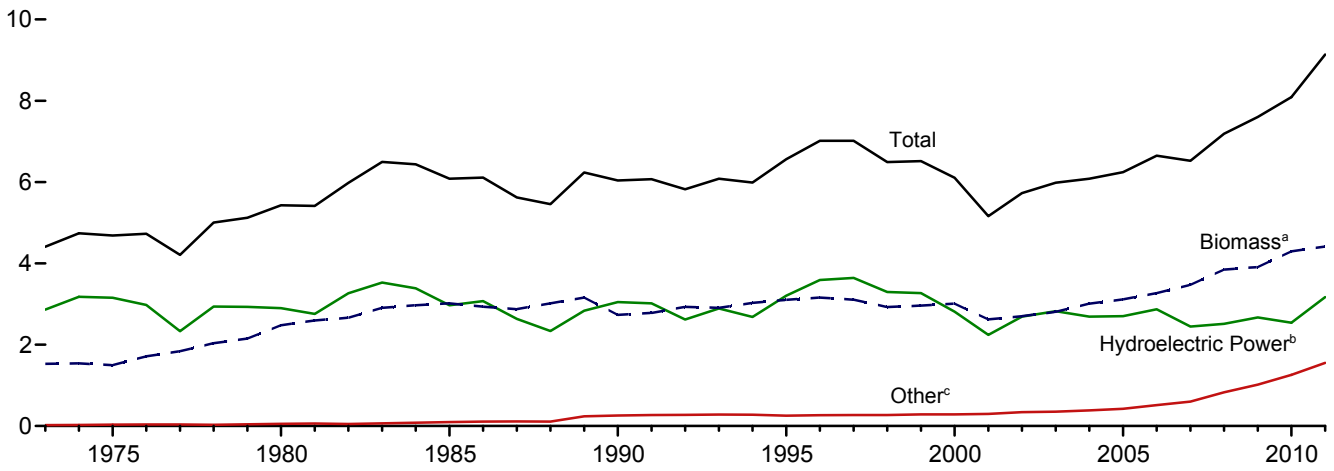


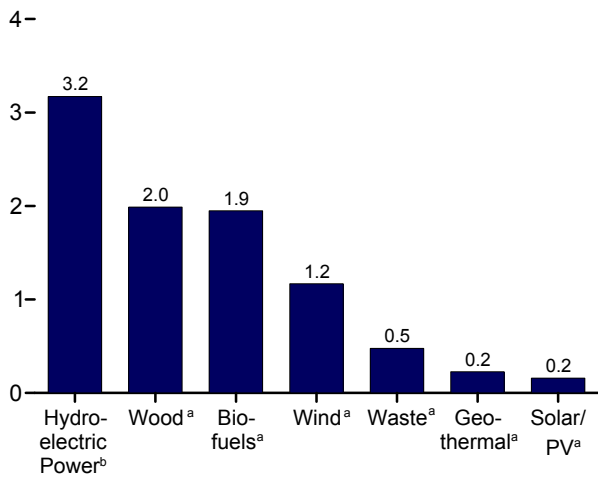
10. Renewable Energy

Figure 10.1 Renewable Energy Consumption
(Quadrillion Btu)

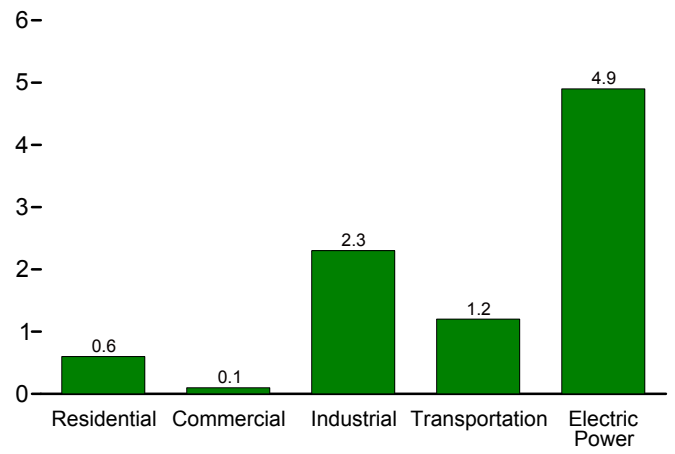
Total and Major Sources, 1973-2011



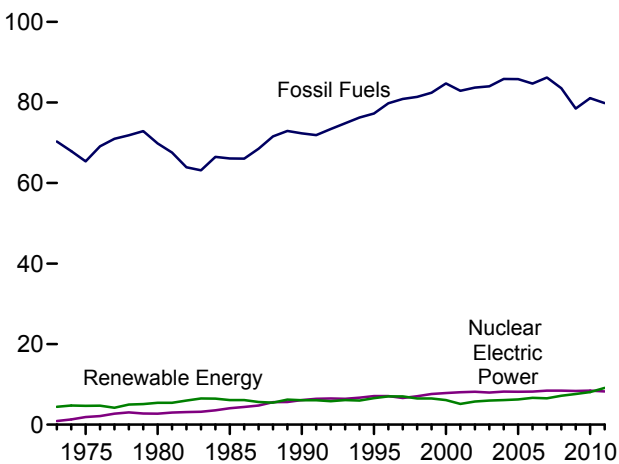
By Source, 2011



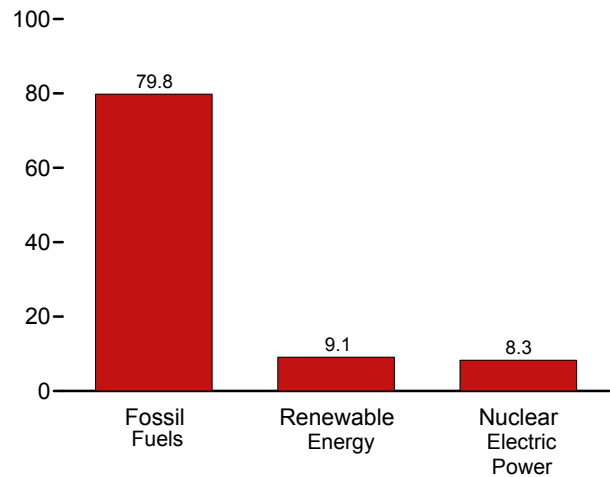
By Sector, 2011



Compared With Other Resources, 1973-2011



Compared With Other Resources, 2011



^a See Table 10.1 for definition.
^b Conventional hydroelectric power.
^c Geothermal, solar/PV, and wind.

Web Page: <http://www.eia.gov/totalenergy/data/monthly/#renewable>.
Sources: Tables 1.3 and 10.1-10.2c.

Table 10.1 Renewable Energy Production and Consumption by Source
(Trillion Btu)

