

## Section 10. Renewable Energy

**Sources.** The Nation consumed 6.2 quadrillion Btu of renewable energy in 2003, accounting for 6 percent<sup>1</sup> of total energy consumption during the year. At 2.8 quadrillion Btu, conventional hydroelectric power was the largest component of the renewable energy total, measuring 45 percent of the total. Wood was the next largest component at 2.1 quadrillion Btu and 34 percent of the total. Waste, the third largest component of the renewable energy total, contributed 0.6 quadrillion Btu in 2003, a 9-percent share of the total.

**Electric Power Sector.** In 2003, the electric power sector consumed 3.6 quadrillion Btu of renewable energy resources, 1.1 quadrillion Btu more than all of the end-use sectors combined and a share of 59 percent of the total. Conventional hydroelectric power recorded 2.7 quadrillion Btu in 2003, for 75 percent of the electric power sector total. Waste, at 0.3 quadrillion Btu, was the second largest

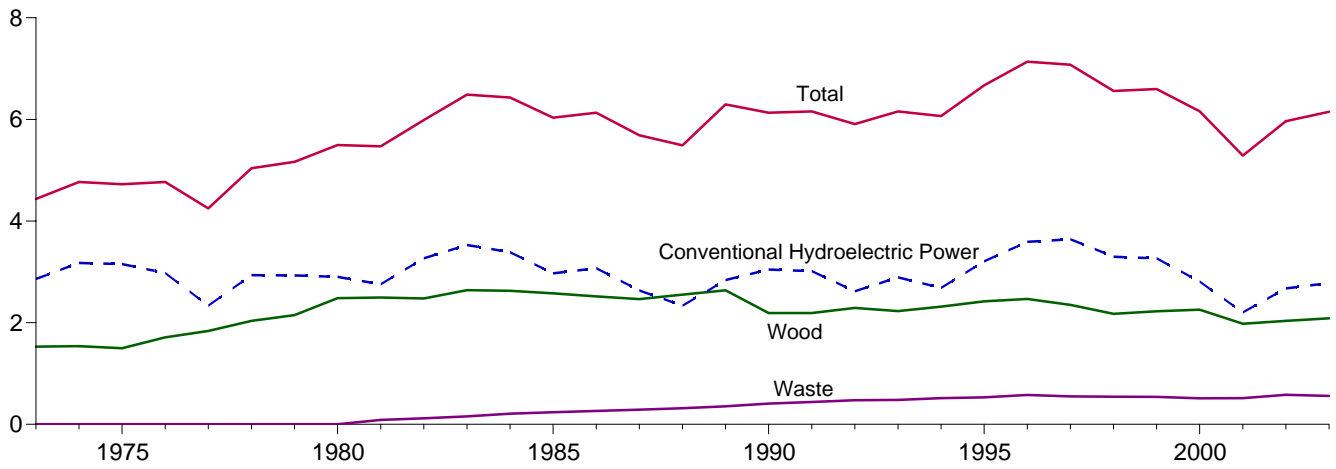
source consumed for electricity generation, followed by geothermal and wood.

**End-Use Sectors.** Of the end-use sectors, the industrial sector was the largest consumer of renewable energy in 2003. Industrial facilities used 1.8 quadrillion Btu of renewable energy in 2003, 87 percent in the form of wood. The residential sector was the next largest end-use sector in the use of renewable energy, consuming 0.4 quadrillion Btu--83 percent in the form of wood, 13 percent solar, and 4 percent geothermal. The transportation sector consumed renewable energy in the form of alcohol fuels used in the blending of motor gasoline; in 2003, alcohol fuel use was 0.2 quadrillion Btu. The commercial sector used 0.1 quadrillion Btu in 2003, 45 percent of it as waste and 39 percent as wood.

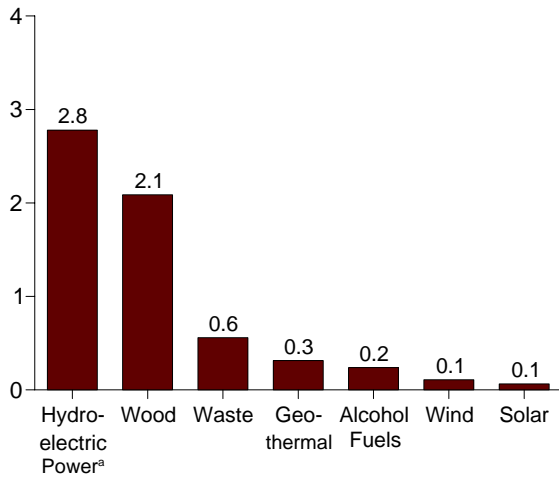
<sup>1</sup>A small amount of alcohol fuel (ethanol blended into motor gasoline) is both fossil fuel (as petroleum) and renewable energy and is counted in both those subtotals but counted only once in total energy consumption.

