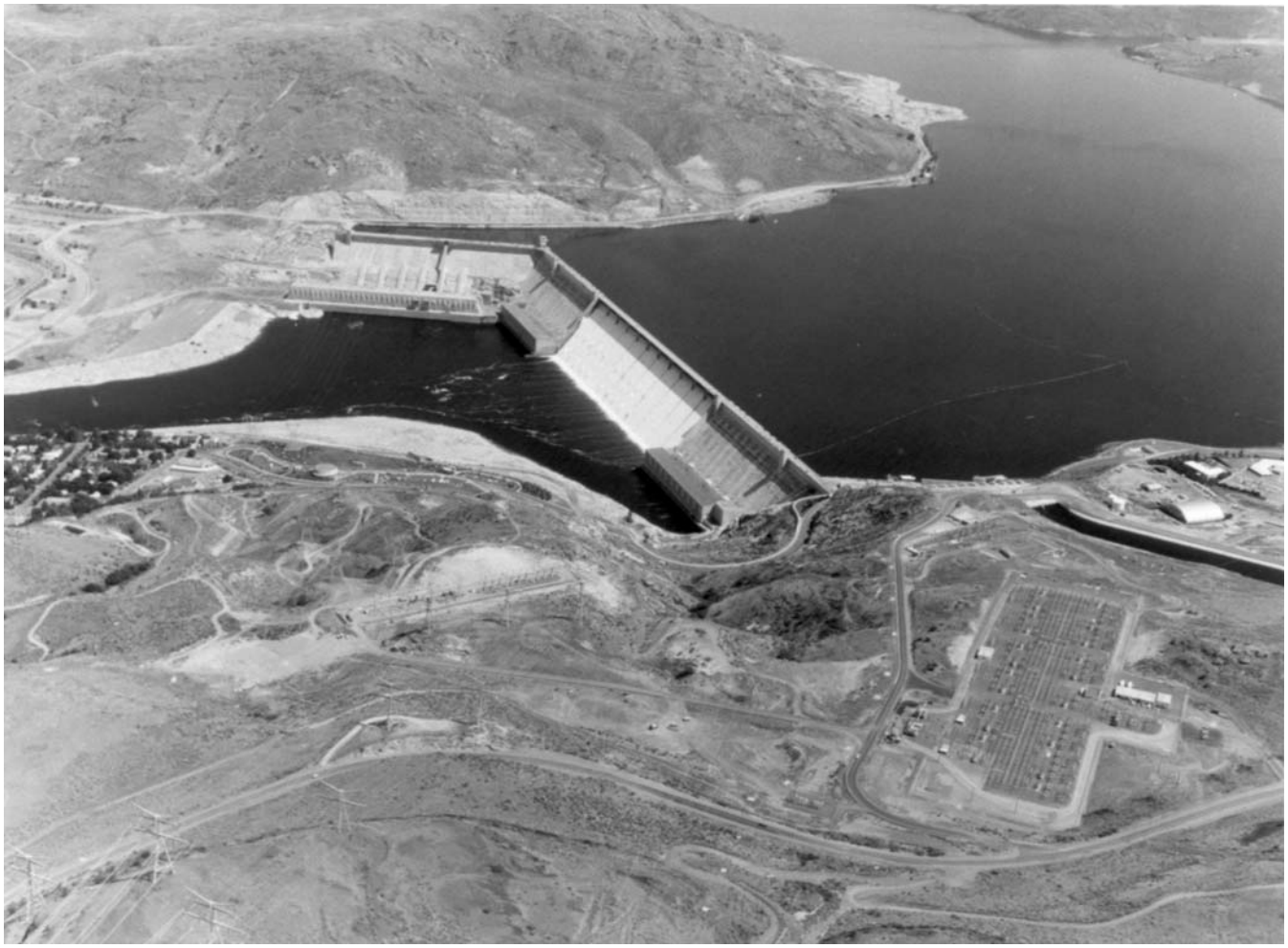
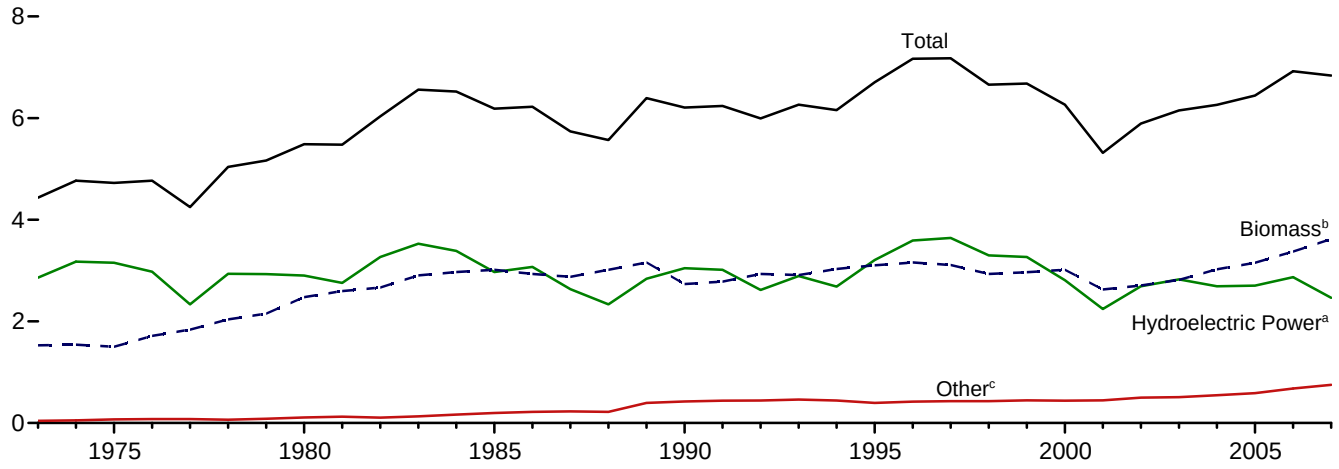
10 Renewable Energy



