7. Electricity
Figure 7.1 Electricity Overview
(Billion Kilowatthours)

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<th>Industrial</th>
<th>Imports</th>
<th>Exports</th>
<th>Sales to Ultimate Customers [b]</th>
<th>Direct Use [c]</th>
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Net Generation [a] by Sector, 1989–2022

Net Generation [a] by Sector, Monthly

Trade, 1949–2022

[a] Data are for utility-scale facilities.
[b] Electricity sales to ultimate customers reported by electric utilities and other energy service providers.
[d] Includes commercial sector.

Source: Table 7.1.
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<th>Total</th>
<th>Importsd</th>
<th>Exportsd</th>
<th>Net Importsd</th>
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Notes: * See Note 1, "Coverage of Electricity Statistics," at end of section. • Data values preceded by "F" are derived from the U.S. Energy Information Administration’s Short-Term Forecasting System. See Note 3, "Electricity Forecast Values," at end of section. • Total is a sum of individual electric utility sales and direct use due to independent rounding. • Geographic coverage is the 50 states and the District of Columbia.


Sources: See end of section.
Figure 7.2 Electricity Net Generation
(Billion Kilowatthours)

Total (All Sectors), Major Sources, 1949–2022

Total (All Sectors), Major Sources, Monthly

Electric Power Sector, Major Sources, 2022

Industrial Sector, Major Sources, 2022

[a] Conventional hydroelectric power, wood, waste, geothermal, solar, and wind.
[b] Blast furnace gas, and other manufactured and waste derived from fossil fuels.
[c] Conventional hydroelectric power.

Note: Data are for utility-scale facilities.
Sources: Tables 7.2a-7.2c.
### Table 7.2a  Electricity Net Generation: Total (All Sectors)  
(Sum of Tables 7.2b and 7.2c; Million Kilowatthours)

<table>
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<th>Year</th>
<th>Coal (PB Btu)</th>
<th>Natural Gas (TB Ccf)</th>
<th>Other Gases (TB Btu)</th>
<th>Nuclear Electric Power (TBkWh)</th>
<th>Hydropower-Pumped Storage (TBkWh)</th>
<th>Conventional Hydroelectric Power (TBkWh)</th>
<th>Biomass (TBkWh)</th>
<th>Renewable Energy (TBkWh)</th>
<th>Total (TBkWh)</th>
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**Footnotes:**
- a: Anthracite, bituminous coal, subbituminous coal, lignite, waste coal, and coal syngas.
- b: Dissolved fuel oil, residual fuel oil, petroleum coke, jet fuel, kerosene, other petroleum oil, and coal.
- c: Natural gas, plus a small amount of supplemental gaseous fuels.
- d: Blast furnace gas, and other manufactured and waste gases derived from fossil fuels. Through 1990, data includes coke gas and coke oven gas. From 1991, includes additional gas from electric utilities, independent power producers, and industrial plants.
- e: Pumped storage facility production minus energy used for pumping.
- f: Includes hydroelectric pumped storage installed in Conventional Hydroelectric Power.
- g: Wood and wood-derived fuels.
- h: Municipal solid waste from biogenic sources, landfill gas, sludge waste, agriculture, byproducts, and other biomass. Through 2000, also includes non-renewable waste (municipal solid waste from non-biogenic sources, and tire derived fuels).
- i: Electricity net generation from solar thermal and photovoltaic (PV) energy at utility-scale facilities. Does not include small-scale solar photovoltaic generation.

See Table 10.6

- **Table 10.6:** Includes data from the Energy Information Administration's Monthly Energy Review, October 2023.
- **Sources:** Tables 7.2b and 7.2c.
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**Table 7.2b: Electricity Net Generation: Electric Power Sector**

(Subset of Table 7.2a; Million Kilowatthours)

- **Coal**
- **Petroleum**
- **Natural Gas**
- **Nuclear**
- **Electric Power**
- **Hydro**
- **Pumped Storage**
- **Conventional Hydroelectric Power**
- **Wood**
- **Waste**
- **Geothermal**
- **Solar**
- **Total**