	Production ^a			Consumption								
	Biomass		Total Renewable Energy ^d	Hydro-electric Power ^e	Geo-thermal ^f	Solar/PV ^g	Wind ^h	Biomass				Total Renewable Energy
	Bio-fuels ^b	Total ^c						Wood ⁱ	Waste ^j	Bio-fuels ^k	Total	
1973 Total	NA	1,529	4,411	2,861	20	NA	NA	1,527	2	NA	1,529	4,411
1975 Total	NA	1,499	4,687	3,155	34	NA	NA	1,497	2	NA	1,499	4,687
1980 Total	NA	2,475	5,428	2,900	53	NA	NA	2,474	2	NA	2,475	5,428
1985 Total	93	3,016	6,084	2,970	97	(s)	(s)	2,687	236	93	3,016	6,084
1990 Total	111	2,735	6,041	3,046	171	59	29	2,216	408	111	2,735	6,041
1995 Total	198	3,099	6,558	3,205	152	69	33	2,370	531	200	3,101	6,560
1996 Total	141	3,155	7,012	3,590	163	70	33	2,437	577	143	3,157	7,014
1997 Total	186	3,108	7,018	3,640	167	70	34	2,371	551	184	3,105	7,016
1998 Total	202	2,929	6,494	3,297	168	69	31	2,184	542	201	2,927	6,493
1999 Total	211	2,965	6,517	3,268	171	68	46	2,214	540	209	2,963	6,516
2000 Total	233	3,006	6,104	2,811	164	66	57	2,262	511	236	3,008	6,106
2001 Total	254	2,624	5,164	2,242	164	64	70	2,006	364	253	2,622	5,163
2002 Total	308	2,705	5,734	2,689	171	63	105	1,995	402	303	2,701	5,729
2003 Total	402	2,805	5,982	2,825	175	62	115	2,002	401	404	2,807	5,983
2004 Total	487	2,998	6,070	2,690	178	63	142	2,121	389	499	3,010	6,082
2005 Total	564	3,104	6,229	2,703	181	63	178	2,137	403	577	3,117	6,242
2006 Total	720	3,216	6,599	2,869	181	68	264	2,099	397	771	3,267	6,649
2007 Total	978	3,461	6,509	2,446	186	76	341	2,070	413	991	3,474	6,523
2008 Total	1,387	3,864	7,202	2,511	192	89	546	2,040	436	1,372	3,849	7,186
2009 Total	1,584	3,928	7,616	2,669	200	98	721	1,891	453	1,568	3,912	7,600
2010 January	152	359	672	218	18	10	67	168	39	142	349	662
February	142	332	610	201	16	9	53	154	35	136	326	605
March	158	366	682	204	18	10	84	168	40	149	357	673
April	152	351	661	186	17	10	95	160	39	149	348	657
May	157	358	717	245	18	11	85	162	39	155	356	715
June	152	355	753	291	17	11	79	164	39	155	357	755
July	158	367	701	239	17	11	66	170	40	158	368	701
August	160	371	662	196	18	11	65	171	40	159	370	660
September	156	360	626	168	17	11	69	166	38	153	357	622
October	163	369	646	173	17	10	77	166	39	160	366	643
November	164	369	682	191	17	10	95	165	40	157	363	676
December	168	383	726	226	18	10	88	174	41	163	377	720
Total	1,884	4,341	8,136	2,539	208	126	923	1,988	469	1,837	4,294	8,090
2011 January	R 169	R 382	R 754	255	20	12	84	174	40	R 153	367	R 738
February	R 151	R 343	R 716	241	18	12	103	156	36	R 145	R 336	R 709
March	171	377	822	310	20	13	103	166	40	160	366	811
April	163	359	R 820	309	18	13	121	158	38	154	R 350	R 811
May	R 170	R 370	840	323	19	14	114	160	40	R 164	R 364	R 834
June	R 168	R 376	R 829	315	19	14	106	168	40	R 168	R 375	R 828
July	R 171	R 383	R 796	308	19	14	72	171	41	162	374	787
August	R 174	R 383	R 745	257	19	14	72	169	41	R 174	R 383	744
September	R 166	371	R 679	210	18	13	67	165	40	160	R 364	R 672
October	176	379	R 710	195	19	14	104	163	40	167	370	R 701
November	R 178	382	742	209	19	12	121	164	41	R 167	R 372	R 732
December	186	403	R 778	241	19	13	102	175	42	R 176	R 393	R 768
Total	R 2,044	R 4,509	R 9,233	3,171	226	158	1,168	1,987	477	R 1,948	R 4,413	R 9,137
2012 January	177	389	792	233	19	15	135	173	40	154	367	769
February	164	362	705	203	18	15	108	161	37	152	350	694
March	172	372	797	256	19	16	132	161	40	163	364	788
April	164	357	776	261	18	17	123	153	40	160	353	773
May	173	377	819	283	19	19	121	164	40	172	376	819
June	165	367	783	264	19	19	115	162	40	164	365	782
6-Month Total	1,014	2,224	4,673	1,501	114	101	734	973	237	966	2,176	4,625
2011 6-Month Total	993	2,207	4,782	1,752	113	78	631	981	233	944	2,158	4,732
2010 6-Month Total	913	2,121	4,094	1,345	104	62	462	976	232	886	2,094	4,067

^a Production equals consumption for all renewable energy sources except biofuels.

^b Total biomass inputs to the production of fuel ethanol and biodiesel.

^c Wood and wood-derived fuels, biomass waste, and total biomass inputs to the production of fuel ethanol and biodiesel.

^d Hydroelectric power, geothermal, solar thermal/photovoltaic, wind, and biomass.

^e Conventional hydroelectricity net generation (converted to Btu using the fossil-fuels heat rate—see Table A6).

^f Geothermal electricity net generation (converted to Btu using the fossil-fuels heat rate—see Table A6), and geothermal heat pump and direct use energy.

^g Solar thermal and photovoltaic (PV) electricity net generation (converted to Btu using the fossil-fuels heat rate—see Table A6), and solar thermal direct use energy.

^h Wind electricity net generation (converted to Btu using the fossil-fuels heat rate—see Table A6).

ⁱ Wood and wood-derived fuels.

^j 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).

^k Fuel ethanol (minus denaturant) and biodiesel consumption, plus losses and co-products from the production of fuel ethanol and biodiesel.

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

Notes: • Most data for the residential, commercial, industrial, and transportation sectors are estimates. See notes and sources for Tables 10.2a and 10.2b. • See Note, "Renewable Energy Production and Consumption," 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.

Web Page: See <http://www.eia.gov/totalenergy/data/monthly/#renewable> for all available data beginning in 1973.

Sources: Tables 10.2a–10.4.