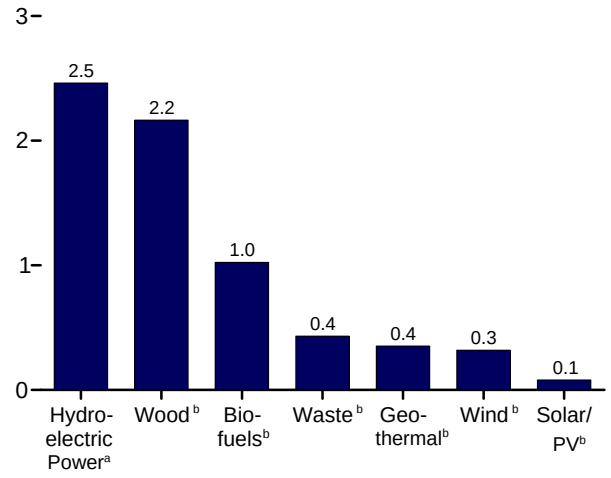
Grand Coulee Dam, Washington State. Source: U.S. Bureau of Reclamation.

Figure 10.1 Renewable Energy Consumption
(Quadrillion Btu)

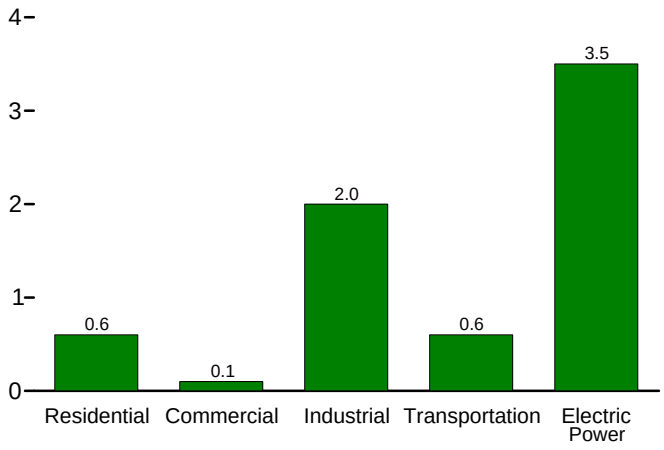
Total and Major Sources, 1973-2007



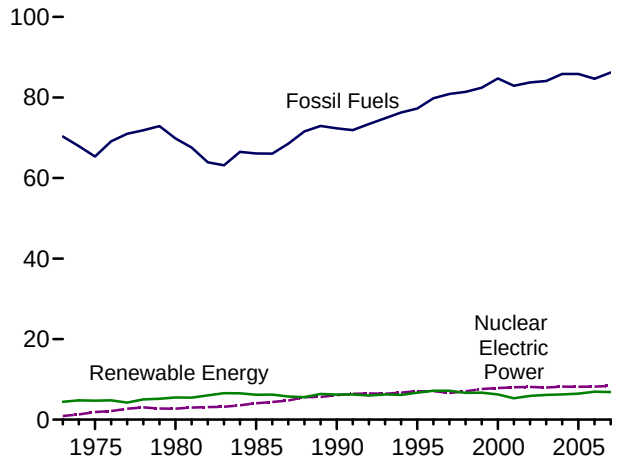
By Source, 2007



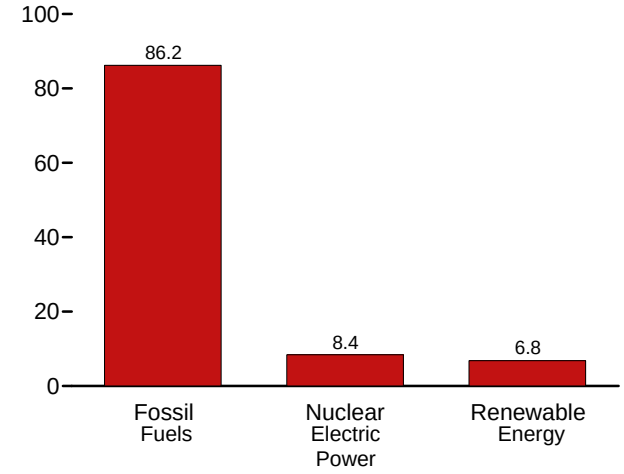
By Sector, 2007



Compared With Other Resources, 1973-2007



Compared With Other Resources, 2007



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

Web Page: http://www.eia.doe.gov/emeu/mer/renew.html.
Sources: Tables 1.3, 10.1, and 10.2a-c.

Table 10.1 Renewable Energy Production and Consumption by Source

(Trillion Btu)