**Figure 10.1 Renewable Energy Consumption**  
(Quadrillion Btu)

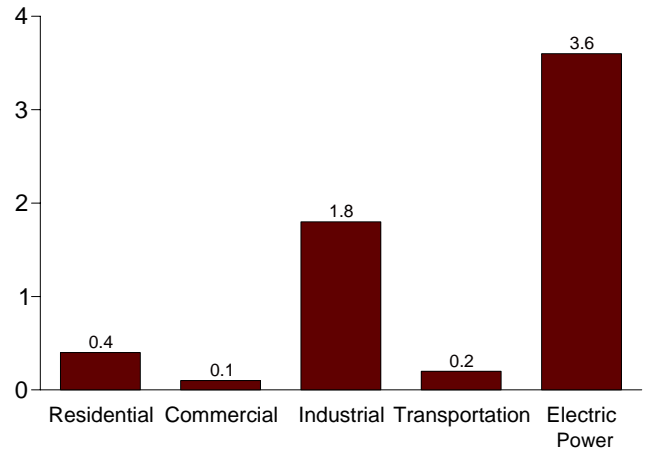
Total and Major Sources, 1973-2003



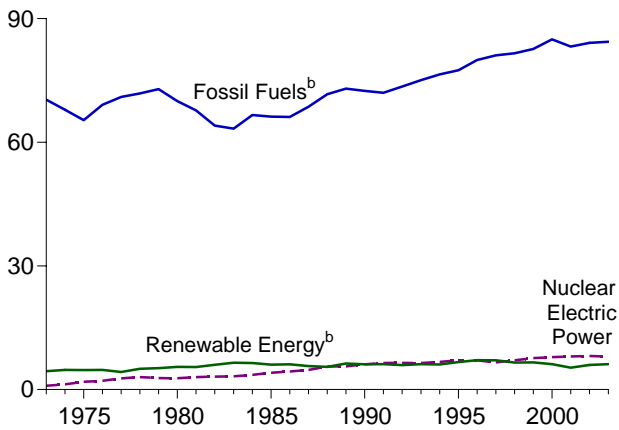
By Source, 2003



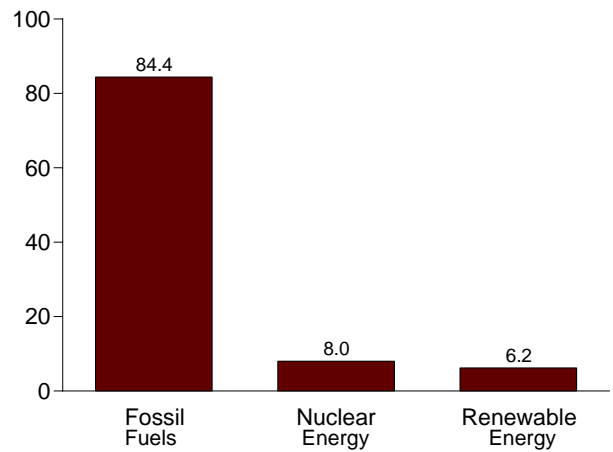
By Sector, 2003



Compared With Other Resources, 1973-2003



Compared With Other Resources, 2003



<sup>a</sup>Conventional hydroelectric power.

<sup>b</sup>A small amount of alcohol (ethanol blended into motor gasoline) is both fossil fuel (as petroleum) and renewable energy and is counted in both

those subtotals but counted only once in total energy consumption.

Web Page: <http://www.eia.doe.gov/emeu/mer/renew.html>.

Sources: Tables 1.3 and 10.1-10.2c.