---

**Notes:**
- **a:** Anthracite, bituminous coal, subbituminous coal, lignite, waste coal, and coal syenite.
- **b:** Distillate fuel oil, residual fuel oil, petroleum coke, jet fuel, kerosene, other petroleum, waste oil, and bitumen in 2012.
- **c:** Natural gas, plus a small amount of supplemental gaseous fuels.
- **d:** Blasting furnace gas, and other manufactured and waste gases derived from fossil fuels. Through 2010, includes all gas marketed.
- **e:** Pumped storage facility production minus energy used for pumping.
- **f:** Through 1985, hydroelectric pumped storage is included in "Conventional Hydroelectric Power.”
- **g:** Wood and wood-derived fuels.
- **h:** Municipal solid waste from biogas sources, landfill gas, sludge waste, agricultural waste, other waste, and non-renewable waste (municipal) solid waste from non-biogenic sources, and tire-derived fuels.
- **i:** Electricity net generation from solar thermal and photovoltaic (PV) energy at utility-scale facilities. Does not include small-scale solar photovoltaic generation.

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**Table 7.10: Electric Power System by Source**

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**Includes:**
- Batteries, chemicals, hydrogen, pitch, purchased steam, sulfur, miscellaneous technologies, and beginning in 2001, non-renewable waste (municipal) non-renewable solid waste, and tire-derived fuels.
- Through 1988, data are for electric utilities only. Beginning in 1989, data are for electric utilities and independent power producers.

**Notes:**
- **a:** Does not include non-renewable solid waste.
- **b:** Data for utility-scale facilities. See Table 1.2, "Coverage of Electricity Statistics,” at end of section.
- **c:** The electric power sector comprises electricity-only and combined-heat-and-power plants.
- **d:** Includes NA-EIA, NA-CES, and others. The 50-State figures do not include NA-EIA and NA-CES.

**Web Page:** See http://www.eia.gov/todayinenergy/data/monthly/elecprices (for historical data) and http://www.eia.gov/todayinenergy/data/monthly/elecprices for daily data.

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Notes: • Data are for utility-scale facilities. See Note 1, “Coverage of Electricity Statistics,” at end of section. • See Note 2, “Classification of Power Plants into Energy-Sector Groups,” at end of section. This may affect the total for coal, due to independent rounding. • Geographic coverage is the 50 states and the District of Columbia.

References: See end of section.

U. S. Energy Information Administration / Monthly Energy Review October 2023
**Figure 7.3 Consumption of Selected Combustible Fuels for Electricity Generation**

**Coal by Sector, 1989–2022**

- **Total [a]**
- **Electric Power**
- **Industrial**

**Petroleum by Sector, 1989–2022**

- **Total [a]**
- **Electric Power**
- **Industrial**

**Natural Gas by Sector, 1989–2022**

- **Total [a]**
- **Electric Power**
- **Industrial**

**Other Gases [b] by Sector, 1989–2022**

- **Total [a]**
- **Electric Power**
- **Industrial**

**Wood by Sector, 1989–2022**

- **Total [a]**
- **Electric Power**
- **Industrial**

**Waste by Sector, 1989–2022**

- **Total [a]**
- **Electric Power**
- **Commercial**
- **Industrial**

[a] Includes commercial sector.
[b] Blast furnace gas, and other manufactured and waste gases derived from fossil fuels. Through 2010, also includes propane gas.

Note: Data are for utility-scale facilities.
Sources: Tables 7.3a-7.3c.
## Table 7.3a: Consumption of Combustible Fuels for Electricity Generation: Total (All Sectors) (Sum of Tables 7.3b and 7.3c)

