Notes and Sources

Map Notes

Note: Most of the data contained in the maps are from Energy Information Administration (EIA) sources. However, utility service territories are based on the following:

Source: Electric Light and Power, Electric Power Generating and Transmission Systems Map of the U.S. and Canada, Third Edition, Rennwell Publishing Co. (Tulsa, OK, 1996).

Table Notes

Table 1, 1999 Summary Statistics:

All State rankings are in descending order, that is from the highest or greatest value to the lowest or least value. The primary energy source is the predominant fuel consumed for the generation of electricity within the State.

Net Summer Capability is the steady hourly output that generating equipment is expected to supply to system load (exclusive of auxiliary) power as demonstrated by tests at the time of summer peak demand. Capability by fuel source is based on the primary fuel source(s) by generator as reported to EIA on Form EIA-860A,"Annual Electric Generator Report - Utility," and Form EIA-860B, "Annual Electric Generator Report - Nonutility."

Generation by Coal includes bituminous, subbituminous, lignite, anthracite, and waste coal; Petroleum includes No. 2, 4, 5, and 6 fuel oils, crude oil, waste oil, kerosene, jet fuel, and petroleum coke. Gas includes natural gas, waste heat, butane, methane, propane, other gases, and digester gas. Hydroelectric includes conventional and pumped storage. Other includes wind, solar (thermal and photovoltaic), geothermal, wood and wood waste, other biomass, municipal solid waste, and landfill gases, as well as other miscellaneous fuels such as sulfur, other chemicals, or batteries.

Emissions estimates are for utility organic-fueled steam-electric plants 10 megawatts and larger and for nonutility fossil-fueled plants 1 megawatt and larger. The estimation methodologies for deriving these estimates of emissions are published in the Electric Power Annual Volume II, Technical Notes.

Electricity consumption is the electricity used by the end users in a State. Electricity consumption is the sum of utility regulated retail sales, unregulated retail sales, nonutility sales to other end users, and nonutility direct use of electricity generated by the nonutility. Electricity consumption excludes transmission and distribution line losses and unaccounted for losses and uses. Utility retail sales are regulated sales by the franchised utilities within the State. Unregulated retail sales are those made by retailers other than the customers' traditional electric utility in those States where restructuring of the electric power industry allows competitive power suppliers to sell to end-use customers. Nonutility end use sales are direct sales by a nonutility power producer to an end user (not for resale). Nonutility direct use is self-consumption of electricity generated by a nonutility power producer. The utility average electricity price does not include prices for unregulated retail sales by retail power marketers or power marketing divisions of utilities in States where retail open access is available.

Sources: Utility Capability -Energy Information Administration (EIA), Form EIA-860A, "Annual Electric Generator Report - Utility." Utility Generation -EIA, Form EIA-759, "Monthly Power Plant Report." Nonutility Capability and Generation - EIA, Form EIA-860B, "Annual Electric Generator Report - Nonutility." Utility Emissions - EIA, Form EIA-767, "Steam-Electric Plant Operation and Design Report," and Form EIA-759, "Monthly Power Plant Report." Nonutility Emissions - EIA, Form EIA-860B, "Annual Electricity Generator Report - Nonutility." Utility Retail Sales and Unregulated Retail Sales - EIA, Form EIA-861, "Annual Electric Utility Report." Nonutility End Use Sales and Direct Use - EIA, Form EIA-860B, "Annual Electric Generator Report - Nonutility." Utility Average Electricity Price - EIA, Form EIA-861, "Annual Electric Utility Report."

***** = The absolute value is less than 0.5; for percentage calculation the absolute value is less than 0.05 percent.

Table 2, Ten Largest Plants by Generating Capability, 1999:

Each fuel used in more than 10 percent of capability is listed. Coal includes bituminous, subbituminous, lignite, anthracite, and waste coal. Petroleum includes No. 2, 4, 5, and 6 fuel oils, crude oil, jet fuel, kerosene, waste oil, and petroleum coke. Gas includes natural gas, waste heat, butane, methane, propane, other gas, and digester gas. Hydroelectric includes conventional and pumped storage. Other includes wind, solar (thermal and photovoltaic), geothermal, wood and wood waste, other biomass, municipal solid waste, and landfill gases, as well as other miscellaneous fuels such as sulfur, other chemicals, or batteries.