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

	Residential Sector				Commercial Sector ^a								
	Geo-thermal ^b	Solar/PV ^c	Biomass		Hydro-electric Power ^e	Geo-thermal ^b	Solar/PV ^f	Wind ^g	Biomass				Total
			Wood ^d	Total					Wood ^d	Waste ^h	Fuel Ethanol ⁱ	Total	
1973 Total	NA	NA	354	354	NA	NA	NA	NA	7	NA	NA	7	7
1975 Total	NA	NA	425	425	NA	NA	NA	NA	8	NA	NA	8	8
1980 Total	NA	NA	850	850	NA	NA	NA	NA	21	NA	NA	21	21
1985 Total	NA	NA	1,010	1,010	NA	NA	NA	NA	24	NA	(s)	24	24
1990 Total	6	56	580	641	1	3	—	—	66	28	(s)	94	98
1995 Total	7	64	520	591	1	5	—	—	72	40	(s)	113	118
1996 Total	7	65	540	612	1	5	—	—	76	53	(s)	129	135
1997 Total	8	64	430	502	1	6	—	—	73	58	(s)	131	138
1998 Total	8	64	380	452	1	7	—	—	64	54	(s)	118	127
1999 Total	9	63	390	461	1	7	—	—	67	54	(s)	121	129
2000 Total	9	61	420	489	1	8	—	—	71	47	(s)	119	128
2001 Total	9	59	370	438	1	8	—	—	67	25	(s)	92	101
2002 Total	10	57	380	448	(s)	9	—	—	69	26	(s)	95	104
2003 Total	13	57	400	470	1	11	—	—	71	29	1	101	113
2004 Total	14	57	410	481	1	12	—	—	70	34	1	105	118
2005 Total	16	58	430	504	1	14	—	—	70	34	1	105	120
2006 Total	18	63	380	462	1	14	—	—	65	36	1	103	118
2007 Total	22	70	410	502	1	14	—	—	70	31	2	103	118
2008 Total	26	80	450	557	1	15	(s)	—	73	34	2	109	125
2009 Total	33	89	430	552	1	17	(s)	(s)	72	36	3	112	129
2010 January	3	10	36	48	(s)	2	(s)	(s)	6	3	(s)	9	11
February	3	9	32	44	(s)	1	(s)	(s)	5	3	(s)	8	10
March	3	10	36	48	(s)	2	(s)	(s)	6	3	(s)	9	11
April	3	9	35	47	(s)	2	(s)	(s)	6	3	(s)	9	11
May	3	10	36	48	(s)	2	(s)	(s)	6	4	(s)	10	12
June	3	9	35	47	(s)	2	(s)	(s)	6	3	(s)	9	11
July	3	10	36	48	(s)	2	(s)	(s)	6	3	(s)	9	11
August	3	10	36	48	(s)	2	(s)	(s)	6	3	(s)	10	11
September	3	9	35	47	(s)	2	(s)	(s)	6	3	(s)	9	11
October	3	10	36	48	(s)	2	(s)	(s)	6	3	(s)	9	11
November	3	9	35	47	(s)	2	(s)	(s)	6	3	(s)	9	11
December	3	10	36	48	(s)	2	(s)	(s)	6	3	(s)	9	11
Total	37	114	420	571	1	19	(s)	(s)	72	36	3	111	130
2011 January	3	12	37	52	(s)	2	(s)	(s)	6	3	(s)	9	11
February	3	11	33	47	(s)	2	(s)	(s)	5	3	(s)	9	10
March	3	12	37	52	(s)	2	(s)	(s)	6	3	(s)	9	11
April	3	12	35	50	(s)	2	(s)	(s)	6	3	(s)	9	10
May	3	12	37	52	(s)	2	(s)	(s)	6	3	(s)	9	11
June	3	12	35	50	(s)	2	(s)	(s)	6	3	(s)	9	11
July	3	12	37	52	(s)	2	(s)	(s)	6	3	(s)	9	11
August	3	12	37	52	(s)	2	(s)	(s)	6	3	(s)	9	11
September	3	12	35	50	(s)	2	(s)	(s)	6	3	(s)	9	11
October	3	12	37	52	(s)	2	(s)	(s)	6	3	(s)	9	11
November	3	12	35	50	(s)	2	(s)	(s)	6	3	(s)	9	11
December	3	12	37	52	(s)	2	(s)	(s)	6	3	(s)	10	11
Total	40	140	430	610	1	20	(s)	(s)	71	36	3	110	131
2012 January	3	14	36	54	(s)	2	(s)	(s)	6	3	(s)	9	11
February	3	13	34	51	(s)	2	(s)	(s)	6	3	(s)	9	10
March	3	14	36	54	(s)	2	(s)	(s)	6	3	(s)	9	11
April	3	14	35	52	(s)	2	(s)	(s)	6	3	(s)	9	11
May	3	14	36	54	(s)	2	(s)	(s)	6	3	(s)	9	11
June	3	14	35	52	(s)	2	(s)	(s)	6	6	(s)	12	14
6-Month Total	20	84	214	318	(s)	10	(s)	(s)	35	20	2	57	67
2011 6-Month Total	20	70	213	303	1	10	(s)	(s)	35	17	2	54	64
2010 6-Month Total	18	57	208	283	1	9	(s)	(s)	35	19	2	56	65

^a Commercial sector, including commercial combined-heat-and-power (CHP) and commercial electricity-only plants. See Note, "Classification of Power Plants Into Energy-Use Sectors," at end of Section 7.

^b Geothermal heat pump and direct use energy.

^c Solar thermal direct use energy, and photovoltaic (PV) electricity net generation (converted to Btu using the fossil-fuels heat rate—see Table A6). Includes distributed solar thermal and PV energy used in the commercial, industrial, and electric power sectors.

^d Wood and wood-derived fuels.

^e Conventional hydroelectricity net generation (converted to Btu using the fossil-fuels heat rate—see Table A6).

^f Photovoltaic (PV) electricity net generation (converted to Btu using the fossil-fuels heat rate—see Table A6) at commercial plants with capacity of 1 megawatt or greater.

^g Wind electricity net generation (converted to Btu using the fossil-fuels heat

rate—see Table A6).

^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 The fuel ethanol (minus denaturant) portion of motor fuels, such as E10, consumed by the commercial sector.

NA=Not available. —=No data reported. (s)=Less than 0.5 trillion Btu.

Notes: • Data are estimates, except for commercial sector solar/PV, hydroelectric power, wind, and waste. • Totals may not equal sum of components due to independent rounding. • Geographic coverage is the 50 States and the District of Columbia.

Web Page: See <http://www.eia.gov/totalenergy/data/monthly/#renewable> for all available data beginning in 1973.

Sources: See end of section.

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

	Industrial Sector ^a										Transportation Sector			
	Hydroelectric Power ^b	Geothermal ^c	Solar/PV ^d	Wind ^e	Biomass					Total	Biomass			
					Wood ^f	Waste ^g	Fuel Ethanol ^h	Losses and Co-products ⁱ	Total		Fuel Ethanol ^j	Bio-diesel	Total	
1973 Total	35	NA	NA	NA	1,165	NA	NA	NA	NA	1,165	1,200	NA	NA	NA
1975 Total	32	NA	NA	NA	1,063	NA	NA	NA	NA	1,063	1,096	NA	NA	NA
1980 Total	33	NA	NA	NA	1,600	NA	NA	NA	NA	1,600	1,633	NA	NA	NA
1985 Total	33	NA	NA	NA	1,645	230	1	42	1,918	1,951	1,951	50	NA	50
1990 Total	31	2	—	—	1,442	192	1	49	1,684	1,717	1,717	60	NA	60
1995 Total	55	3	—	—	1,652	195	2	86	1,934	1,992	1,992	112	NA	112
1996 Total	61	3	—	—	1,683	224	1	61	1,969	2,033	2,033	81	NA	81
1997 Total	58	3	—	—	1,731	184	1	80	1,996	2,057	2,057	102	NA	102
1998 Total	55	3	—	—	1,603	180	1	86	1,872	1,929	1,929	113	NA	113
1999 Total	49	4	—	—	1,620	171	1	90	1,882	1,934	1,934	118	NA	118
2000 Total	42	4	—	—	1,636	145	1	99	1,881	1,928	1,928	135	NA	135
2001 Total	33	5	—	—	1,443	129	3	108	1,681	1,719	1,719	141	1	142
2002 Total	39	5	—	—	1,396	146	3	130	1,676	1,720	1,720	168	2	170
2003 Total	43	3	—	—	1,363	142	4	169	1,679	1,726	1,726	228	2	230
2004 Total	33	4	—	—	1,476	132	6	203	1,817	1,853	1,853	286	3	290
2005 Total	32	4	—	—	1,452	148	7	230	1,837	1,873	1,873	327	12	339
2006 Total	29	4	—	—	1,472	130	10	285	1,897	1,930	1,930	442	33	475
2007 Total	16	5	—	—	1,405	144	10	377	1,936	1,956	1,956	557	46	602
2008 Total	17	5	—	—	1,340	144	12	532	2,028	2,049	2,049	786	40	826
2009 Total	18	4	—	—	1,208	155	13	617	1,994	2,016	2,016	894	42	935
2010 January	2	(s)	(s)	—	109	15	1	60	185	187	187	81	(s)	81
February	2	(s)	(s)	—	100	13	1	56	170	172	172	76	3	79
March	2	(s)	(s)	—	110	15	1	62	188	190	190	83	2	85
April	2	(s)	(s)	—	105	15	1	60	181	183	183	84	4	87
May	2	(s)	(s)	—	106	14	1	62	183	185	185	89	3	92
June	1	(s)	(s)	—	107	13	2	60	182	183	183	90	2	93
July	1	(s)	(s)	—	111	14	2	62	188	190	190	91	3	94
August	1	(s)	(s)	—	111	14	2	63	190	191	191	91	3	94
September	1	(s)	(s)	—	110	13	1	61	185	187	187	86	4	90
October	1	(s)	(s)	—	110	15	2	64	190	192	192	91	3	94
November	1	(s)	(s)	—	108	15	1	65	190	191	191	88	3	91
December	1	(s)	(s)	—	114	15	2	67	198	199	199	92	3	94
Total	16	4	(s)	—	1,301	169	17	742	2,230	2,250	2,250	1,040	34	1,074
2011 January	1	(s)	(s)	(s)	115	15	1	66	197	199	199	R 82	3	86
February	2	(s)	(s)	(s)	102	14	1	59	176	178	178	R 80	4	R 84
March	2	(s)	(s)	(s)	109	14	1	R 65	190	192	192	87	6	93
April	2	(s)	(s)	(s)	105	14	1	62	182	R 184	R 184	R 82	8	R 90
May	2	(s)	(s)	(s)	105	14	2	R 64	185	187	187	90	R 8	R 98
June	1	(s)	(s)	(s)	112	14	2	63	R 191	192	192	92	R 10	102
July	1	(s)	(s)	(s)	112	14	1	64	192	R 193	R 193	R 86	R 10	96
August	1	(s)	(s)	(s)	110	14	2	65	191	192	192	R 95	R 12	R 107
September	1	(s)	(s)	(s)	109	14	1	62	187	188	188	83	R 13	R 96
October	1	(s)	(s)	(s)	107	15	1	65	R 188	190	190	89	R 11	100
November	1	(s)	(s)	(s)	110	15	1	66	192	194	194	R 86	13	R 99
December	2	(s)	(s)	(s)	116	15	2	69	202	204	204	R 91	R 14	R 105
Total	18	4	(s)	(s)	1,311	172	17	R 771	R 2,272	R 2,294	R 2,294	R 1,044	R 113	R 1,157
2012 January	2	(s)	(s)	(s)	114	15	1	67	197	199	199	81	5	86
February	2	(s)	(s)	(s)	106	14	1	61	183	185	185	82	8	89
March	2	(s)	(s)	(s)	104	14	1	64	184	186	186	87	10	98
April	2	(s)	(s)	(s)	101	14	1	61	178	180	180	86	11	98
May	2	(s)	(s)	(s)	108	14	2	64	188	190	190	93	14	107
June	1	(s)	(s)	1	106	14	2	61	183	185	185	90	11	101
6-Month Total	10	2	(s)	1	641	86	9	378	1,113	1,126	1,126	519	59	578
2011 6-Month Total	10	2	(s)	(s)	647	85	9	380	1,120	1,132	1,132	514	40	554
2010 6-Month Total	10	2	(s)	—	637	84	8	359	1,088	1,100	1,100	502	15	517