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**Notes:**
- \(^a\) Anthracite, bituminous coal, subbituminous coal, lignite, waste coal, and coal syngas.
- \(^b\) Fuel oil nos. 1, 2, and 4. For 1949–1979, data are for gas turbine and internal combustion plant use of petroleum. For 1980–2000, electric utility data also include small amounts of kerosene and jet fuel.
- \(^c\) Fuel oil nos. 5 and 6. For 1949–1979, data are for steam plant use of petroleum. For 1980–2000, electric utility data also include a small amount of fuel oil no. 4.
- \(^d\) Jet fuel, kerosene, other petroleum liquids, waste oil, and, beginning in 2011, propane gas.
- \(^e\) Petroleum coke is converted from short tons to barrels by multiplying by 5.
- \(^f\) Natural gas, plus a small amount of supplemental gaseous fuels.
- \(^g\) Blast furnace gas and other miscellaneous and waste gases deriving from fossil fuels. Through 2010, also includes propylene gas.
- \(^h\) Municipal solid waste from biogenic sources, landfill gas, sludge waste, agricultural byproducts, and other biomass. Through 2000, also includes non-renewable waste (municipal solid waste from non-biogenic sources, and tire-derived fuels).
- \(^i\) Batteries, chemicals, hydrogen, pitch, purchased steam, sulfur, miscellaneous technologies, and, beginning in 2001, non-renewable waste (municipal solid waste from non-biogenic sources, and tire-derived fuels).
- \(^j\) Wood and wood-derived fuels.
- \(^k\) Through 1988, data are for electric utilities only. Beginning in 1989, data are for electric utilities, independent power producers, commercial plants, and industrial plants.
- \(^l\)Data are for utility-scale facilities. See Note 1, "Coverage of Electricity Statistics," at end of section. Data are for fuels consumed to produce electricity. Data also include fuels consumed to produce useful thermal output at a small number of utility owned heat and power (CHP) plants. \(^m\) Data may not equal sum of components due to independent rounding. \(^n\) Geographic coverage is the 50 states and the District of Columbia.

**Sources:** Tables 7.3b and 7.3c.
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<th>Hundred Thousand Barrels</th>
<th>Thousand Short Tons</th>
<th>Billion Cubic Feet</th>
<th>Trillion Btu</th>
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<tr>
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<td>138,861</td>
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<td>50,103</td>
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<td>10,961</td>
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<td>1,635</td>
<td>50,103</td>
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**Table 7.3b: Consumption of Combustible Fuels for Electricity Generation: Electric Power Sector**

(a) Anthracite, bituminous coal, subbituminous coal, lignite, waste coal, and coal syngas.
(b) Fuel oil nos. 1, 2, and 4. For 1949–1979, data are for gas turbine and internal combustion plant use of petroleum. For 1980–2000, electricity data also include small amounts of kerosene and jet fuel.
(c) Fuel oil nos. 5 and 6. For 1949–1979, data are for steam plant use of petroleum. For 1980–2000, electricity data also include a small amount of fuel oil no. 4.
(d) Jett fuel, kerosene, other petroleum liquids, waste oil, and, beginning in 2011, propane.
(e) Petroleum coke is converted from short tons to barrels by multiplying by 5.
(f) Natural gas, plus a small amount of supplemental gaseous fuels.
(g) Includes all manufactured and waste gases derived from fossil fuels. Through 2010, also includes propane gas.
(h) Wood and wood-derived fuels.
(i) Municipal solid waste from biogenic sources, landfill gas, sludge waste, agricultural byproducts, and other biomass. Through 2000, also includes non-renewable waste (municipal solid waste from non-biogenic sources, and tire-derived fuels).
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[^a]: Commercial combined-heat-and-power (CHP) and commercial electricity-only plants.
[^b]: Industrial combined-heat-and-power (CHP) and industrial electricity-only plants.
[^c]: Anthracite, bituminous coal, subbituminous coal, lignite, waste coal, and coal syngas.
[^d]: Distillate fuel oil, residual fuel oil, petroleum coke, jet fuel, kerosene, other petroleum, waste oil, and, beginning in 2011, prepare.
[^e]: Municipal solid waste from biogas sources, landfill gas, sludge waste, agricultural byproducts, and other biomass. Through 2000, also includes non-renewable waste (municipal solid waste from non-biogas sources, and tire-derived fuels).
[^f]: Blast furnace gas, and other manufactured and waste gases derived from fossil fuels. Through 2010, also includes propane gas.
[^g]: Wood and wood-derived fuels.
[^h]: Batteries, chemicals, hydrogen, pitch, purchased steam, sulfur, miscellaneous technologies, and, beginning in 2001, non-renewable waste (municipal solid waste from non-biogas sources, and tire-derived fuels).
[^i]: Less than 0.5 trillion Btu.

Figure 7.4 Consumption of Selected Combustible Fuels for Electricity Generation and Useful Thermal Output

Coal by Sector, 1989–2022

Petroleum by Sector, 1989–2022

Natural Gas by Sector, 1989–2022

Other Gases [b] by Sector, 1989–2022

Wood by Sector, 1989–2022

Waste by Sector, 1989–2022

[a] Includes commercial sector.
[b] Blast furnace gas, and other manufactured and waste gases derived from fossil fuels. Through 2010, also includes propane gas.