**Table 10.1 Renewable Energy Consumption by Source**  
(Trillion Btu)

	Conventional Hydroelectric Power <sup>a</sup>	Wood <sup>b</sup>	Waste <sup>c</sup>	Alcohol Fuels <sup>d</sup>	Geothermal <sup>e</sup>	Solar <sup>f</sup>	Wind <sup>g</sup>	Total
1973 Total	2,861	1,527	2	NA	43	NA	NA	4,433
1974 Total	3,177	1,538	2	NA	53	NA	NA	4,769
1975 Total	3,155	1,497	2	NA	70	NA	NA	4,723
1976 Total	2,976	1,711	2	NA	78	NA	NA	4,768
1977 Total	2,333	1,837	2	NA	77	NA	NA	4,249
1978 Total	2,937	2,036	1	NA	64	NA	NA	5,039
1979 Total	2,931	2,150	2	NA	84	NA	NA	5,166
1980 Total	2,900	2,483	2	NA	110	NA	NA	5,494
1981 Total	2,758	2,495	88	7	123	NA	NA	5,471
1982 Total	3,266	2,477	119	19	105	NA	NA	5,985
1983 Total	3,527	2,639	157	35	129	NA	(s)	6,488
1984 Total	3,386	2,629	208	43	165	(s)	(s)	6,431
1985 Total	2,970	2,576	236	52	198	(s)	(s)	6,033
1986 Total	3,071	2,518	263	60	219	(s)	(s)	6,132
1987 Total	2,635	2,465	289	69	229	(s)	(s)	5,687
1988 Total	2,334	2,552	315	70	217	(s)	(s)	5,489
1989 Total	2,837	2,637	354	71	317	55	22	6,294
1990 Total	3,046	2,191	408	63	336	60	29	6,133
1991 Total	3,016	2,190	440	73	346	63	31	6,158
1992 Total	2,617	2,290	473	83	349	64	30	5,907
1993 Total	2,892	2,227	479	97	364	66	31	6,156
1994 Total	2,683	2,315	515	109	338	69	36	6,065
1995 Total	3,205	2,420	531	117	294	70	33	6,669
1996 Total	3,590	2,467	577	84	316	71	33	7,137
1997 Total	3,640	2,350	551	106	325	70	34	7,075
1998 Total	3,297	2,175	542	117	328	70	31	6,561
1999 Total	3,268	2,224	540	122	331	69	46	6,599
2000 Total	2,811	2,257	511	139	317	66	57	6,158
2001 Total	2,201	1,980	514	147	311	65	68	5,286
<b>2002</b> January	221	173	49	13	29	5	8	497
February	204	152	43	12	26	5	7	449
March	213	163	49	12	28	5	9	478
April	245	162	46	12	25	5	10	506
May	270	171	48	14	28	6	11	547
June	285	163	49	12	26	6	11	552
July	258	180	52	15	29	6	9	547
August	213	167	51	14	28	6	10	490
September	173	175	48	15	27	5	7	450
October	174	184	48	17	28	5	7	464
November	200	170	48	20	27	5	7	476
December	219	178	50	19	28	5	8	506
<b>Total</b>	<b>2,675</b>	<b>2,036</b>	<b>581</b>	<b>174</b>	<b>328</b>	<b>64</b>	<b>105</b>	<b>5,963</b>
<b>2003</b> January	199	165	43	17	27	5	6	462
February	198	153	40	20	25	5	7	446
March	246	177	47	17	27	5	10	529
April	253	169	46	20	25	5	11	528
May	302	167	46	19	25	6	9	574
June	288	170	46	19	26	6	10	564
July	249	178	50	20	26	6	9	537
August	231	174	48	21	26	6	8	513
September	184	165	44	18	26	5	8	451
October	185	187	49	21	26	5	9	482
November	199	199	48	24	26	5	10	511
December	244	186	51	25	29	5	11	552
<b>Total</b>	<b>2,779</b>	<b>2,087</b>	<b>559</b>	<b>239</b>	<b>314</b>	<b>63</b>	<b>108</b>	<b>6,150</b>
<b>2004</b> January	235	185	48	24	30	5	9	536
February	214	170	43	22	28	5	10	491
March	233	175	46	24	28	5	12	524
April	213	176	46	24	27	5	12	504
May	242	170	50	25	28	6	17	538
June	255	R 168	R 48	25	28	6	14	R 544
July	235	179	48	25	29	6	11	533
<b>7-Month Total</b>	<b>1,627</b>	<b>1,225</b>	<b>328</b>	<b>169</b>	<b>198</b>	<b>38</b>	<b>85</b>	<b>3,669</b>
<b>2003 7-Month Total</b>	<b>1,736</b>	<b>1,177</b>	<b>318</b>	<b>130</b>	<b>181</b>	<b>37</b>	<b>62</b>	<b>3,642</b>
<b>2002 7-Month Total</b>	<b>1,696</b>	<b>1,163</b>	<b>334</b>	<b>89</b>	<b>191</b>	<b>38</b>	<b>66</b>	<b>3,577</b>

<sup>a</sup> Hydroelectricity generated by pumped storage is not included in renewable energy.

<sup>b</sup> Wood, black liquor, and other wood waste.

<sup>c</sup> Municipal solid waste, landfill gas, sludge waste, tires, agricultural byproducts, and other biomass.

<sup>d</sup> Ethanol blended into motor gasoline.

