

Table 6.1 – Electric Net Summer Capability (All Sectors)

(Gigawatts)

	<u>1980</u>	<u>1990</u>	<u>2000</u>	<u>2001</u>	<u>2002</u>	<u>2003</u>	<u>2004</u>	<u>2010</u>	<u>2015</u>	<u>2020</u>	<u>2025</u>	<u>2030</u>
Coal ¹	NA	307.4	315.1	314.2	315.4	313.0	313.3	322.8	325.5	355.4	409.3	481.0
Petroleum/Natural Gas ²	NA	220.4	283.8	320.7	374.2	418.2	436.9	466.1	437.9	468.6	491.8	509.8
Total Fossil Energy	444.1	527.8	598.9	634.9	689.5	731.2	750.2	788.9	763.4	824.0	901.1	990.8
Nuclear	51.8	99.6	97.9	98.2	98.7	99.2	99.6	100.9	104.0	108.8	108.8	108.8
Hydroelectric Pumped Storage ³	NA	19.5	19.5	19.1	20.4	20.5	20.5	20.8	20.8	20.8	20.8	20.8
Conventional Hydroelectric	81.7	73.9	79.4	79.5	79.4	78.7	78.7	78.3	78.4	78.5	78.5	78.5
Geothermal	0.9	2.7	2.8	2.2	2.3	2.1	2.1	2.6	3.2	4.6	6.0	6.6
Wood ⁴	0.1	5.5	6.1	5.9	5.8	5.9	5.9	7.2	7.6	8.5	10.1	11.9
Waste ⁵	NA	2.5	3.9	3.8	3.8	3.8	3.8	3.8	3.9	4.0	4.1	4.1
Solar Thermal and Photovoltaic	NA	0.3	0.4	0.4	0.4	0.4	0.4	1.2	1.3	1.5	1.7	2.6
Wind	NA	1.8	2.4	3.9	4.4	6.0	6.2	16.3	17.7	18.8	19.8	20.1
Total Renewable Energy	82.7	86.8	94.9	95.7	96.1	96.9	97.1	109.3	112.1	115.9	120.2	123.9
Other ⁶	NA	0.5	0.5	0.4	0.6	0.6	0.6	0.7	0.7	0.7	0.7	0.7
Total Electric Capability	578.6	734.1	811.7	848.3	905.3	948.4	968.1	1020.6	1001.1	1070.2	1151.6	1245.0

Sources: EIA, *Annual Energy Outlook 2006* DOE/EIA-0383 (2006) (Washington, D.C., February 2006), Tables A9, A16; EIA, *Annual Energy Review 2004*, DOE/EIA-0384(2004) (Washington, D.C., August 2005), Table 8.11a.

Notes:

Data include electricity-only and combined-heat-and-power (CHP) plants whose primary business is to sell electricity – or electricity and heat – to the public. Through 1988, data are for net summer capacity at electric utilities only. Beginning in 1989, data also include net summer capacity at independent power producers and the commercial and industrial (end-use) sectors.

¹ Anthracite, bituminous coal, subbituminous coal, lignite, waste coal, and synthetic coal.

² Petroleum, natural gas, distillate fuel oil, residual fuel oil, petroleum coke, jet fuel, kerosene, other petroleum, waste oil, supplemental gaseous fuels, blast furnace gas, propane gas, and other manufactured and waste gases derived from fossil fuels. Includes natural gas-fired distributed generation.

³ Pumped storage included in Conventional Hydro prior to 1989.

⁴ Wood, black liquor, and other wood waste. Includes projections for energy crops after 2010. Includes other biomass in projections.

⁵ Municipal solid waste, landfill gas, sludge waste, tires, agricultural byproducts, and other biomass. Waste included in Wood prior to 1985.

⁶ Includes batteries, chemicals, hydrogen, pitch, sulfur, purchased steam, fuel cells, and miscellaneous technologies.