Note: Data are for utility-scale facilities. Web Page: http://www.eia.gov/totalenergy/data/monthly/#electricity. Sources: Tables 7.4a-7.4c.
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<th>Other Liquids</th>
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<td>Thousand Short Tons</td>
<td>Thousand Barrels</td>
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<td>Thousand Barrels</td>
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**Notes:***

- ^a^ Anthracite, bituminous coal, subbituminous coal, lignite, waste coal, and coal syufuel.
- ^b^ Fuel oil nos. 1, 2, and 4. For 1949–1979, data are for gas turbine and internal combustion plant use of petroleum. For 1980–2020, electric utility data also include small amounts of kerosene and jet fuel.
- ^c^ Fuel oil nos. 5 and 6. For 1980–2020, electric utility data also include a small amount of fuel oil no. 4.
- ^d^ Jet fuel, kerosene, other petroleum liquids, waste oil, and, beginning in 2011, propane.
- ^e^ Petroleum coke is converted from short tons to barrels by multiplying by 5.
- ^f^ Natural gas, plus a small amount of supplemental gaseous fuels.
- ^g^ Blast furnace gas, and other manufactured and waste gases derived from fossil fuels. Through 2010, also includes propane gas.
- ^h^ Municipal solid waste from biogenic sources, landfill gas, sludge waste, agricultural byproducts, and other biomass. Through 2000, also includes non-renewable waste (municipal solid waste from non-biogenic sources and tire-derived fuels).
- ^i^ Batteires, chemicals, hydrogen, pitche, purchased steam, sulfur, miscellaneous technologies, and, beginning in 2001, non-renewable waste (municipal solid waste from non-biogenic sources, and tire-derived fuels).

Notes:

- Data are for utility-scale facilities. See Note 1, "Coverage of Electricity Statistics," at end of section. TotaIs may not equal sum of components due to independent rounding.
- Geographic coverage is the 50 states and the District of Columbia.


Sources: Tables 7.4b and 7.4c.
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<th>Other Liquids</th>
<th>Petroleum Coke</th>
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<tr>
<td>2005 Total</td>
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<td>6,758</td>
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</table>

Notes: 
- **Petroleum:** Includes crude oil, natural gas liquids, and related products.
- **Natural Gas:** Includes natural gas and related products.
- **Biomass:** Includes wood, wood products, and related products.
- **Other:** Includes all other fuels not specifically listed.

Sources: See end of table.
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- Commercial combined-heat-and-power (CHP) and commercial electricity-only plants.
- Industrial combined-heat-and-power (CHP) and industrial electricity-only plants.
- Anthracite, bituminous coal, subbituminous coal, lignite, waste coal, and coal synfuel.
- Distillate fuel oil, residual fuel oil, petroleum coke, jet fuel, kerosene, other petroleum, waste oil, and, beginning in 2011, propane.
- Natural gas, plus a small amount of supplemental gaseous fuels.
- Municipal solid waste from biogenic sources, landfill gas, sludge waste, agricultural byproducts, and other biomass. Through 2000, also includes non-renewable waste (municipal) solid waste from non-biogenic sources, and tire-derived fuels.
- Batteries, chemicals, hydrogen, pitch, purchased steam, sulfur, miscellaneous technologies, and, beginning in 2001, non-renewable waste (municipal) solid waste from non-biogenic sources, and tire-derived fuels.
- Wood and woody-derived fuels.

Notes: • Data are for utility-scale facilities. See Note 1, "Coverage of Electricity Statistics." at end of section. • See Note 2, "Classification of Power Plants Into Energy-Use Sectors." at end of section. • Totals may not equal sum of components due to independent rounding. • Geographic coverage is the 50 states and the District of Columbia.


