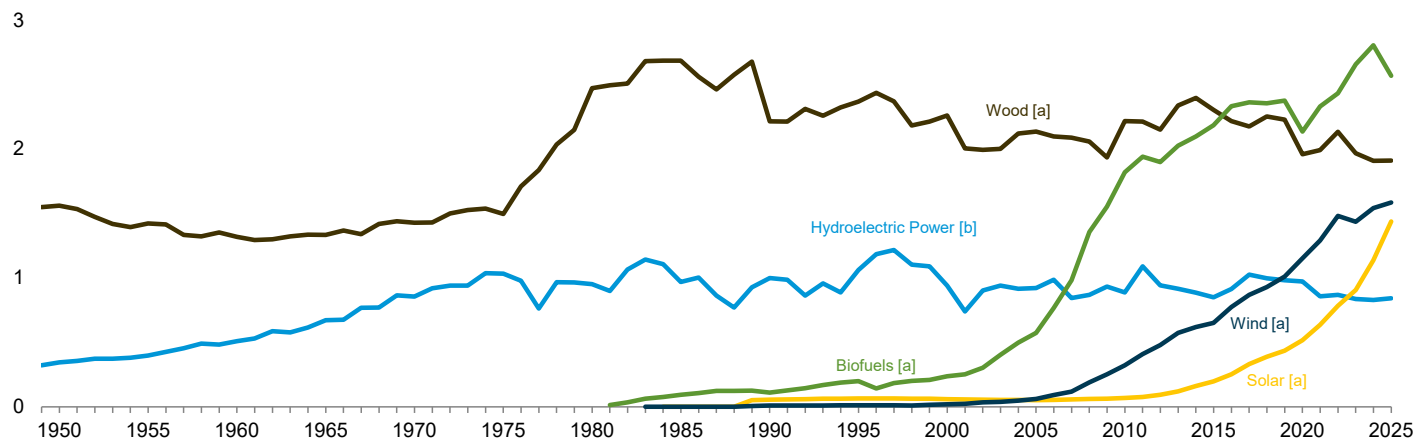


10. Renewable Energy

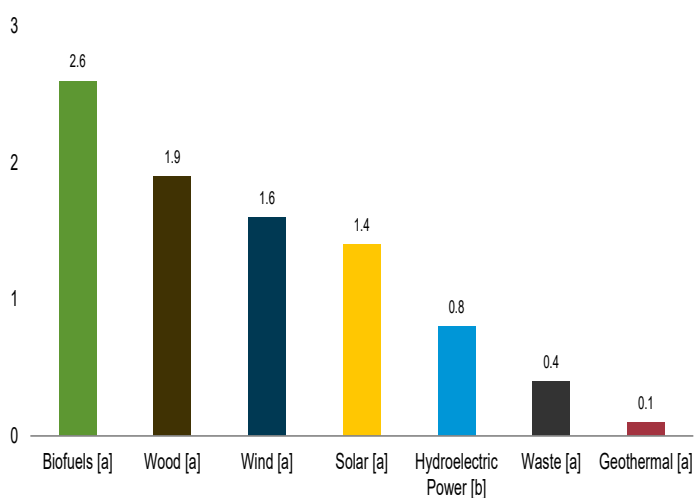
Figure 10.1 Renewable Energy Consumption

(Quadrillion Btu)

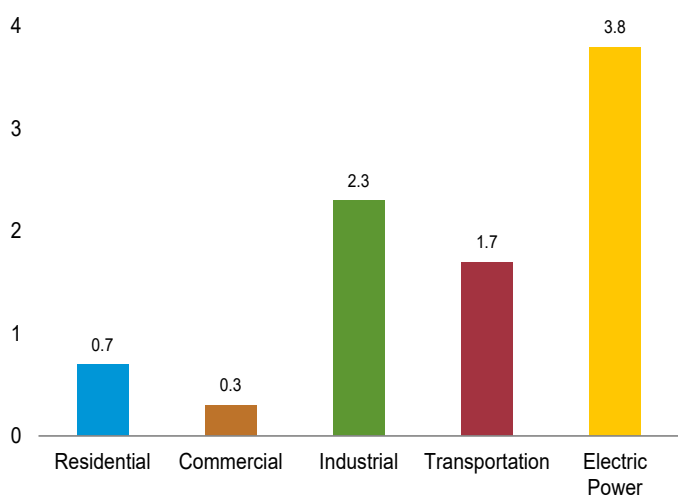
Major Sources, 1949–2025



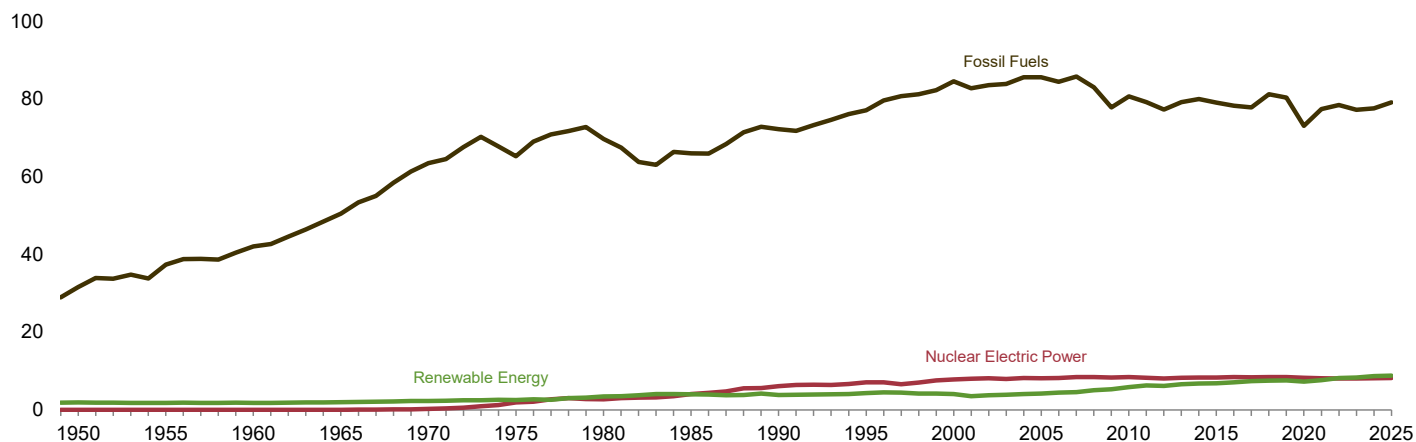
By Source, 2025



By Sector, 2025



Compared With Other Resources, 1949–2025



[a] See Table 10.1 for definition.

[b] Conventional hydroelectric power.