^a Industrial sector, including industrial combined-heat-and-power (CHP) and industrial electricity-only plants. See Note, "Classification of Power Plants Into Energy-Use Sectors," at end of Section 7.

^b Conventional hydroelectricity net generation (converted to Btu using the fossil-fuels heat rate—see Table A6).

^c Geothermal heat pump and direct use energy.

^d Photovoltaic (PV) electricity net generation (converted to Btu using the fossil-fuels heat rate—see Table A6) at industrial plants with capacity of 1 megawatt or greater.

^e Wind electricity net generation (converted to Btu using the fossil-fuels heat rate—see Table A6).

^f Wood and wood-derived fuels.

^g 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).

^h The fuel ethanol (minus denaturant) portion of motor fuels, such as E10,

consumed by the industrial sector.

ⁱ Losses and co-products from the production of fuel ethanol and biodiesel. Does not include natural gas, electricity, and other non-biomass energy used in the production of fuel ethanol and biodiesel—these are included in the industrial sector consumption statistics for the appropriate energy source.

^j The fuel ethanol (minus denaturant) portion of motor fuels, such as E10 and E85, consumed by the transportation sector.

R=Revised. NA=Not available. —=No data reported. (s)=Less than 0.5 trillion Btu.

Notes: • Data are estimates, except for industrial sector hydroelectric power in 1973-1978 and 1989 forward, solar/PV, and wind. • Totals may not equal sum of components due to independent rounding. • Geographic coverage is the 50 States and the District of Columbia.

Web Page: See <http://www.eia.gov/totalenergy/data/monthly/#renewable> for all available data beginning in 1973.

Sources: See end of section.

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

	Hydro-electric Power ^a	Geo-thermal ^b	Solar/PV ^c	Wind ^d	Biomass			Total
					Wood ^e	Waste ^f	Total	
1973 Total	2,827	20	NA	NA	1	2	3	2,851
1975 Total	3,122	34	NA	NA	(s)	2	2	3,158
1980 Total	2,867	53	NA	NA	3	2	4	2,925
1985 Total	2,937	97	(s)	(s)	8	7	14	3,049
1990 Total ^g	3,014	161	4	29	129	188	317	3,524
1995 Total	3,149	138	5	33	125	296	422	3,747
1996 Total	3,528	148	5	33	138	300	438	4,153
1997 Total	3,581	150	5	34	137	309	446	4,216
1998 Total	3,241	151	5	31	137	308	444	3,872
1999 Total	3,218	152	5	46	138	315	453	3,874
2000 Total	2,768	144	5	57	134	318	453	3,427
2001 Total	2,209	142	6	70	126	211	337	2,763
2002 Total	2,650	147	6	105	150	230	380	3,288
2003 Total	2,781	148	5	115	167	230	397	3,445
2004 Total	2,656	148	6	142	165	223	388	3,340
2005 Total	2,670	147	6	178	185	221	406	3,406
2006 Total	2,839	145	5	264	182	231	412	3,665
2007 Total	2,430	145	6	341	186	237	423	3,345
2008 Total	2,494	146	9	546	177	258	435	3,630
2009 Total	2,650	146	9	721	180	261	441	3,967
2010 January	217	13	(s)	67	17	21	39	335
February	199	11	(s)	53	16	20	36	300
March	202	13	1	84	16	22	39	338
April	184	12	1	95	15	21	36	329
May	243	13	1	85	14	22	36	378
June	290	12	2	79	16	23	39	421
July	238	12	2	66	17	23	40	358
August	195	13	2	65	18	23	41	315
September	168	12	1	69	16	22	38	288
October	171	12	1	77	15	22	37	298
November	190	12	1	95	16	23	39	337
December	225	13	(s)	88	17	23	41	367
Total	2,521	148	12	923	196	264	459	4,064
2011 January	254	14	(s)	84	16	21	38	391
February	239	13	1	103	15	20	35	390
March	308	14	1	103	15	23	38	463
April	307	13	2	121	12	22	33	476
May	321	14	2	113	13	22	35	486
June	313	13	2	106	15	23	38	473
July	307	13	2	72	16	24	40	434
August	256	13	2	72	16	23	39	383
September	209	13	2	67	15	22	37	327
October	194	14	2	104	13	23	36	349
November	207	13	1	120	13	23	36	377
December	239	14	1	102	16	23	39	396
Total	3,153	163	18	1,168	175	269	444	4,945
2012 January	232	14	1	135	16	22	38	420
February	201	13	1	108	15	21	35	359
March	255	14	2	132	14	23	37	440
April	259	13	3	123	11	22	33	432
May	281	14	4	121	13	23	36	457
June	263	14	5	114	15	20	34	429
6-Month Total	1,491	82	16	733	83	131	214	2,536
2011 6-Month Total	1,741	82	8	631	86	131	217	2,679
2010 6-Month Total	1,335	74	5	462	95	129	225	2,101

^a Conventional hydroelectricity net generation (converted to Btu using the fossil-fuels heat rate—see Table A6).

^b Geothermal electricity net generation (converted to Btu using the fossil-fuels heat rate—see Table A6).

^c Solar thermal and photovoltaic (PV) electricity net generation (converted to Btu using the fossil-fuels heat rate—see Table A6).

^d Wind electricity net generation (converted to Btu using the fossil-fuels heat rate—see Table A6).

^e Wood and wood-derived fuels.

^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 Through 1988, data are for electric utilities only. Beginning in 1989, data are for electric utilities and independent power producers.

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: See <http://www.eia.gov/totalenergy/data/monthly/#renewable> for all available data beginning in 1973.