	Production[a]			Consumption								
	Biomass		Total Renewable Energy[d]	Hydroelectric Power[e]	Geothermal[f]	Solar/PV[g]	Wind[h]	Biomass				Total Renewable Energy
	Biofuels[b]	Total[c]						Wood[i]	Waste[j]	Biofuels[k]	Total	
1973 Total	**NA**	**1,529**	**4,433**	**2,861**	**43**	**NA**	**NA**	**1,527**	**2**	**NA**	**1,529**	**4,433**
1975 Total	**NA**	**1,499**	**4,723**	**3,155**	**70**	**NA**	**NA**	**1,497**	**2**	**NA**	**1,499**	**4,723**
1980 Total	**NA**	**2,475**	**5,485**	**2,900**	**110**	**NA**	**NA**	**2,474**	**2**	**NA**	**2,475**	**5,485**
1985 Total	**93**	**3,016**	**6,185**	**2,970**	**198**	**(s)**	**(s)**	**2,687**	**236**	**93**	**3,016**	**6,185**
1990 Total	**111**	**2,735**	**6,206**	**3,046**	**336**	**60**	**29**	**2,216**	**408**	**111**	**2,735**	**6,206**
1995 Total	**200**	**3,102**	**6,703**	**3,205**	**294**	**70**	**33**	**2,370**	**531**	**202**	**3,104**	**6,705**
1996 Total	**143**	**3,157**	**7,167**	**3,590**	**316**	**71**	**33**	**2,437**	**577**	**145**	**3,159**	**7,168**
1997 Total	**190**	**3,111**	**7,180**	**3,640**	**325**	**70**	**34**	**2,371**	**551**	**187**	**3,108**	**7,178**
1998 Total	**206**	**2,933**	**6,659**	**3,297**	**328**	**70**	**31**	**2,184**	**542**	**205**	**2,931**	**6,657**
1999 Total	**215**	**2,969**	**6,683**	**3,268**	**331**	**69**	**46**	**2,214**	**540**	**213**	**2,967**	**6,681**
2000 Total	**238**	**3,010**	**6,262**	**2,811**	**317**	**66**	**57**	**2,262**	**511**	**241**	**3,013**	**6,264**
2001 Total	**260**	**2,629**	**5,318**	**2,242**	**311**	**65**	**70**	**2,006**	**364**	**258**	**2,627**	**5,316**
2002 Total	**315**	**2,712**	**5,899**	**2,689**	**328**	**64**	**105**	**1,995**	**402**	**309**	**2,706**	**5,893**
2003 Total	**412**	**2,815**	**6,149**	**2,825**	**331**	**64**	**115**	**2,002**	**401**	**414**	**2,817**	**6,150**
2004 Total	**501**	**3,011**	**6,248**	**2,690**	**341**	**65**	**142**	**2,121**	**389**	**513**	**3,023**	**6,261**
2005 Total	**582**	**3,141**	**6,431**	**2,703**	**343**	**66**	**178**	**2,156**	**403**	**595**	**3,154**	**6,444**
2006 January	56	286	617	272	29	6	24	194	36	55	285	615
February	53	256	552	246	26	5	19	170	32	51	254	550
March	59	274	578	244	30	6	23	182	34	58	273	576
April	55	259	600	283	27	6	25	172	32	57	261	602
May	59	270	633	306	26	6	24	177	35	65	277	640
June	62	271	621	295	28	6	20	176	33	71	281	630
July	63	284	592	252	30	6	19	186	35	69	290	598
August	66	287	555	216	30	7	16	186	35	72	293	561
September	65	277	501	171	29	6	19	179	33	71	283	507
October	67	285	514	169	30	6	24	184	34	75	292	521
November	67	280	540	201	28	6	25	179	34	73	287	547
December	72	293	568	214	30	6	25	186	35	78	299	574
Total	**745**	**3,324**	**6,872**	**2,869**	**343**	**72**	**264**	**2,172**	**407**	**795**	**3,374**	**6,922**
2007 January	73	296	620	262	31	6	24	186	37	78	301	624
February	68	272	517	185	28	6	25	171	34	71	275	520
March	75	293	600	241	29	7	30	181	37	79	297	604
April	74	287	590	237	28	7	32	180	33	76	289	592
May	80	296	617	257	28	7	28	180	36	82	298	618
June	80	293	581	227	30	7	24	177	36	83	296	583
July	85	307	588	224	30	7	19	184	37	88	310	590
August	88	307	567	198	30	7	24	182	37	90	309	569
September	87	299	507	145	29	7	26	176	36	87	299	507
October	92	308	523	147	30	7	30	183	34	96	312	526
November	93	308	527	156	29	6	27	179	36	95	311	529
December	97	321	570	183	30	6	28	186	38	100	324	573
Total	**993**	**3,589**	**6,805**	**2,463**	**353**	**80**	**319**	**2,165**	**431**	**1,024**	**3,620**	**6,835**
2008 January	101	311	605	222	28	6	37	175	34	102	312	606
February	96	293	558	201	26	6	32	165	33	98	295	561
March	110	312	616	227	29	7	41	166	35	108	310	614
April	108	R 308	R 607	R 219	R 29	7	R 45	R 165	R 35	112	R 313	R 612
May	118	R 323	R 684	R 280	R 30	7	R 44	R 170	R 35	119	R 324	R 685
June	113	325	E 644	F 238	30	7	F 45	174	38	118	329	E 649
6-Month Total	**646**	**1,870**	E **3,714**	E **1,387**	**172**	**41**	E **244**	**1,015**	**209**	**658**	**1,883**	E **3,726**
2007 6-Month Total	**451**	**1,739**	**3,525**	**1,408**	**174**	**40**	**164**	**1,074**	**213**	**468**	**1,756**	**3,541**
2006 6-Month Total	**344**	**1,617**	**3,600**	**1,646**	**166**	**36**	**135**	**1,072**	**201**	**357**	**1,630**	**3,613**

[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, fuel ethanol, and biodiesel.
[d] Hydroelectric power, geothermal, solar/photovoltaic, wind, and biomass.
[e] Conventional hydroelectricity net generation (converted to Btu using the fossil-fueled plants heat rate).
[f] Geothermal electricity net generation (converted to Btu using the geothermal energy plants heat rate), and geothermal heat pump and direct use energy.
[g] Solar thermal and photovoltaic electricity net generation (converted to Btu using the fossil-fueled plants heat rate), and solar thermal direct use energy.
[h] Wind electricity net generation (converted to Btu using the fossil-fueled plants heat rate).
[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 and biodiesel consumption, plus losses and co-products from the production of fuel ethanol and biodiesel.

R=Revised. E=Estimate. NA=Not available. F=Forecast. (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.doe.gov/emeu/mer/renew.html for all available data beginning in 1973.

Sources: Tables 10.2a-c, 10.3, and 10.4.