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 ^e	Hydroelectric Power ^f	Geothermal ^g	Solar ^h	Wind ⁱ	Biomass				Total Renewable Energy
	Wood ^b	Bio-fuels ^c	Total ^d						Wood ^j	Waste ^k	Bio-fuels ^l	Total	
1950 Total	1,562	NA	1,562	1,907	344	NA	NA	NA	1,562	NA	NA	1,562	1,907
1955 Total	1,424	NA	1,424	1,821	397	NA	NA	NA	1,424	NA	NA	1,424	1,821
1960 Total	1,320	NA	1,320	1,830	510	(s)	NA	NA	1,320	NA	NA	1,320	1,830
1965 Total	1,335	NA	1,335	2,008	672	1	NA	NA	1,335	NA	NA	1,335	2,008
1970 Total	1,429	NA	1,431	2,289	856	2	NA	NA	1,429	2	NA	1,431	2,289
1975 Total	1,497	NA	1,499	2,544	1,034	11	NA	NA	1,497	2	NA	1,499	2,544
1980 Total	2,474	NA	2,475	3,445	953	17	NA	NA	2,474	2	NA	2,475	3,445
1985 Total	2,687	93	3,016	4,018	970	32	(s)	(s)	2,687	236	93	3,016	4,018
1990 Total	2,216	111	2,735	3,863	999	63	56	10	2,216	408	111	2,735	3,863
1995 Total	2,370	198	3,099	4,295	1,061	60	64	11	2,370	531	200	3,101	4,297
2000 Total	2,262	233	3,006	4,093	940	69	59	19	2,262	511	236	3,008	4,096
2005 Total	2,137	561	3,101	4,220	922	84	52	61	2,137	403	574	3,114	4,233
2010 Total	2,217	1,868	4,553	5,943	888	111	68	323	2,217	468	1,821	4,506	5,896
2011 Total	2,213	2,037	4,712	6,404	1,090	116	76	410	2,213	462	1,941	4,616	6,308
2012 Total	2,151	1,936	4,554	6,187	943	117	94	480	2,151	467	1,899	4,517	6,151
2013 Total	2,338	2,000	4,835	6,561	916	117	120	573	2,338	496	2,026	4,861	6,587
2014 Total	2,398	2,135	5,049	6,833	885	118	161	620	2,398	516	2,099	5,013	6,796
2015 Total	2,305	2,201	5,025	6,840	850	118	197	651	2,305	518	2,185	5,008	6,823
2016 Total	2,290	2,329	5,122	7,180	914	117	252	774	2,217	503	2,333	5,053	7,112
2017 Total	2,254	2,407	5,156	7,498	1,025	118	331	868	2,176	495	2,364	5,035	7,377
2018 Total	2,348	2,471	5,306	7,740	998	118	388	930	2,254	487	2,355	5,096	7,530
2019 Total	2,333	2,432	5,207	7,750	982	116	435	1,010	2,229	442	2,376	5,048	7,591
2020 Total	2,066	2,194	4,700	7,460	973	118	516	1,153	1,960	440	2,136	4,535	7,296
2021 Total	2,111	2,374	4,916	7,819	858	118	636	1,290	1,992	430	2,331	4,753	7,656
2022 Total	2,273	2,511	5,196	8,450	869	118	784	1,482	2,135	412	2,433	4,980	8,233
2023 Total	2,103	2,705	5,202	8,501	836	119	907	1,437	1,968	394	2,659	5,021	8,320
2024 January	173	226	434	691	74	10	55	119	165	35	212	411	668
February	166	227	425	713	71	9	67	140	154	32	223	410	698
March	174	241	448	779	80	10	88	154	161	33	232	427	758
April	166	223	420	764	71	10	102	161	155	31	222	408	752
May	170	232	435	778	84	10	116	134	158	33	242	433	776
June	169	238	437	778	76	9	123	132	157	30	235	422	763
July	173	252	457	760	73	10	124	97	162	32	252	446	749
August	176	250	458	759	70	10	122	100	163	32	242	437	738
September	169	236	435	703	54	9	105	100	157	31	231	418	686
October	164	245	441	737	52	10	99	135	153	32	243	428	724
November	169	251	452	727	57	10	72	137	157	32	235	425	701
December	178	255	465	743	67	10	66	135	166	33	236	435	713
Total	2,046	2,875	5,308	8,933	829	116	1,138	1,542	1,909	387	2,806	5,101	8,726
2025 January	177	233	443	753	73	10	78	149	165	33	208	406	716
February	160	212	402	695	67	9	83	134	148	30	199	377	670
March	176	232	441	816	77	10	116	173	163	33	214	410	785
April	162	218	411	787	78	10	132	157	151	31	212	393	769
May	170	234	434	797	83	10	144	126	158	31	212	401	764
June	170	235	435	794	76	10	153	122	158	30	209	397	757
July	180	243	453	799	68	10	159	109	166	30	220	416	762
August	177	237	445	768	69	10	151	93	165	30	218	413	736
September	172	233	434	717	52	10	134	88	160	29	211	400	683
October	171	248	450	769	56	10	119	135	158	31	226	416	736
November	169	243	443	746	63	10	91	140	156	31	212	400	703
December	175	249	457	787	82	10	78	161	163	32	228	423	753
Total	2,058	2,817	5,247	9,229	843	117	1,438	1,585	1,912	372	2,569	4,853	8,835
2026 January	172	232	436	781	95	10	88	152	159	31	199	390	735
February	154	220	403	726	77	9	101	135	145	29	194	368	690
March	166	248	446	865	92	10	139	178	155	32	225	412	831
April	154	233	416	820	77	9	150	168	140	30	216	386	790
May	169	257	456	855	78	10	172	140	157	30	234	420	820
5-Month Total	815	1,190	2,157	4,047	418	48	650	773	755	152	1,069	1,976	3,866
2025 5-Month Total	845	1,129	2,132	3,848	377	49	552	738	785	157	1,045	1,987	3,703
2024 5-Month Total	849	1,150	2,163	3,725	379	49	427	707	794	164	1,131	2,089	3,651

^a For hydroelectric power, geothermal, solar, wind, and biomass waste, production equals consumption.

^b Wood and wood-derived fuels. Through 2015, wood production equals consumption. Beginning in 2016, wood production equals consumption plus densified biomass exports.

^c Total biomass inputs to the production of fuel ethanol and biodiesel. Beginning in 2011, also includes production of renewable diesel fuel. Beginning in 2014, also includes production of other biofuels.

^d Includes biomass waste.

^e Hydroelectric power, geothermal, solar, wind, and biomass.

^f Conventional hydroelectricity net generation (converted to Btu by multiplying by the heat content of electricity in Table A6).

^g Geothermal electricity net generation (converted to Btu by multiplying by the heat content of electricity in Table A6), and geothermal heat pump and direct use energy.

^h Solar photovoltaic (PV) and solar thermal electricity net generation (converted to Btu by multiplying by the heat content of electricity in Table A6), and solar thermal direct use energy.

ⁱ Wind electricity net generation (converted to Btu by multiplying by the heat content of electricity in Table A6).

^j Wood and wood-derived fuels.

^k 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).

^l Fuel ethanol (minus denaturant), biodiesel, renewable diesel fuel, and other biofuels 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: • Production data are estimates. Consumption data are estimates, except for hydroelectric power in 1949–1978 and 1989 forward, and wind. • 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> (Excel and CSV files) for all available annual data beginning in 1949 and monthly data beginning in 1973.

Sources: • **Production:** Tables 10.2a–10.4c and U.S. Energy Information Administration, Form EIA-63C, "Densified Biomass Fuel Report."

• **Consumption:** Tables 10.2a–10.2c.