<sup>e</sup> Geothermal electricity net generation, heat pump, and direct use energy.

<sup>f</sup> Solar thermal and photovoltaic electricity net generation, and solar thermal

direct use energy.

<sup>g</sup> Wind electricity net generation.

R=Revised. NA=Not available. (s)=Less than 0.5 trillion Btu.

Notes: • Totals may not equal sum of components due to independent rounding. • Geographic coverage is the 50 states and the District of Columbia.

Web Page: <http://www.eia.doe.gov/emeu/mer/renew.html>.

Sources: Tables 10.2a, 10.2b, and 10.2c.

**Table 10.2a Estimated Renewable Energy Consumption:  
Residential and Commercial Sectors**  
(Trillion Btu)

	Residential Sector				Commercial Sector <sup>a</sup>				
	Wood <sup>b</sup>	Geothermal <sup>c</sup>	Solar <sup>d</sup>	Total	Hydropower <sup>e</sup>	Wood <sup>b</sup>	Waste <sup>f</sup>	Geothermal <sup>c</sup>	Total
1973 Total .....	354	NA	NA	354	NA	7	NA	NA	7
1974 Total .....	371	NA	NA	371	NA	7	NA	NA	7
1975 Total .....	425	NA	NA	425	NA	8	NA	NA	8
1976 Total .....	482	NA	NA	482	NA	9	NA	NA	9
1977 Total .....	542	NA	NA	542	NA	10	NA	NA	10
1978 Total .....	622	NA	NA	622	NA	12	NA	NA	12
1979 Total .....	728	NA	NA	728	NA	14	NA	NA	14
1980 Total .....	859	NA	NA	859	NA	21	NA	NA	21
1981 Total .....	869	NA	NA	869	NA	21	NA	NA	21
1982 Total .....	937	NA	NA	937	NA	22	NA	NA	22
1983 Total .....	925	NA	NA	925	NA	22	NA	NA	22
1984 Total .....	923	NA	NA	923	NA	22	NA	NA	22
1985 Total .....	899	NA	NA	899	NA	24	NA	NA	24
1986 Total .....	876	NA	NA	876	NA	27	NA	NA	27
1987 Total .....	852	NA	NA	852	NA	29	NA	NA	29
1988 Total .....	885	NA	NA	885	NA	32	NA	NA	32
1989 Total .....	918	5	53	976	1	36	22	3	61
1990 Total .....	581	6	56	642	1	39	28	3	71
1991 Total .....	613	6	58	677	1	41	26	3	72
1992 Total .....	645	6	60	711	1	44	32	3	81
1993 Total .....	548	7	62	616	1	46	33	3	84
1994 Total .....	537	6	64	607	1	46	35	4	86
1995 Total .....	596	7	65	667	1	46	40	5	92
1996 Total .....	595	7	65	667	1	50	53	5	110
1997 Total .....	433	8	65	506	1	49	58	6	113
1998 Total .....	387	8	65	459	1	48	54	7	111
1999 Total .....	414	9	64	486	1	52	54	7	114
2000 Total .....	433	9	61	503	1	53	47	8	109
2001 Total .....	370	9	60	439	1	40	39	8	89
2002 January .....	27	1	5	32	(s)	4	3	1	7
February .....	24	1	5	29	(s)	3	3	1	7
March .....	27	1	5	32	(s)	4	3	1	7
April .....	26	1	5	31	(s)	3	3	1	7
May .....	27	1	5	32	(s)	4	4	1	8
June .....	26	1	5	31	(s)	3	4	1	8
July .....	27	1	5	32	(s)	4	4	1	8
August .....	27	1	5	32	(s)	4	4	1	8
September .....	26	1	5	31	(s)	3	4	1	8
October .....	27	1	5	32	(s)	4	4	1	8
November .....	26	1	5	31	(s)	3	4	1	8
December .....	27	1	5	32	(s)	4	3	1	7
<b>Total .....</b>	<b>313</b>	<b>10</b>	<b>59</b>	<b>382</b>	<b>(s)</b>	<b>42</b>	<b>42</b>	<b>9</b>	<b>93</b>
2003 January .....	30	2	5	37	(s)	4	3	1	8
February .....	28	1	4	33	(s)	3	3	1	8
March .....	30	2	5	37	(s)	4	4	1	9
April .....	30	1	5	36	(s)	3	4	1	9
May .....	30	2	5	37	(s)	4	4	1	9
June .....	30	1	5	36	(s)	3	4	1	9
July .....	30	2	5	37	(s)	4	4	1	9
August .....	30	2	5	37	(s)	4	4	1	9
September .....	30	1	5	36	(s)	3	4	1	8
October .....	30	2	5	37	(s)	4	4	1	9
November .....	30	1	5	36	(s)	3	4	1	9
December .....	30	2	5	37	(s)	4	4	1	9
<b>Total .....</b>	<b>359</b>	<b>18</b>	<b>58</b>	<b>435</b>	<b>1</b>	<b>42</b>	<b>48</b>	<b>15</b>	<b>107</b>
2004 January .....	30	2	5	37	(s)	4	4	1	9
February .....	28	1	5	34	(s)	3	4	1	8
March .....	30	2	5	37	(s)	4	4	1	9
April .....	29	1	5	36	(s)	4	4	1	9
May .....	30	2	5	37	(s)	4	4	1	9
June .....	29	1	5	36	(s)	3	4	1	9
July .....	30	2	5	37	(s)	4	4	1	9
<b>7-Month Total .....</b>	<b>209</b>	<b>10</b>	<b>34</b>	<b>253</b>	<b>1</b>	<b>25</b>	<b>28</b>	<b>9</b>	<b>63</b>
2003 7-Month Total .....	209	10	34	253	1	25	28	9	62
2002 7-Month Total .....	182	6	34	222	(s)	24	24	5	53

