plants.

In 1991, the FERC Form 423 was amended to include combined-cycle generating units. This increase in coverage added 5 electric utilities and approximately 15 additional electric plants. Several plants, already reporting on the FERC Form 423, began including fuel receipts for combined-cycle units starting with 1991 data.

Data Processing. Starting with the January 1993 data, the FERC began collection of the data directly from the respondents. The FERC processes the data through edits and each month provides the EIA with a diskette containing the data. The EIA reviews the data for accuracy. Following EIA approval, the data are made available for public use.

Form EIA-826

The Form EIA-826 is a monthly collection of data from 252 U.S. electric utilities, which generally account for the largest share of retail sales within the State for which they report.

Instrument and Design History. The collection of electric power sales, revenue, and income data began in the early 1940's and was established as FPC Form 5 by FPC Order 141 in 1947. In 1980, the report was revised with only selected income items remaining and became the FERC Form 5. The Form EIA-826 replaced the FERC Form 5 in January 1983. In

January 1987, the Form EIA-826 was changed to the "Monthly Electric Utility Sales and Revenue Report with State Distributions;" it was formerly titled, "Electric Utility Company Monthly Statement." The Form EIA-826 was revised in January 1990, and some data elements were eliminated.

Frame. The current sample for the Form EIA-826, which was designed to obtain estimates of electricity sales and revenue per kilowatthour at the State level by end-use sector, was chosen to be in effect for the January 1993 data. The frame for the Form EIA-826 was originally based on the 1989 submission of the Form EIA-861, which consisted of approximately 3,250 electric utilities selling retail and/or sales for resale. Note that for the Form EIA-826, we are only interested in retail sales. Updates have been made to the frame to reflect mergers that affect data processing. Some electric utilities serve in more than one State. Thus, the State-service area is actually the sampling unit. For each State served by each utility, there is a utility State-part, or "State-service area." This approach allows for an explicit calculation of estimates for State, Census division, and U.S. level sales, revenue and revenue per kilowatthour by end-use sector (residential, commercial, industrial and other). Regressor data came from the Form EIA-861. (Note that estimates at the "State level" are for sales for the entire State, and similarly for "Census division" and "U.S." levels.)

The preponderance of electric power sales to ultimate consumers in each State are made by a few large utilities. Ranking of electric utilities by retail sales on a State-by-State basis revealed a consistent pattern of dominance by a few electric utilities in nearly all 50 States and the District of Columbia. These dominant electric utilities were selected as a model sample. These electric utilities constitute about 8 percent of the population of U.S. electric utilities, but provide three-quarters of the total U.S. retail electricity sales. The procedures used to derive electricity sales, revenue, average revenue per kilowatthour, and associated coefficient of variation (CV) estimates are provided in the Formulas and Calculations section of this Appendix.

Data Processing. The forms are mailed each year to the electric utilities with State-parts selected in the sample. The completed form is to be returned to the EIA by the last calendar day of the month following the reporting month. Nonrespondents are telephoned to obtain the data. Imputation, in model sampling, is an implicit part of the estimation. That is, data that are not available either because it was not part of the sample or because the data are missing are estimated using a model. The data are edited and entered into the computer where additional checks are completed. After all forms have been received from the respondents, the final automated edit is submitted. After EIA approval, the data are made available for public use.

Form EIA-860

The Form EIA-860 is a mandatory census of electric utilities in the United States that operate power plants or plan to operate a power plant within 10 years of the reporting year. The survey is used to collect data on existing power plants from the electric utilities and their 10-year plans for constructing new plants, and modifying and retiring existing plants. Data on the survey are collected at the generating unit level. These data are then aggregated by energy source, geographic area, and prime mover. Final data from the Form EIA-860 are also summarized in the *Inventory of Power Plants in the United States*.

Instrument and Design History. The Form EIA-860 was implemented in January 1985 to collect data as of year-end 1984. The Federal Energy Administration Act of 1974 (Public Law 93-275) defines the legislative authority to collect these data.

Data Processing. The Form EIA-860 is mailed to approximately 900 respondents in December and the completed forms are to be returned to the EIA by February 15 containing data as of January 1 of the following year. Data for each respondent are preprinted from the applicable data base. Respondents are instructed to verify all preprinted data and to supply missing data. The data are manually edited before being keyed for automatic data processing. Computer programs containing additional edit checks are run. Respondents are telephoned to obtain correction or clarification of reported data and to obtain missing data, as a result of the manual and automatic editing process. After EIA approval, the data are made available for public use.

Quality of Data

The Office of Coal, Nuclear, Electric and Alternate Fuels (CNEAF) is responsible for routine data improvement and quality assurance activities. All operations in this office are done in accordance with formal standards established by the EIA. These standards are the measuring rod necessary for quality statistics. Data improvement efforts include verification of data-keyed input by automatic computerized methods, editing by subject matter specialists, and follow up on nonrespondents. The CNEAF office supports the quality assurance efforts of the data collectors by providing advisory reviews of the structure of information requirements, and of proposed designs for new and revised data collection forms and systems. Once implemented, the actual performance of working data collection systems is also validated. Computerized respondent data files are checked to identify those who fail to respond to the survey. By law, nonrespondents may be fined or otherwise penalized for not filing a mandatory EIA data form. Before invoking the law, the EIA tries to obtain the required information by encouraging cooperation of nonrespondents.

Completed forms received by the CNEAF office are sorted, screened for completeness of reported information, and keyed onto computer tapes for storage and transfer to random access data bases for computer processing. The information coded on the computer tapes is manually spot-checked against the forms to certify accuracy of the tapes. To ensure the quality standards established by the EIA, formulas that use the past history of data values in the data base have been designed and implemented to check data input for errors automatically. Data values that fall outside the ranges prescribed in the formulas are verified by telephoning respondents to resolve any discrepancies.

Conceptual problems affecting the quality of data are discussed in the report, *An Assessment of the Quality of Selected EIA Data Series:*[25]

Data Editing System

Data from the form surveys are edited using automated systems. The edit includes both deterministic checks, in which records are checked for the presence of required fields and their validity; and statistical checks, in which estimation techniques are used to validate data according to their behavior in the past and in comparison to other current fields.

Rounding Rules for Data

Given a number with r digits to the left of the decimal and d+t digits in the fraction part, with d being the place to which the number is to be rounded and t being the remaining digits which will be truncated, this number is rounded to r+d digits by adding 5 to the (r+d+1)th digit when the number is positive or by subtracting 5 when the number is negative. The t digits are then truncated at the (r+d+1)th digit. The symbol for a rounded number truncated to zero is (*).

CNEAF Data Revision and Policy

The Office of Coal, Nuclear, Electric and Alternate Fuels has adopted the following policy with respect to the revision and correction of recurrent data in energy publications:

1. Annual survey data collected by this office are published either as preliminary or final when first appearing in a data report. Data initially released as preliminary will be so noted in the report. These data will be revised, if necessary, and declared final in the next publication of the data.
2. All monthly and quarterly survey data collected by this office are published as preliminary. These data are revised only after the completion of the 12-month cycle of the data. No revisions are made to the published data before this unless approved by the Office Director.
3. The magnitude of changes due to revisions experienced in the past will be included in the data reports, so that the reader can assess the accuracy of the data.
4. After data are published as final, corrections will be made only in the event of a greater than one percent difference at the national level. Corrections for differences that are less than the before-mentioned threshold are left to the discretion of the Office Director.