Note: In recent years, the sale of power plants by utilities to nonutilities has resulted in some plants having multiple owners and operators. For example, the Colstrip plant, generating unit 4, in Montana is operated by the Montana Power Company while generating units 1, 2, and 3 are operated by PPL Montana. All units at Colstrip are listed as one plant in this publication.

Sources: Energy Information Administration (EIA), Form EIA-860A, "Annual Electric Generator Report - Utility and Form EIA-860B, "Annual Electric Generator Report - Nonutility."

Table 3, Five Largest Utilities by Retail Sales within the State, 1999:

Utilities are ranked based on regulated retail sales within the State. Unregulated retail sales by power marketers are not included.

Note: Total may not equal sum of components due to independent rounding.

Source: Energy Information Administration (EIA), Form EIA-861, "Annual Electric Utility Report."

Table 4, Electric Power Industry Generating Capability by Primary Energy Source, 1990, 1994, and 1999:

Note: Totals may not equal sum of components due to independent rounding.

***** = The absolute value is less than 0.5; for percentage calculation the absolute value is less than 0.05 percent.

W = Withheld to avoid disclosure of individual company data.

Sources: Energy Information Administration (EIA), Form EIA-860A, "Annual Electric Generator Report - Utility," Form EIA-860B, "Annual Electric Generator Report - Nonutility," and EIA-867, "Annual Nonutility Power Producer Report."

Table 5, Electric Power Industry Generation of Electricity by Energy Source, 1990, 1994, and 1999:

The Energy Source is the fuel or other energy source consumed for the generation of electricity. Generation by coal includes bituminous, subbituminous, lignite, anthracite, and waste coal. Petroleum includes fuel oil Nos. 2, 4, 5, and 6, crude oil, waste oil, kerosene, jet fuel, and petroleum coke. Gas includes natural gas, waste heat, butane, methane, propane, other gases, and digester gas. Hydroelectric includes conventional and pumped storage. Other includes wind, solar (thermal and photovoltaic), geothermal, wood and wood waste, other biomass, municipal solid waste, and landfill gases, as well as other miscellaneous fuels such as sulfur, other chemicals, or batteries.

Totals may not equal sum of components due to independent rounding.

* = The absolute value is less than 0.5; for percentage calculation the absolute value is less than 0.05 percent.

W = Withheld to avoid disclosure of individual company data.

Sources: Energy Information Administration (EIA), Form EIA-759, "Monthly Power Plant Report," Form EIA-860B, "Annual Electric Generator Report - Nonutility," and EIA-867, "Annual Nonutility Power Producer Report."

Table 6, Utility Delivered Fuel Costs for Coal, Petroleum, and Gas, 1990, 1994, and 1999:

Data are for electric generating plants owned by regulated utilities with a total steam-electric and combined-cycle nameplate capacity of 50 or more megawatts. Restructuring of the electric power industry, which has encouraged the sale of utility plants to nonutility companies, has eroded the frame of utility plants that report fuel costs on the Federal Energy Regulatory Commission (FERC) Form 423. Historically, fuel cost data were a weighted average cost of delivered fuel costs of many respondents in a State. Depending on the cost of fuel delivered to a specific plant, its removal from the FERC Form 423 database can substantially change the weighted average cost of fuel shown for a particular State. Petroleum does not include petroleum coke. Sulfur content of petroleum is for residual fuels only (excludes No. 2 fuel oil).

* = The absolute value is less than 0.5; for percentage calculation the absolute value is less than 0.05 percent.