Table 10.2a Renewable Energy Consumption: Residential and Commercial Sectors

(Trillion Btu)

	Residential Sector				Commercial Sector[a]						
			Biomass				Biomass				
	Geo-thermal[b]	Solar/ PV[c]	Wood[d]	Total	Hydro-electric Power[e]	Geo-thermal[b]	Wood[d]	Waste[f]	Fuel Ethanol[g]	Total	Total
1973 Total	**NA**	**NA**	**354**	**354**	**NA**	**NA**	**7**	**NA**	**NA**	**7**	**7**
1975 Total	**NA**	**NA**	**425**	**425**	**NA**	**NA**	**8**	**NA**	**NA**	**8**	**8**
1980 Total	**NA**	**NA**	**850**	**850**	**NA**	**NA**	**21**	**NA**	**NA**	**21**	**21**
1985 Total	**NA**	**NA**	**1,010**	**1,010**	**NA**	**NA**	**24**	**NA**	**(s)**	**24**	**24**
1990 Total	**6**	**56**	**580**	**641**	**1**	**3**	**66**	**28**	**1**	**94**	**98**
1995 Total	**7**	**65**	**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**	**65**	**430**	**503**	**1**	**6**	**73**	**58**	**(s)**	**131**	**138**
1998 Total	**8**	**65**	**380**	**452**	**1**	**7**	**64**	**54**	**(s)**	**118**	**127**
1999 Total	**9**	**64**	**390**	**462**	**1**	**7**	**67**	**54**	**(s)**	**121**	**129**
2000 Total	**9**	**61**	**420**	**490**	**1**	**8**	**71**	**47**	**(s)**	**119**	**128**
2001 Total	**9**	**60**	**370**	**439**	**1**	**8**	**67**	**25**	**(s)**	**92**	**101**
2002 Total	**10**	**59**	**380**	**449**	**(s)**	**9**	**69**	**26**	**(s)**	**95**	**104**
2003 Total	**13**	**58**	**400**	**471**	**1**	**11**	**71**	**29**	**1**	**101**	**113**
2004 Total	**14**	**59**	**410**	**483**	**1**	**12**	**70**	**34**	**1**	**105**	**118**
2005 Total	**16**	**61**	**450**	**527**	**1**	**14**	**70**	**34**	**1**	**105**	**119**
2006 January	2	6	35	42	(s)	1	5	3	(s)	9	10
February	1	5	31	38	(s)	1	5	3	(s)	8	9
March	2	6	35	42	(s)	1	5	3	(s)	8	10
April	2	6	34	41	(s)	1	5	3	(s)	8	10
May	2	6	35	42	(s)	1	5	3	(s)	9	10
June	2	6	34	41	(s)	1	5	3	(s)	8	10
July	2	6	35	42	(s)	1	5	3	(s)	9	10
August	2	6	35	42	(s)	1	6	3	(s)	9	10
September	2	6	34	41	(s)	1	5	3	(s)	8	9
October	2	6	35	42	(s)	1	5	3	(s)	9	10
November	2	6	34	41	(s)	1	5	3	(s)	8	10
December	2	6	35	42	(s)	1	6	3	(s)	9	10
Total	**18**	**67**	**410**	**495**	**1**	**14**	**65**	**36**	**1**	**102**	**117**
2007 January	2	6	39	47	(s)	1	5	3	(s)	9	10
February	2	6	35	43	(s)	1	5	3	(s)	8	9
March	2	6	39	47	(s)	1	5	3	(s)	9	10
April	2	6	38	46	(s)	1	5	3	(s)	8	9
May	2	6	39	47	(s)	1	5	3	(s)	9	10
June	2	6	38	46	(s)	1	5	3	(s)	9	10
July	2	6	39	47	(s)	1	5	3	(s)	9	10
August	2	6	39	47	(s)	1	5	3	(s)	9	10
September	2	6	38	46	(s)	1	5	3	(s)	8	10
October	2	6	39	47	(s)	1	5	3	(s)	9	10
November	2	6	38	46	(s)	1	5	3	(s)	9	10
December	2	6	39	47	(s)	1	6	3	(s)	9	10
Total	**22**	**74**	**460**	**556**	**1**	**14**	**65**	**37**	**2**	**104**	**119**
2008 January	2	6	39	47	(s)	1	5	2	(s)	8	9
February	2	6	36	44	(s)	1	5	3	(s)	8	9
March	2	6	39	47	(s)	1	5	3	(s)	8	10
April	2	6	38	46	(s)	1	5	R 3	(s)	R 9	R 10
May	2	6	39	47	(s)	1	5	3	(s)	9	10
June	2	6	38	46	F (s)	1	5	F 3	(s)	9	10
6-Month Total	**11**	**37**	**229**	**277**	E **(s)**	**7**	**32**	E **18**	**1**	**51**	**59**
2007 6-Month Total	**11**	**37**	**228**	**276**	**1**	**7**	**32**	**18**	**1**	**51**	**59**
2006 6-Month Total	**9**	**33**	**203**	**246**	**1**	**7**	**32**	**18**	**1**	**51**	**58**

[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 electricity net generation (converted to Btu using the fossil-fueled plants heat rate). Includes a small amount of commercial sector use.

[d] Wood and wood-derived fuels.

[e] Conventional hydroelectricity net generation (converted to Btu using the fossil-fueled plants heat rate).

[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] The ethanol portion of motor fuels (such as E10) consumed by the commercial sector.

R=Revised. E=Estimate. F=Forecast. NA=Not available. (s)=Less than 0.5 trillion Btu.