The EPA presents the most current annual data available to the EIA. The statistics may differ from those published previously in EIA publications due to corrections, revisions, or other adjustments to the data subsequent to its original release. On a chapter basis, the status (preliminary versus final) of the data contained in this report is:

- **Generating Capability at U.S. Electric Utilities**
  Total net summer capability data for 1995 from the Form EIA-860 are preliminary. Preliminary 1995 data are based on final 1994 data and changes (including additions, retirements, and modifications) that occurred in 1995 that were followed up and verified by telephone using the respondents' proposed ten-year changes reported as of December 31, 1994. No updates from responses submitted on Form EIA-860 with data as of January 1, 1996 are included. Final 1995 data will be reported in the *Inventory of Power Plants in the United States 1995,* scheduled to be published in October 1996.

- **Net Generation at U.S. Electric Utilities**
  All Form EIA-759 data are final. A comparison of preliminary versus final data for 1995 is provided in the Technical Notes of the *Electric Power Monthly* (EPM), April 1996.

- **U.S. Electric Utility Fossil-Fuel Statistics**
  All FERC Form 423 data are final. A comparison of preliminary versus final data for 1995 from the FERC Form 423 is provided in the Technical Notes of the EPM, May 1996.

- **Estimated U.S. Electric Utility Retail Sales, Revenue, and Average Revenue per Kilowatthour**
  Estimates for sales, revenue, and average revenue per kilowatthour from the Form EIA-826 for 1995 are final. Preliminary annual data from the Form EIA-861, "Annual Electric Utility Report," will be provided in Volume 2 of the *EPA.* The data are revised and declared final in the *Electric Sales and Revenue 1995.* A comparison of preliminary versus final annual data at the national level for 1995 will be provided in the *EPA Volume 2* 1996.

[25] Energy Information Administration, Office of Statistical Standards, *An Assessment of the Quality of Selected EIA Data Series: Electric Power Data,* DOE/EIA-0292(87) (Washington, DC, 1989).

Formulas and Calculations

Average Heat Content. In order to determine the Btu value per unit of consumption for each of the fossil fuels collected on the Form EIA-759, the heat content values contained on the FERC Form 423 were used. Data on the FERC Form 423 represent approximately 85 percent of the total generator nameplate capacity for all electric utilities.

Percent Difference The following formula is used to calculate percent differences.

$$\text{Percent Difference} = \left(\frac{x(t_2) - x(t_1)}{x(t_1)} \right) \times 100,$$

where $x(t_1)$ and $x(t_2)$ denote the quantity at year t_1 and subsequent year t_2.

Form EIA-759

Data for the Form EIA-759 are collected at the plant level. These data are then aggregated to provide geographic totals at the State, Census division, and U.S. level, or totals by type of plant. Consumption of fuel(s) is converted from quantities (in short tons, barrels, or thousand cubic feet) to Btu at the plant level. End-of-month fuel stocks for a single generating plant may not equal beginning-of-the-month stocks, plus receipts, less consumption, for many reasons, including the fact that several plants may share the same fuel stock.

FERC Form 423

Data for the FERC Form 423 are collected at the plant level. These data are then used in the following formulas to produce aggregates and averages for each fuel type at the State, Census division, and U.S. level. For these formulas, receipts and average heat content are at the plant level. For each geographic region, the summation $\sum$ represents the sum of all plants in that geographic region. Additionally,

- For coal, units for receipts (R) are in tons, units for average heat content (A) are in Btu per pound, and the unit conversion (U) is 2,000 pounds per ton;
- For petroleum, units for receipts (R) are in barrels, units for average heat content (A) are in Btu per gallon, and the unit conversion (U) is 42 gallons per barrel;
- For gas, units for receipts (R) are in thousand cubic feet (Mcf), average heat content (A) are in Btu per cubic foot, and the unit conversion (U) is 1,000 cubic feet per Mcf.

Where i denotes a plant; R_i = receipts for plant i; A_i = average heat content for receipts at plant i; and, U = unit conversion:

$$\text{Total Btu} = \sum_i (R_i \times A_i \times U),$$

and

$$\text{Weighted Average Btu} = \frac{\sum_i (R_i \times A_i)}{\sum_i R_i},$$

for a given fuel type.

Where i denotes a plant; R_i = receipts for plant i; A_i = average heat content for receipts at plant i; and, C_i = cost at plant i:

Weighted Average Cost (cents per million Btu) =

$$\frac{\sum_i (R_i \times A_i \times U \times C_i)}{\sum_i (R_i \times U \times A_i)},$$

and

Weighted Average Cost (dollars per unit) =

$$\frac{U \sum_i (R_i \times A_i \times C_i)}{(10^8) \sum_i R_i}.$$

Form EIA-826

The Form EIA-826 data are collected at the utility level by sector and State. When a utility has sales in more than one State, the data that may be required are dependent upon the sample selection that was done for each State. Data from the Form EIA-826 are used to determine estimates by sector at the State, Census division, and national level for the entire corresponding State, Census division, or national category. Form EIA-861 data were used as the frame from which the sample was selected, and also as regressor data.

The sample consists of 252 electric utilities. This includes a somewhat larger number of State-service areas for electric utilities. Estimation procedures include imputation to account for nonresponse. State-level sales-and-revenue estimates are calculated. Also, a ratio estimation procedure is used for estimation of average revenue per kilowatthour at the State level. These estimates are accumulated separately to produce estimates for Census division and U.S. levels.

The coefficient of variation (CV) statistic, usually given as a percent, is an estimate that describes the magnitude of sampling error that might reasonably be incurred. The CV, sometimes referred to as the relative standard error, is the square root of the estimated relative variance of the variable of interest. The variable of interest may be a single variable (for example, sales) or it may be the ratio of two variables (for example, revenue to sales).

CV's do not account for nonsampling errors, such as errors of misclassification or transposed digits. They are, however, affected by nonsampling errors. Using the Central Limit Theorem, which applies to sums and

means, there is an approximate 68-percent chance that the true sampling error is less than the corresponding CV.

As an example, suppose that a revenue-per-kilowatthour value is estimated to be 5.13 cents per kilowatthour with an estimated CV of 1.6 percent. This means that, ignoring any nonsampling error, there is approximately a 68-percent chance that the true average revenue per kilowatthour is within approximately 1.6 percent of 5.13 cents per kilowatthour (that is, between 5.05 and 5.21 cents per kilowatthour). There is approximately a 95-percent chance of a true sampling error being 2 CV's or less.

For sales or revenue in any sector at the State level, if we let x represent an observation from the Form EIA-861, y represents an observation from the Form

EIA-826, and $\hat{y}$ represents an estimated value for data not collected, then

$$y_i = bx_i + x_i^{\gamma} e_o,$$

$$\hat{y}_i = \hat{b}x_i,$$

$$\hat{b}(\gamma) = \left[\sum_{k=1}^{n} x_k^{1-2\gamma} y_k\right] \left[\sum_{k=1}^{n} x_k^{2-2\gamma}\right]$$

Here, n is the Form EIA-826 sample size for that State, and b is the factor ('slope') relating x to y in the linear regression. γ is taken to be 1/2 although more research could refine this. For the Form EIA-826, $\gamma = 1/2$ has been shown to be adequate.