<sup>a</sup> Commercial sector fuel use, including that at commercial combined-heat-and-power (CHP) and commercial electricity-only plants. See note at end of Section 7.

<sup>b</sup> Wood, black liquor, and other wood waste.

<sup>c</sup> Geothermal heat pump and direct use energy.

<sup>d</sup> Solar thermal direct use energy and photovoltaic electricity generation. Small amounts of commercial sector use are included in the residential sector.

<sup>e</sup> Conventional hydroelectric power.

<sup>f</sup> Municipal solid waste, landfill gas, sludge waste, tires, agricultural byproducts, and other biomass.

NA=Not available. (s)=Less than 0.5 trillion Btu.

Notes: • Totals may not equal sum of components due to independent rounding. • Geographic coverage is the 50 states and the District of Columbia.

Web Page: <http://www.eia.doe.gov/emeu/mer/renew.html>.

Sources: See end of section.

**Table 10.2b Estimated Renewable Energy Consumption:  
Industrial and Transportation Sectors**  
(Trillion Btu)

	Industrial Sector <sup>a</sup>					Transportation Sector
	Hydropower <sup>b</sup>	Wood <sup>c</sup>	Waste <sup>d</sup>	Geothermal <sup>e</sup>	Total	Alcohol Fuels <sup>f</sup>
1973 Total .....	35	1,165	NA	NA	1,200	NA
1974 Total .....	33	1,159	NA	NA	1,192	NA
1975 Total .....	32	1,063	NA	NA	1,096	NA
1976 Total .....	33	1,220	NA	NA	1,253	NA
1977 Total .....	33	1,281	NA	NA	1,314	NA
1978 Total .....	32	1,400	NA	NA	1,432	NA
1979 Total .....	34	1,405	NA	NA	1,439	NA
1980 Total .....	33	1,600	NA	NA	1,633	NA
1981 Total .....	33	1,602	87	NA	1,722	7
1982 Total .....	33	1,516	118	NA	1,667	19
1983 Total .....	33	1,690	155	NA	1,879	35
1984 Total .....	33	1,679	204	NA	1,916	43
1985 Total .....	33	1,645	230	NA	1,908	52
1986 Total .....	33	1,610	256	NA	1,899	60
1987 Total .....	33	1,576	282	NA	1,891	69
1988 Total .....	33	1,625	308	NA	1,965	70
1989 Total .....	28	1,584	200	2	1,814	71
1990 Total .....	31	1,442	192	2	1,667	63
1991 Total .....	30	1,410	185	2	1,626	73
1992 Total .....	31	1,461	179	2	1,672	83
1993 Total .....	30	1,483	181	2	1,696	97
1994 Total .....	62	1,580	199	3	1,844	109
1995 Total .....	55	1,652	195	3	1,905	117
1996 Total .....	61	1,683	224	3	1,971	84
1997 Total .....	58	1,731	184	3	1,976	106
1998 Total .....	55	1,603	180	3	1,841	117
1999 Total .....	49	1,620	171	4	1,843	122
2000 Total .....	42	1,636	145	4	1,828	139
2001 Total .....	32	1,443	150	5	1,630	147
2002 January .....	3	130	15	(s)	149	13
February .....	3	114	13	(s)	131	12
March .....	3	120	15	(s)	138	12
April .....	3	121	14	(s)	139	12
May .....	3	130	14	(s)	147	14
June .....	3	122	14	(s)	139	12
July .....	3	137	14	(s)	154	15
August .....	3	124	14	(s)	141	14
September .....	2	132	14	(s)	148	15
October .....	3	141	15	(s)	159	17
November .....	5	128	15	(s)	148	20
December .....	5	133	16	(s)	155	19
<b>Total .....</b>	<b>39</b>	<b>1,531</b>	<b>174</b>	<b>5</b>	<b>1,748</b>	<b>174</b>
2003 January .....	4	116	13	(s)	134	17
February .....	4	110	12	(s)	126	20
March .....	5	130	14	(s)	149	17
April .....	4	124	13	(s)	142	20
May .....	5	122	14	(s)	141	19
June .....	5	125	13	(s)	143	19
July .....	5	129	13	(s)	148	20
August .....	5	125	14	(s)	144	21
September .....	4	119	14	(s)	137	18
October .....	4	138	15	(s)	157	21
November .....	4	151	14	(s)	170	24
December .....	6	137	15	(s)	158	25
<b>Total .....</b>	<b>57</b>	<b>1,524</b>	<b>164</b>	<b>5</b>	<b>1,750</b>	<b>239</b>
2004 January .....	5	136	14	(s)	156	24
February .....	4	124	13	(s)	142	22
March .....	4	127	14	(s)	145	24
April .....	4	131	14	(s)	149	24
May .....	4	124	15	(s)	143	25
June .....	3	<sup>R</sup> 123	15	(s)	<sup>R</sup> 141	25
July .....	3	130	14	(s)	147	25
<b>7-Month Total .....</b>	<b>28</b>	<b>895</b>	<b>99</b>	<b>3</b>	<b>1,025</b>	<b>169</b>
2003 7-Month Total .....	33	854	93	3	983	130
2002 7-Month Total .....	20	874	100	3	997	89