Notes: • Data are estimates, except for commercial sector hydroelectric power 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.doe.gov/emeu/mer/renew.html 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		
			Biomass						Biomass		
	Hydro-electric Power[b]	Geo-thermal[c]	Wood[d]	Waste[e]	Fuel Ethanol[f]	Losses and Co-products[g]	Total	Total	Fuel Ethanol[h]	Bio-diesel[i]	Total
1973 Total	**35**	**NA**	**1,165**	**NA**	**NA**	**NA**	**1,165**	**1,200**	**NA**	**NA**	**NA**
1975 Total	**32**	**NA**	**1,063**	**NA**	**NA**	**NA**	**1,063**	**1,096**	**NA**	**NA**	**NA**
1980 Total	**33**	**NA**	**1,600**	**NA**	**NA**	**NA**	**1,600**	**1,633**	**NA**	**NA**	**NA**
1985 Total	**33**	**NA**	**1,645**	**230**	**1**	**41**	**1,917**	**1,950**	**51**	**NA**	**51**
1990 Total	**31**	**2**	**1,442**	**192**	**1**	**48**	**1,683**	**1,716**	**62**	**NA**	**62**
1995 Total	**55**	**3**	**1,652**	**195**	**2**	**86**	**1,935**	**1,992**	**115**	**NA**	**115**
1996 Total	**61**	**3**	**1,683**	**224**	**1**	**61**	**1,970**	**2,033**	**82**	**NA**	**82**
1997 Total	**58**	**3**	**1,731**	**184**	**1**	**81**	**1,997**	**2,058**	**104**	**NA**	**104**
1998 Total	**55**	**3**	**1,603**	**180**	**1**	**88**	**1,873**	**1,931**	**115**	**NA**	**115**
1999 Total	**49**	**4**	**1,620**	**171**	**1**	**92**	**1,883**	**1,936**	**120**	**NA**	**120**
2000 Total	**42**	**4**	**1,636**	**145**	**1**	**101**	**1,884**	**1,930**	**138**	**NA**	**138**
2001 Total	**33**	**5**	**1,443**	**129**	**3**	**110**	**1,684**	**1,721**	**144**	**1**	**145**
2002 Total	**39**	**5**	**1,396**	**146**	**3**	**133**	**1,679**	**1,723**	**171**	**1**	**172**
2003 Total	**43**	**3**	**1,363**	**142**	**5**	**174**	**1,684**	**1,731**	**233**	**2**	**235**
2004 Total	**33**	**4**	**1,476**	**132**	**6**	**210**	**1,824**	**1,861**	**292**	**4**	**296**
2005 Total	**32**	**4**	**1,452**	**148**	**7**	**241**	**1,848**	**1,884**	**334**	**12**	**346**
2006 January	4	(s)	137	12	1	23	173	177	29	2	31
February	3	(s)	119	11	1	22	152	155	27	1	29
March	2	(s)	125	12	1	24	162	164	31	2	33
April	2	(s)	121	11	1	22	156	158	32	2	34
May	2	(s)	124	12	1	24	160	162	38	3	41
June	2	(s)	122	11	1	25	159	161	42	3	45
July	2	(s)	130	12	1	25	168	171	39	3	42
August	2	(s)	129	12	1	27	168	170	41	4	45
September	2	(s)	125	11	1	26	163	165	41	3	44
October	3	(s)	128	12	1	27	168	171	43	3	46
November	4	(s)	125	12	1	27	164	168	43	3	45
December	3	(s)	130	12	1	29	172	175	45	3	48
Total	**29**	**4**	**1,515**	**140**	**9**	**301**	**1,966**	**1,999**	**451**	**32**	**483**
2007 January	4	(s)	125	13	1	28	167	171	44	4	48
February	2	(s)	114	12	1	26	153	155	40	3	43
March	2	(s)	121	13	1	29	164	167	44	4	49
April	2	(s)	122	12	1	29	164	166	42	4	46
May	2	(s)	122	13	1	31	166	168	45	5	50
June	2	(s)	118	13	1	31	163	165	46	5	51
July	1	(s)	125	13	1	32	171	172	48	7	55
August	2	(s)	122	13	1	33	169	171	48	7	55
September	1	(s)	118	12	1	33	165	166	47	7	53
October	1	(s)	124	13	1	35	172	174	53	6	59
November	1	(s)	121	13	1	36	170	172	53	5	58
December	2	(s)	126	13	1	37	177	179	56	5	61
Total	**23**	**5**	**1,457**	**151**	**12**	**381**	**2,000**	**2,028**	**567**	**62**	**629**
2008 January	2	(s)	114	13	1	39	166	169	56	6	62
February	3	(s)	107	13	1	37	158	161	54	6	60
March	3	(s)	105	12	1	43	162	165	58	6	64
April	2	(s)	R 109	12	1	41	R 163	R 166	63	7	70
May	2	(s)	113	12	1	45	172	174	65	7	72
June	F 2	(s)	115	12	1	43	172	174	65	8	73
6-Month Total	E **15**	**2**	**663**	**74**	**8**	**248**	**993**	**1,010**	**362**	**40**	**402**
2007 6-Month Total	**14**	**2**	**722**	**74**	**5**	**175**	**976**	**992**	**262**	**25**	**287**
2006 6-Month Total	**14**	**2**	**748**	**70**	**4**	**140**	**962**	**978**	**199**	**13**	**213**

[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-fueled plants heat rate).

[c] Geothermal heat pump and direct use energy.

[d] Wood and wood-derived fuels.

[e] 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).

[f] The ethanol portion of motor fuels (such as E10) consumed by the industrial sector.

[g] 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.

[h] The ethanol portion of motor fuels (such as E10 and E85) consumed by the transportation sector.

[i] "Biodiesel" is any liquid biofuel suitable as a diesel fuel substitute, additive, or extender. See "Biodiesel" in Glossary.

R=Revised. E=Estimate. NA=Not available. F=Forecast. (s)=Less than 0.5 trillion Btu.