**Figure 7.5 Stocks of Coal and Petroleum: Electric Power Sector**

Coal, 1949–2022

Total Petroleum, 1949–2022

Coal, Monthly

Total Petroleum, Monthly

Note: Data are for utility-sale facilities. Web Page: http://www.eia.gov/totalenergy/data/monthly/#electricity. Source: Table 7.5.
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### Table 7.5 Stocks of Coal and Petroleum: Electric Power Sector

- **Coal:** Anthracite, bituminous coal, subbituminous coal, and lignite; excludes waste coal.
- **Distillate Fuel Oil:** Fuel oil nos. 1, 2, and 4. For 1973–1979, data are for gas turbine and internal combustion plant stocks of petroleum. For 1980–2000, electric utility data also include small amounts of kerosene and jet fuel.
- **Residual Fuel Oil:** Fuel oil nos. 3 and 6. For 1973–1979, data are for steam plant stocks of petroleum. For 1980–2000, electric utility data also include a small amount of fuel oil no. 4.
- **Other Liquids:** Jet fuel and kerosene. Through 2003, data also include a small amount of waste oil.
- **Petroleum Coke:** Petroleum coke is converted from short tons to barrels by multiplying by 5.
- **Percent:** Distillate fuel oil and residual fuel oil. Beginning in 1970, also includes petroleum coke. Beginning in 2002, also includes other liquids.
- **Through 1998:** Data are for electric utilities only. Beginning in 1999, data are for electric utilities and independent power producers.

- **NA:** Not available.

**Notes:** Data are for utility-scale facilities. See Note 1, “Coverage of Electricity Statistics,” at end of section. Electric power sector comprises electricity-only and combined-heat-and-power (CHP) plants within the NAICS 22 category whose primary business is to sell electricity, or electricity and heat, to the public. Stocks are at end of period. Totals may not equal sum of components due to independent rounding. Geographic coverage is the 50 states and the District of Columbia.
Figure 7.6 Electricity End Use
(Billion Kilowatthours)

Electricity End Use Overview, 1989–2022

Sales to Ultimate Customers [a] by Sector, July 2023

Sales to Ultimate Customers [a] by Sector, 1949–2022

Sales to Ultimate Customers [a] by Sector, Monthly

Sales to Ultimate Customers [a] Total, January–July

[a] Electricity sales to ultimate customers reported by utilities and other energy service providers.
[b] See “Direct Use” in Glossary.
[c] Commercial sector, including public street and highway lighting, inter-
departmental sales, and other sales to public authorities.
[d] Transportation sector, including sales to railroads and railways.

Source: Table 7.6.
## Table 7.6 Electricity End Use (Million Kilowatthours)

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<th>Industrial</th>
<th>Transportation</th>
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<th>Direct Use</th>
<th>Total End Use</th>
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### Notes:
- Total End Use: The sum of "Sales to Ultimate Customers" and "Direct Use." Title. "Sum of Total Sales to Ultimate Customers" and "Direct Use."
- "Electricity sales to ultimate customers reported by electric utilities and, beginning in 1996, other energy service providers.
- Commercial sector, including public street and highway lighting, interdepartmental sales, and other sales to public authorities.
- Industrial sector. Through 2002, excludes agriculture and irrigation; beginning in 2003, includes agriculture and irrigation.
- Sales to interdepartmental agencies, sales and rail systems only.
- The sum of "Residential," "Commercial," "Industrial," and "Transportation."
- Use of electricity that is 1) self-generated, 2) produced by the electric utility company or its affiliate, and 3) used in direct support of a service or industrial process located within the same facility or group of facilities that house the generating equipment. Direct use is exclusive of station use.
- This data are not available for all states and the District of Columbia.

### Web Page:

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1 Anthracite, bituminous coal, subbituminous coal, lignite, waste coal, and coal syngas.
2 Distillate fuel oil, residual fuel oil, petroleum coke, jet fuel, kerosene, other petroleum waste oil, and, beginning in 2011, propane gas, which are not separately shown.
3 Natural gas, plus a small amount of supplemental gaseous fuels.
4 Includes other gases (blast furnace gas, other manufactured and waste gases derived from fossil fuels, and, through 2010, propane gas), which are not separately shown.
6 Wood and wood-derived fuels.
7 Municipal solid waste from biogenic sources, landfill gas, sludge waste, agriculture, and other non-renewable waste. Beginning in 2010, also includes non-renewable waste (municipal solid waste from non-biogenic sources, and tire-derived fuels).
8 Electric energy not currently usable from solar thermal and photovoltaic (PV) energy at utility-scale facilities. Does not include small-scale solar photovoltaic capacity.
9 Includes chemicals, hydrogen, pitch, purchased steam, sulfur, miscellaneous technologies, flywheels, and, beginning in 2001, non-renewable waste (municipal solid waste from non-biogenic sources, and tire-derived fuels), which are not separately shown.
10 Through 1984, waste is included in "Wood."
11 Through 1988, all data are for electric utilities only. Beginning in 1989, data are for electric utilities, independent power producers, commercial plants, and industrial plants.
12 NA=Not available. (s)=Less than 0.05 million kilowatts.
### Table 7.7b  Electric Net Summer Capacity: Electric Power Sector