Sources: • **Biomass:** Table 7.4b. • **All Other Data:** Tables 7.2b and A6.

Table 10.3 Fuel Ethanol Overview

	Feed-stock ^a	Losses and Co-products ^b	Denaturant ^c	Production ^d			Trade ^d	Stocks ^{d,f}	Stock Change ^{d,g}	Consumption ^d			Consumption Minus Denaturant ^h
							Net Imports ^e						
				TBtu	TBtu	Mbbl	Mbbl			MMgal	TBtu	Mbbl	
1981 Total	13	6	40	1,978	83	7	NA	NA	NA	1,978	83	7	7
1985 Total	93	42	294	14,693	617	52	NA	NA	NA	14,693	617	52	51
1990 Total	111	49	356	17,802	748	63	NA	NA	NA	17,802	748	63	62
1995 Total	198	86	647	32,325	1,358	115	387	2,186	-207	32,919	1,383	117	114
1996 Total	141	61	464	23,178	973	83	313	2,065	-121	23,612	992	84	82
1997 Total	186	80	613	30,674	1,288	109	85	2,925	860	29,899	1,256	107	104
1998 Total	202	86	669	33,453	1,405	119	66	3,406	481	33,038	1,388	118	115
1999 Total	211	90	698	34,881	1,465	124	87	4,024	618	34,350	1,443	122	119
2000 Total	233	99	773	38,627	1,622	138	116	3,400	-624	39,367	1,653	140	137
2001 Total	253	108	841	42,028	1,765	150	315	4,298	898	41,445	1,741	148	144
2002 Total	307	130	1,019	50,956	2,140	182	306	6,200	1,902	49,360	2,073	176	171
2003 Total	400	169	1,335	66,772	2,804	238	292	5,978	-222	67,286	2,826	240	233
2004 Total	484	203	1,621	81,058	3,404	289	3,542	6,002	24	84,576	3,552	301	293
2005 Total	552	230	1,859	92,961	3,904	331	3,234	5,563	-439	96,634	4,059	344	335
2006 Total	688	285	2,326	116,294	4,884	414	17,408	8,760	3,197	130,505	5,481	465	453
2007 Total	914	376	3,105	155,263	6,521	553	10,457	10,535	1,775	163,945	6,886	584	569
2008 Total	1,300	531	4,433	221,637	9,309	790	12,610	14,226	3,691	230,556	9,683	821	800
2009 Total	1,517	616	5,688	260,424	10,938	928	4,720	16,594	2,368	262,776	11,037	936	910
2010 January	149	60	541	25,625	1,076	91	-234	18,251	1,657	23,734	997	85	82
February	138	56	496	23,802	1,000	85	-482	19,297	1,046	22,274	936	79	77
March	154	62	537	26,486	1,112	94	-1,104	20,222	925	24,457	1,027	87	85
April	147	59	522	25,384	1,066	90	-927	20,042	-180	24,637	1,035	88	85
May	152	61	534	26,244	1,102	93	-368	19,851	-191	26,067	1,095	93	90
June	149	60	522	25,632	1,077	91	-341	18,565	-1,286	26,577	1,116	95	92
July	154	62	543	26,584	1,117	95	-578	17,809	-756	26,762	1,124	95	93
August	157	63	538	26,964	1,132	96	-695	17,380	-429	26,698	1,121	95	93
September	152	61	533	26,221	1,101	93	-924	17,437	57	25,240	1,060	90	88
October	160	64	563	27,471	1,154	98	-830	17,278	-159	26,800	1,126	95	93
November	161	65	585	27,747	1,165	99	-923	18,150	872	25,952	1,090	92	90
December	165	67	592	28,457	1,195	101	-1,711	17,941	-209	26,955	1,132	96	93
Total	1,839	742	6,506	316,617	13,298	1,127	-9,115	17,941	1,347	306,155	12,858	1,090	1,061
2011 January	165	66	581	R 28,467	R 1,196	R 101	-1,359	R 20,826	R 2,885	R 24,223	R 1,017	R 86	R 84
February	R 146	59	535	R 25,300	R 1,063	90	-1,425	R 21,016	R 190	R 23,685	R 995	R 84	R 82
March	163	65	548	R 28,178	R 1,183	100	-2,003	R 21,593	R 577	R 25,598	R 1,075	91	89
April	154	62	R 508	R 26,538	R 1,115	R 94	-2,865	R 21,065	R -528	R 24,201	R 1,016	R 86	R 84
May	R 160	64	R 550	R 27,720	R 1,164	99	-1,743	R 20,609	R -456	26,433	1,110	94	92
June	R 158	63	R 540	R 27,224	R 1,143	R 97	-1,533	R 19,217	R -1,392	R 27,083	R 1,137	96	94
July	R 159	64	555	R 27,541	R 1,157	98	-2,731	R 18,788	R -429	R 25,239	R 1,060	R 90	R 88
August	R 162	65	575	R 27,976	R 1,175	100	R -665	R 18,123	R -665	R 27,976	R 1,175	100	97
September	162	62	525	R 26,588	R 1,117	95	R -1,745	R 18,465	R 342	R 24,501	R 1,029	R 87	R 85
October	R 154	65	557	R 28,013	R 1,177	100	-2,388	R 18,038	R -427	R 26,052	R 1,094	93	90
November	164	66	573	R 28,383	R 1,192	101	R -2,911	R 18,308	R 270	R 25,202	R 1,058	R 90	R 87
December	172	69	R 602	R 29,718	R 1,248	106	R -2,997	R 18,238	R -70	R 26,791	R 1,125	R 95	R 93
Total	R 1,919	R 769	R 6,649	R 331,646	R 13,929	R 1,181	R -24,365	R 18,238	R 297	R 306,984	R 12,893	R 1,093	R 1,065
2012 January	167	67	583	29,063	1,221	103	-1,789	21,753	ⁱ 3,492	23,782	999	85	82
February	154	61	528	26,653	1,119	95	-1,785	22,572	819	24,049	1,010	86	83
March	160	64	522	27,706	1,164	99	-1,626	22,952	380	25,700	1,079	91	89
April	152	61	494	26,368	1,107	94	-1,549	22,370	-582	25,401	1,067	90	88
May	160	64	520	27,718	1,164	99	-1,013	21,851	-519	27,224	1,143	97	95
June	154	61	503	26,611	1,118	95	-613	21,456	-395	26,393	1,109	94	92
6-Month Total ...	946	377	3,150	164,119	6,893	584	-8,375	21,456	3,195	152,549	6,407	543	530
2011 6-Month Total ...	946	379	3,262	163,427	6,864	582	-10,927	19,217	1,276	151,224	6,351	538	525
2010 6-Month Total ...	890	359	3,152	153,173	6,433	545	-3,455	18,565	1,971	147,747	6,205	526	512

^a Total corn and other biomass inputs to the production of undenatured ethanol used for fuel ethanol.

^b Losses and co-products from the production of fuel ethanol. Does not include natural gas, electricity, and other non-biomass energy used in the production of fuel ethanol—these are included in the industrial sector consumption statistics for the appropriate energy source.

^c The amount of denaturant in fuel ethanol produced.

^d Includes denaturant.

^e Through 2009, data are for fuel ethanol imports only; data for fuel ethanol exports are not available. Beginning in 2010, data are for fuel ethanol imports minus fuel ethanol exports.

^f Stocks are at end of period.

^g A negative value indicates a decrease in stocks and a positive value indicates an increase.

^h Consumption of fuel ethanol minus denaturant. Data for fuel ethanol minus denaturant are used to develop data for "Renewable Energy/Biomass" in Tables 10.1–10.2b, as well as in Sections 1 and 2.

ⁱ Derived from the preliminary 2011 stocks value (18,261 thousand barrels), not the final 2011 value (18,238 thousand barrels) that is shown under "Stocks."

R=Revised. NA=Not available.