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

	Residential Sector				Commercial Sector ^a								
	Geo-thermal ^b	Solar ^c	Biomass	Total	Hydro-electric Power ^e	Geo-thermal ^f	Solar ^g	Wind ^h	Biomass				Total
			Wood ^d						Wood ^d	Waste ⁱ	Fuel Ethanol ^{j,k}	Total	
1950 Total	NA	NA	1,006	1,006	NA	NA	NA	NA	19	NA	NA	19	19
1955 Total	NA	NA	775	775	NA	NA	NA	NA	15	NA	NA	15	15
1960 Total	NA	NA	627	627	NA	NA	NA	NA	12	NA	NA	12	12
1965 Total	NA	NA	468	468	NA	NA	NA	NA	9	NA	NA	9	9
1970 Total	NA	NA	401	401	NA	NA	NA	NA	8	NA	NA	8	8
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	55	580	640	(s)	3	(s)	—	66	28	(s)	94	97
1995 Total	7	63	520	589	(s)	5	(s)	—	72	40	(s)	113	118
2000 Total	9	57	420	486	(s)	8	(s)	—	71	47	(s)	119	127
2005 Total	16	49	430	495	(s)	14	1	—	70	34	1	105	120
2010 Total	37	59	541	636	(s)	19	4	(s)	72	36	3	111	134
2011 Total	40	62	524	626	(s)	20	7	(s)	69	43	3	115	141
2012 Total	40	66	438	544	(s)	20	11	(s)	61	45	3	108	139
2013 Total	40	72	572	683	(s)	20	15	(s)	70	47	3	120	155
2014 Total	40	80	579	698	(s)	20	19	(s)	73	47	4	124	163
2015 Total	40	87	513	640	(s)	20	21	(s)	73	47	^k 26	146	187
2016 Total	40	101	445	586	1	20	23	(s)	74	48	26	148	191
2017 Total	40	115	430	585	1	20	28	(s)	74	48	25	146	195
2018 Total	40	127	526	693	1	20	35	1	74	47	25	146	203
2019 Total	40	141	547	728	1	21	40	1	74	39	26	139	201
2020 Total	40	156	345	541	1	21	46	1	73	38	26	137	205
2021 Total	40	178	356	574	1	21	54	1	73	39	27	139	215
2022 Total	40	219	449	708	1	20	63	1	73	75	32	180	263
2023 Total	40	260	381	681	1	20	69	(s)	72	72	28	172	263
2024 January	3	17	29	50	(s)	2	4	(s)	6	6	2	14	20
February	3	19	28	50	(s)	2	5	(s)	6	6	2	13	20
March	3	25	29	58	(s)	2	6	(s)	6	6	2	14	22
April	3	28	28	60	(s)	2	7	(s)	6	6	2	13	22
May	3	30	29	63	(s)	2	8	(s)	6	6	2	14	24
June	3	30	28	62	(s)	2	8	(s)	6	6	2	14	23
July	3	31	29	64	(s)	2	8	(s)	6	6	2	14	24
August	3	30	29	63	(s)	2	8	(s)	6	6	2	14	24
September	3	27	28	58	(s)	2	7	(s)	6	6	2	14	22
October	3	24	29	57	(s)	2	6	(s)	6	6	2	14	22
November	3	19	28	51	(s)	2	5	(s)	6	6	2	14	20
December	3	18	29	51	(s)	2	4	(s)	6	6	2	14	20
Total	40	298	347	685	1	20	76	(s)	72	72	23	167	264
2025 January	3	19	32	54	(s)	2	5	(s)	6	6	2	14	21
February	3	20	29	52	NM	2	5	(s)	6	5	2	13	20
March	3	28	32	63	NM	2	7	(s)	6	6	2	14	23
April	3	31	31	65	(s)	2	8	(s)	6	6	2	13	23
May	3	32	32	67	(s)	2	9	(s)	6	5	2	13	24
June	3	33	31	67	(s)	2	9	(s)	6	5	2	14	24
July	3	35	32	70	NM	2	9	(s)	6	6	2	14	25
August	3	33	32	67	(s)	2	9	(s)	6	6	2	14	25
September	3	28	31	62	(s)	2	8	(s)	6	6	2	13	23
October	3	27	32	62	(s)	2	7	(s)	6	6	2	14	22
November	3	21	31	55	(s)	2	5	(s)	6	6	2	13	21
December	3	20	32	55	NM	2	5	(s)	6	6	2	14	21
Total	40	327	372	738	1	20	87	(s)	72	67	23	163	271
2026 January	3	20	29	53	NM	2	6	(s)	6	5	2	13	21
February	3	22	26	51	NM	2	6	(s)	6	5	2	12	20
March	3	30	29	62	NM	2	8	(s)	6	6	2	14	24
April	3	33	28	64	(s)	2	9	(s)	6	5	2	13	24
May	3	35	29	68	NM	2	10	(s)	6	6	2	14	26
5-Month Total	16	140	142	299	1	8	40	(s)	30	26	9	65	114
2025 5-Month Total	16	131	154	301	1	8	35	(s)	30	28	9	67	110
2024 5-Month Total	16	119	144	280	1	8	30	(s)	29	30	9	69	108

^a Commercial sector, including commercial combined-heat-and-power (CHP) and commercial electricity-only plants. See Note 2, "Classification of Power Plants Into Energy-Use Sectors," at end of Section 7.

^b Geothermal heat pump and direct use energy.

^c Small-scale solar photovoltaic (PV) electricity generation in the residential sector (converted to Btu by multiplying by the heat content of electricity in Table A6) and small-scale solar thermal energy in the residential, commercial, and industrial sectors. See Table 10.5.

^d Wood and wood-derived fuels.

^e Conventional hydroelectricity net generation (converted to Btu by multiplying by the heat content of electricity in Table A6).

^f Geothermal heat pump and direct use energy. Beginning in December 2018, also includes geothermal electricity net generation (converted to Btu by multiplying by the heat content of electricity in Table A6).

^g Solar photovoltaic (PV) electricity net generation in the commercial sector (converted to Btu by multiplying by the heat content of electricity in Table A6), both utility-scale and small-scale. See Table 10.5.

^h Wind electricity net generation (converted to Btu by multiplying by the heat content of electricity in Table A6).

ⁱ 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).

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

^k There is a discontinuity in this time series between 2014 and 2015 due to a change in the method for allocating motor gasoline consumption to the end-use sectors. Beginning in 2015, the commercial and industrial sector shares of fuel ethanol consumption are larger than in 2014, while the transportation sector share is smaller.

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

Notes: • Residential sector data are estimates. Commercial sector data are estimates, except for hydroelectric power, wind, and biomass 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> (Excel and CSV files) for all available annual data beginning in 1949 and monthly data beginning in 1973.

Sources: See end of section.

Table 10.2b Renewable Energy Consumption: Industrial Sector
(Trillion Btu)