CV estimates are also provided for **annualized estimates** of sales and revenue. These CV estimates may be biased to larger than actual values, in general, because covariances between the various months of data are ignored. Even so, many of these estimates are less than one percent, and the national level estimates are quite small. Also, note that experience with past test data indicates that when CV estimates are only a few tenths of a percent, they may often be biased high even before aggregation. Thus, these CV estimates, especially at the national level, are likely to be conservative. Further, CV estimates, although designed to measure sampling error, are impacted by nonsampling error, and along with information given in the *Electric Power Monthly* (EPM) Table C2, "Comparison of Preliminary Versus Final Published Data at the U.S. Level," and Table C4, "Comparison of Sample Versus Census Published Data at the U.S. Level by End-Use Sector," give a fairly good indication of overall data accuracy.

Sales and revenue data are expected, generally, to be highly positively correlated, and when estimating CV's for average revenue per kilowatthour, that covariance should not be ignored. (For additional technical information, see the EPM, April 1995, page 254).

Form EIA-860

Data for the Form EIA-860 are submitted at the generating unit level and then aggregated by energy source, prime mover, and geographic area. Estimated values for net summer and net winter capability for nonnuclear electric generating units were developed by use of a regression formula, using year-end 1992 data on net summer capability, net winter capability, and generator nameplate capacity of units in commercial operation during three intervals of time: 1940 or earlier, 1941 through 1980, and 1981 to present.[26]

A heterogeneous, zero-intercept linear regression model with generator nameplate capacity (expressed in kilowatts) as the regressor data was used since examination of the data shows that the intercepts are generally near zero.[27]

In all formulas,

the symbol, *, is an operator meaning multiplied by.

For nonnuclear units,

Net Capability=b*(Nameplate Capacity),

where

b, represents the slope or factor by which nameplate capacity has to be multiplied to obtain a capability estimate.

Using this model in the following information,

σ represents the standard error for b,

Net Summer Capability

b = .90, σ = .04, 1940 or earlier; b = .927, σ = .002, 1941-1980; b = .937, σ = .004, 1981 through present, for coal steam units (Unit Types, ST, AB, PB)

b = 1.00, σ = .03, 1940 or earlier; b = .961, σ = .002, 1941 - 1980; b = .93, σ = .01, 1981 through present, for noncoal steam units (Unit Types, ST, AB, PB)

b = .856, σ = .003, 1980 or earlier; b = .85, σ = .01, 1981 through present, for gas-turbine units (Unit Types, GT, JE)

[26] Respondents report summer and winter capability and nameplate for all nuclear units.

[27] This model is discussed in Knaub, J.R., Jr. (1994), "Relative Standard Error for a Ratio of Variables at an Aggregate Level Under Model Sampling," *Proceedings of the Section on Survey Research Methods*, pp. 310-312, American Statistical Association.

b = .94, σ = .01, 1940 or earlier; b = .84, σ = .01, 1941 - 1980; b = .86, σ = .02, 1981 through present, for combined-cycle units (Unit Types, CA, CS, CW, CT, IG)

b = .884, σ = .009, 1940 or earlier; b = .925, σ = .002, 1941 - 1980; b = .976, σ = .003, 1981 through present, for internal combustion units (Unit Type, IC)

b = .975, σ = .005, 1940 or earlier; b = 1.034, σ = .004, 1941 - 1980; b = .950, σ = .008, 1981 through present, for conventional and pipeline hydroelectric units (Unit Types, HC, HL)

b = .93, σ = .03, 1940 or earlier; b = 1.03, σ = .01, 1941 - 1980; b = 1.01, σ = .006, 1981 through present, for pumped-storage hydroelectric units (Unit Type, HR)

b = 1, for all other units (Including Unit Types, CG, FC, GE, OC, SP, SS, WT), where limited data are available.

Net Winter Capability

b = .88, σ = .05, 1940 or earlier; b = .934, σ = .002, 1941 - 1980; b = .940, σ = .004, 1981 through present, for coal steam units (Unit Types, ST, AB, PB)

b = 1.02, σ = .03, 1940 or earlier; b = .965, σ = .002, 1941 - 1980; b = .94, σ = .01, 1981 through present, for noncoal steam units (Unit Types, ST, AB, PB)

b = 1.023, σ = .004, 1980 or earlier; b = .98, σ = .01, 1981 through present, for gas-turbine units (Unit Types, GT, JE)

b = 1.02, σ = .03, 1940 or earlier; b = .96, σ = .01, 1941 - 1980; b = .94, σ = .02, 1981 through present, for combined-cycle units (Unit Types, CA, CS, CW, CT, IG)

b = .893, σ = .008, 1940 or earlier; b = .940, σ = .002, 1941 - 1980; b = .987, σ = .002, 1981 through present, for internal combustion units (Unit Type, IC)

b = .979, σ = .005, 1940 or earlier; b = 1.026, σ = .004, 1941 - 1980; b = .92, σ = .01, 1981 through present, for conventional and pipeline hydroelectric units (Unit Types, HC, HL)

b = .96, σ = .05, 1940 or earlier; b = 1.02, σ = .01, 1941 - 1980; b = 1.03, σ = .01, 1981 through present, for pumped-storage hydroelectric units (Unit Type, HR)

b = 1, for all other units (Unit Types, FC, GE, OC, SP, SS, WT, CG), where limited data are available.

General Information

Use of the Glossary

The terms in the glossary have been defined for general use. Restrictions on the definitions as used in these data collection systems are included in each definition when necessary to define the terms as they are used in this report.

Table A1. Unit-of-Measure Equivalents

Unit	Equivalent		
Kilowatt (kW)	1,000	(One Thousand)	Watts
Megawatt (MW)	1,000,000	(One Million)	Watts
Gigawatt (GW)	1,000,000,000	(One Billion)	Watts
Terawatt (TW)	1,000,000,000,000	(One Trillion)	Watts
Gigawatt	1,000,000	(One Million)	Kilowatts
Thousand Gigwatts	1,000,000,000	(One Billion)	Kilowatts
Kilowatthours (kWh)	1,000	(One Thousand)	Watthours
Megawatthours (Mwh)	1,000,000	(One Million)	Watthours
Gigawatthours (Gwh)	1,000,000,000	(One Billion)	Watthours
Terawatthours (Twh)	1,000,000,000,000	(One Trillion)	Watthours
Gigawatthours	1,000,000	(One Million)	Kilowatthours
Thousand Gigawatthours	1,000,000,000	(One Billion)	Kilowatthours
U.S. Dollar	1,000	(One Thousand)	Mills
U.S. Cent	10	(Ten)	Mills

Source: Energy Information Administration, Coal and Electric Data and Renewables Division.