NA = not available

Table 6.2 – Electricity-Only Plant Net Summer Capability

(Gigawatts)

	<u>1980</u>	<u>1990</u>	<u>2000</u>	<u>2001</u>	<u>2002</u>	<u>2003</u>	<u>2004</u>	<u>2010</u>	<u>2015</u>	<u>2020</u>	<u>2025</u>	<u>2030</u>
Coal ²	NA	299.9	305.2	305.2	305.8	303.0	303.4	313.7	315.0	340.9	385.7	453.1
Petroleum/Natural Gas ³	NA	198.7	243.9	279.4	325.1	362.9	378.9	409.4	379.1	407.3	428.1	443.9
Total Fossil Energy	NA	498.6	549.0	584.5	630.9	665.9	682.2	723.1	694.1	748.2	813.8	897.0
Nuclear	NA	99.6	97.9	98.2	98.7	99.2	99.6	100.9	104.0	108.8	108.8	108.8
Hydroelectric Pumped Storage ⁴	NA	19.5	19.5	19.1	20.4	20.5	20.5	20.8	20.8	20.8	20.8	20.8
Conventional Hydroelectric	NA	73.3	78.2	78.4	78.3	77.9	77.9	77.7	77.8	77.9	77.9	77.9
Geothermal	NA	2.7	2.8	2.2	2.3	2.1	2.1	2.6	3.2	4.6	6.0	6.6
Wood ⁵	NA	1.0	1.5	1.5	1.4	1.4	1.4	2.2	2.2	2.5	3.5	4.6
Waste ⁶	NA	1.9	2.8	3.0	3.0	2.8	2.9	3.5	3.7	3.8	3.8	3.9
Solar Thermal and Photovoltaic	NA	0.3	0.4	0.4	0.4	0.4	0.4	0.5	0.6	0.7	0.8	0.9
Wind	NA	1.8	2.4	3.6	4.4	6.0	6.0	16.3	17.7	18.8	19.8	20.1
Total Renewable Energy	NA	80.9	88.1	89.1	89.7	90.6	90.7	102.7	105.1	108.2	111.8	114.1
Other	NA	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Electric Capability ⁷	NA	698.6	754.5	790.8	839.2	876.3	893.1	947.5	924.0	986.0	1055.2	1140.7

Sources: EIA, *Annual Energy Outlook 2006* DOE/EIA-0383 (2006) (Washington, D.C., February 2006), Tables A9, A16; EIA, *Annual Energy Review 2003*, DOE/EIA-0384(2003) (Washington, D.C., September 2004), Table 8.11c.

Notes:

Data are for electricity-only plants in the electric-power sector, whose primary business is to sell electricity to the public. Through 1988, data are for net summer capacity at electric utilities only. Beginning in 1989, data also include net summer capacity at independent power producers.

¹ Anthracite, bituminous coal, subbituminous coal, lignite, waste coal, and synthetic coal.

² Petroleum, natural gas, distillate fuel oil, residual fuel oil, petroleum coke, jet fuel, kerosene, other petroleum, waste oil, supplemental gaseous fuels, blast furnace gas, propane gas, and other manufactured and waste gases derived from fossil fuels. Includes natural gas-fired distributed generation.

³ Pumped storage included in Conventional Hydro prior to 1989.

⁴ Wood, black liquor, and other wood waste. Includes projections for energy crops after 2010. Includes other biomass in projections.

⁵ Municipal solid waste, landfill gas, sludge waste, tires, agricultural byproducts, and other biomass. Waste included in Wood prior to 1985.

⁶ Includes batteries, chemicals, hydrogen, pitch, sulfur, purchased steam, fuel cells, and miscellaneous technologies.

NA = not available

Table 6.3 – Combined-Heat-and-Power Plant Net Summer Capability

(Gigawatts)

	<u>1980</u>	<u>1990</u>	<u>2000</u>	<u>2001</u>	<u>2002</u>	<u>2003</u>	<u>2004</u>	<u>2010</u>	<u>2015</u>	<u>2020</u>	<u>2025</u>	<u>2030</u>
Coal ²	NA	7.5	10.0	9.1	9.5	10.0	9.9	9.1	10.5	14.5	23.6	27.9
Petroleum/Natural Gas ³	NA	21.7	39.9	41.3	49.1	55.3	58.0	56.7	58.7	61.4	63.7	65.9
Total Fossil Energy	NA	29.2	49.9	50.4	58.6	65.3	67.9	65.8	69.3	75.9	87.3	93.8
Nuclear	NA	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Hydroelectric Pumped Storage	NA	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Conventional Hydroelectric	NA	0.6	1.1	1.1	1.1	0.8	0.8	0.7	0.7	0.7	0.7	0.7
Geothermal	NA	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Wood ⁴	NA	4.6	4.9	4.6	4.7	4.7	4.8	5.0	5.5	6.0	6.6	7.3
Waste ⁵	NA	0.4	0.6	0.5	0.5	0.5	0.5	0.3	0.3	0.3	0.3	0.3
Solar Thermal and Photovoltaic	NA	0.0	0.0	0.0	0.0	0.0	0.0	0.6	0.7	0.8	0.9	1.7
Wind	NA	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Renewable Energy	NA	5.3	6.1	5.8	5.8	5.6	5.6	7.0	7.5	8.1	8.8	10.3
Other	NA	0.5	0.5	0.4	0.6	0.6	0.6	0.7	0.7	0.7	0.7	0.7
Total Electric Capability ⁶	NA	35.5	57.2	57.4	65.6	72.1	75.0	73.4	77.5	84.7	96.8	104.8