	Industrial Sector ^a									
	Hydro- electric Power ^b	Geo- thermal ^c	Solar ^d	Wind ^e	Biomass					Total
					Wood ^f	Waste ^g	Fuel Ethanol ^{h,i}	Losses and Co- products ⁱ	Total	
1950 Total	17	NA	NA	NA	532	NA	NA	NA	532	549
1955 Total	11	NA	NA	NA	631	NA	NA	NA	631	642
1960 Total	12	NA	NA	NA	680	NA	NA	NA	680	692
1965 Total	11	NA	NA	NA	855	NA	NA	NA	855	866
1970 Total	11	NA	NA	NA	1,019	NA	NA	NA	1,019	1,030
1975 Total	11	NA	NA	NA	1,063	NA	NA	NA	1,063	1,074
1980 Total	11	NA	NA	NA	1,600	NA	NA	NA	1,600	1,611
1985 Total	11	NA	NA	NA	1,645	230	1	42	1,918	1,928
1990 Total	10	2	(s)	—	1,442	192	1	49	1,684	1,696
1995 Total	18	3	(s)	—	1,652	195	2	86	1,934	1,955
2000 Total	14	4	(s)	—	1,636	145	1	99	1,881	1,900
2005 Total	11	4	(s)	—	1,452	148	7	227	1,834	1,849
2010 Total	6	4	1	—	1,409	168	17	727	2,320	2,331
2011 Total	6	4	1	(s)	1,438	165	17	756	2,375	2,387
2012 Total	8	4	2	(s)	1,462	159	17	711	2,349	2,363
2013 Total	12	4	3	(s)	1,489	187	18	714	2,407	2,427
2014 Total	4	4	4	(s)	1,495	190	14	766	2,466	2,478
2015 Total	5	4	5	(s)	1,476	190	ⁱ 18	791	2,474	2,489
2016 Total	4	4	7	(s)	1,474	174	18	821	2,487	2,503
2017 Total	5	4	8	(s)	1,442	168	18	847	2,475	2,493
2018 Total	4	4	9	(s)	1,432	165	19	855	2,471	2,489
2019 Total	4	4	11	(s)	1,407	156	19	835	2,416	2,435
2020 Total	3	4	12	(s)	1,356	160	19	735	2,270	2,290
2021 Total	3	4	14	(s)	1,366	161	19	789	2,336	2,357
2022 Total	3	4	15	(s)	1,415	161	20	808	2,404	2,426
2023 Total	3	4	16	(s)	1,341	153	20	819	2,334	2,357
2024 January	(s)	(s)	1	(s)	113	14	1	68	196	198
February	(s)	(s)	1	(s)	107	13	2	69	190	192
March	(s)	(s)	2	(s)	112	14	2	73	201	203
April	(s)	(s)	2	(s)	110	13	1	65	190	192
May	(s)	(s)	2	(s)	110	14	2	70	196	198
June	(s)	(s)	2	(s)	109	12	2	69	191	194
July	(s)	(s)	2	(s)	111	12	2	75	200	202
August	(s)	(s)	2	(s)	112	12	2	74	200	203
September	(s)	(s)	2	(s)	110	12	2	69	192	195
October	(s)	(s)	1	(s)	107	13	2	72	194	196
November	(s)	(s)	1	(s)	111	13	2	74	200	201
December	(s)	(s)	1	(s)	116	14	2	76	206	208
Total	3	4	18	(s)	1,328	156	19	854	2,358	2,383
2025 January	(s)	(s)	1	(s)	112	14	2	72	199	201
February	(s)	(s)	1	(s)	101	12	1	65	180	181
March	(s)	(s)	2	(s)	112	14	2	70	197	200
April	(s)	(s)	2	(s)	104	13	2	66	185	187
May	(s)	(s)	2	(s)	108	13	2	69	192	195
June	(s)	(s)	2	(s)	107	12	2	69	190	193
July	(s)	(s)	2	(s)	113	12	2	72	198	201
August	(s)	(s)	2	(s)	112	12	2	72	198	201
September	(s)	(s)	2	(s)	108	12	2	68	189	192
October	(s)	(s)	2	(s)	108	14	2	73	197	199
November	(s)	(s)	2	(s)	106	13	2	72	193	195
December	(s)	(s)	1	(s)	109	14	2	75	199	201
Total	3	4	22	1	1,300	154	19	843	2,317	2,346
2026 January	(s)	(s)	2	(s)	108	14	1	72	195	197
February	(s)	(s)	2	(s)	97	12	1	67	178	181
March	(s)	(s)	2	(s)	105	13	2	73	193	197
April	(s)	(s)	2	(s)	95	13	2	66	176	179
May	(s)	(s)	3	(s)	108	13	2	74	195	199
5-Month Total	1	2	11	(s)	513	65	8	353	939	953
2025 5-Month Total	1	2	8	(s)	537	66	8	342	953	964
2024 5-Month Total	2	2	7	(s)	552	68	8	346	973	984

^a Industrial sector, including industrial combined-heat-and-power (CHP) and industrial electricity-only plants. See Note 2, "Classification of Power Plants Into Energy-Use Sectors," at end of Section 7.

^b Conventional hydroelectricity net generation (converted to Btu by multiplying by the heat content of electricity in Table A6).

^c Geothermal heat pump and direct use energy.

^d Solar photovoltaic (PV) electricity net generation in the industrial sector (converted to Btu by multiplying by the heat content of electricity in Table A6), both utility-scale and small-scale. See Table 10.5.

^e Wind electricity net generation (converted to Btu by multiplying by the heat content of electricity in 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 There is a discontinuity in this time series between 2014 and 2015 due to a change in the method for allocating motor gasoline consumption to the end-use sectors. Beginning in 2015, the commercial and industrial sector shares of fuel ethanol consumption are larger than in 2014, while the transportation sector share is smaller.

^j 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.

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

Notes: • Industrial sector data are estimates, except for hydroelectric power in 1949–1978 and 1989 forward, 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> (Excel and CSV files) for all available annual data beginning in 1949 and monthly data beginning in 1973.

Sources: See end of section.

Table 10.2c Renewable Energy Consumption: Transportation and Electric Power Sectors
(Trillion Btu)

	Transportation Sector					Electric Power Sector ^a							
	Biomass					Hydro-electric Power ^g	Geo-thermal ^h	Solar ⁱ	Wind ^j	Biomass			Total
	Fuel Ethanol ^{b,c}	Bio-diesel ^d	Renewable Diesel Fuel ^e	Other Biofuels ^f	Total					Wood ^k	Waste ^l	Total	
1950 Total	NA	NA	NA	NA	NA	327	NA	NA	NA	5	NA	5	333
1955 Total	NA	NA	NA	NA	NA	385	NA	NA	NA	3	NA	3	389
1960 Total	NA	NA	NA	NA	NA	498	(s)	NA	NA	2	NA	2	499
1965 Total	NA	NA	NA	NA	NA	661	1	NA	NA	3	NA	3	665
1970 Total	NA	NA	NA	NA	NA	845	2	NA	NA	1	2	4	851
1975 Total	NA	NA	NA	NA	NA	1,024	11	NA	NA	(s)	2	2	1,037
1980 Total	NA	NA	NA	NA	NA	942	17	NA	NA	3	2	4	964
1985 Total	50	NA	NA	NA	50	959	32	(s)	(s)	8	7	14	1,006
1990 Total	60	NA	NA	NA	60	989	53	1	10	129	188	317	1,369
1995 Total	112	NA	NA	NA	112	1,042	46	2	11	125	296	422	1,522
2000 Total	135	NA	NA	NA	135	926	48	2	19	134	318	453	1,447
2005 Total	327	12	NA	NA	339	911	50	2	61	185	221	406	1,430
2010 Total	1,041	33	NA	NA	1,075	882	52	4	323	196	264	459	1,720
2011 Total	1,045	113	8	NA	1,166	1,083	52	6	410	182	255	437	1,988
2012 Total	1,045	115	10	NA	1,169	934	53	14	480	190	262	453	1,935
2013 Total	1,072	182	39	NA	1,292	904	54	30	572	207	262	470	2,030
2014 Total	1,093	181	38	2	1,314	880	54	59	619	251	279	530	2,143
2015 Total	^c 1,110	191	48	2	1,351	845	54	83	650	244	281	525	2,158
2016 Total	1,143	266	57	2	1,469	909	54	121	774	224	281	505	2,363
2017 Total	1,156	253	62	3	1,474	1,019	54	180	867	229	280	510	2,630
2018 Total	1,152	243	57	3	1,456	993	54	216	929	221	275	496	2,689
2019 Total	1,162	231	99	4	1,497	978	51	243	1,009	201	248	448	2,729
2020 Total	1,004	239	107	4	1,355	969	53	302	1,152	185	242	428	2,904
2021 Total	1,110	218	158	10	1,496	854	53	391	1,289	197	229	426	3,014
2022 Total	1,111	212	225	25	1,573	865	55	487	1,481	198	176	374	3,263
2023 Total	1,132	246	376	38	1,792	832	56	562	1,436	174	168	342	3,228
2024 January	87	20	30	3	141	73	5	33	119	16	14	31	260
February	89	22	37	3	151	71	4	43	140	14	13	27	285
March	96	20	36	3	155	79	5	54	154	14	14	27	319
April	88	22	39	4	153	71	4	65	161	11	12	24	325
May	103	21	42	2	168	83	4	76	134	12	13	26	323
June	95	22	42	3	162	76	4	83	132	14	13	27	322
July	101	20	50	3	174	73	4	83	97	15	13	28	285
August	99	19	43	3	164	70	4	83	100	15	14	29	285
September	93	19	42	4	158	54	4	70	100	13	13	26	253
October	101	21	41	5	168	52	4	67	135	10	13	23	282
November	94	18	40	6	158	57	4	47	137	12	13	25	270
December	94	20	38	4	157	66	5	43	135	15	13	28	277
Total	1,139	246	480	44	1,909	825	53	746	1,541	162	158	320	3,485
2025 January	92	12	25	4	133	73	5	52	149	15	13	29	307
February	86	11	28	6	130	66	4	56	134	13	12	25	286
March	94	13	29	5	140	76	5	79	173	14	13	27	359
April	96	13	28	5	142	78	4	91	156	10	12	22	351
May	95	13	26	6	139	83	4	101	126	13	12	25	339
June	98	12	19	7	136	75	4	108	122	15	13	27	337
July	100	11	28	6	144	68	4	113	108	15	13	28	322
August	99	10	29	5	142	68	5	108	93	15	12	28	301
September	94	13	26	7	140	52	4	95	88	15	12	27	266
October	101	11	31	6	149	56	4	83	135	13	12	25	303
November	91	11	24	10	137	63	4	63	140	13	13	26	295
December	100	11	30	8	150	81	5	52	160	16	13	29	327
Total	1,145	141	322	74	1,683	839	53	1,001	1,583	167	151	318	3,795
2026 January	88	12	18	5	124	95	5	61	152	16	12	28	340
February	82	13	24	5	124	76	4	72	135	15	12	27	315
March	99	14	30	6	148	91	5	98	178	14	13	28	400
April	94	16	31	6	147	76	4	105	168	10	12	22	376
May	102	17	30	7	156	77	4	123	140	14	12	26	371
5-Month Total	465	72	133	29	698	416	22	459	773	70	61	132	1,802
2025 5-Month Total	462	62	135	26	685	376	22	379	737	65	63	128	1,643
2024 5-Month Total	463	106	183	16	768	377	22	271	707	68	66	134	1,511