Table A2. Metric Conversion

Type of Unit	U.S. Unit	*multiplied by*	Conversion Factor	*equals*	Metric Unit
Mass	short tons (2,000 lb)	x	0.907 184 7	=	metric tons (t)
	pounds (lb)	x	0.453 592 37[a]	=	kilograms (kg)
Volume	barrels of oil (bbl)	x	0.158 987 3	=	cubic meters (m^3)
	cubic feet (ft^3)	x	0.028 316 85	=	cubic meters (m^3)
	U.S. gallons (gal)	x	3.785 412	=	liters (L)
Energy	British thermal units (Btu)	x	1,055.055 852 62[ab]	=	joules (J)

[a]Exact conversion.
[b]The Btu used in this table is the International Table Btu adopted by the Fifth International Conference on Properties of Steam, London, 1956.

Notes: ●Spaces have been inserted after every third digit to the right of the decimal for ease of reading. ●Most metric units belong to the International System of Units (SI), and the liter and metric ton are acceptable for use with the SI units. For more information about the SI units, contact Dr. Barry Taylor at Building 221, Room B610, National Institute of Standards and Technology, Gaithersburg, MD 20899, or on telephone number 301-975-4220.

Sources: ●General Services Administration, Federal Standard 376B, *Preferred Metric Units for General Use by the Federal Government* (Washington, DC, January 27, 1993), pp. 9-11, 13, and 16. ●National Institute of Standards and Technology, Special Publications 330, 811, and 814. ●American National Standards Institute/Institute of Electrical and Electronic Engineers, SVIEEE Std 268-1992, pp. 28 and 29.

Glossary

Acid Rain: Also called acid precipitation or acid deposition, acid rain is precipitation containing harmful amounts of nitric and sulfuric acids formed primarily by nitrogen oxides and sulfur oxides released into the atmosphere when fossil fuels are burned. It can be wet precipitation (rain, snow, or fog) or dry precipitation (absorbed gaseous and particulate matter, aerosol particles or dust). Acid rain has a pH below 5.6. Normal rain has a pH of about 5.6, which is slightly acidic. The term pH is a measure of acidity or alkalinity and ranges from 0 to 14. A pH measurement of 7 is regarded as neutral. Measurements below 7 indicate increased acidity, while those above indicate increased alkalinity.

Ampere: The unit of measurement of electrical current produced in a circuit by 1 volt acting through a resistance of 1 ohm.

Anthracite: A hard, black lustrous coal, often referred to as hard coal, containing a high percentage of fixed carbon and a low percentage of volatile matter. Comprises three groups classified according to the following ASTM Specification D388-84, on a dry mineral-matter-free basis:

	Fixed Carbon Limits		Volatile Matter Limits	
	GE	LT	GT	LE
Meta-Anthracite	98	-	-	2
Anthracite	92	98	2	8
Semianthracite	86	92	8	14

Ash: Impurities consisting of silica, iron, alumina, and other noncombustible matter that are contained in coal. Ash increases the weight of coal, adds to the cost of handling, and can affect its burning characteristics. Ash content is measured as a percent by weight of coal on an "as received" or a "dry" (moisture-free, usually part of a laboratory analysis) basis.

Available but not Needed Capability: Net capability of main generating units that are operable but not considered necessary to carry load, and cannot be connected to load within 30 minutes.

Average Revenue per Kilowatthour: The average revenue per kilowatthour of electricity sold by sector (residential, commercial, industrial, or other) and geographic area (State, Census division, and national), is calculated by dividing the total monthly revenue by the corresponding total monthly sales for each sector and geographic area.

Barrel: A volumetric unit of measure for crude oil and petroleum products equivalent to 42 U.S. gallons.

Base Bill: A charge calculated through multiplication of the rate from the appropriate electric rate schedule by the level of consumption.

Baseload: The minimum amount of electric power delivered or required over a given period of time at a steady rate.

Baseload Capacity: The generating equipment normally operated to serve loads on an around-the-clock basis.

Baseload Plant: A plant, usually housing high-efficiency steam-electric units, which is normally operated to take all or part of the minimum load of a system, and which consequently produces electricity at an essentially constant rate and runs continuously. These units are operated to maximize system mechanical and thermal efficiency and minimize system operating costs.

Bbl: The abbreviation for barrel.

Bcf: The abbreviation for 1 billion cubic feet.

Bituminous Coal: The most common coal. It is dense and black (often with well-defined bands of bright and dull material). Its moisture content usually is less than 20 percent. It is used for generating electricity, making coke, and space heating. Comprises five groups classified according to the following ASTM Specification D388-84, on a dry mineral-matter-free (mmf) basis for fixed-carbon and volatile matter and a moist mmf basis for calorific value.

	Fixed Carbon Limits		Volatile Matter Limits		Calorific Value Limits	
					Btu/lb	
	GE	LT	GT	LT	GE	LE
LV	78	86	14	22	-	-
MV	69	78	22	31	-	-
HVA	-	69	31	-	14000	-
HVB	-	-	-	-	13000	14000
HVC	-	-	-	-	10500	13000

LV = Low-volatile bituminous coal
MV = Medium-volatile bituminous coal
HVA = High-volatile A bituminous coal
HVB = High-volatile B bituminous coal
HVC = High-volatile C bituminous coal

Boiler: A device for generating steam for power, processing, or heating purposes or for producing hot water for heating purposes or hot water supply. Heat

from an external combustion source is transmitted to a fluid contained within the tubes in the boiler shell. This fluid is delivered to an end-use at a desired pressure, temperature, and quality.

Btu (British Thermal Unit): A standard unit for measuring the quantity of heat energy equal to the quantity of heat required to raise the temperature of 1 pound of water by 1 degree Fahrenheit.

Capability: The maximum load that a generating unit, generating station, or other electrical apparatus can carry under specified conditions for a given period of time without exceeding approved limits of temperature and stress.

Capacity: The amount of electric power delivered or required for which a generator, turbine, transformer, transmission circuit, station, or system is rated by the manufacturer.

Capacity (Purchased): The amount of energy and capacity available for purchase from outside the system.

Capacity Charge: An element in a two-part pricing method used in capacity transactions (energy charge is the other element). The capacity charge, sometimes called Demand Charge, is assessed on the amount of capacity being purchased.

Census Divisions: The nine geographic divisions of the United States established by the Bureau of the Census, U.S. Department of Commerce, for the purpose of statistical analysis. The boundaries of Census divisions coincide with State boundaries. The Pacific Division is subdivided into the Pacific Contiguous and Pacific Noncontiguous areas.

Circuit: A conductor or a system of conductors through which electric current flows.

Coal: A black or brownish-black solid combustible substance formed by the partial decomposition of vegetable matter without access to air. The rank of coal, which includes anthracite, bituminous coal, subbituminous coal, and lignite, is based on fixed carbon, volatile matter, and heating value. Coal rank indicates the progressive alteration from lignite to anthracite. Lignite contains approximately 9 to 17 million Btu per ton. The contents of subbituminous and bituminous coal range from 16 to 24 million Btu per ton and from 19 to 30 million Btu per ton, respectively. Anthracite contains approximately 22 to 28 million Btu per ton.