Notes: • Data are estimates, except for industrial sector hydroelectric power in 1973-1978 and 1989 forward. • 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.doe.gov/emeu/mer/renew.html 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**	**43**	**NA**	**NA**	**1**	**2**	**3**	**2,873**
1975 Total	**3,122**	**70**	**NA**	**NA**	**(s)**	**2**	**2**	**3,194**
1980 Total	**2,867**	**110**	**NA**	**NA**	**3**	**2**	**4**	**2,982**
1985 Total	**2,937**	**198**	**(s)**	**(s)**	**8**	**7**	**14**	**3,150**
1990 Total[g]	**3,014**	**326**	**4**	**29**	**129**	**188**	**317**	**3,689**
1995 Total	**3,149**	**280**	**5**	**33**	**125**	**296**	**422**	**3,889**
1996 Total	**3,528**	**300**	**5**	**33**	**138**	**300**	**438**	**4,305**
1997 Total	**3,581**	**309**	**5**	**34**	**137**	**309**	**446**	**4,375**
1998 Total	**3,241**	**311**	**5**	**31**	**137**	**308**	**444**	**4,032**
1999 Total	**3,218**	**312**	**5**	**46**	**138**	**315**	**453**	**4,034**
2000 Total	**2,768**	**296**	**5**	**57**	**134**	**318**	**453**	**3,579**
2001 Total	**2,209**	**289**	**6**	**70**	**126**	**211**	**337**	**2,910**
2002 Total	**2,650**	**305**	**6**	**105**	**150**	**230**	**380**	**3,445**
2003 Total	**2,781**	**303**	**5**	**115**	**167**	**230**	**397**	**3,601**
2004 Total	**2,656**	**311**	**6**	**142**	**165**	**223**	**388**	**3,503**
2005 Total	**2,670**	**309**	**6**	**178**	**185**	**221**	**406**	**3,568**
2006 January	268	26	(s)	24	17	20	37	355
February	243	23	(s)	19	15	18	34	319
March	242	27	(s)	23	16	19	35	327
April	281	24	1	25	12	17	30	360
May	304	23	1	24	13	19	33	384
June	293	25	1	20	15	19	34	373
July	250	27	1	19	16	20	36	333
August	214	27	1	16	17	20	37	295
September	169	26	1	19	15	19	34	248
October	166	27	(s)	24	15	19	34	252
November	197	25	(s)	25	15	20	35	283
December	211	27	(s)	25	16	20	36	299
Total	**2,839**	**306**	**5**	**264**	**182**	**231**	**412**	**3,827**
2007 January	258	27	(s)	24	16	21	38	347
February	183	25	(s)	25	17	19	36	269
March	239	26	(s)	30	15	21	36	331
April	235	24	1	32	15	19	33	325
May	255	25	1	28	14	20	34	343
June	225	26	1	24	15	21	36	311
July	223	27	1	19	15	21	36	306
August	196	27	1	24	16	21	37	285
September	144	26	1	26	15	20	35	232
October	146	27	(s)	30	14	18	32	236
November	155	26	(s)	27	15	21	36	243
December	182	27	(s)	28	16	22	37	275
Total	**2,440**	**312**	**6**	**319**	**184**	**243**	**427**	**3,503**
2008 January	219	25	(s)	37	17	19	36	318
February	198	23	(s)	32	16	17	33	286
March	224	26	1	41	16	20	36	327
April	R 217	25	1	R 45	14	19	33	R 321
May	R 278	26	1	R 44	R 13	R 20	R 32	R 382
June	F 236	F 26	F 1	F 45	F 16	F 22	F 38	F 346
6-Month Total	E **1,372**	E **151**	E **4**	E **244**	E **91**	E **117**	E **208**	E **1,979**
2007 6-Month Total	**1,394**	**153**	**3**	**164**	**92**	**121**	**213**	**1,927**
2006 6-Month Total	**1,632**	**148**	**3**	**135**	**88**	**113**	**201**	**2,119**

[a] Conventional hydroelectricity net generation (converted to Btu using the fossil-fueled plants heat rate).

[b] Geothermal electricity net generation (converted to Btu using the geothermal energy plants heat rate).

[c] Solar thermal and photovoltaic electricity net generation (converted to Btu using the fossil-fueled plants heat rate).

[d] Wind electricity net generation (converted to Btu using the fossil-fueled plants heat rate).

[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.

