

Table 7.8b Capacity Factors and Usage Factors at Electric Generators: Electric Power Sector (Percent)

	Capacity Factors ^a											Usage Factors ^b		
	Coal ^{c,d}	Petroleum ^{c,e}	Natural Gas ^f			Nuclear Electric Power ^g	Conventional Hydroelectric Power	Bio-mass ^{c,h}	Geothermal	Solar			Hydroelectric Pumped Storage	Battery Storage
			Combined Cycle	Gas Turbine	Steam Turbine					Photo-voltaic ⁱ	Thermal	Wind ^j		
2008 Year	72.6	9.4	39.5	5.2	11.6	91.1	37.0	65.5	74.3	19.7	19.5	31.7	—	—
2009 Year	64.4	9.1	43.5	4.4	10.4	90.3	39.5	64.6	73.0	20.3	23.6	28.1	—	—
2010 Year	67.3	8.1	43.5	5.2	10.6	91.1	37.5	63.4	71.6	20.3	24.5	29.8	—	—
2011 Year	62.9	7.1	43.6	5.1	11.2	89.1	45.7	62.5	71.5	19.0	23.9	32.1	—	—
2012 Year	56.4	7.1	51.7	6.0	12.7	86.6	39.5	63.4	68.3	20.4	23.6	32.4	—	—
2013 Year	59.5	6.3	48.0	5.0	10.4	90.8	38.6	60.0	71.8	24.7	17.4	32.4	9.8	.7
2014 Year	60.7	6.4	48.0	5.2	9.5	91.7	37.1	61.5	72.0	25.8	18.3	34.0	10.2	1.7
2015 Year	54.3	6.3	55.5	6.8	10.8	92.3	35.6	59.5	71.9	25.7	21.7	32.2	10.2	3.6
2016 Year	52.9	5.6	54.9	8.2	11.6	92.3	38.1	59.2	71.6	25.1	22.1	34.5	11.2	3.8
2017 Year	53.2	6.1	50.6	6.6	10.1	92.3	43.0	60.2	73.2	25.7	21.8	34.6	11.4	6.9
2018 Year	53.7	6.4	54.6	9.0	11.9	92.5	41.8	60.2	76.0	25.2	23.6	34.6	10.8	5.3
2019 Year	47.5	5.3	57.0	8.3	13.2	93.4	41.1	59.5	68.9	24.4	21.2	34.4	10.4	5.5
2020 Year	40.5	5.0	56.8	8.3	13.3	92.4	40.7	58.9	68.4	24.3	20.6	35.3	10.5	5.2
2021 January	51.6	5.6	54.3	4.6	6.4	99.9	41.3	63.9	68.8	15.5	6.3	33.6	8.1	4.3
February	61.3	6.0	51.1	7.0	10.9	97.0	37.5	64.0	73.0	19.3	11.5	32.8	9.0	5.8
March	39.5	5.1	45.1	4.8	6.4	88.7	35.6	62.2	64.6	25.0	19.9	43.0	7.4	5.6
April	35.7	3.6	45.3	7.3	8.9	82.1	33.7	57.5	68.2	29.5	26.7	40.7	7.2	5.2
May	40.9	4.4	47.2	6.6	9.1	89.2	39.2	60.4	67.8	31.9	30.2	36.5	8.7	6.3
June	58.2	4.3	61.8	11.5	17.1	96.0	40.8	64.6	67.7	31.9	25.8	29.5	12.4	6.5
July	65.6	6.0	67.9	13.0	19.1	96.8	37.1	64.3	69.5	30.6	22.3	23.1	15.2	6.6
August	65.8	6.8	68.5	13.6	20.4	97.7	34.2	64.1	68.6	29.1	29.6	28.8	15.9	7.5
September	52.9	5.9	58.5	7.7	13.4	93.8	29.5	61.5	71.1	27.6	26.8	31.7	12.8	7.2
October	40.7	6.0	53.0	9.2	11.6	82.2	28.8	57.4	67.1	21.7	19.9	33.8	9.7	6.1
November	39.1	5.8	51.1	8.3	7.7	91.2	33.6	58.3	72.1	18.5	17.9	38.2	7.7	6.3
December	39.6	5.0	53.2	6.3	6.1	99.5	39.6	63.5	75.4	13.4	8.5	40.8	8.6	5.9
Average	49.2	5.4	54.8	8.3	11.4	92.8	35.9	61.8	69.5	24.4	20.5	34.4	10.2	6.2
2022 January	57.5	7.2	55.2	7.9	13.7	99.4	40.6	58.9	75.1	16.8	11.3	37.6	9.5	5.5
February	52.3	5.4	52.0	6.2	10.8	96.5	39.6	61.1	70.3	21.2	15.9	41.6	8.9	6.6
March	41.0	3.7	46.1	5.0	7.4	89.0	40.9	56.9	65.7	24.5	23.1	42.7	9.1	5.8
April	38.5	3.7	43.7	6.6	8.5	80.5	34.7	53.3	67.1	28.6	30.1	46.6	7.3	6.1
May	42.1	4.6	49.3	9.4	13.7	89.3	39.2	54.5	67.4	31.0	33.5	41.1	10.9	6.4
June	52.6	5.0	61.1	13.7	19.5	96.4	45.1	60.3	67.0	33.3	34.9	33.9	14.8	7.1