Cogenerator: A generating facility that produces electricity and another form of useful thermal energy (such as heat or steam), used for industrial, commercial, heating, or cooling purposes. To receive status as a qualifying facility (QF) under the Public Utility Regulatory Policies Act (PURPA), the facility must produce electric energy and "another form of useful thermal energy through the sequential use of energy," and meet certain ownership, operating, and efficiency criteria established by the Federal Energy Regulatory Commission (FERC). (See the Code of Federal Regulations, Title 18, Part 292.)

Coincidental Demand: The sum of two or more demands that occur in the same time interval.

Coincidental Peak Load: The sum of two or more peakloads that occur in the same time interval.

Coke (Petroleum): A residue high in carbon content and low in hydrogen that is the final product of thermal decomposition in the condensation process in cracking. This product is reported as marketable coke or catalyst coke. The conversion factor is 5 barrels (42 U.S. gallons each) per short ton.

Combined Cycle: An electric generating technology in which electricity is produced from otherwise lost waste heat exiting from one or more gas (combustion) turbines. The exiting heat is routed to a conventional boiler or to a heat recovery steam generator for utilization by a steam turbine in the production of electricity. This process increases the efficiency of the electric generating unit.

Combined Cycle Unit: An electric generating unit that consists of one or more combustion turbines and one or more boilers with a portion of the required energy input to the boiler(s) provided by the exhaust gas of the combustion turbine(s).

Combined Pumped-Storage Plant: A pumped-storage hydroelectric power plant that uses both pumped water and natural streamflow to produce electricity.

Commercial: The commercial sector is generally defined as nonmanufacturing business establishments, including hotels, motels, restaurants, wholesale businesses, retail stores, and health, social, and educational institutions. The utility may classify commercial service as all consumers whose demand or annual use exceeds some specified limit. The limit may be set by the utility based on the rate schedule of the utility.

Commercial Operation: Commercial operation begins when control of the loading of the generator is turned over to the system dispatcher.

Consumption (Fuel): The amount of fuel used for gross generation, providing standby service, start-up and/or flame stabilization.

Contract Price: Price of fuels marketed on a contract basis covering a period of 1 or more years. Contract prices reflect market conditions at the time the contract was negotiated and therefore remain constant throughout the life of the contract or are adjusted through escalation clauses. Generally, contract prices do not fluctuate widely.

Contract Receipts: Purchases based on a negotiated agreement that generally covers a period of 1 or more years.

Cooperative Electric Utility: An electric utility legally established to be owned by and operated for the benefit of those using its service. The utility company will generate, transmit, and/or distribute supplies of electric energy to a specified area not being serviced by another utility. Such ventures are generally exempt from Federal income tax laws. Most electric cooperatives have been initially financed by the Rural Electrification Administration, U.S. Department of Agriculture.

Cost: The amount paid to acquire resources, such as plant and equipment, fuel, or labor services.

Current (Electric): A flow of electrons in an electrical conductor. The strength or rate of movement of the electricity is measured in amperes.

Demand (Electric): The rate at which electric energy is delivered to or by a system, part of a system, or piece of equipment, at a given instant or averaged over any designated period of time.

Demand-Side Management: The planning, implementation, and monitoring of utility activities designed to encourage consumers to modify patterns of electricity usage, including the timing and level of electricity demand. It refers only to energy and load-shape modifying activities that are undertaken in response to utility-administered programs. It does not refer to energy and load-shape changes arising from the normal operation of the marketplace or from government-mandated energy-efficiency standards. Demand-Side Management (DSM) covers the complete range of load-shape objectives, including strategic conservation and load management, as well as strategic load growth.

Distillate Fuel Oil: A general classification for one of the petroleum fractions produced in conventional distillation operations. It is used primarily for space heating, on-and-off-highway diesel engine fuel (including railroad engine fuel and fuel for agriculture machinery), and electric power generation. Included are Fuel Oils No. 1, No. 2, and No. 4; and Diesel Fuels No. 1, No. 2, and No. 4.

Distribution System: The portion of an electric system that is dedicated to delivering electric energy to an end user.

Electric Plant (Physical): A facility containing prime movers, electric generators, and auxiliary equipment for converting mechanical, chemical, and/or fission energy into electric energy.

Electric Rate Schedule: A statement of the electric rate and the terms and conditions governing its application, including attendant contract terms and conditions that have been accepted by a regulatory body with appropriate oversite authority.

Electric Utility: A corporation, person, agency, authority, or other legal entity or instrumentality that owns and/or operates facilities within the United States, its territories, or Puerto Rico for the generation, transmission, distribution, or sale of electric energy primarily for use by the public and files forms listed in the Code of Federal Regulations, Title 18, Part 141. Facilities that qualify as cogenerators or small power producers under the Public Utility Regulatory Policies Act (PURPA) are not considered electric utilities.

Energy: The capacity for doing work as measured by the capability of doing work (potential energy) or the conversion of this capability to motion (kinetic energy). Energy has several forms, some of which are easily convertible and can be changed to another form useful for work. Most of the world's convertible energy comes from fossil fuels that are burned to produce heat that is then used as a transfer medium to mechanical or other means in order to accomplish tasks. Electrical energy is usually measured in kilowatthours, while heat energy is usually measured in British thermal units.

Energy Charge: That portion of the charge for electric service based upon the electric energy (kWh) consumed or billed.

Energy Deliveries: Energy generated by one electric utility system and delivered to another system through one or more transmission lines.

Energy Efficiency: Refers to programs that are aimed at reducing the energy used by specific end-use devices and systems, typically without affecting the services provided. These programs reduce overall electricity consumption (reported in megawatthours), often without explicit consideration for the timing of program-induced savings. Such savings are generally achieved by substituting technically more advanced equipment to produce the same level of end-use services (e.g. lighting, heating, motor drive) with less electricity. Examples include high-efficiency appliances, efficient lighting programs, high-efficiency heating, ventilating and air conditioning (HVAC) systems or control modifications, efficient building design, advanced electric motor drives, and heat recovery systems.

Energy Receipts: Energy generated by one electric utility system and received by another system through one or more transmission lines.

Energy Source: The primary source that provides the power that is converted to electricity through chemical, mechanical, or other means. Energy sources include coal, petroleum and petroleum products, gas, water, uranium, wind, sunlight, geothermal, and other sources.

Facility: An existing or planned location or site at which prime movers, electric generators, and/or equipment for converting mechanical, chemical, and/or nuclear energy into electric energy are situated, or will be situated. A facility may contain more than one generator of either the same or different prime mover type. For a cogenerator, the facility includes the industrial or commercial process.

Federal Energy Regulatory Commission (FERC): A quasi-independent regulatory agency within the

Department of Energy having jurisdiction over interstate electricity sales, wholesale electric rates, hydroelectric licensing, natural gas pricing, oil pipeline rates, and gas pipeline certification.

Federal Power Act: Enacted in 1920, and amended in 1935, the Act consists of three parts. The first part incorporated the Federal Water Power Act administered by the former Federal Power Commission, whose activities were confined almost entirely to licensing non-Federal hydroelectric projects. Parts II and III were added with the passage of the Public Utility Act. These parts extended the Act's jurisdiction to include regulating the interstate transmission of electrical energy and rates for its sale as wholesale in interstate commerce. The Federal Energy Regulatory Commission is now charged with the administration of this law.