<sup>a</sup> Industrial sector fuel use, including that at industrial combined-heat-and-power (CHP) and industrial electricity-only plants. See note at end of Section 7.

<sup>b</sup> Conventional hydroelectric power.

<sup>c</sup> Wood, black liquor, and other wood waste.

<sup>d</sup> Municipal solid waste, landfill gas, sludge waste, tires, agricultural byproducts, and other biomass.

<sup>e</sup> Geothermal heat pump and direct use energy.

<sup>f</sup> Ethanol blended into motor gasoline.

R=Revised. NA=Not available. (s)=Less than 0.5 trillion Btu.

Notes: • Totals may not equal sum of components due to independent rounding. • Geographic coverage is the 50 states and the District of Columbia.

Web Page: <http://www.eia.doe.gov/emeu/mer/renew.html>.

Sources: See end of section.

**Table 10.2c Renewable Energy Consumption: Electric Power Sector**  
(Trillion Btu)

	Hydropower <sup>a</sup>	Wood <sup>b</sup>	Waste <sup>c</sup>	Geothermal <sup>d</sup>	Solar <sup>e</sup>	Wind <sup>f</sup>	Total
1973 Total	2,827	1	2	43	NA	NA	2,873
1974 Total	3,143	1	2	53	NA	NA	3,199
1975 Total	3,122	(s)	2	70	NA	NA	3,194
1976 Total	2,943	1	2	78	NA	NA	3,024
1977 Total	2,301	3	2	77	NA	NA	2,383
1978 Total	2,905	2	1	64	NA	NA	2,973
1979 Total	2,897	3	2	84	NA	NA	2,986
1980 Total	2,867	3	2	110	NA	NA	2,982
1981 Total	2,725	3	1	123	NA	NA	2,852
1982 Total	3,233	2	1	105	NA	NA	3,341
1983 Total	3,494	2	2	129	NA	(s)	3,627
1984 Total	3,353	5	4	165	(s)	(s)	3,527
1985 Total	2,937	8	7	198	(s)	(s)	3,150
1986 Total	3,038	5	7	219	(s)	(s)	3,270
1987 Total	2,602	8	7	229	(s)	(s)	2,846
1988 Total	2,302	10	8	217	(s)	(s)	2,536
1989 Total <sup>g</sup>	2,808	100	132	308	3	22	3,372
1990 Total	3,014	129	188	326	4	29	3,689
1991 Total	2,985	126	229	335	5	31	3,710
1992 Total	2,586	140	262	338	4	30	3,360
1993 Total	2,861	150	265	351	5	31	3,662
1994 Total	2,620	152	282	325	5	36	3,420
1995 Total	3,149	125	296	280	5	33	3,889
1996 Total	3,528	138	300	300	5	33	4,305
1997 Total	3,581	137	309	309	5	34	4,375
1998 Total	3,241	137	308	311	5	31	4,032
1999 Total	3,218	138	315	312	5	46	4,034
2000 Total	2,768	134	318	296	5	57	3,579
2001 Total	2,169	126	324	289	6	68	2,982
2002 January	218	13	30	27	(s)	8	296
February	201	10	27	24	(s)	7	270
March	210	13	30	26	(s)	9	288
April	242	11	28	23	(s)	10	316
May	267	11	30	26	1	11	345
June	283	12	31	24	1	11	362
July	255	13	33	27	1	9	337
August	211	13	33	26	1	10	293
September	170	14	31	25	1	7	248
October	170	13	30	26	(s)	7	247
November	195	13	30	25	(s)	7	270
December	214	14	32	26	(s)	8	293
Total	2,636	150	365	305	6	105	3,567
2003 January	195	15	27	24	(s)	6	267
February	195	12	24	22	(s)	7	260
March	241	13	29	23	1	10	317
April	248	12	28	22	1	11	322
May	297	11	29	22	1	9	368
June	283	13	29	23	1	10	358
July	244	14	32	23	1	9	323
August	226	15	30	23	1	8	302
September	180	13	27	23	1	8	251
October	181	15	30	23	(s)	9	258
November	195	14	30	23	(s)	10	272
December	238	15	32	26	(s)	11	322
Total	2,722	161	346	276	5	108	3,619
2004 January	230	15	30	26	(s)	9	310
February	209	14	26	25	(s)	10	284
March	228	14	28	25	1	12	309
April	210	12	28	24	1	12	286
May	239	13	30	25	1	17	323
June	252	R 12	29	25	1	14	333
July	231	16	30	26	1	11	315
7-Month Total	1,598	96	201	176	4	85	2,159
2003 7-Month Total	1,703	90	197	159	4	62	2,214
2002 7-Month Total	1,676	83	210	177	4	66	2,215