Sources: EIA, *Annual Energy Outlook 2006* DOE/EIA-0383 (2006) (Washington, D.C., February 2006), Tables A9, A16; EIA, *Annual Energy Review 2004*, DOE/EIA-0384(2004) (Washington, D.C., August 2005), Table 8.11c.

Notes:

Includes combined-heat-and-power (CHP) plants whose primary business is to sell electricity and heat to the public. Includes electric utility CHP plants. Also includes commercial and industrial CHP and a small number of commercial electricity-only plants.

¹ Anthracite, bituminous coal, subbituminous coal, lignite, waste coal, and synthetic coal.

² Petroleum, natural gas, distillate fuel oil, residual fuel oil, petroleum coke, jet fuel, kerosene, other petroleum, waste oil, supplemental gaseous fuels, blast furnace gas, propane gas, and other manufactured and waste gases derived from fossil fuels. Includes natural gas fired distributed generation.

³ Pumped storage included in Conventional Hydro prior to 1989.

⁴ Wood, black liquor, and other wood waste. Includes projections for energy crops after 2010. Includes other biomass in projections.

⁵ Municipal solid waste, landfill gas, sludge waste, tires, agricultural byproducts, and other biomass. Waste included in Wood prior to 1985.

⁶ Includes batteries, chemicals, hydrogen, pitch, sulfur, purchased steam, fuel cells, and miscellaneous technologies.

NA = not available

Table 6.4 – Regional Noncoincident ¹ Peak Loads and Capacity Margin

(Megawatts, except as noted)

North American Electric Reliability Council Regions

	<u>1990</u>	<u>2000</u>	<u>2001</u>	<u>2002</u>	<u>2003</u>	<u>2004</u>	<u>1990</u>	<u>2000</u>	<u>2001</u>	<u>2002</u>	<u>2003</u>	<u>2004</u>
	Summer Peak						Winter Peak					
ECAR	79,258	92,033	100,235	102,996	98,487	102,423	67,097	84,546	85,485	87,300	86,332	87,972
ERCOT	42,737	57,606	55,201	56,248	59,996	61,432	35,815	44,641	44,015	45,414	42,702	43,556
FRCC	NA	37,194	39,062	40,696	40,475	42,705	NA	38,606	40,922	45,635	36,841	45,418
MAAC	42,613	49,477	54,015	55,569	53,566	56,886	36,551	43,256	39,458	46,551	45,625	45,471
MAIN	40,740	52,552	56,344	56,396	56,988	57,868	32,461	41,943	40,529	42,412	41,719	42,409
MAPP (U.S.)	24,994	28,605	28,321	29,119	28,831	29,244	21,113	24,536	21,815	23,645	24,134	24,628
NPCC (U.S.)	44,116	50,057	55,949	56,012	55,018	57,535	40,545	43,852	42,670	46,009	48,079	47,986
SERC	121,943	156,088	149,293	158,767	153,110	157,961	117,448	139,146	135,182	141,882	137,972	141,176
SPP	52,541	40,199	40,273	39,688	40,367	40,089	38,949	30,576	29,614	30,187	28,450	28,469
WECC ² (U.S.)	97,389	114,602	109,119	119,074	122,537	122,870	94,252	97,324	96,622	95,951	102,020	104,393
Contiguous U.S.	546,331	678,413	687,812	714,565	709,375	729,013	484,231	588,426	576,312	604,986	593,874	611,478
ASCC (Alaska)	463	NF	NF	NF	NF	NF	613	NF	NF	NF	NF	NF
Hawaii	NF	NF	NF	NF	NF	NF	NF	NF	NF	NF	NF	NF
U.S. Total	546,794	678,413	687,812	714,565	717,652	729,013	484,844	588,426	576,312	604,986	608,729	611,478
Capacity Margin (%) ³	21.6	15.7	14.5	16.4	18.6	19.2	NA	29.5	28.9	29.4	33.5	33.4

Source: EIA, *Annual Energy Review 2003*, DOE/EIA-0384(2003) (Washington, D.C., September 2004), Table 8.12.