Federal Power Commission: The predecessor agency of the Federal Energy Regulatory Commission. The Federal Power Commission (FPC) was created by an Act of Congress under the Federal Water Power Act on June 10, 1920. It was charged originally with regulating the electric power and natural gas industries. The FPC was abolished on September 20, 1977, when the Department of Energy was created. The functions of the FPC were divided between the Department of Energy and the Federal Energy Regulatory Commission.

FERC: The Federal Energy Regulatory Commission.

Firm Gas: Gas sold on a continuous and generally long-term contract.

Firm Power: Power or power-producing capacity intended to be available at all times during the period covered by a guaranteed commitment to deliver, even under adverse conditions.

Flue Gas Desulfurization Unit (Scrubber): Equipment used to remove sulfur oxides from the combustion gases of a boiler plant before discharge to the atmosphere. Chemicals, such as lime, are used as the scrubbing media.

Flue Gas Particulate Collectors: Equipment used to remove fly ash from the combustion gases of a boiler plant before discharge to the atmosphere. Particulate collectors include electrostatic precipitators, mechanical collectors (cyclones), fabric filters (baghouses), and wet scrubbers.

Fly Ash: Particule matter from coal ash in which the particle diameter is less than 1×10^{-4} meter. This is removed from the flue gas using flue gas particulate collectors such as fabric filters and electrostatic precipitators.

Forced Outage: The shutdown of a generating unit, transmission line or other facility, for emergency reasons or a condition in which the generating equipment is unavailable for load due to unanticipated breakdown.

Fossil Fuel: Any naturally occurring organic fuel, such as petroleum, coal, and natural gas.

Fossil-Fuel Plant: A plant using coal, petroleum, or gas as its source of energy.

Fuel: Any substance that can be burned to produce heat; also, materials that can be fissioned in a chain reaction to produce heat.

Fuel Expenses: These costs include the fuel used in the production of steam or driving another prime mover for the generation of electricity. Other associated expenses include unloading the shipped fuel and all handling of the fuel up to the point where it enters the first bunker, hopper, bucket, tank, or holder in the boiler-house structure.

Full-Forced Outage: The net capability of main generating units that is unavailable for load for emergency reasons.

Gas: A fuel burned under boilers and by internal combustion engines for electric generation. These include natural, manufactured and waste gas.

Gas Turbine Plant: A plant in which the prime mover is a gas turbine. A gas turbine consists typically of an axial-flow air compressor, one or more combustion chambers, where liquid or gaseous fuel is burned and the hot gases are passed to the turbine and where the hot gases expand to drive the generator and are then used to run the compressor.

Generating Unit: Any combination of physically connected generator(s), reactor(s), boiler(s), combustion turbine(s), or other prime mover(s) operated together to produce electric power.

Generation (Electricity): The process of producing electric energy by transforming other forms of energy; also, the amount of electric energy produced, expressed in watthours (Wh).

Gross Generation: The total amount of electric energy produced by the generating units at a generating station or stations, measured at the generator terminals.

Net Generation: Gross generation less the electric energy consumed at the generating station for station use.

Generator: A machine that converts mechanical energy into electrical energy.

Generator Nameplate Capacity: The full-load continuous rating of a generator, prime mover, or other electric power production equipment under specific conditions as designated by the manufacturer. Installed generator nameplate rating is usually indicated on a nameplate physically attached to the generator.

Geothermal Plant: A plant in which the prime mover is a steam turbine. The turbine is driven either by steam produced from hot water or by natural steam that derives its energy from heat found in rocks or

fluids at various depths beneath the surface of the earth. The energy is extracted by drilling and/or pumping.

Gigawatt (GW): One billion watts.

Gigawatthour (GWh): One billion watthours.

Greenhouse Effect: The increasing mean global surface temperature of the earth caused by gases in the atmosphere (including carbon dioxide, methane, nitrous oxide, ozone, and chlorofluorocarbon). The greenhouse effect allows solar radiation to penetrate but absorbs the infrared radiation returning to space.

Grid: The layout of an electrical distribution system.

Gross Generation: The total amount of electric energy produced by a generating facility, as measured at the generator terminals.

Heavy Oil: The fuel oils remaining after the lighter oils have been distilled off during the refining process. Except for start-up and flame stabilization, virtually all petroleum used in steam plants is heavy oil.

Hydroelectric Plant: A plant in which the turbine generators are driven by falling water.

Industrial: The industrial sector is generally defined as manufacturing, construction, mining agriculture, fishing and forestry establishments Standard Industrial Classification (SIC) codes 01-39. The utility may classify industrial service using the SIC codes, or based on demand or annual usage exceeding some specified limit. The limit may be set by the utility based on the rate schedule of the utility.

Intermediate Load (Electric System): The range from base load to a point between base load and peak. This point may be the midpoint, a percent of the peakload, or the load over a specified time period.

Internal Combustion Plant: A plant in which the prime mover is an internal combustion engine. An internal combustion engine has one or more cylinders in which the process of combustion takes place, converting energy released from the rapid burning of a fuel-air mixture into mechanical energy. Diesel or gas-fired engines are the principal types used in electric plants. The plant is usually operated during periods of high demand for electricity.

Interruptible Gas: Gas sold to customers with a provision that permits curtailment or cessation of service at the discretion of the distributing company under certain circumstances, as specified in the service contract.

Interruptible Load: Refers to program activities that, in accordance with contractual arrangements, can interrupt consumer load at times of seasonal peak load by direct control of the utility system operator or by action of the consumer at the direct request of the system operator. It usually involves commercial and industrial consumers. In some instances the load reduction may be affected by direct action of the system operator (remote tripping) after notice to the consumer in accordance with contractual provisions. For example, loads that can be interrupted to fulfill planning or operation reserve requirements should be reported as Interruptible Load. Interruptible Load as defined here excludes Direct Load Control and Other Load Management. (Interruptible Load, as reported here, is synonymous with Interruptible Demand reported to the North American Electric Reliability Council on the voluntary Office of Energy Emergency Operations Form OE-411, "Coordinated Regional Bulk Power Supply Program Report," with the exception that annual peakload effects are reported on the Form EIA-861 and seasonal (i.e., summer and winter) peakload effects are reported on the OE-411).

Kilowatt (kW): One thousand watts.

Kilowatthour (kWh): One thousand watthours.

Light Oil: Lighter fuel oils distilled off during the refining process. Virtually all petroleum used in internal combustion and gas-turbine engines is light oil.

Lignite: A brownish-black coal of low rank with high inherent moisture and volatile matter (used almost exclusively for electric power generation). It is also referred to as brown coal. Comprises two groups classified according to the following ASTM Specification D388-84 for calorific values on a moist material-matter-free basis:

	Limits Btu/lb.	
	GE	LT
Lignite A	6300	8300
Lignite B	-	6300

Load (Electric): The amount of electric power delivered or required at any specific point or points on a system. The requirement originates at the energy-consuming equipment of the consumers.

Maximum Demand: The greatest of all demands of the load that has occurred within a specified period of time.

Mcf: One thousand cubic feet.

Megawatt (MW): One million watts.

Megawatthour (MWh): One million watthours.