Notes: • Mbbl = thousand barrels. MMgal = million U.S. gallons. TBtu = trillion Btu. • Fuel ethanol data in thousand barrels are converted to million gallons by multiplying by 0.042, and are converted to Btu by multiplying by the approximate heat content of fuel ethanol—see Table A3. • Through 1980, data are not available. For 1981–1992, data are estimates. For 1993–2008, only data for feedstock, losses and co-products, and denaturant are estimates. Beginning in 2009, only data for feedstock, and losses and co-products, are estimates. • See "Denaturant," "Ethanol," "Fuel Ethanol," and "Fuel Ethanol Minus Denaturant" in Glossary. • Totals may not equal sum of components due to independent rounding. • Geographic coverage is the 50 States and the District of Columbia.

Web Page: See <http://www.eia.gov/totalenergy/data/monthly/#renewable> for all available data beginning in 1981.

Sources: See end of section.

Table 10.4 Biodiesel Overview

	Feed-stock ^a	Losses and Co-products ^b	Production			Trade			Stocks ^d	Stock Change ^e	Balancing Item ^f	Consumption		
						Imports	Exports	Net Imports ^c						
			TBtu	TBtu	Mbbl	MMgal	TBtu	Mbbl				Mbbl	Mbbl	Mbbl
2001 Total	1	(s)	204	9	1	78	39	39	NA	NA	NA	243	10	1
2002 Total	1	(s)	250	10	1	191	56	135	NA	NA	NA	385	16	2
2003 Total	2	(s)	338	14	2	94	110	-16	NA	NA	NA	322	14	2
2004 Total	4	(s)	666	28	4	97	124	-26	NA	NA	NA	640	27	3
2005 Total	12	(s)	2,162	91	12	207	206	1	NA	NA	NA	2,163	91	12
2006 Total	32	(s)	5,963	250	32	1,069	828	242	NA	NA	NA	6,204	261	33
2007 Total	63	1	11,662	490	62	3,342	6,477	-3,135	NA	NA	NA	8,528	358	46
2008 Total	88	1	16,145	678	87	7,502	16,128	-8,626	NA	NA	NA	7,519	316	40
2009 Total	67	1	12,281	516	66	1,844	6,332	-4,489	711	711	669	7,750	326	42
2010 January	3	(s)	633	27	3	41	296	-256	1,049	338	0	40	2	(s)
February	4	(s)	696	29	4	31	139	-108	1,039	-10	0	599	25	3
March	4	(s)	804	34	4	60	433	-374	1,057	18	0	412	17	2
April	4	(s)	814	34	4	45	227	-182	1,009	-48	0	680	29	4
May	4	(s)	760	32	4	80	251	-171	1,016	7	0	582	24	3
June	4	(s)	644	27	3	54	304	-249	968	-48	0	443	19	2
July	4	(s)	657	28	4	32	199	-167	830	-138	0	628	26	3
August	4	(s)	653	27	3	52	225	-173	771	-59	0	539	23	3
September	4	(s)	723	30	4	69	131	-62	682	-89	0	749	31	4
October	4	(s)	676	28	4	18	132	-114	650	-32	0	594	25	3
November	3	(s)	528	22	3	30	57	-27	676	26	0	475	20	3
December	3	(s)	588	25	3	34	109	-75	672	-4	0	517	22	3
Total	44	1	8,177	343	44	546	2,503	-1,958	672	-39	0	6,258	263	34
2011 January	5	(s)	842	35	5	49	217	-169	R 1,016	R 39	0	R 634	R 27	3
February	5	(s)	961	40	5	37	88	-51	R 1,217	R 201	0	R 709	R 30	4
March	8	(s)	1,419	60	8	53	197	-144	R 1,381	R 164	0	R 1,111	R 47	6
April	9	(s)	1,692	71	9	52	222	-169	R 1,408	R 27	0	R 1,495	63	8
May	10	(s)	1,838	77	10	48	192	-144	R 1,576	R 168	0	R 1,526	R 64	8
June	11	(s)	1,938	81	10	48	117	-69	R 1,524	R -53	0	R 1,922	R 81	R 10
July	12	(s)	2,183	92	12	62	142	-80	R 1,748	R 224	0	R 1,879	R 79	R 10
August	12	(s)	2,273	95	12	65	71	-7	R 1,834	R 86	0	R 2,181	R 92	R 12
September	12	(s)	R 2,284	96	12	65	193	-127	R 1,617	R -207	0	R 2,364	R 99	R 13
October	14	(s)	2,508	105	13	82	132	-49	R 1,965	R 347	0	R 2,111	R 89	R 11
November	14	(s)	2,494	105	13	66	131	-65	R 1,877	R -87	0	R 2,516	R 106	13
December	14	(s)	2,604	109	14	234	39	195	R 2,012	R 135	0	R 2,664	R 112	R 14
Total	125	2	R 23,035	967	123	861	1,740	-879	R 2,012	R 1,045	0	R 21,111	R 887	R 113
2012 January	9	(s)	1,700	71	9	44	248	-204	2,527	9 625	0	872	37	5
February	10	(s)	1,837	77	10	58	119	-62	2,869	342	0	1,433	60	8
March	12	(s)	2,193	92	12	55	149	-93	3,053	184	0	1,915	80	10
April	12	(s)	2,180	92	12	49	221	-171	2,932	-121	0	2,130	89	11
May	13	(s)	2,373	100	13	94	306	-212	2,514	-418	0	2,579	108	14
June	12	(s)	2,162	91	12	102	375	-273	2,363	-151	0	2,039	86	11
6-Month Total	68	1	12,445	523	67	403	1,418	-1,015	2,363	461	0	10,969	461	59
2011 6-Month Total	47	1	8,689	365	47	287	1,033	-745	1,524	547	0	7,396	311	40
2010 6-Month Total	24	(s)	4,352	183	23	311	1,650	-1,340	968	257	0	2,756	116	15

^a Total vegetable oil and other biomass inputs to the production of biodiesel.

^b Losses and co-products from the production of biodiesel. Does not include natural gas, electricity, and other non-biomass energy used in the production of biodiesel—these are included in the industrial sector consumption statistics for the appropriate energy source.

^c Net imports equal imports minus exports.

^d Stocks are at end of period.

^e A negative value indicates a decrease in stocks and a positive value indicates an increase.

^f Beginning in 2009, because of incomplete data coverage and different data sources, "Balancing Item" is used to balance biodiesel supply and disposition.

^g Derived from the preliminary 2011 stocks value (1,902 thousand barrels), not the final 2011 value (2,012 thousand barrels) that is shown under "Stocks."

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

Notes: • Mbbl = thousand barrels. MMgal = million U.S. gallons. TBtu = trillion Btu. • Biodiesel data in thousand barrels are converted to million gallons by multiplying by 0.042, and are converted to Btu by multiplying by 5.359 million Btu per barrel (the approximate heat content of biodiesel—see Table A3). • Through 2000, data are not available. Beginning in 2001, data not from U.S. Energy Information Administration (EIA) surveys are estimates. • Totals may not equal sum of components due to independent rounding. • Geographic coverage is the 50 States and the District of Columbia.

Web Page: See <http://www.eia.gov/totalenergy/data/monthly/#renewable> for all available data beginning in 2001.

Sources: See end of section.

Renewable Energy

Note. Renewable Energy Production and Consumption. In Tables 1.1, 1.3, and 10.1, renewable energy consumption consists of: conventional hydroelectricity net generation (converted to Btu using the fossil-fuels heat rate—see Table A6); geothermal electricity net generation (converted to Btu using the fossil-fuels heat rate—see Table A6), and geothermal heat pump and geothermal direct use energy; solar thermal and photovoltaic electricity net generation (converted to Btu using the fossil-fuels heat rate—see Table A6), and solar thermal direct use energy; wind electricity net generation (converted to Btu using the fossil-fuels heat rate—see Table A6); wood and wood-derived fuels consumption; biomass waste (municipal solid waste from biogenic sources, landfill gas, sludge waste, agricultural byproducts, and other biomass) consumption; fuel ethanol (minus denaturant) and biodiesel consumption; and losses and co-products from the production of fuel ethanol and biodiesel. In Tables 1.1, 1.2, and 10.1, renewable production is assumed to equal consumption for all renewable energy sources except biofuels (biofuels production comprises biomass inputs to the production of fuel ethanol and biodiesel).