(Subset of Table 7.7a; Million Kilowatts)

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Note: *Data are for electric utilities only. Beginning in 1988, data are for electric utilities and independent power producers.*

For more information, see the U.S. Energy Information Administration's Monthly Energy Review.
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^a Anthracite, bituminous coal, subbituminous coal, lignite, waste coal, and coal synfuel.

^b Distillate fuel oil, residual fuel oil, petroleum coke, jet fuel, kerosene, other petroleum, waste oil, and, beginning in 2011, propane.

^c Natural gas, plus a small amount of supplemental gaseous fuels.

^d Includes other gases (blast furnace gas, other manufactured and waste gases derived from fossil fuels, and, through 2010, propane gas), which are not separately shown.

^1 Municipal solid waste from biogenic sources, landfill gas, sludge waste, agricultural byproducts, and other biomass. Through 2000, also includes non-renewable waste (municipal solid waste from non-biogenic sources, and tire-derived fuels).

^2 Electric net summer capacity from solar thermal and photovoltaic (PV) energy at utility-scale facilities. Does not include small-scale solar photovoltaic capacity.

Notes: Data are at end of period. For plants that use multiple sources of energy, capacity is assigned to the energy source reported as the predominant one.


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

Geographic coverage is the 50 states and the District of Columbia. For a list of states covered, see "Geographic Coverage," at end of section.

Energy from waste is included in the NRE capacity data. See "Energy from Waste" in the Glossary.

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a Anthracite, bituminous coal, subbituminous coal, lignite, waste coal, and coal synth.
b Distillate fuel oil, residual fuel oil, petroleum coke, jet fuel, kerosene, other petroleum, waste oil, and, beginning in 2011, propane.
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f Municipal solid waste from biogenic sources, landfill gas, sludge waste, agricultural byproducts, and other biomass. Through 2000, also includes non-renewable waste (municipal solid waste from non-biogenic sources, and tire-derived fuels).
g Electric net summer capacity from solar thermal and photovoltaic (PV) energy at utility-scale facilities. Does not include small-scale solar photovoltaic capacity.
h Includes chemicals, hydrogen, naphtha, purchased steam, sulfur, miscellaneous technologies, flywheels, and, beginning in 2003, non-renewable waste (municipal solid waste from non-biogenic sources, and tire-derived fuels), which are not separately shown. =No data reported. (s)Less than 0.05 million kilowatts.
Notes: Data are at end of period. For plants that use multiple sources of energy, capacity is assigned to the energy source reported as the predominant one.
Data are for utility-scale facilities. See Note 1. "Coverage of Electricity Statistics," at end of section. See "Net summer capacity" in Glossary. See Note 2, "Classification of Power Plants Into Energy-Use Sectors," at end of section.
Totals may not equal sum of components due to independent rounding.
Geographic coverage is the 50 states and the District of Columbia.
For complete monthly availability of all available annual data beginning in 1989 and monthly data beginning in 2006.

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Notes: Data are for utility-scale facilities in the United States. Monthly factors are based on a time-averaged total net summer capacity of generators in operation for the entire month. Annual factors are based on a time-weighted average of the monthly time-averaged capacity.

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*a Capacity factors are a measure of how often electric generators operate over a specific period of time, using a ratio of actual output (net generation) to the maximum possible output over that same period (using time-adjusted capacity).
*b Usage factors are a measure of how often electric generators operate over a specific period of time, using a ratio of actual output (gross generation) to the maximum possible output over that same period (using time-adjusted capacity).
*c Steam turbine, gas turbine, internal combustion engine, combined-cycle, and other plants.
*d Anthracite, bituminous coal, subbituminous coal, lignite, waste coal, and coal syngas.
*e Distillate fuel oil, residual fuel oil, petroleum coke, jet fuel, kerosene, other petroleum, wood, coal, and other
f Natural gas, plus a small amount of supplemental gas fuel. Capacity factors for natural gas internal combustion engine, energy storage, fuel cell, and other plants are not displayed.
*g Solar photovoltaic (PV) energy at utility-scale facilities. Does not include small-scale solar photovoltaic facilities.
*h Onshore wind plant(s) and, beginning in 2017, offshore wind farms.