MMcf: One million cubic feet.

Natural Gas: A naturally occurring mixture of hydrocarbon and nonhydrocarbon gases found in porous geological formations beneath the earth's surface, often in association with petroleum. The principal constituent is methane.

Net Capability: The maximum load-carrying ability of the equipment, exclusive of station use, under specified conditions for a given time interval, independent

of the characteristics of the load. (Capability is determined by design characteristics, physical conditions, adequacy of prime mover, energy supply, and operating limitations such as cooling and circulating water supply and temperature, headwater and tailwater elevations, and electrical use.)

Net Generation: Gross generation minus plant use from all electric utility owned plants. The energy required for pumping at a pumped-storage plant is regarded as plant use and must be deducted from the gross generation.

Net Summer Capability: The steady hourly output, which generating equipment is expected to supply to system load exclusive of auxiliary power, as demonstrated by tests at the time of summer peak demand.

Net Winter Capability: The steady hourly output which generating equipment is expected to supply to system load exclusive of auxiliary power, as demonstrated by tests at the time of winter peak demand.

Noncoincidental Peak Load: The sum of two or more peakloads on individual systems that do not occur in the same time interval. Meaningful only when considering loads within a limited period of time, such as a day, week, month, a heating or cooling season, and usually for not more than 1 year.

Non-Firm Power: Power or power-producing capacity supplied or available under a commitment having limited or no assured availability.

Nonutility Power Producer: A corporation, person, agency, authority, or other legal entity or instrumentality that owns electric generating capacity and is not an electric utility. Nonutility power producers include qualifying cogenerators, qualifying small power producers, and other nonutility generators (including independent power producers) without a designated franchised service area, and which do not file forms listed in the Code of Federal Regulations, Title 18, Part 141.

Nuclear Fuel: Fissionable materials that have been enriched to such a composition that, when placed in a nuclear reactor, will support a self-sustaining fission chain reaction, producing heat in a controlled manner for process use.

Nuclear Power Plant: A facility in which heat produced in a reactor by the fissioning of nuclear fuel is used to drive a steam turbine.

Off-Peak Gas: Gas that is to be delivered and taken on demand when demand is not at its peak.

Ohm: The unit of measurement of electrical resistance. The resistance of a circuit in which a potential difference of 1 volt produces a current of 1 ampere.

Operable Nuclear Unit: A nuclear unit is "operable" after it completes low-power testing and is granted authorization to operate at full power. This occurs when it receives its full power amendment to its operating license from the Nuclear Regulatory Commission.

Outage: The period during which a generating unit, transmission line, or other facility is out of service.

Peak Demand: The maximum load during a specified period of time.

Peak Load Plant: A plant usually housing old, low-efficiency steam units; gas turbines; diesels; or pumped-storage hydroelectric equipment normally used during the peak-load periods.

Peaking Capacity: Capacity of generating equipment normally reserved for operation during the hours of highest daily, weekly, or seasonal loads. Some generating equipment may be operated at certain times as peaking capacity and at other times to serve loads on an around-the-clock basis.

Percent Difference: The relative change in a quantity over a specified time period. It is calculated as follows: the current value has the previous value subtracted from it; this new number is divided by the absolute value of the previous value; then this new number is multiplied by 100.

Petroleum: A mixture of hydrocarbons existing in the liquid state found in natural underground reservoirs, often associated with gas. Petroleum includes fuel oil No. 2, No. 4, No. 5, No. 6; topped crude; Kerosene; and jet fuel.

Petroleum Coke: See Coke (Petroleum).

Petroleum (Crude Oil): A naturally occurring, oily, flammable liquid composed principally of hydrocarbons. Crude oil is occasionally found in springs or pools but usually is drilled from wells beneath the earth's surface.

Planned Generator: A proposal by a company to install electric generating equipment at an existing or planned facility or site. The proposal is based on the owner having obtained (1) all environmental and regulatory approvals, (2) a signed contract for the electric energy, or (3) financial closure for the facility.

Plant: A facility at which are located prime movers, electric generators, and auxiliary equipment for converting mechanical, chemical, and/or nuclear energy into electric energy. A plant may contain more than one type of prime mover. Electric utility plants exclude facilities that satisfy the definition of a qualifying facility under the Public Utility Regulatory Policies Act of 1978.

Plant Use: The electric energy used in the operation of a plant. Included in this definition is the energy required for pumping at pumped-storage plants.

Plant-Use Electricity: The electric energy used in the operation of a plant. This energy total is subtracted from the gross energy production of the plant; for reporting purposes the plant energy production is then reported as a net figure. The energy required for

pumping at pumped-storage plants is, by definition, subtracted, and the energy production for these plants is then reported as a net figure.

Power: The rate at which energy is transferred. Electrical energy is usually measured in watts. Also used for a measurement of capacity.

Power Pool: An association of two or more interconnected electric systems having an agreement to coordinate operations and planning for improved reliability and efficiencies.

Price: The amount of money or consideration-in-kind for which a service is bought, sold, or offered for sale.

Prime Mover: The engine, turbine, water wheel, or similar machine that drives an electric generator; or, for reporting purposes, a device that converts energy to electricity directly (e.g., photovoltaic solar and fuel cell(s)).

Profit: The income remaining after all business expenses are paid.

Public Authority Service to Public Authorities: Public authority service includes electricity supplied and services rendered to municipalities or divisions or agencies of State or Federal governments, under special contracts or agreements or service classifications applicable only to public authorities.

Public Street and Highway Lighting: Public street and highway lighting includes electricity supplied and services rendered for the purposes of lighting streets, highways, parks, and other public places; or for traffic or other signal system service, for municipalities, or other divisions or agencies of State or Federal governments.

Pumped-Storage Hydroelectric Plant: A plant that usually generates electric energy during peak-load periods by using water previously pumped into an elevated storage reservoir during off-peak periods when excess generating capacity is available to do so. When additional generating capacity is needed, the water can be released from the reservoir through a conduit to turbine generators located in a power plant at a lower level.

Purchased Power Adjustment: A clause in a rate schedule that provides for adjustments to the bill when energy from another electric system is acquired and it varies from a specified unit base amount.

Pure Pumped-Storage Hydroelectric Plant: A plant that produces power only from water that has previously been pumped to an upper reservoir.

Qualifying Facility (QF): A cogeneration or small power production facility that meets certain ownership, operating, and efficiency criteria established by the Federal Energy Regulatory Commission (FERC) pursuant to the Public Utility Regulatory Policies Act (PURPA). (See the Code of Federal Regulations, Title 18, Part 292.) Part 292.

Railroad and Railway Services: Railroad and railway services include electricity supplied and services rendered to railroads and interurban and street railways, for general railroad use, including the propulsion of cars or locomotives, where such electricity is supplied under separate and distinct rate schedules.

Rate Base: The value of property upon which a utility is permitted to earn a specified rate of return as established by a regulatory authority. The rate base generally represents the value of property used by the utility in providing service and may be calculated by any one or a combination of the following accounting methods: fair value, prudent investment, reproduction cost, or original cost. Depending on which method is used, the rate base includes cash, working capital, materials and supplies, and deductions for accumulated provisions for depreciation, contributions in aid of construction, customer advances for construction, accumulated deferred income taxes, and accumulated deferred investment tax credits.