<sup>a</sup> Conventional hydroelectric power.  
<sup>b</sup> Wood, black liquor, and other wood waste.  
<sup>c</sup> Municipal solid waste, landfill gas, sludge waste, tires, agricultural byproducts, and other biomass.  
<sup>d</sup> Geothermal electricity net generation.  
<sup>e</sup> Solar thermal and photovoltaic electricity net generation.  
<sup>f</sup> Wind electricity net generation.  
<sup>g</sup> Through 1988, data are for consumption at electric utilities only. Beginning in 1989, data also include consumption at independent power producers.  
R=Revised. NA=Not available. (s)=Less than 0.5 trillion Btu.

Notes: • 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.  
• Totals may not equal sum of components due to independent rounding.  
• Geographic coverage is the 50 states and the District of Columbia.  
Web Page: <http://www.eia.doe.gov/emeu/mer/renew.html>.  
Sources: **Wood and Waste** • 1973-1988: Table 7.3d. • 1989 forward: Table 7.3b. **Hydropower, Geothermal, Solar, and Wind**: Tables 7.2b and A6.

## Renewable Energy

### Tables 10.2a and 10.2b Sources

#### Wood, Residential

1973–1979: Energy Information Administration (EIA), *Estimates of U.S. Wood Energy Consumption from 1949 to 1981*, Table A2.

1980–1983: EIA, *Estimates of U.S. Wood Energy Consumption 1980–1983*, Table ES1.

1984: EIA, *Estimates of U.S. Biofuels Consumption 1990*, Table 1.

1985 and 1986: Values interpolated.

1987: EIA, *Estimates of Biofuels Consumption in the United States During 1987*, Table 2.

1988: Value interpolated.

1989: EIA, *Estimates of U.S. Biofuels Consumption 1990*, Table 1.

1990–2001: EIA, *Renewable Energy Annual*, annual reports, Table 6. Includes revisions published in the EIA, *Annual Energy Review 2000*, Table 10.2a.

2002 forward: EIA, Office of Coal, Nuclear, Electric and Alternate Fuels (CNEAF), estimates.

#### Wood, Commercial

1973–1979: EIA, *Estimates of U.S. Wood Energy Consumption from 1949 to 1981*, Table A2.

1980–1983: EIA, *Estimates of U.S. Wood Energy Consumption 1980–1983*, Table ES1.

1984: EIA, CNEAF, estimate.

1985–1992: Values interpolated.

1993–2001: EIA, *Renewable Energy Annual*, annual reports, Table 6. Includes revisions published in the EIA, *Annual Energy Review 2000*, Table 10.2a.

2002 forward: EIA, CNEAF, estimates.

#### Wood, Industrial

1973–1979: EIA, *Estimates of U.S. Wood Energy Consumption from 1949 to 1981*, Table A2.