Table 10.2a Sources

Residential Sector, Geothermal

Oregon Institute of Technology, Geo-Heat Center. Monthly estimates are created by dividing the annual estimates by the number of days in the year and then multiplying by the number of days in the month. (The annual estimate for the current year is set equal to that of the previous year.)

Residential Sector, Solar/PV

1989–2009: U.S. Energy Information Administration (EIA) estimates based on Form EIA-63A, “Annual Solar Thermal Collector Manufacturers Survey,” and Form EIA-63B, “Annual Photovoltaic Module/Cell Manufacturers Survey.” Monthly estimates are created by dividing the annual estimates by the number of days in the year and then multiplying by the number of days in the month.

2010 forward: EIA estimates based on Form EIA-63B, “Annual Photovoltaic Cell/Module Shipments Report”; Form EIA-63A, “Annual Solar Thermal Collector Manufacturers Survey” (pre-2010 data); and SEIA/GTM Research, *U.S. Solar Market Insight: 2010 Year in Review*. Monthly estimates are created by dividing the annual estimates by the number of days in the year and then multiplying by the number of days in the month. (The annual estimate for 2012 is derived using the average annual growth rate for 2009–2011.)

Residential Sector, Wood

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

1980 forward: EIA, Form EIA-457, “Residential Energy Consumption Survey”; and EIA estimates based on Form EIA-457 and regional heating degree-day data. Monthly estimates are created by dividing the annual estimates by the number of days in the year and then multiplying by the number of days in the month. (The annual estimate for the current year is set equal to that of the previous year.)

Commercial Sector, Hydroelectric Power

1989 forward: Commercial sector conventional hydroelectricity net generation data from EIA, Form EIA-923, “Power Plant Operations Report,” and predecessor forms, are converted to Btu by multiplying by the fossil-fuels heat rate—see Table A6.

Commercial Sector, Geothermal

Oregon Institute of Technology, Geo-Heat Center. Monthly estimates are created by dividing the annual estimates by the number of days in the year and then multiplying by the number of days in the month. (The annual estimate for the current year is set equal to that of the previous year.)

Commercial Sector, Solar/PV

2008 forward: Commercial sector solar thermal and photovoltaic (PV) electricity net generation data from EIA, Form EIA-923, “Power Plant Operations Report,” are converted to Btu by multiplying by the fossil-fuels heat rate—see Table A6.

Commercial Sector, Wind

2009 forward: Commercial sector wind electricity net generation data from EIA, Form EIA-923, “Power Plant Operations Report,” are converted to Btu by multiplying by the fossil-fuels heat rate—see Table A6.

Commercial Sector, Wood

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 estimate based on the 1983 value.

1985–1988: Values interpolated.

1989 forward: EIA, *Monthly Energy Review (MER)*, Tables 7.4a–7.4c; and EIA estimates based on Form EIA-871, “Commercial Buildings Energy Consumption Survey.” Data for wood consumption at commercial combined-heat-and-power (CHP) plants are calculated as total wood consumption at electricity-only and CHP plants (MER, Table 7.4a) minus wood consumption in the electric power sector (MER, Table 7.4b) and at industrial CHP plants (MER, Table 7.4c). Annual estimates for wood consumption at other commercial plants are based on Form EIA-871 (the annual estimate for the current year is set equal to that of the previous year); monthly estimates are created by dividing

the annual estimates by the number of days in the year and then multiplying by the number of days in the month.

Commercial Sector, Biomass Waste

EIA, MER, Table 7.4c.

Commercial Sector, Fuel Ethanol (Minus Denaturant)

EIA, MER, Tables 3.5, 3.7a, and 10.3. Calculated as commercial sector motor gasoline consumption (Table 3.7a) divided by total motor gasoline product supplied (Table 3.5), and then multiplied by fuel ethanol (minus denaturant) consumption (Table 10.3).

Table 10.2b Sources

Industrial Sector, Hydroelectric Power

Industrial sector conventional hydroelectricity net generation data from Table 7.2c are converted to Btu by multiplying by the fossil-fuels heat rate—see Table A6.

Industrial Sector, Geothermal

Oregon Institute of Technology, Geo-Heat Center. Monthly estimates are created by dividing the annual estimates by the number of days in the year and then multiplying by the number of days in the month. (The annual estimate for the current year is set equal to that of the previous year.)

Industrial Sector, Solar/PV

2010 forward: Industrial sector solar thermal and photovoltaic (PV) electricity net generation data from the U.S. Energy Information Administration (EIA), Form EIA-923, "Power Plant Operations Report," are converted to Btu by multiplying by the fossil-fuels heat rate—see Table A6.

Industrial Sector, Wind

2011 forward: Industrial sector wind electricity net generation data from EIA, Form EIA-923, "Power Plant Operations Report," are converted to Btu by multiplying by the fossil-fuels heat rate—see Table A6.

Industrial Sector, Wood

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 forward: EIA, *Monthly Energy Review (MER)*, Table 7.4c; and EIA estimates based on Form EIA-846, "Manufacturing Energy Consumption Survey." Data for wood consumption at industrial combined-heat-and-power (CHP) plants are from MER, Table 7.4c. Annual estimates for wood consumption at other industrial plants are based on Form EIA-846 (the annual estimate for the current year is set equal to that of the previous year); monthly estimates are created by dividing the annual estimates by the number of days in the year and then multiplying by the number of days in the month.

Industrial Sector, Biomass Waste

1981: EIA, *Estimates of U.S. Biofuels Consumption 1990*, Table 8; and EIA, MER, Table 10.2c. Estimates are calculated as total waste consumption minus electric power sector waste consumption.

1982 and 1983: EIA estimates for total waste consumption based on *Estimates of U.S. Biofuels Consumption 1990*, Table 8; and EIA, MER, Table 10.2c. Estimates are calculated as total waste consumption minus electric power sector waste consumption.

1984: EIA, *Estimates of U.S. Biofuels Consumption 1990*, Table 8; and EIA, MER, Table 10.2c. Estimates are calculated as total waste consumption minus electric power sector waste consumption.

1985 and 1986: Values interpolated.

1987: EIA, *Estimates of U.S. Biofuels Consumption 1990*, Table 8; and EIA, MER, Table 10.2c. Estimates are calculated as total waste consumption minus electric power sector waste consumption.

1988: Value interpolated.

1989 forward: EIA, MER, Table 7.4c; and EIA estimates based on information presented in Government Advisory Associates, *Resource Recovery Yearbook* and *Methane Recovery Yearbook*, and information provided by the U.S. Environmental Protection Agency, Landfill Methane Outreach Program. Data for waste consumption at industrial CHP plants are from MER, Table 7.4c. Annual estimates for waste consumption at other industrial plants are based on the non-EIA sources listed above (the annual estimate for the current year is set equal to that of the previous year); monthly estimates are created by dividing the annual estimates by the number of days in the year and then multiplying by the number of days in the month.

Industrial Sector, Fuel Ethanol (Minus Denaturant)

EIA, MER, Tables 3.5, 3.7b, and 10.3. Calculated as industrial sector motor gasoline consumption (Table 3.7b) divided by total motor gasoline product supplied (Table

3.5), and then multiplied by fuel ethanol (minus denaturant) consumption (Table 10.3).

Industrial Sector, Losses and Co-products

Calculated as fuel ethanol losses and co-products (Table 10.3) plus biodiesel losses and co-products (Table 10.4).