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

Table 7, Electric Power Industry Emissions Estimates by Fuel, 1990, 1994, and 1999:

As of 1993, CO2 emissions data derived from the emission factor for light oil and NOx emissions reduction from control technologies have been revised due to a software problem-- (see Electric Power Annual Volume II, Technical Notes, Appendix A)-- historical data were revised to reflect these changes. Emissions of NO_x, and SO_2 incorporate the July 1999 Air Pollutant Emissions Factors (AP-42 5th release) of the Environmental Protection Agency. Emissions of CO_2 use carbon emission factors developed by the Energy Information Administration (see Electric Power Annual Volume II, Technical Notes, Appendix A). Utility emission

estimates are for fossil-fueled steam-electric plants 10 megawatt and larger, based on fuel consumption data. Nonutility emissions are for fossil-fueled plants 1 megawatt and larger.

* = The absolute value is less than 0.5; for percentage calculation the absolute value is less than 0.05 percent.

Sources: Energy Information Administration (EIA), Form EIA-767, "Steam-Electric Plant Operation and Design Report," Form EIA 860B, "Annual Electric Generator Report - Nonutility," and Form EIA-867, "Annual Nonutility Power Producers Report."

Table 8, Utility Retail Sales, Revenue, and Average Revenue per Kilowatthour by Sector, 1990, 1994, and 1999:

Utility retail sales, revenue, and average revenue per kilowatthour (price) are regulated sales by the franchised utilities within the State and do not include unregulated retail sales by retail power marketers or power marketing divisions of utilities in States where the electric power industry has been restructured to allow unregulated sales to end-use customers. Revenue and average revenue per kilowatthour are in real dollars, chained to 1999 dollars.

Retail sales, revenue, and average revenue per kilowatthour are provided for the Residential, Commercial, Industrial, and Other consumer sectors. The Other Sector includes sales for 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 due to independent rounding.

* = The absolute value is less than 0.5; for percentage calculation the absolute value is less than 0.05 percent.

Sources: Energy Information Administration (EIA), Form EIA-861, "Annual Electric Utility Report." U.S. Department of Commerce, Bureau of Economic Anaylsis, Implicit Price Deflators, downloaded from Bureau of Economic Analysis, U.S. Department of Commerce.

Table 9, Utility Retail Sales, Revenue, and Number of Customers by Type of Utility, 1999:

Utility retail sales, revenue, average revenue per kilowatthour (price), and number of customers are for those utilities with regulated sales in franchised service territories within the State and do not include unregulated retail sales by retail power marketers or power marketing divisions of utilities in States where the electric power industry has been restructured to allow unregulated sales to end-use customers. For a discussion of the types of utilities (investor-owned, publicly owned, cooperative, and Federal) see the Electric Power Annual Volume II, "The U.S. Electric Power Industry at a Glance," page 1.

Note: Total may not equal sum of components due to independent rounding.

* = The absolute value is less than 0.5; for percentage calculation the absolute value is less than 0.05 percent.

Source: Energy Information Administration (EIA), Form EIA-861, "Annual Electric Utility Report."

Figure Notes

Figure 1: Industry Generating Capability by Primary Energy Source, 1999

"Industry" is defined as the sum of utility and nonutility generating units 1 megawatt and above connected to the grid. Net Summer Capability is based on the primary energy source used by a generator. Coal includes bituminous, subbituminous, lignite, anthracite, and waste coal. Petroleum includes No. 2, 4, 5, and 6 fuel oils, crude oil, jet fuel, kerosene, waste oil, and petroleum coke. Gas includes natural gas, waste heat, butane, methane, propane, other gas, and digester gas. Hydroelectric includes conventional and pumped storage. Other includes wind, solar (thermal and photovoltaic), geothermal, wood and wood waste, other biomass, municipal solid waste, and landfill gases, as well as other miscellaneous fuels such as sulfur, other chemicals, or batteries.

Sources: Energy Information Administration (EIA), Form EIA-860A, "Annual Electric Generator Report - Utility," and Form EIA-860B, "Annual Electric Generator Report - Nonutility."