R=Revised. E=Estimate. NA=Not available. F=Forecast. (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.doe.gov/emeu/mer/renew.html 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]	Production			Net Imports[c]		Stocks[d]	Stock Change[e]		Consumption		
	TBtu	TBtu	Mbbl	MMgal	TBtu	Mbbl	TBtu	Mbbl	Mbbl	TBtu	Mbbl	MMgal	TBtu
1981 Total	**13**	**6**	**1,978**	**83**	**7**	**NA**	**NA**	**NA**	**NA**	**NA**	**1,978**	**83**	**7**
1985 Total	**93**	**41**	**14,693**	**617**	**52**	**NA**	**NA**	**NA**	**NA**	**NA**	**14,693**	**617**	**52**
1990 Total	**111**	**48**	**17,802**	**748**	**63**	**NA**	**NA**	**NA**	**NA**	**NA**	**17,802**	**748**	**63**
1995 Total	**200**	**86**	**32,325**	**1,358**	**114**	**387**	**1**	**2,186**	**-207**	**-1**	**32,919**	**1,383**	**117**
1996 Total	**143**	**61**	**23,178**	**973**	**82**	**313**	**1**	**2,065**	**-121**	**(s)**	**23,612**	**992**	**84**
1997 Total	**190**	**81**	**30,674**	**1,288**	**109**	**85**	**(s)**	**2,925**	**860**	**3**	**29,899**	**1,256**	**106**
1998 Total	**206**	**88**	**33,453**	**1,405**	**118**	**66**	**(s)**	**3,406**	**481**	**2**	**33,038**	**1,388**	**117**
1999 Total	**215**	**92**	**34,881**	**1,465**	**123**	**87**	**(s)**	**4,024**	**618**	**2**	**34,350**	**1,443**	**122**
2000 Total	**238**	**101**	**38,627**	**1,622**	**137**	**116**	**(s)**	**3,400**	**-624**	**-2**	**39,367**	**1,653**	**139**
2001 Total	**259**	**110**	**42,028**	**1,765**	**149**	**315**	**1**	**4,298**	**898**	**3**	**41,445**	**1,741**	**147**
2002 Total	**313**	**133**	**50,956**	**2,140**	**180**	**306**	**1**	**6,200**	**1,902**	**7**	**49,360**	**2,073**	**175**
2003 Total	**410**	**174**	**66,772**	**2,804**	**236**	**292**	**1**	**5,978**	**-222**	**-1**	**67,286**	**2,826**	**238**
2004 Total	**497**	**210**	**81,058**	**3,404**	**287**	**3,542**	**13**	**6,002**	**24**	**(s)**	**84,576**	**3,552**	**299**
2005 Total	**570**	**241**	**92,961**	**3,904**	**329**	**3,234**	**11**	**5,563**	**-439**	**-2**	**96,634**	**4,059**	**342**
2006 January	55	23	8,935	375	32	132	(s)	6,099	536	2	8,531	358	30
February	52	22	8,463	355	30	610	2	7,268	1,169	4	7,904	332	28
March	57	24	9,333	392	33	894	3	8,626	1,358	5	8,869	372	31
April	53	22	8,663	364	31	905	3	8,990	364	1	9,204	387	33
May	56	23	9,086	382	32	682	2	7,767	-1,223	-4	10,991	462	39
June	58	25	9,531	400	34	1,550	5	6,675	-1,092	-4	12,173	511	43
July	60	25	9,791	411	35	2,637	9	7,706	1,031	4	11,397	479	40
August	63	26	10,235	430	36	3,102	11	9,133	1,427	5	11,910	500	42
September	62	26	10,088	424	36	2,268	8	9,725	592	2	11,764	494	42
October	64	27	10,512	442	37	2,044	7	9,723	-2	(s)	12,558	527	44
November	64	27	10,442	439	37	1,376	5	9,232	-491	-2	12,309	517	44
December	69	29	11,215	471	40	1,208	4	8,760	-472	-2	12,895	542	46
Total	**712**	**301**	**116,294**	**4,884**	**412**	**17,408**	**62**	**8,760**	**3,197**	**11**	**130,505**	**5,481**	**462**
2007 January	70	28	11,621	488	41	1,077	4	8,656	-104	(s)	12,802	538	45
February	65	26	10,795	453	38	1,010	4	8,765	109	(s)	11,696	491	41
March	71	29	11,892	499	42	720	3	8,539	-226	-1	12,838	539	45
April	70	29	11,716	492	41	733	3	8,807	268	1	12,181	512	43
May	75	31	12,573	528	44	663	2	8,966	159	1	13,077	549	46
June	75	31	12,553	527	44	922	3	9,171	205	1	13,270	557	47
July	78	32	13,083	549	46	1,533	5	9,866	695	2	13,921	585	49
August	81	33	13,581	570	48	1,586	6	11,011	1,145	4	14,022	589	50
September	80	33	13,402	563	47	610	2	11,555	544	2	13,468	566	48
October	85	35	14,221	597	50	998	4	11,449	-106	(s)	15,325	644	54
November	87	36	14,568	612	52	393	1	11,218	-231	-1	15,192	638	54
December	91	37	15,258	641	54	212	1	10,535	-683	-2	16,153	678	57
Total	**930**	**380**	**155,263**	**6,521**	**549**	**10,457**	**37**	**10,535**	**1,775**	**6**	**163,945**	**6,886**	**580**
2008 January	95	39	15,818	664	56	495	2	10,674	[f]165	1	16,148	678	57
February	90	37	15,025	631	53	483	2	10,465	-209	-1	15,717	660	56
March	104	43	17,387	730	62	368	1	11,391	926	3	16,829	707	60
April	101	41	16,868	708	60	1,451	5	11,539	148	1	18,171	763	64
May	111	45	18,543	779	66	866	3	12,044	505	2	18,904	794	67
June	105	43	17,544	737	62	1,571	6	12,304	260	1	18,855	792	67
6-Month Total	**606**	**248**	**101,185**	**4,250**	**358**	**5,234**	**19**	**12,304**	**1,795**	**6**	**104,624**	**4,394**	**370**
2007 6-Month Total	**426**	**174**	**71,150**	**2,988**	**252**	**5,125**	**18**	**9,171**	**411**	**1**	**75,864**	**3,186**	**268**
2006 6-Month Total	**331**	**140**	**54,011**	**2,268**	**191**	**4,773**	**17**	**6,675**	**1,112**	**4**	**57,672**	**2,422**	**204**

[a] Total corn and other biomass inputs to the production of 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] Fuel ethanol imports only. Data for fuel ethanol exports are not available.

[d] Stocks are at end of period.

[e] A negative number indicates a decrease in stocks and a positive number indicates an increase.

[f] Derived from preliminary December 2007 stock value, not final December 2007 stock value shown in column 8.

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

Notes: • Mbbl = thousand barrels. MMgal = million U.S. gallons. TBtu = trillion Btu. • Through 1980, data are not available. For 1981-1992, data are estimates. Beginning in 1993, only data for feedstock and losses and co-products 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.doe.gov/emeu/mer/renew.html for all available data beginning in 1981.

Sources: *(Note: For production, net imports, stocks, stock change, and consumption, data in thousand barrels are converted to million gallons by multiplying by 0.042; and are converted to trillion Btu by multiplying by the approximate heat content of fuel ethanol—see Table A3.)* • **Feedstock:** Calculated as fuel ethanol production in thousand barrels multiplied by the approximate heat content of fuel ethanol feedstock—see Table A3. • **Losses and Co-products:** Calculated as fuel ethanol feedstock minus fuel ethanol production. • **Production: 1981-1992—**Fuel ethanol production is equal to 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 Energy Information Administration (EIA), Form EIA-819, "Monthly Oxygenate Report," and predecessor form, which were not reconciled and updated to be consistent with the final balance. **2005 forward—**EIA, Form EIA-819, "Monthly Oxygenate Report." • **Net Imports, Stocks, and Stock Change: 1992-2007—**EIA, *Petroleum Supply Annual (PSA),* annual reports. **2008—**EIA, *Petroleum Supply Monthly (PSM),* monthly reports. • **Consumption: 1981-1989—**EIA, *Estimates of U.S. Biofuels Consumption 1990,* Table 10; and EIA, Office of Coal, Nuclear, Electric and Alternate Fuels (CNEAF), estimates. **1990-1992—**EIA, *Estimates of U.S. Biomass Energy Consumption 1992,* Table D2; and EIA, CNEAF, estimates. **1993-2004—**EIA, *PSA,* annual reports, Tables 2 and 16. Calculated as ten percent of oxygenated finished motor gasoline field production (Table 2), plus fuel ethanol refinery input (Table 16). **2005-2007—**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). **2008—**EIA, *PSM,* monthly reports, Tables 1 and 27. 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 27).