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

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

^c There is a discontinuity in this time series between 2014 and 2015 due to a change in the method for allocating motor gasoline consumption to the end-use sectors. Beginning in 2015, the commercial and industrial sector shares of fuel ethanol consumption are larger than in 2014, while the transportation sector share is smaller.

^d "Biodiesel" is primarily fatty acid methyl esters (FAME). See "Biodiesel" in Glossary. Although there is use of biodiesel in other sectors, all consumption is assigned to the transportation sector.

^e "Renewable diesel fuel," which is commonly called "non-ester renewable diesel" and "green diesel," is chemically similar to petroleum diesel fuel. Although there is use of renewable diesel fuel in other sectors, all consumption is assigned to the transportation sector.

^f Renewable heating oil, renewable jet fuel (sustainable aviation fuel), renewable naphtha and gasoline, biobutanol, and other biofuels and biointermediates. Although there is use of these biofuels in other sectors, all consumption is assigned to the transportation sector.

^g Conventional hydroelectricity net generation (converted to Btu by multiplying

by the heat content of electricity in Table A6).

^h Geothermal electricity net generation (converted to Btu by multiplying by the heat content of electricity in Table A6).

ⁱ Solar photovoltaic (PV) and solar thermal electricity net generation in the electric power sector (converted to Btu by multiplying by the heat content of electricity in Table A6). See Table 10.5.

^j Wind electricity net generation (converted to Btu by multiplying by the heat content of electricity in Table A6).

^k Wood and wood-derived fuels.

^l 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).

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

Notes: • Transportation sector data are estimates, except for biodiesel beginning in 2012, and renewable diesel fuel and other biofuels beginning in 2021.

• 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> (Excel and CSV files) for all available annual data beginning in 1949 and monthly data beginning in 1973.

Sources: See end of section.