Transportation Sector, Fuel Ethanol (Minus Denaturant)

EIA, MER, Tables 3.5, 3.7c, and 10.3. Calculated as transportation sector motor gasoline consumption (Table 3.7c) divided by total motor gasoline product supplied (Table 3.5), and then multiplied by fuel ethanol (minus denaturant) consumption (Table 10.3).

Transportation Sector, Biodiesel

EIA, MER, Table 10.4. Transportation sector biodiesel consumption is assumed to equal total biodiesel consumption.

Table 10.3 Sources

Feedstock

Calculated as fuel ethanol production (in thousand barrels) minus denaturant, and then multiplied by the fuel ethanol feedstock factor—see Table A3.

Losses and Co-products

Calculated as fuel ethanol feedstock plus denaturant minus fuel ethanol production.

Denaturant

1981–2008: Data in thousand barrels for petroleum denaturant in fuel ethanol produced are estimated as 2 percent of fuel ethanol production; these data are converted to Btu by multiplying by 4.645 million Btu per barrel (the estimated quantity-weighted factor of pentanes plus and conventional motor gasoline used as denaturant).

2009–2011: U.S. Energy Information Administration (EIA), *Petroleum Supply Annual (PSA)*, annual reports, Table 1. Data in thousand barrels for net production of pentanes plus at renewable fuels and oxygenate plants are multiplied by -1; these data are converted to Btu by multiplying by 4.620 million Btu per barrel (the approximate heat content of pentanes plus). Data in thousand barrels for net production of conventional motor gasoline and motor gasoline blending components at renewable fuels and oxygenate plants are multiplied by -1; these data are converted to Btu by multiplying by 5.253 million Btu per barrel (the approximate heat content of conventional motor gasoline). Total denaturant is the sum of the values for pentanes plus, conventional motor gasoline, and motor gasoline blending components.

2012: EIA, *Petroleum Supply Monthly (PSM)*, monthly reports, Table 1. Data in thousand barrels for net production of pentanes plus at renewable fuels and oxygenate plants are multiplied by -1; these data are converted to Btu by multiplying by 4.620 million Btu per barrel (the approximate

heat content of pentanes plus). Data in thousand barrels for net production of conventional motor gasoline and motor gasoline blending components at renewable fuels and oxygenate plants are multiplied by -1; these data are converted to Btu by multiplying by 5.253 million Btu per barrel (the approximate heat content of conventional motor gasoline). Total denaturant is the sum of the values for pentanes plus, conventional motor gasoline, and motor gasoline blending components.

Production

1981–1992: Fuel ethanol production is assumed to equal fuel ethanol consumption—see sources for "Consumption."

1993–2004: Calculated as fuel ethanol consumption plus fuel ethanol stock change minus fuel ethanol net imports. These data differ slightly from the original production data from EIA, Form EIA-819, "Monthly Oxygenate Report," and predecessor form, which were not reconciled and updated to be consistent with the final balance.

2005–2008: EIA, Form EIA-819, "Monthly Oxygenate Report."

2009–2011: EIA, PSA, annual reports, Table 1, data for net production of fuel ethanol at renewable fuels and oxygenate plants.

2012: EIA, PSM, monthly reports, Table 1, data for net production of fuel ethanol at renewable fuels and oxygenate plants.

Trade, Stocks, and Stock Change

1992–2011: EIA, PSA, annual reports, Table 1.

2012: EIA, PSM, monthly reports, Table 1.

Consumption

1981–1989: EIA, *Estimates of U.S. Biofuels Consumption 1990*, Table 10; and interpolated values for 1982, 1983, 1985, 1986, and 1988.

1990–1992: EIA, *Estimates of U.S. Biomass Energy Consumption 1992*, Table D2; and interpolated value for 1991.

1993–2004: EIA, PSA, annual reports, Tables 2 and 16. Calculated as 10 percent of oxygenated finished motor gasoline field production (Table 2), plus fuel ethanol refinery input (Table 16).

2005–2008: EIA, PSA, annual reports, Tables 1 and 15. Calculated as motor gasoline blending components adjustments (Table 1), plus finished motor gasoline adjustments (Table 1), plus fuel ethanol refinery and blender net inputs (Table 15).

2009–2011: EIA, PSA, annual reports, Table 1. Calculated as fuel ethanol refinery and blender net inputs minus fuel ethanol adjustments.

2012: EIA, PSM, monthly reports, Table 1. Calculated as fuel ethanol refinery and blender net inputs minus fuel ethanol adjustments.

Consumption Minus Denaturant

Calculated as fuel ethanol consumption minus the amount of denaturant in fuel ethanol consumed. Denaturant in fuel ethanol consumed is estimated by multiplying denaturant in fuel ethanol produced by the fuel ethanol consumption-to-production ratio.

Table 10.4 Sources

Feedstock

Calculated as biodiesel production in thousand barrels multiplied by 5.433 million Btu per barrel (the biodiesel feedstock factor—see Table A3).

Losses and Co-products

Calculated as biodiesel feedstock minus biodiesel production.

Production

2001–2005: U.S. Department of Agriculture, Commodity Credit Corporation, Bioenergy Program records. Annual data are derived from quarterly data. Monthly data are estimated by dividing the annual data by the number of days in the year and then multiplying by the number of days in the month.

2006: U.S. Department of Commerce, Bureau of the Census, “M311K—Fats and Oils: Production, Consumption, and Stocks,” data for soybean oil consumed in methyl esters (biodiesel). In addition, the U.S. Energy Information Administration (EIA) estimates that 14.4 million gallons of yellow grease were consumed in methyl esters (biodiesel).

2007: U.S. Department of Commerce, Bureau of the Census, “M311K—Fats and Oils: Production, Consumption, and Stocks,” data for all fats and oils consumed in methyl esters (biodiesel).

2008: EIA, *Monthly Biodiesel Production Report*, December 2009 (release date October 2010), Table 11. Monthly data for 2008 are estimated based on U.S. Department of

Commerce, Bureau of the Census, M311K data, multiplied by the EIA 2008 annual value’s share of the M311K 2008 annual value.

2009 forward: EIA, *Monthly Biodiesel Production Report*, monthly reports, Table 1.

Trade

For imports, U.S. Department of Agriculture, data for the following Harmonized Tariff Schedule codes: 3824.90.40.20, “Fatty Esters Animal/Vegetable Mixture” (data through June 2010); 3824.90.40.30, “Biodiesel/Mixes” (data for July 2010–2011); 3826.00.00.00, “Biodiesel B30-99” (data for 2012); and 3826.00.10.00, “Biodiesel B100” (data for 2012). For exports, U.S. Department of Agriculture, data for the following Schedule B codes: 3824.90.40.00, “Fatty Substances Animal/Vegetable/Mixture” (data through 2010); 3824.90.40.30, “Biodiesel <70%” (data for 2011); and 3826.00.00.00, “Biodiesel B=>30” (data for 2012). Although these categories include products other than biodiesel (such as biodiesel coprocessed with petroleum feedstocks; and products destined for soaps, cosmetics, and other items), biodiesel is the largest component. In the absence of other reliable data for biodiesel trade, EIA sees these data as good substitutes.

Stocks and Stock Change

2009–2011: EIA, *Petroleum Supply Annual (PSA)*, annual reports, Table 1, data for renewable fuels except fuel ethanol.

2012: EIA, *Petroleum Supply Monthly*, monthly reports, Table 1, data for renewable fuels except fuel ethanol.

Balancing Item

Calculated as biodiesel consumption and biodiesel stock change minus biodiesel production and biodiesel net imports.

Consumption

2001–2008: Calculated as biodiesel production plus biodiesel net imports.

January and February 2009: EIA, PSA, Table 1, data for refinery and blender net inputs of renewable fuels except fuel ethanol.

March 2009 forward: Calculated as biodiesel production plus biodiesel net imports minus biodiesel stock change.