Notes: • Data are for utility-scale facilities. See Note 1 “Coverage of Electricity Statistics,” at end of section. • Monthly factors are based on a time-adjusted total net summer capacity of generators in operation for the entire month. Annual factors are based on a time-weighted average of the monthly time-adjusted capacity.
• For plants that use multiple energy sources or technologies, capacity is assigned to the reported combination of predominant energy source and technology. See “Capacity factor in Glossary.”
• The electric power sector comprises electricity generation and combined-heat-and-power (CHP) plants within the NAICS 22 category whose primary business is to sell electricity, or electricity and heat, to the public. Geographic coverage is the 50 states and the District of Columbia.
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a Capacity factors are a measure of how often electric generators operate over a specific period of time, using a ratio of actual output (not generation) to the maximum possible output over that same period time (using time-adjusted capacity).

b Usage factors are a measure of how often electric generators operate over a specific period of time, using a ratio of actual output (gross generation) to the maximum possible output over that same period time (using time-adjusted capacity).

c Steam turbine, gas turbine, internal combustion engine, combined-cycle, and other plants.

d Anthracite, bituminous coal, subbituminous coal, lignite, waste coal, and coal synfuel.

e Distillate fuel oil, residual fuel oil, petroleum coke, jet fuel, kerosene, other petroleum, waste oil, and, beginning in 2011, propane.

f Natural gas, plus a small amount of supplemental gaseous fuels. Capacity factors for natural gas internal combustion engine, energy storage, fuel cell, and other plants are not displayed.

1 Wood and wood-derived fuels, municipal solid waste from biogenic sources, landfill gas, sludge waste, agricultural byproducts, and other biomass. Through 2000, also includes non-renewable waste (municipal solid waste from non-biogenic sources, and fire-derived fuels).

Solar photovoltaic (PV) energy at utility-scale facilities. Does not include small-scale solar photovoltaic generators.

1 Offshore wind plants, and, beginning in 2017, offshore wind plants.

Notes: NA=Not available. NA=No data reported. (5)<Less than 0.5 percent.

1 Capacity factor in Glossary. See Note 2, "Classification of Power Plants Into Energy-Use Sectors," at end of section. Geographic coverage is the 50 states and the District of Columbia.


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<th>Year</th>
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<th>Conventional Hydroelectric Power</th>
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Notes: a. Capacity factors are a measure of how often electric generators operate over a specific period of time, using a ratio of actual output (not generation) to the maximum possible output over that same time period (using time-adjusted capacity). b. Usage factors are a measure of how often electric generators operate over a specific period of time, using a ratio of actual output (gross generation) to the maximum possible output over that same time period (using time-adjusted capacity). c. Steam turbine, gas turbine, internal combustion engine, combined-cycle, and other plants. d. Rankine cycle, bituminous coal, subbituminous coal, lignite, waste coal, and coal synfuels. e. Distillate fuel oil, residual fuel oil, petroleum coke, jet fuel, kerosene, other petroleum, waste oil, and, beginning in 2011, propane. f. Natural gas, plus a small amount of supplemental gaseous fuels. g. Capacity factors for natural gas internal combustion engine, energy storage, fuel cell, and other plants are not displayed. h. Wood and wood-derived fuels, municipal solid waste from biogenic sources, landfill gas, sludge waste, agricultural byproducts, and other biomass. Through 2000, also includes non-renewable waste (municipal solid waste from non-biogenic}

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Solar photovoltaic (PV) energy at utility-scale facilities. Does not include small-scale solar photovoltaic generators.