Table 10.3 Fuel Ethanol Overview

	Feed-stock ^b	Losses and Co-products ^c	Denaturant ^d	Production ^a			Trade ^a	Stocks ^{a,f}	Stock Change ^{a,g}	Consumption ^a			Consumption Minus Denaturant ^h
							Net Imports ^e						
	TBtu	TBtu	Mbbl	Mbbl	MMgal	TBtu	Mbbl	Mbbl	Mbbl	Mbbl	MMgal	TBtu	TBtu
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
2000 Total	233	99	773	38,627	1,622	138	116	3,400	-624	39,367	1,653	140	137
2005 Total	550	227	1,859	92,961	3,904	331	3,234	5,563	-439	96,634	4,059	344	335
2010 Total	1,823	726	6,506	316,617	13,298	1,128	-9,115	17,941	1,347	306,155	12,858	1,091	1,061
2011 Total	1,904	754	6,649	331,646	13,929	1,181	-24,365	18,238	297	306,984	12,893	1,093	1,065
2012 Total	1,801	709	6,264	314,714	13,218	1,120	-5,891	20,350	2,112	306,711	12,882	1,092	1,064
2013 Total	1,809	711	6,181	316,493	13,293	1,127	-5,761	16,424	-3,926	314,658	13,216	1,120	1,092
2014 Total	1,947	764	6,476	340,781	14,313	1,213	-18,371	18,739	2,315	320,095	13,444	1,139	1,111
2015 Total	2,013	788	6,636	352,553	14,807	1,254	-17,632	21,596	2,857	332,064	13,947	1,181	1,153
2016 Total	2,092	818	6,920	366,981	15,413	1,306	-27,002	19,758	-1,838	341,817	14,356	1,216	1,187
2017 Total	2,164	844	6,657	379,435	15,936	1,349	-31,268	23,043	3,285	344,882	14,485	1,226	1,199
2018 Total	2,187	852	5,819	383,127	16,091	1,361	-39,410	23,418	375	343,342	14,420	1,220	1,197
2019 Total	2,140	832	6,089	375,678	15,778	1,336	-30,276	22,352	-1,066	346,468	14,552	1,232	1,206
2020 Total	1,886	732	5,892	331,928	13,941	1,181	-27,692	24,663	2,311	301,925	12,681	1,074	1,050
2021 Total	2,030	786	6,094	357,517	15,016	1,271	-28,135	22,036	-2,627	332,010	13,944	1,180	1,155
2022 Total	2,079	805	5,869	365,731	15,361	1,299	-29,631	24,245	2,209	333,891	14,023	1,186	1,163
2023 Total	2,107	816	6,211	370,957	15,580	1,318	-32,895	23,498	-747	338,808	14,230	1,204	1,179
2024 January	175	68	508	30,843	1,295	110	-3,564	24,781	1,283	25,997	1,092	92	90
February	177	69	524	31,149	1,308	111	-3,273	26,027	1,246	26,629	1,118	95	93
March	188	73	503	33,129	1,391	118	-3,986	26,741	714	28,430	1,194	101	99
April	168	65	437	29,466	1,238	105	-4,468	25,466	-1,274	26,272	1,103	93	92
May	181	70	471	31,783	1,335	113	-4,002	22,750	-2,717	30,499	1,281	108	106
June	178	69	499	31,304	1,315	111	-3,194	22,655	-95	28,205	1,185	100	98
July	192	74	541	33,810	1,420	120	-3,067	23,328	673	30,070	1,263	107	105
August	191	74	526	33,506	1,407	119	-3,644	23,782	454	29,408	1,235	104	102
September	178	69	476	31,220	1,311	111	-3,905	23,462	-319	27,634	1,161	98	96
October	185	72	518	32,539	1,367	116	-3,891	22,124	-1,339	29,986	1,259	107	104
November	190	74	519	33,383	1,402	119	-4,549	22,973	849	27,985	1,175	99	97
December	194	75	544	34,184	1,436	121	-4,680	24,418	1,445	28,059	1,178	100	98
Total	2,197	851	6,067	386,316	16,225	1,373	-46,223	24,418	920	339,173	14,245	1,205	1,181
2025 January	189	72	576	33,596	1,411	119	-4,724	25,774	ⁱ 1,416	27,455	1,153	98	95
February	171	65	479	30,354	1,275	108	-3,313	27,339	1,565	25,476	1,070	91	89
March	184	70	525	32,683	1,373	116	-4,671	27,378	39	27,973	1,175	99	97
April	172	66	500	30,649	1,287	109	-4,110	25,376	-2,003	28,541	1,199	101	99
May	180	69	538	32,098	1,348	114	-4,410	24,708	-668	28,356	1,191	101	99
June	182	69	523	32,317	1,357	115	-4,143	23,605	-1,102	29,276	1,230	104	102
July	188	72	551	33,461	1,405	119	-3,922	23,397	-208	29,748	1,249	106	104
August	188	72	550	33,494	1,407	119	-4,504	22,836	-561	29,551	1,241	105	103
September	177	67	551	31,505	1,323	112	-3,542	22,740	-96	28,059	1,178	100	98
October	192	73	595	34,112	1,433	121	-4,414	22,423	-318	30,015	1,261	107	104
November	188	72	575	33,522	1,408	119	-5,041	23,765	1,342	27,139	1,140	96	94
December	196	75	663	34,934	1,467	124	-5,256	23,530	-234	29,913	1,256	106	104
Total	2,207	841	6,624	392,724	16,494	1,396	-52,050	23,530	ⁱ -827	341,502	14,343	1,214	1,188
2026 January	189	72	647	33,738	1,417	120	-5,056	25,851	2,321	26,362	1,107	94	92
February	176	67	587	31,399	1,319	112	-5,007	27,698	1,847	24,545	1,031	87	85
March	192	73	603	34,174	1,435	121	-5,194	27,168	-530	29,510	1,239	105	103
April	174	66	518	30,925	1,299	110	-4,100	26,082	-1,086	27,911	1,172	99	97
May	193	73	544	34,220	1,437	122	-4,531	25,375	-707	30,396	1,277	108	106
5-Month Total	924	352	2,899	164,456	6,907	584	-23,887	25,375	1,844	138,725	5,826	493	482
2025 5-Month Total ...	896	341	2,617	159,378	6,694	566	-21,227	24,708	350	137,801	5,788	490	480
2024 5-Month Total ...	889	344	2,443	156,371	6,568	556	-19,293	22,750	-748	137,827	5,789	490	480

^a Includes denaturant.

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

^c 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.

^d The amount of denaturant in fuel ethanol produced.

^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 (including industrial alcohol) 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 2024 stocks value (24,358 thousand barrels), not the final 2024 value (24,418 thousand barrels) that is shown under "Stocks."

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> (Excel and CSV files) for all available annual and monthly data beginning in 1981.

Sources: See end of section.

Table 10.4a Biodiesel Overview

	Feed- stock ^b	Losses and Co- products ^c	Production ^a			Trade ^a			Stocks ^{a,e}	Stock Change ^{a,f}	Consumption ^{a,g}		
						Imports	Exports	Net Imports ^d					
			TBtu	TBtu	Mbbl	MMgal	TBtu	Mbbl	Mbbl	Mbbl	Mbbl	Mbbl	Mbbl
2001 Total	1	(s)	204	9	1	81	41	40	NA	NA	244	10	1
2005 Total	12	(s)	2,162	91	12	214	213	1	NA	NA	2,163	91	12
2010 Total	44	1	8,177	343	44	564	2,588	-2,024	672	-39	6,192	260	33
2011 Total	125	2	23,035	967	123	890	1,799	-908	2,005	^h 1,028	21,099	886	113
2012 Total	128	2	23,588	991	126	853	3,056	-2,203	1,984	-20	21,406	899	115
2013 Total	176	2	32,368	1,359	173	8,152	4,675	3,477	3,810	1,825	34,020	1,429	182
2014 Total	165	2	30,452	1,279	163	4,578	1,974	2,604	3,131	-679	33,735	1,417	181
2015 Total	163	2	30,080	1,263	161	8,399	2,091	6,308	3,943	813	35,575	1,494	191
2016 Total	203	3	37,327	1,568	200	16,879	2,098	14,781	6,398	2,454	49,653	2,085	266
2017 Total	206	3	37,993	1,596	204	9,374	2,228	7,146	4,268	-2,130	47,269	1,985	253
2018 Total	240	3	44,222	1,857	237	3,969	2,470	1,499	4,662	394	45,326	1,904	243
2019 Total	223	3	41,060	1,725	220	4,078	2,730	1,348	3,907	-756	43,163	1,813	231
2020 Total	235	3	43,207	1,815	232	4,684	3,458	1,226	3,665	-241	44,675	1,876	239
2021 Total	221	3	40,686	1,709	218	5,005	4,452	553	4,187	522	40,717	1,710	218
2022 Total	210	3	38,620	1,622	207	5,950	5,671	279	3,608	-580	39,478	1,658	212
2023 Total	219	3	40,401	1,697	217	11,929	6,169	5,760	3,813	206	45,955	1,930	246
2024 January	16	(s)	3,026	127	16	1,251	105	1,146	4,179	365	3,806	160	20
February	16	(s)	2,987	125	16	1,714	213	1,501	4,553	374	4,114	173	22
March	18	(s)	3,232	136	17	729	316	413	4,392	-161	3,806	160	20
April	17	(s)	3,178	133	17	1,454	428	1,026	4,440	48	4,155	175	22
May	19	(s)	3,407	143	18	789	504	285	4,177	-263	3,955	166	21
June	18	(s)	3,370	142	18	721	480	241	3,720	-457	4,069	171	22
July	19	(s)	3,477	146	19	599	627	-28	3,445	-274	3,724	156	20
August	19	(s)	3,482	146	19	551	581	-30	3,267	-178	3,630	152	19
September	18	(s)	3,361	141	18	604	483	121	3,164	-103	3,585	151	19
October	19	(s)	3,449	145	18	505	136	369	3,007	-157	3,975	167	21
November	19	(s)	3,446	145	18	537	293	244	3,309	302	3,389	142	18
December	18	(s)	3,381	142	18	777	137	640	3,555	247	3,775	159	20
Total	216	3	39,795	1,671	213	10,231	4,303	5,928	3,555	-258	45,982	1,931	246
2025 January	10	(s)	1,862	78	10	78	195	-117	3,058	ⁱ -495	2,240	94	12
February	11	(s)	1,936	81	10	165	56	109	3,014	-44	2,089	88	11
March	13	(s)	2,355	99	13	111	107	4	3,028	14	2,346	99	13
April	13	(s)	2,479	104	13	32	153	-121	2,914	-113	2,471	104	13
May	13	(s)	2,384	100	13	14	221	-207	2,708	-207	2,383	100	13
June	13	(s)	2,351	99	13	14	254	-240	2,647	-61	2,172	91	12
July	14	(s)	2,492	105	13	—	306	-306	2,762	115	2,071	87	11
August	14	(s)	2,582	108	14	—	253	-253	3,242	480	1,849	78	10
September	13	(s)	2,468	104	13	1	176	-175	3,125	-118	2,411	101	13
October	13	(s)	2,371	100	13	176	88	88	3,454	330	2,129	89	11
November	11	(s)	2,085	88	11	135	72	63	3,476	21	2,126	89	11
December	11	(s)	2,022	85	11	95	69	26	3,417	-59	2,107	89	11
Total	149	2	27,387	1,150	147	821	1,949	-1,128	3,417	ⁱ -136	26,395	1,109	141
2026 January	12	(s)	2,157	91	12	27	27	(s)	3,334	-83	2,239	94	12
February	13	(s)	2,342	98	13	2	51	-49	3,265	-69	2,361	99	13
March	15	(s)	2,726	114	15	6	201	-195	3,192	-72	2,603	109	14
April	16	(s)	2,861	120	15	—	141	-141	2,875	-317	3,038	128	16
May	17	(s)	3,082	129	17	40	138	-98	2,699	-176	3,160	133	17
5-Month Total	72	1	13,167	553	71	75	558	-483	2,699	-718	13,403	563	72
2025 5-Month Total	60	1	11,016	463	59	400	731	-331	2,708	-845	11,529	484	62
2024 5-Month Total	86	1	15,829	665	85	5,937	1,566	4,371	4,177	363	19,836	833	106