Table 10.4 Biodiesel Overview

	Feedstock[a]	Losses and Co-products[b]	Production[c]		
	Trillion Btu	Trillion Btu	Thousand Barrels	Million Gallons	Trillion Btu
2001 Total	**1**	**(s)**	**204**	**9**	**1**
2002 Total	**1**	**(s)**	**250**	**10**	**1**
2003 Total	**2**	**(s)**	**338**	**14**	**2**
2004 Total	**4**	**(s)**	**666**	**28**	**4**
2005 Total	**12**	**(s)**	**2,162**	**91**	**12**
2006 January	2	(s)	312	13	2
February	1	(s)	269	11	1
March	2	(s)	368	15	2
April	2	(s)	385	16	2
May	3	(s)	531	22	3
June	3	(s)	612	26	3
July	3	(s)	540	23	3
August	4	(s)	689	29	4
September	3	(s)	598	25	3
October	3	(s)	549	23	3
November	3	(s)	520	22	3
December	3	(s)	590	25	3
Total	**32**	**(s)**	**5,963**	**250**	**32**
2007 January	4	(s)	692	29	4
February	3	(s)	564	24	3
March	4	(s)	775	33	4
April	4	(s)	765	32	4
May	5	(s)	958	40	5
June	5	(s)	943	40	5
July	7	(s)	1,237	52	7
August	7	(s)	1,298	55	7
September	7	(s)	1,224	51	7
October	6	(s)	1,188	50	6
November	5	(s)	993	42	5
December	6	(s)	1,026	43	5
Total	**63**	**1**	**11,662**	**490**	**62**
2008 January	7	(s)	1,208	51	6
February	6	(s)	1,030	43	6
March	6	(s)	1,168	49	6
April	7	(s)	1,258	53	7
May	7	(s)	1,250	52	7
June	8	(s)	1,509	63	8
6-Month Total	**40**	**1**	**7,423**	**312**	**40**
2007 6-Month Total	**26**	**(s)**	**4,697**	**197**	**25**
2006 6-Month Total	**13**	**(s)**	**2,477**	**104**	**13**

[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] Production of biofuels for use as diesel fuel substitutes or additives. Biodiesel consumption equals biodiesel production.

(s)=Less than 0.5 trillion Btu.

Notes: • Through 2000, data are not available. Beginning in 2001, data 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.doe.gov/emeu/mer/renew.html for all available data beginning in 2001.

Sources: • **Feedstock:** Calculated as biodiesel production in thousand barrels multiplied by the approximate heat content of biodiesel feedstock—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," Table 3A, data for soybean oil consumed in methyl esters (biodiesel). In addition, the Energy Information Administration (EIA), Office of Integrated Analysis and Forecasting, estimates that 14.4 million gallons of yellow grease were consumed in methyl esters (biodiesel). EIA assumes that 7.65 pounds of vegetable oil are needed to make one gallon of biodiesel. **2007 and 2008—**U.S. Department of Commerce, Bureau of the Census, "M311K - Fats and Oils: Production, Consumption, and Stocks," Table 3A, data for all fats and oils consumed in methyl esters (biodiesel). EIA assumes that 7.65 pounds of vegetable oil are needed to make one gallon of biodiesel. *(Note: For production, data in thousand barrels are converted to million gallons by multiplying by 0.042; and are converted to trillion Btu by multiplying by the approximate heat content of biodiesel — see Table A3.)*

Renewable Energy

Note. Renewable Energy Production and Consumption. In Table 10.1, renewable energy consumption consists of: conventional hydroelectricity net generation (converted to Btu using the fossil-fueled plants heat rate); geothermal electricity net generation (converted to Btu using the geothermal plants heat rate), and geothermal heat pump and geothermal direct use energy; solar thermal and photovoltaic electricity net generation (converted to Btu using the fossil-fueled plants heat rate), and solar thermal direct use energy; wind electricity net generation (converted to Btu using the fossil-fueled plants heat rate); 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 and biodiesel consumption; and losses and co-products from the production of fuel ethanol and biodiesel. 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
Energy Information Administration (EIA), Office of Coal, Nuclear, Electric and Alternate Fuels (CNEAF), 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. (The annual estimate for the current year is set equal to that of the previous year.)

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, CNEAF, 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
EIA, *Monthly Energy Review (MER)*, Tables 7.2a–7.2c and A6. Calculated as total conventional hydroelectric power minus conventional hydroelectric power in the electric power and industrial sectors, multiplied by the fossil-fueled plants heat rate.

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, 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, CNEAF, estimate.

1985–1988: Values interpolated.

1989 forward: EIA, *MER*, Tables 7.4a–c; and EIA, CNEAF, 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
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 consumption (Table 10.3).

Table 10.2b Sources

Industrial Sector, Hydroelectric Power
Energy Information Administration (EIA), *MER* Tables 7.2c and 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, 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, *MER*, Table 7.4c; and EIA, Office of Coal, Nuclear, Electric and Alternate Fuels (CNEAF), 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, CNEAF, estimates for total waste consumption; 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, CNEAF, 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

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 consumption (Table 10.3).

Industrial Sector, Losses and Co-products

EIA, *MER*, Tables 10.3 and 10.4.

Transportation Sector, Fuel Ethanol

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 consumption (Table 10.3).

Transportation Sector, Biodiesel

EIA, *MER*, Table 10.4. Transportation sector biodiesel consumption is set equal to biodiesel production.