

**Table 7.8a Capacity Factors and Usage Factors at Electric Generators: Total (All Sectors)**  
(Percent)

	Capacity Factors <sup>a</sup>											Usage Factors <sup>b</sup>		
	Coal <sup>c,d</sup>	Petroleum <sup>c,e</sup>	Natural Gas <sup>f</sup>			Nuclear Electric Power <sup>g</sup>	Conventional Hydroelectric Power	Bio-mass <sup>c,h</sup>	Geothermal	Solar		Wind <sup>i</sup>	Hydroelectric Pumped Storage	Battery Storage
			Combined Cycle	Gas Turbine	Steam Turbine					Photo-voltaic <sup>j</sup>	Thermal			
<b>2008 Year</b> .....	<b>72.4</b>	<b>9.7</b>	<b>40.3</b>	<b>7.6</b>	<b>12.1</b>	<b>91.1</b>	<b>37.1</b>	<b>64.0</b>	<b>74.3</b>	<b>19.2</b>	<b>19.5</b>	<b>31.7</b>	–	–
<b>2009 Year</b> .....	<b>64.2</b>	<b>9.3</b>	<b>43.9</b>	<b>6.8</b>	<b>10.9</b>	<b>90.3</b>	<b>39.6</b>	<b>62.9</b>	<b>73.0</b>	<b>20.0</b>	<b>23.6</b>	<b>28.1</b>	–	–
<b>2010 Year</b> .....	<b>67.1</b>	<b>8.4</b>	<b>44.3</b>	<b>7.8</b>	<b>11.1</b>	<b>91.1</b>	<b>37.5</b>	<b>62.5</b>	<b>71.6</b>	<b>20.2</b>	<b>24.5</b>	<b>29.7</b>	–	–
<b>2011 Year</b> .....	<b>62.8</b>	<b>7.4</b>	<b>44.3</b>	<b>7.9</b>	<b>11.7</b>	<b>89.1</b>	<b>45.8</b>	<b>61.4</b>	<b>71.5</b>	<b>19.0</b>	<b>23.9</b>	<b>32.1</b>	–	–
<b>2012 Year</b> .....	<b>56.2</b>	<b>7.6</b>	<b>52.2</b>	<b>8.9</b>	<b>13.3</b>	<b>86.1</b>	<b>39.6</b>	<b>62.1</b>	<b>68.3</b>	<b>20.4</b>	<b>23.6</b>	<b>32.4</b>	–	–
<b>2013 Year</b> .....	<b>59.4</b>	<b>6.6</b>	<b>48.8</b>	<b>8.3</b>	<b>11.2</b>	<b>90.8</b>	<b>38.8</b>	<b>60.3</b>	<b>71.8</b>	<b>24.5</b>	<b>17.4</b>	<b>32.4</b>	<b>9.8</b>	<b>.7</b>
<b>2014 Year</b> .....	<b>60.5</b>	<b>6.7</b>	<b>48.6</b>	<b>8.3</b>	<b>10.3</b>	<b>91.7</b>	<b>37.2</b>	<b>61.0</b>	<b>72.0</b>	<b>25.6</b>	<b>18.3</b>	<b>34.0</b>	<b>10.2</b>	<b>1.7</b>
<b>2015 Year</b> .....	<b>54.3</b>	<b>6.7</b>	<b>55.8</b>	<b>9.8</b>	<b>11.3</b>	<b>92.3</b>	<b>35.7</b>	<b>60.5</b>	<b>71.9</b>	<b>25.5</b>	<b>21.7</b>	<b>32.2</b>	<b>10.2</b>	<b>3.6</b>
<b>2016 Year</b> .....	<b>52.8</b>	<b>5.9</b>	<b>55.4</b>	<b>11.0</b>	<b>12.3</b>	<b>92.3</b>	<b>38.2</b>	<b>59.9</b>	<b>71.6</b>	<b>25.0</b>	<b>22.1</b>	<b>34.5</b>	<b>11.2</b>	<b>3.8</b>
<b>2017 Year</b> .....	<b>53.1</b>	<b>6.3</b>	<b>51.2</b>	<b>9.6</b>	<b>10.7</b>	<b>92.3</b>	<b>43.0</b>	<b>60.8</b>	<b>73.2</b>	<b>25.6</b>	<b>21.8</b>	<b>34.6</b>	<b>11.4</b>	<b>6.8</b>
<b>2018 Year</b> .....	<b>53.6</b>	<b>6.6</b>	<b>55.1</b>	<b>11.9</b>	<b>12.6</b>	<b>92.5</b>	<b>41.9</b>	<b>61.1</b>	<b>76.0</b>	<b>25.1</b>	<b>23.6</b>	<b>34.6</b>	<b>10.8</b>	<b>5.2</b>
<b>2019 Year</b> .....	<b>47.5</b>	<b>5.5</b>	<b>57.4</b>	<b>11.4</b>	<b>14.1</b>	<b>93.5</b>	<b>41.2</b>	<b>60.3</b>	<b>69.6</b>	<b>24.3</b>	<b>21.2</b>	<b>34.8</b>	<b>10.4</b>	<b>5.4</b>
<b>2020 Year</b> .....	<b>40.5</b>	<b>5.2</b>	<b>57.1</b>	<b>11.6</b>	<b>14.2</b>	<b>92.5</b>	<b>40.7</b>	<b>59.5</b>	<b>69.1</b>	<b>24.2</b>	<b>20.6</b>	<b>35.4</b>	<b>10.5</b>	<b>5.2</b>
<b>2021 Year</b> .....	<b>49.1</b>	<b>5.5</b>	<b>55.0</b>	<b>11.7</b>	<b>12.5</b>	<b>92.8</b>	<b>36.0</b>	<b>61.1</b>	<b>69.8</b>	<b>24.4</b>	<b>20.5</b>	<b>34.4</b>	<b>10.2</b>	<b>6.1</b>
<b>2022</b> January .....	57.4	7.4	55.6	11.3	14.8	99.4	40.6	60.8	75.1	16.8	11.3	37.5	9.5	5.5
February .....	52.2	5.7	52.4	9.6	11.7	96.5	39.6	61.9	70.3	21.2	15.9	41.6	8.9	6.6
March .....	41.0	3.9	46.6	8.3	8.5	89.0	41.0	58.3	65.7	24.4	23.1	42.7	9.1	5.7