^a Data are for "biodiesel," which is primarily fatty acid methyl esters (FAME). See "Biodiesel" in Glossary.

^b Total vegetable oil and other biomass inputs to the production of biodiesel. See "Biodiesel Feedstock" entry in the "Thermal Conversion Factor Source Documentation" at the end of Appendix A.

^c 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.

^d Net imports equal imports minus exports.

^e Stocks are at end of period. Includes biodiesel stocks at (or in) refineries, pipelines, and bulk terminals. Beginning in 2011, also includes stocks at biodiesel production plants.

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

^g In 2009, because of incomplete data coverage and differing data sources, a "Balancing Item" amount of 733 thousand barrels (653 thousand barrels in January 2009; 80 thousand barrels in February 2009) is used to balance biodiesel supply

and disposition.

^h Derived from the final 2010 stocks value for bulk terminals and biodiesel production plants (977 thousand barrels), not the final 2010 value for bulk terminals only (672 thousand barrels) that is shown under "Stocks."

ⁱ Derived from the preliminary 2024 stocks value (3,552 thousand barrels), not the final 2024 value (3,555 thousand barrels) that is shown under "Stocks."

NA=Not available. - =No data reported. (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 A1). • Through 2000, data are not available. Beginning in 2001, data not from 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> (Excel and CSV files) for all available annual and monthly data beginning in 2001.

Sources: See end of section.

Table 10.4b Renewable Diesel Fuel Overview

	Feed-stock ^b	Losses and Co-products ^c	Production ^{a,d}			Trade ^a			Stocks ^{a,f}	Stock Change ^{a,g}	Consumption ^{a,h}		
						Imports	Exports	Net Imports ^e					
	TBtu	TBtu	Mbbl	MMgal	TBtu	Mbbl	Mbbl	Mbbl	Mbbl	Mbbl	Mbbl	MMgal	TBtu
2011 Total	NA	NA	1,477	62	8	—	NA	—	7	7	1,470	62	8
2012 Total	NA	NA	1,248	52	7	605	NA	605	94	87	1,766	74	10
2013 Total	NA	NA	2,697	113	15	4,921	NA	4,921	691	597	7,021	295	39
2014 Total	NA	NA	3,789	159	21	2,873	NA	2,873	350	-341	7,003	294	38
2015 Total	NA	NA	4,211	177	23	4,874	NA	4,874	634	284	8,801	370	48
2016 Total	NA	NA	5,750	241	32	5,304	NA	5,304	1,315	681	10,373	436	57
2017 Total	NA	NA	6,151	258	34	4,509	NA	4,509	753	-562	11,222	471	62
2018 Total	NA	NA	7,273	305	40	4,124	NA	4,124	1,727	974	10,423	438	57
2019 Total	NA	NA	11,715	492	64	6,143	NA	6,143	1,491	-236	18,094	760	99
2020 Total	NA	NA	12,702	533	70	6,658	NA	6,658	1,287	-204	19,564	822	107
2021 Total	NA	NA	^d 20,503	^d 861	^d 113	9,340	NA	9,340	2,353	1,066	28,777	1,209	158
2022 Total	NA	NA	35,692	1,499	196	6,254	NA	6,254	3,405	1,053	40,893	1,718	225
2023 Total	NA	NA	61,895	2,600	340	8,622	NA	8,622	5,478	2,072	68,445	2,875	376
2024 January	NA	NA	5,707	240	31	860	NA	860	6,572	1,095	5,472	230	30
February	NA	NA	5,624	236	31	1,002	NA	1,002	6,517	-55	6,681	281	37
March	NA	NA	5,688	239	31	1,053	NA	1,053	6,670	152	6,588	277	36
April	NA	NA	6,222	261	34	1,030	NA	1,030	6,908	238	7,014	295	39
May	NA	NA	5,468	230	30	1,209	NA	1,209	5,957	-951	7,628	320	42
June	NA	NA	7,020	295	39	1,459	NA	1,459	6,720	762	7,717	324	42
July	NA	NA	6,835	287	38	1,600	NA	1,600	6,136	-584	9,019	379	50
August	NA	NA	6,648	279	37	1,359	NA	1,359	6,343	207	7,800	328	43
September	NA	NA	6,385	268	35	1,015	NA	1,015	6,104	-239	7,639	321	42
October	NA	NA	6,770	284	37	701	NA	701	6,108	4	7,467	314	41
November	NA	NA	6,797	285	37	145	NA	145	5,686	-422	7,364	309	40
December	NA	NA	6,889	289	38	961	NA	961	6,531	845	7,005	294	38
Total	NA	NA	76,054	3,194	418	12,394	NA	12,394	6,531	1,053	87,395	3,671	480
2025 January	NA	NA	5,189	218	29	1	163	-162	6,903	ⁱ 504	^h 4,523	^h 190	^h 25
February	NA	NA	4,416	185	24	442	543	-101	6,113	-789	5,104	214	28
March	NA	NA	5,413	227	30	177	641	-464	5,860	-253	5,202	218	29
April	NA	NA	5,082	213	28	33	1,264	-1,231	4,627	-1,233	5,085	214	28
May	NA	NA	6,233	262	34	154	1,009	-855	5,310	683	4,695	197	26
June	NA	NA	6,242	262	34	81	1,524	-1,443	6,591	1,282	3,518	148	19
July	NA	NA	6,224	261	34	230	1,594	-1,364	6,407	-185	5,045	212	28
August	NA	NA	5,670	238	31	441	1,339	-898	5,945	-461	5,233	220	29
September	NA	NA	6,464	271	36	347	1,543	-1,196	6,463	517	4,751	200	26
October	NA	NA	6,420	270	35	900	1,770	-870	6,388	-75	5,624	236	31
November	NA	NA	6,059	254	33	112	1,568	-1,456	6,598	210	4,393	185	24
December	NA	NA	6,076	255	33	475	1,223	-748	6,412	-186	5,514	232	30
Total	NA	NA	69,487	2,918	382	3,393	14,181	-10,788	6,412	ⁱ 13	58,687	2,465	322
2026 January	NA	NA	4,682	197	26	—	566	-566	7,163	751	3,365	141	18
February	NA	NA	4,703	198	26	225	1,410	-1,185	6,382	-781	4,299	181	24
March	NA	NA	6,413	269	35	250	1,017	-767	6,618	236	5,411	227	30
April	NA	NA	6,803	286	37	—	1,078	-1,078	6,708	90	5,635	237	31
May	NA	NA	7,587	319	42	—	1,865	-1,865	7,003	295	5,427	228	30
5-Month Total	NA	NA	30,189	1,268	166	475	5,936	-5,461	7,003	591	24,138	1,014	133
2025 5-Month Total	NA	NA	26,332	1,106	145	807	3,619	-2,812	5,310	-1,089	24,609	1,034	135
2024 5-Month Total	NA	NA	28,709	1,206	158	5,154	NA	5,154	5,957	479	33,384	1,402	183