Ratemaking Authority: A utility commission's legal authority to fix, modify, approve, or disapprove rates, as determined by the powers given the commission by a State or Federal legislature.

Receipts: Purchases of fuel.

Regulation: The governmental function of controlling or directing economic entities through the process of rulemaking and adjudication.

Reserve Margin (Operating): The amount of unused available capability of an electric power system at peakload for a utility system as a percentage of total capability.

Residential: The residential sector is defined as private household establishments which consume energy primarily for space heating, water heating, air conditioning, lighting, refrigeration, cooking and clothes drying. The classification of an individual consumer's account, where the use is both residential and commercial, is based on principal use. For the residential class, do not duplicate consumer accounts due to multiple metering for special services (water, heating, etc.). Apartment houses are also included.

Residual Fuel Oil: The topped crude of refinery operation, includes No. 5 and No. 6 fuel oils as defined in ASTM Specification D396 and Federal Specification VV-F-815C; Navy Special fuel oil as defined in Military Specification MIL-F-859E including Amendment 2 (NATO Symbol F-77); and Bunker C fuel oil. Residual fuel oil is used for the production of electric power, space heating, vessel bunkering, and various industrial purposes. Imports of residual fuel oil include imported crude oil burned as fuel.

Restricted-Universe Census: This is the complete enumeration of data from a specifically defined subset of entities including, for example, those that exceed a given level of sales or generator nameplate capacity.

Retail: Sales covering electrical energy supplied for residential, commercial, and industrial end-use purposes. Other small classes, such as agriculture and street lighting, also are included in this category.

Revenue: The total amount of money received by a firm from sales of its products and/or services, gains from the sales or exchange of assets, interest and dividends earned on investments, and other increases in the owner's equity except those arising from capital adjustments.

Running and Quick-Start Capability: The net capability of generating units that carry load or have quick-start capability. In general, quick-start capability refers to generating units that can be available for load within a 30-minute period.

Sales: The amount of kilowatthours sold in a given period of time; usually grouped by classes of service, such as residential, commercial, industrial, and other. Other sales include public street and highway lighting, other sales to public authorities and railways, and interdepartmental sales.

Sales for Resale: Energy supplied to other electric utilities, cooperatives, municipalities, and Federal and State electric agencies for resale to ultimate consumers.

Scheduled Outage: The shutdown of a generating unit, transmission line, or other facility, for inspection or maintenance, in accordance with an advance schedule.

Short Ton: A unit of weight equal to 2,000 pounds.

Small Power Producer (SPP): Under the Public Utility Regulatory Policies Act (PURPA), a small power production facility (or small power producer) generates electricity using waste, renewable (water, wind and solar), or geothermal energy as a primary energy source. Fossil fuels can be used, but renewable resource must provide at least 75 percent of the total energy input. (See Code of Federal Regulations, Title 18, Part 292.)

Spinning Reserve: That reserve generating capacity running at a zero load and synchronized to the electric system.

Spot Purchases: A single shipment of fuel or volumes of fuel, purchased for delivery within 1 year. Spot purchases are often made by a user to fulfill a certain portion of energy requirements, to meet unanticipated energy needs, or to take advantage of low-fuel prices.

Stability: The property of a system or element by virtue of which its output will ultimately attain a steady state. The amount of power that can be transferred from one machine to another following a disturbance. The stability of a power system is its ability to develop restoring forces equal to or greater than the disturbing forces so as to maintain a state of equilibrium.

Standard Industrial Classification (SIC): A set of codes developed by the Office of Management and Budget, which categorizes business into groups with similar economic activities.

Standby Facility: A facility that supports a utility system and is generally running under no-load. It is available to replace or supplement a facility normally in service.

Standby Service: Support service that is available, as needed, to supplement a consumer, a utility system, or to another utility if a schedule or an agreement authorizes the transaction. The service is not regularly used.

Steam-Electric Plant (Conventional): A plant in which the prime mover is a steam turbine. The steam used to drive the turbine is produced in a boiler where fossil fuels are burned.

Stocks: A supply of fuel accumulated for future use. This includes coal and fuel oil stocks at the plant site, in coal cars, tanks, or barges at the plant site, or at separate storage sites.

Subbituminous Coal: Subbituminous coal, or black lignite, is dull black and generally contains 20 to 30 percent moisture. The heat content of subbituminous coal ranges from 16 to 24 million Btu per ton as received and averages about 18 million Btu per ton. Subbituminous coal, mined in the western coal fields, is used for generating electricity and space heating.

Substation: Facility equipment that switches, changes, or regulates electric voltage.

Sulfur: One of the elements present in varying quantities in coal which contributes to environmental degradation when coal is burned. In terms of sulfur content by weight, coal is generally classified as low (less than or equal to 1 percent), medium (greater than 1 percent and less than or equal to 3 percent), and high (greater than 3 percent). Sulfur content is measured as a percent by weight of coal on an “as received” or a “dry” (moisture-free, usually part of a laboratory analysis) basis.

Switching Station: Facility equipment used to tie together two or more electric circuits through switches. The switches are selectively arranged to permit a circuit to be disconnected, or to change the electric connection between the circuits.

System (Electric): Physically connected generation, transmission, and distribution facilities operated as an integrated unit under one central management, or operating supervision.

Transformer: An electrical device for changing the voltage of alternating current.

Transmission: The movement or transfer of electric energy over an interconnected group of lines and associated equipment between points of supply and points at which it is transformed for delivery to consumers, or is delivered to other electric systems.

Transmission is considered to end when the energy is transformed for distribution to the consumer.

Transmission System (Electric): An interconnected group of electric transmission lines and associated equipment for moving or transferring electric energy in bulk between points of supply and points at which it is transformed for delivery over the distribution system lines to consumers, or is delivered to other electric systems.

Turbine: A machine for generating rotary mechanical power from the energy of a stream of fluid (such as water, steam, or hot gas). Turbines convert the kinetic energy of fluids to mechanical energy through the principles of impulse and reaction, or a mixture of the two.

Uniform System of Accounts: Prescribed financial rules and regulations established by the Federal Energy Regulatory Commission for utilities subject to its jurisdiction under the authority granted by the Federal Power Act.

Useful Thermal Output: The thermal energy made available for use in any industrial or commercial process, or used in any heating or cooling application, i.e., total thermal energy made available for processes and applications other than electrical generation.

Voltage Reduction: Any intentional reduction of system voltage by 3 percent or greater for reasons of maintaining the continuity of service of the bulk electric power supply system.

Watt: The electrical unit of power. The rate of energy transfer equivalent to 1 ampere flowing under a pressure of 1 volt at unity power factor.

Watthour (Wh): An electrical energy unit of measure equal to 1 watt of power supplied to, or taken from, an electric circuit steadily for 1 hour.

Wheeling Service: The movement of electricity from one system to another over transmission facilities of intervening systems. Wheeling service contracts can be established between two or more systems.

Wholesale Sales: Energy supplied to other electric utilities, cooperatives, municipals, and Federal and State electric agencies for resale to ultimate consumers.