April .....	38.5	4.0	44.2	9.6	9.6	80.5	34.8	56.7	67.1	28.5	30.1	46.6	7.3	6.0
May .....	42.1	4.9	49.6	12.5	14.6	89.3	39.2	56.8	67.4	30.9	33.5	41.1	10.9	6.4
June .....	52.5	5.2	61.2	16.9	20.2	96.4	45.1	60.3	67.0	33.2	34.9	33.9	14.8	7.1
July .....	59.6	4.9	70.5	20.2	28.1	97.8	41.2	61.6	67.1	31.2	26.2	28.6	15.9	6.9
August .....	59.2	5.2	72.4	18.6	22.4	97.8	35.5	60.4	67.9	28.4	25.3	24.0	16.4	6.6
September .....	47.3	5.4	63.9	13.9	16.3	93.5	29.5	57.5	68.5	26.5	26.7	27.3	13.2	6.1
October .....	38.7	5.1	53.0	10.3	13.3	83.7	24.1	53.8	65.3	22.9	26.4	31.6	8.4	6.7
November .....	40.9	5.2	52.0	11.3	13.7	91.0	31.0	57.8	72.6	16.5	14.1	40.8	9.2	6.7
December .....	51.4	7.7	56.8	12.5	14.1	98.1	34.3	59.3	74.1	12.5	9.0	36.8	9.6	6.5
<b>Average</b> .....	<b>48.4</b>	<b>5.4</b>	<b>56.6</b>	<b>12.9</b>	<b>15.6</b>	<b>92.7</b>	<b>36.3</b>	<b>58.7</b>	<b>69.0</b>	<b>24.4</b>	<b>23.1</b>	<b>35.9</b>	<b>11.1</b>	<b>6.4</b>
<b>2023</b> January .....	44.3	3.8	56.8	9.3	9.9	100.7	37.4	60.1	78.4	14.6	7.7	37.1	9.2	5.6
February .....	37.1	4.2	56.6	8.9	10.0	95.6	34.7	58.5	72.6	18.3	11.0	43.9	9.6	5.2
March .....	35.9	4.0	52.8	10.4	11.5	89.2	33.9	54.1	69.4	21.5	14.0	41.4	9.2	5.9
April .....	30.4	4.1	47.4	12.2	13.4	83.2	30.3	50.0	69.6	26.6	27.9	41.5	8.8	5.7
May .....	32.4	3.9	52.2	13.7	15.5	87.3	46.0	56.2	68.5	29.2	27.5	29.8	11.0	5.2
June .....	44.1	5.0	62.7	17.0	21.0	95.3	33.8	56.3	65.7	30.8	34.6	26.3	13.8	5.1
July .....	58.0	6.9	72.5	23.2	30.6	99.1	35.6	56.7	65.2	31.1	35.0	25.9	15.8	5.5
August .....	57.7	6.8	72.8	22.5	29.6	97.9	35.4	57.5	67.1	29.0	28.4	26.4	15.6	5.7
September .....	46.1	6.3	64.9	15.2	21.6	95.1	28.6	52.7	69.8	25.7	27.7	27.0	13.3	5.5
October .....	38.3	4.5	52.6	14.2	16.4	86.2	30.3	48.7	70.7	22.1	26.2	33.6	8.7	6.3
November .....	39.4	3.6	54.0	12.3	14.2	90.3	31.4	55.7	72.8	16.6	15.7	35.3	8.3	6.0
December .....	41.7	3.4	59.1	9.9	10.8	96.7	32.4	56.4	70.5	13.7	9.9	34.9	8.1	5.7
<b>Average</b> .....	<b>42.1</b>	<b>4.7</b>	<b>58.8</b>	<b>14.1</b>	<b>17.1</b>	<b>93.1</b>	<b>34.2</b>	<b>55.2</b>	<b>70.0</b>	<b>23.3</b>	<b>22.2</b>	<b>33.5</b>	<b>11.0</b>	<b>5.7</b>
<b>2024</b> January .....	56.4	4.7	62.7	14.1	16.6	97.1	35.7	58.4	66.5	13.7	7.3	31.6	9.5	5.3
February .....	35.8	3.4	56.1	10.3	11.1	96.9	35.2	55.2	65.9	18.7	11.7	40.1	9.7	6.3
March .....	29.3	3.2	50.4	11.2	13.5	88.9	38.5	52.8	60.2	21.7	20.4	41.4	7.4	6.9
April .....	29.8	3.8	46.7	14.4	15.5	83.2	33.4	53.0	66.0	26.2	31.6	44.2	9.2	7.3

<sup>a</sup> 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).

<sup>b</sup> 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).

<sup>c</sup> Steam turbine, gas turbine, internal combustion engine, combined-cycle, and other plants.

<sup>d</sup> Anthracite, bituminous coal, subbituminous coal, lignite, waste coal, and coal syngas.

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

<sup>f</sup> 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.

<sup>g</sup> See Table 8.1 for nuclear capacity factors for 1957–2007.

<sup>h</sup> 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).

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

<sup>j</sup> Onshore wind plants, and, beginning in 2017, offshore wind plants. – =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. • 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."