Figure 2: Industry Generation by Energy Source, 1999

"Industry" is defined as the sum of utility and nonutility generating units 1 megawatt and above connected to the grid. Net generation is provided by the energy sources consumed by generating plants. Coal includes bituminous, subbituminous, lignite, anthracite, and waste coal. Petroleum includes No. 2, 4, 5, and 6 fuel oils, crude oil, jet fuel, kerosene, waste oil, and petroleum coke. Gas includes natural gas, waste heat, butane, methane, propane, other gas, and digester gas. Hydroelectric includes conventional and pumped storage. Other includes wind, solar (thermal and photovoltaic), geothermal, wood and wood waste, other biomass, municipal solid waste, and landfill gases, as well as other miscellaneous fuels such as sulfur, other chemicals, or batteries.

Sources: Energy Information Administration (EIA), Form EIA-759, "Monthly Power Plant Report," and Form EIA-860B, "Annual Electric Generator Report - Nonutility."

Figure 3: Industry Generation of Electricity by Energy Source, 1990 - 1999

"Industry" is defined as the sum of utility and nonutility generating units 1 megawatt and above connected to the grid. Net generation is provided by the energy sources consumed by generating plants. Coal includes bituminous, subbituminous, lignite, anthracite, and waste coal. Petroleum includes No. 2, 4, 5, and 6 fuel oils, crude oil, jet fuel, kerosene, waste oil, and petroleum coke. Gas includes natural gas, waste heat, butane, methane, propane, other gas, and digester gas. Hydroelectric includes conventional and pumped storage. Other includes wind, solar (thermal and photovoltaic), geothermal, wood and wood waste, other biomass, municipal solid waste, and landfill gases, as well as other miscellaneous fuels such as sulfur, other chemicals, or batteries.

Sources: Energy Information Administration (EIA), Form EIA-759, "Monthly Power Plant Report," Form EIA-860B, "Annual Electric Generator Report - Nonutility," and Form EIA-867, "Annual Nonutility Power Producer Report."

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Figure 4: Utility Delivered Fuel Costs for Coal, Petroleum, and Gas, 1990 - 1999

Data are for electric generating plants owned by regulated utilities with a total steam-electric and combined-cycle nameplate capacity of 50 or more megawatts. Restructuring of the electric power industry, which has encouraged the sale of utility plants to nonutility companies, has eroded the frame of utility plants that report fuel costs on the Federal Energy Regulatory Commission (FERC) Form 423. Historically, fuel cost data were a weighted average cost of delivered fuel costs of many respondents in a State. Depending on the cost of fuel delivered to a specific plant, its removal from the FERC Form 423 database can substantially change the weighted average cost of fuel shown for a particular State.

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

Figure 5: Estimated Sulfur Dioxide Emissions, 1990 - 1999

Sources: Energy Information Administration (EIA), Form EIA-767, "Steam-Electric Plant Operation and Design Report," Form EIA-860B, "Annual Electric Generator Report - Nonutility," and Form EIA-867, "Annual Nonutility Power Producer Report."

Figure 6: Estimated Nitrogen Oxide Emissions, 1990 - 1999

Sources: Energy Information Administration (EIA), Form EIA-767, "Steam-Electric Plant Operation and Design Report," Form EIA-860B, "Annual Electric Generator Report - Nonutility," and Form EIA-867, "Annual Nonutility Power Producer Report."

Figure 7: Estimated Carbon Dioxide Emissions, 1990 - 1999

Sources: Energy Information Administration (EIA), Form EIA-767, "Steam-Electric Plant Operation and Design Report," Form EIA-860B, "Annual Electric Generator Report - Nonutility," and Form EIA-867, "Annual Nonutility Power Producer Report."

Figure 8: Nuclear Power Capacity Factor Comparison, 1990 - 1999

Note: The annual capacity factors are calculated as the actual yearly net generation divided by the maximum possible generation for the year. The maximum possible generation is the number of hours in a year (8760) multiplied by the net summer capability as reported to the EIA.

Sources: Energy Information Administration (EIA), Form EIA-759, "Monthly Power Plant Report," Form EIA-860A, "Annual Electric Generator Report," and Form EIA-860B, "Annual Electric Generator Report - Nonutility."