Notes:

NF = data not filed, NA = not available

2003 data are forecast estimates.

¹ Noncoincident peak load is the sum of two or more peak loads on individual systems that do not occur at the same time interval.

² Renamed from WSCC in 2002

³ The percent by which planned generating capacity resources are expected to be greater (or less) than estimated net internal demand at the time of expected peak summer (or winter) demand. Net internal demand does not include estimated demand for direct control load management and customers with interruptible service agreements.

Table 6.5 – Electric-Generator Cumulative Additions and Retirements(Gigawatts)¹

	<u>2010</u>	<u>2015</u>	<u>2020</u>	<u>2025</u>	<u>2030</u>
Cumulative Planned Additions					
Coal Steam	8.3	9.3	9.3	9.3	9.3
Other Fossil Steam ²	0.1	0.1	0.1	0.1	0.1
Combined Cycle	25.7	25.7	25.7	25.7	25.7
Combustion Turbine/Diesel	5.3	5.3	5.3	5.3	5.3
Nuclear	0.0	0.0	0.0	0.0	0.0
Pumped Storage	0.0	0.0	0.0	0.0	0.0
Fuel Cells	0.0	0.0	0.0	0.0	0.0
Renewable Sources ³	10.0	11.0	11.1	11.2	11.4
Distributed Generation ⁴	0.0	0.0	0.0	0.0	0.0
Total Planned Additions	49.4	51.5	51.6	51.7	51.8
Cumulative Unplanned Additions					
Coal Steam	3.4	7.0	32.9	77.7	145.1
Other Fossil Steam ²	0.0	0.0	0.0	0.0	0.0
Combined Cycle	0.0	5.5	29.9	41.9	46.8
Combustion Turbine/Diesel	4.7	11.6	21.5	31.3	46.2
Nuclear	0.0	2.2	6.0	6.0	6.0
Pumped Storage	0.0	0.0	0.0	0.0	0.0
Fuel Cells	0.0	0.0	0.0	0.0	0.0
Renewable Sources ³	0.4	1.7	4.8	8.3	10.4
Distributed Generation ⁴	0.2	0.6	1.4	2.4	5.5
Total Unplanned Additions	8.8	28.6	96.5	167.7	260.0
Cumulative Retirements					
Coal Steam	3.0	6.8	6.8	6.8	6.8
Other Fossil Steam ²	2.0	37.9	44.0	45.1	49.0
Combined Cycle	0.6	0.6	0.6	0.6	0.6
Combustion Turbine/Diesel	1.4	8.2	8.2	8.2	8.2
Nuclear	0.0	0.0	0.0	0.0	0.0
Pumped Storage	0.0	0.0	0.0	0.0	0.0
Fuel Cells	0.0	0.0	0.0	0.0	0.0
Renewable Sources ³	0.1	0.1	0.1	0.1	0.1
Total Retirements	7.1	53.6	59.8	60.8	64.7

Sources: EIA, *Annual Energy Outlook 2006*, DOE/EIA-0383 (2006) (Washington, D.C., February 2006), Table A9.

Notes:

¹ Additions and retirements since December 31, 2001.

² Includes oil-, gas-, and dual-fired capability.

³ Includes conventional hydroelectric, geothermal, wood, wood waste, municipal solid waste, landfill gas, other biomass, solar, and wind power.

⁴ Primarily peak load capacity fueled by natural gas.

Table 6.6 – Transmission and Distribution Circuit Miles(Miles) ¹

Voltage (kilovolts)	<u>1980</u>	<u>1990</u>	<u>1999</u>	<u>2000</u> ²	<u>2001</u> ²	<u>2002</u> ²	<u>2003</u> ²	<u>2004</u> ²
230	NA	70,511	76,762	76,437	80,515	81,252	82,238	81,992
345	NA	47,948	49,250	51,025	53,855	54,827	54,195	55,429
500	NA	23,958	26,038	25,000	27,343	27,587	27,407	28,011
765	NA	2,428	2,453	2,426	2,518	2,560	2,560	2,560
Total	NA	144,845	154,503	154,888	164,231	166,226	166,400	167,992

Sources: EIA, Electricity Transmission Fact Sheets,http://www.eia.doe.gov/cneaf/electricity/page/fact_sheets/transmission.html; NERC, Electricity Supply and Demand Database, 2005, <http://www.nerc.com/~esd/Brochure.pdf>**Notes:**¹ Circuit miles of AC lines 230 kV and above.² Data includes both existing and planned transmission lines