1980–1983: EIA, *Estimates of U.S. Wood Energy Consumption 1980–1983*, Table ES1.

1984: EIA, *Estimates of U.S. Biofuels Consumption 1990*, Table 1.

1985 and 1986: Values interpolated.

1987: EIA, *Estimates of Biofuels Consumption in the United States During 1987*, Table 2.

1988: Value interpolated.

1989: American Paper Institute, *Fact Sheet on 1990 Energy Use in the U.S. Pulp and Paper Industry* (July 1991), total pulp and paper industry wood consumption, minus nonutility power producers' use of wood to produce electricity (see Table 10.3b).

1990–2001: EIA, *Renewable Energy Annual 2001* (November 2002), Table B1, and CNEAF staff for subsequent data updates.

2002 forward: EIA, CNEAF, estimates.

## Waste, Commercial

Table 7.3c

#### Waste, Industrial

1981: EIA, *Estimates of U.S. Biofuels Consumption 1990*, Table 8, total waste consumption, minus electric utilities' use of waste to produce electricity (see Table 10.3a).

1982 and 1983: EIA, CNEAF, estimates for total waste consumption, minus electric utilities' use of waste to produce electricity (see Table 10.3a).

1984: EIA, *Estimates of U.S. Biofuels Consumption 1990*, Table 8, total waste consumption, minus electric utilities' use of waste to produce electricity (see Table 10.3a).

1985 and 1986: Values interpolated.

1987: EIA, *Estimates of U.S. Biofuels Consumption 1990*, Table 8, total waste consumption, minus electric utilities' use of waste to produce electricity (see Table 10.3a).

1988: Value interpolated.

1989: EIA, *Estimates of U.S. Biofuels Consumption 1990*, Table 8, total waste consumption, minus electric utilities' and nonutility power producers' use of waste to produce electricity (see Tables 10.3a and 10.3b).

1990–2001: EIA, *Renewable Energy Annual 2001* (November 2002), Table B1, and CNEAF staff for subsequent data updates.

2002 forward: EIA, CNEAF, estimates.

#### Hydroelectric, Commercial

Hydroelectric total (all sectors) from Table 7.2a minus electric power sector hydroelectric from Table 7.2b minus industrial sector hydroelectric from Table 7.2c, times the fossil-fueled steam-electric plants heat rate from Table A6.

#### Hydroelectric, Industrial

1973–1978: Federal Power Commission (FPC), Form FPC-4, "Monthly Power Plant Report," for plants with generating capacity exceeding 10 megawatts, and FPC, Form FPC-12C, "Industrial Electric Generating Capacity," for all other plants, and Table A6.

1979: FPC, Form FPC-4, "Monthly Power Plant Report," for plants with generating capacity exceeding 10 megawatts, and EIA estimates for all other plants; and Table A6.

1980–1988: Estimated by EIA as the average generation over the 6-year period of 1974–1979, and Table A6.

1989 forward: Tables 7.2c and A6.

#### Alcohol Fuels

1981: EIA, *Estimates of U.S. Biofuels Consumption 1990*, Table 10.

1982 and 1983: EIA, CNEAF, estimates.

1984: EIA, *Estimates of U.S. Biofuels Consumption 1990*, Table 10.

1985 and 1986: Values interpolated.

1987: EIA, *Estimates of U.S. Biofuels Consumption 1990*, Table 10.

1988: Value interpolated.

1989: EIA, *Estimates of U.S. Biofuels Consumption 1990*, Table 10.

1990: EIA, *Estimates of U.S. Biomass Energy Consumption 1992*, Table D1.

1991: Value interpolated.

1992: EIA, *Estimates of U.S. Biomass Energy Consumption 1992*, Table D1.

1993 forward: EIA, *Petroleum Supply Monthly (PSM)*, Tables 2 and 28, and *Monthly Energy Review (MER)* Table A1. Ten percent of the “Field Production” of “Oxygenated Finished Motor Gasoline” from *PSM* Table 2 is added to the “Refinery Input of Fuel Ethanol” from *PSM* Table 28. The sum is multiplied by the conversion factor of 3.539 million Btu per barrel as shown in the *MER* Table A1.

#### **Geothermal**

1989 forward: John Lund, Oregon Institute of Technology Geoheat Center, unpublished data.

#### **Solar**

1989–1991: EIA, CNEAF, estimates.

1992–2001: EIA *Renewable Energy Annual*, annual reports, Table 2. Includes revisions published in the EIA, *Annual Energy Review 2000*, Table 10.2a and 10.2b.

2002 forward: EIA, CNEAF, estimates.