July	59.7	4.6	70.7	16.8	27.6	97.8	41.3	62.6	67.1	31.3	26.2	28.7	15.9	6.9
August	59.3	5.0	72.5	15.1	21.7	97.8	35.5	61.6	67.9	28.5	25.3	24.0	16.4	6.6
September	47.4	5.2	64.0	10.5	15.5	93.5	29.5	58.3	68.6	26.6	26.7	27.4	13.2	6.1
October	38.7	4.8	52.6	7.2	12.4	83.7	24.1	53.5	65.3	22.9	26.4	31.6	8.4	6.8
November	40.9	4.9	51.5	8.1	12.7	91.0	31.0	56.1	72.6	16.6	14.1	40.8	9.2	6.7
December	51.5	7.6	56.5	9.4	13.2	98.1	34.2	59.3	74.1	12.6	9.0	36.8	9.6	6.5
Average	48.5	5.2	56.3	9.7	14.7	92.7	36.3	58.0	69.0	24.4	23.1	36.0	11.1	6.5
2023 January	R 44.3	R 3.6	R 56.6	5.9	R 8.7	R 100.7	37.4	R 60.1	78.4	14.6	7.7	37.1	9.2	R 5.6
February	R 37.1	4.0	R 56.3	5.4	R 8.8	95.6	34.7	57.9	72.6	18.4	11.0	R 43.9	9.6	R 5.2
March	35.9	3.6	52.6	7.0	10.4	89.2	R 33.8	52.9	69.4	21.6	14.0	41.4	9.2	R 5.9
April	R 30.3	R 3.9	R 47.3	9.5	R 12.4	R 83.2	30.3	46.1	69.6	26.7	27.9	41.5	8.8	R 5.7
May	R 32.4	R 3.7	R 52.1	10.8	R 14.6	87.3	R 46.0	54.5	68.5	29.3	27.5	R 29.8	11.0	5.2
June	R 44.2	R 4.9	R 62.6	13.9	R 20.2	95.3	R 33.7	55.3	65.7	30.9	34.6	26.3	13.8	5.2
July	R 58.2	6.8	72.7	20.4	R 30.0	99.1	35.6	58.1	65.2	31.2	35.0	R 25.9	15.8	5.5
August	R 57.9	R 6.7	72.9	19.6	R 29.0	97.9	R 35.4	57.9	67.1	29.1	28.4	26.4	15.6	R 5.7
September	R 46.1	R 6.2	R 64.8	R 12.0	R 20.6	95.1	R 28.5	51.7	69.8	25.8	27.7	27.0	13.3	5.6
October	38.4	R 4.4	R 52.3	11.3	R 15.5	86.2	30.3	R 43.8	72.7	22.2	26.2	33.6	8.7	R 6.3
November	39.4	R 3.4	R 53.6	8.9	R 13.1	90.3	31.4	R 50.8	70.8	16.6	15.7	R 35.3	8.3	6.1
December	41.7	3.2	58.8	6.3	9.4	96.7	32.4	51.0	70.5	13.7	9.9	35.0	8.1	5.7
Average	42.2	4.5	58.6	10.9	16.1	93.1	34.1	53.3	70.0	23.3	22.2	33.5	11.0	5.7

^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 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 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.

^g See Table 8.1 for nuclear capacity factors for 1957–2007.

^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

sources, and tire-derived fuels).

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

^j Onshore wind plants, and, beginning in 2017, offshore wind plants.

R=Revised. —=No data reported.

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 EIA's *Electric Power Annual*, "Technical notes," for further information. • See "Capacity factor" in Glossary. • The 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. • Geographic coverage is the 50 states and the District of Columbia.

Web Page: See <http://www.eia.gov/totalenergy/data/monthly/#electricity> (Excel and CSV files) for all available annual and monthly data beginning in 2008.

Sources: U.S. Energy Information Administration (EIA), Form EIA-860, "Annual Electric Generator Report"; Form EIA-860M, "Monthly Update to the Annual Electric Generator Report"; and Form EIA-923, "Power Plant Operations Report."