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Notes: a. Data are for utility-scale facilities. See Note 1, "Coverage of Electricity Statistics," at end of section. b. Monthly factors are based on a time-adjusted total annual capacity of generating capacity for the entire month. Annual factors are based on a time-weighted average of the monthly time-adjusted capacity. c. For plants that use multiple energy sources or technologies, capacity is assigned to the reported combination of predominant energy source and technology. d. See EIA's Electric Power Annual, "Technical notes," for further information. e. See "Capacity factor" in Glossary. f. See Note 2, "Classification of Power Plants into Energy-Use Sectors," at end of section. g. Geographic coverage is the 50 states and the District of Columbia.
**Electricity**

**Note 1. Coverage of Electricity Statistics.** Data in Section 7 cover the following:

Through 1984, data for electric utilities also include institutions (such as universities) and military facilities that generated electricity primarily for their own use; beginning in 1985, data for electric utilities exclude institutions and military facilities. Beginning in 1989, data for the commercial sector include institutions and military facilities.

The generation, consumption, and stocks data in Section 7 are for utility-scale facilities—those with a combined generation nameplate capacity of 1 megawatt or more. Data exclude small-scale facilities—those with a combined generator nameplate capacity of less than 1 megawatt. For data on small-scale solar photovoltaic (PV) generation in the residential, commercial, and industrial sectors, see Table 10.6.

**Note 2. Classification of Power Plants into Energy-Use Sectors.** The U.S. Energy Information Administration (EIA) classifies power plants (both electricity-only and combined-heat-and-power plants) into energy-use sectors based on the North American Industry Classification System (NAICS), which replaced the Standard Industrial Classification (SIC) system in 1997. Plants with a NAICS code of 22 are assigned to the Electric Power Sector. Those with NAICS codes beginning with 11 (agriculture, forestry, fishing, and hunting); 21 (mining, including oil and gas extraction); 23 (construction); 31–33 (manufacturing); 2212 (natural gas distribution); and 22131 (water supply and irrigation systems) are assigned to the Industrial Sector. Those with all other codes are assigned to the Commercial Sector. Form EIA-860, "Annual Electric Generator Report," asks respondents to indicate the primary purpose of the facility by assigning a NAICS code from the list at http://www.eia.gov/survey/form/eia_860/instructions.pdf.

**Note 3. Electricity Forecast Values.** Data values preceded by "F" in this section are forecast values. They are derived from EIA's Short-Term Integrated Forecasting System (STIFS). STIFS is driven primarily by data and assumptions about key macroeconomic variables, energy prices, and weather. The electricity forecast relies on additional variables such as alternative fuel prices (natural gas and oil) and power generation by sources other than fossil fuels, including nuclear, renewables, and hydroelectric power. Each month, EIA staff review the model output and make adjustments, if appropriate, based on their knowledge of developments in the electricity industry.

The STIFS model results are published monthly in EIA's Short-Term Energy Outlook, which is accessible on the Web at http://www.eia.gov/forecasts/steo/.

**Table 7.1 Sources**

*Net Generation, Electric Power Sector*
1949 forward: Table 7.2b.

*Net Generation, Commercial and Industrial Sectors*
1949 forward: Table 7.2c.

*Trade*


2016 forward: EIA, Form EIA-111, "Quarterly Electricity Imports and Exports Report"; and for forecast values, EIA Short-Term Integrated Forecasting System (STIFS).

T&D Losses and Unaccounted for
1949 forward: Calculated as the sum of total net generation and imports minus end use and exports.

End Use
1949 forward: Table 7.6.

Table 7.2b Sources

Table 7.2c Sources
Industrial Sector, Hydroelectric Power, 1949–1988

All Data, 1989 Forward


**Table 7.3b Sources**


**Table 7.4b Sources**


**Table 7.6 Sources**

*Sales to Ultimate Customers, Residential and Industrial*


2004 forward: EIA, Electric Power Monthly (EPM) September 2023, Table 5.1.

**Sales to Ultimate Customers, Commercial**


2004 forward: EIA, EPM, September 2023, Table 5.1.

**Sales to Ultimate Customers, Transportation**


2004 forward: EIA, EPM September 2023, Table 5.1.

**Direct Use, Annual**


2001–2020: EIA, Electric Power Annual 2022, October 2022, Table 2.2.

**Direct Use, Monthly**
1989 forward: Annual shares are calculated as annual direct use divided by annual commercial and industrial net generation (on Table 7.1). Then monthly direct use estimates are calculated as the annual share multiplied by the monthly commercial and industrial net generation values. For 2021, the 2020 annual share is used.

### Table 7.7b Sources

**Net Summer Capacity, Nuclear Power**
1949 forward: Table 8.1.

**All Other Data**