^a Data are for "renewable diesel fuel," which is commonly called "non-ester renewable diesel" and "green diesel," and which is chemically similar to petroleum diesel fuel. Beginning in 2025, exports data also include renewable jet fuel (sustainable aviation fuel).

^b Total vegetable oil and other biomass inputs to the production of renewable diesel fuel.

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

^d Through 2020, production data are from U.S. Environmental Protection Agency. Beginning in 2021, production data are from EIA. See sources at end of section.

^e Net imports equal imports minus exports.

^f Stocks are at end of period. Includes renewable diesel fuel stocks at refineries and bulk terminals. Beginning in 2021, also includes renewable diesel fuel stocks at renewable fuel production plants.

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

^h Through 2024, consumption, which is calculated as production plus imports minus stock change, also includes amounts of exports that cannot be differentiated from consumption. Beginning in 2025, consumption is calculated as production plus net imports minus stock change.

ⁱ Derived from the preliminary 2024 stocks value (6,399 thousand barrels), not the final 2024 value (6,531 thousand barrels) that is shown under "Stocks."

NA=Not available. —=No data reported.

Notes: • Mbbl = thousand barrels. MMgal = million U.S. gallons. TBtu = trillion Btu. • Renewable diesel fuel data in thousand barrels are converted to million gallons by multiplying by 0.042, and are converted to Btu by multiplying by 5.494 million Btu per barrel (the approximate heat content of renewable diesel fuel—see Table A1). • Through 2010, data are not available, or there is incomplete data coverage. Beginning in 2011, data not from 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> (Excel and CSV files) for all available annual and monthly data beginning in 2011.

Sources: See end of section.

Table 10.4c Other Biofuels Overview

	Feed-stock ^b	Losses and Co-products ^c	Production ^{a,d}			Trade ^a			Stocks ^{a,f}	Stock Change ^{a,g}	Consumption ^{a,h}		
						Imports	Exports	Net Imports ^e					
	TBtu	TBtu	Mbbl	MMgal	TBtu	Mbbl	Mbbl	Mbbl	Mbbl	Mbbl	Mbbl	MMgal	TBtu
2014 Total	NA	NA	290	12	2	—	NA	—	7	2	288	12	2
2015 Total	NA	NA	393	17	2	—	NA	—	4	-3	396	17	2
2016 Total	NA	NA	503	21	3	—	NA	—	43	39	464	20	2
2017 Total	NA	NA	570	24	3	—	NA	—	28	-15	585	25	3
2018 Total	NA	NA	611	26	3	—	NA	—	54	26	585	25	3
2019 Total	NA	NA	791	33	4	—	NA	—	50	-4	795	33	4
2020 Total	NA	NA	761	32	4	—	NA	—	27	-23	784	33	4
2021 Total ⁱ	NA	NA	^d 1,914	^d 80	^d 10	27	NA	27	83	56	1,885	79	10
2022 Total	NA	NA	4,841	203	26	114	NA	114	282	200	4,756	200	25
2023 Total	NA	NA	7,058	296	38	100	NA	100	314	32	7,126	299	38
2024 January	NA	NA	623	26	3	—	NA	—	400	85	538	23	3
February	NA	NA	620	26	3	—	NA	—	412	12	607	26	3
March	NA	NA	692	29	4	—	NA	—	496	84	609	26	3
April	NA	NA	651	27	3	—	NA	—	414	-82	733	31	4
May	NA	NA	512	21	3	—	NA	—	478	64	447	19	2
June	NA	NA	651	27	3	—	NA	—	538	60	592	25	3
July	NA	NA	580	24	3	—	NA	—	467	-71	652	27	3
August	NA	NA	700	29	4	—	NA	—	612	145	555	23	3
September	NA	NA	874	37	5	—	NA	—	740	129	746	31	4
October	NA	NA	742	31	4	—	NA	—	631	-110	851	36	5
November	NA	NA	856	36	5	—	NA	—	451	-179	1,035	43	6
December	NA	NA	792	33	4	—	NA	—	489	37	754	32	4
Total	NA	NA	8,293	348	44	—	NA	—	489	174	8,118	341	44
2025 January	NA	NA	1,032	43	6	—	(s)	(s)	725	ⁱ 269	^h 764	^h 32	^h 4
February	NA	NA	1,238	52	7	—	45	-45	884	159	1,033	43	6
March	NA	NA	1,013	43	5	—	1	-1	938	54	958	40	5
April	NA	NA	877	37	5	—	(s)	(s)	850	-88	965	41	5
May	NA	NA	1,107	47	6	—	1	-1	880	29	1,077	45	6
June	NA	NA	1,142	48	6	—	120	-120	629	-251	1,273	53	7
July	NA	NA	1,290	54	7	—	(s)	(s)	877	248	1,041	44	6
August	NA	NA	740	31	4	—	52	-52	718	-159	847	36	5
September	NA	NA	1,342	56	7	—	(s)	(s)	842	123	1,218	51	7
October	NA	NA	1,498	63	8	—	—	—	1,130	289	1,209	51	6
November	NA	NA	1,801	76	10	—	97	-97	879	-251	1,955	82	10
December	NA	NA	1,667	70	9	—	75	-75	1,006	127	1,464	62	8
Total	NA	NA	14,747	619	79	—	392	-392	1,006	ⁱ 551	13,805	580	74
2026 January	NA	NA	1,029	43	6	—	—	—	1,107	100	928	39	5
February	NA	NA	991	42	5	—	—	—	1,143	37	954	40	5
March	NA	NA	1,126	47	6	—	99	-99	1,086	-57	1,085	46	6
April	NA	NA	1,090	46	6	—	111	-111	1,011	-75	1,054	44	6
May	NA	NA	1,164	49	6	—	—	—	798	-213	1,377	58	7
5-Month Total	NA	NA	5,400	227	29	—	210	-210	798	-209	5,399	227	29
2025 5-Month Total	NA	NA	5,268	221	28	—	47	-47	880	424	4,797	201	26
2024 5-Month Total	NA	NA	3,098	130	17	—	NA	—	478	164	2,934	123	16

^a Data are for renewable heating oil, renewable jet fuel (sustainable aviation fuel), renewable naphtha and gasoline, biobutanol, and other biofuels and biointermediates. Beginning in 2025, exports data for renewable jet fuel (sustainable aviation fuel) are included with renewable diesel fuel exports on Table 10.4b.

^b Total vegetable oil and other biomass inputs to the production of other biofuels.

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

^d Through 2020, production data are from U.S. Environmental Protection Agency. Beginning in 2021, production data are from EIA. See sources at end of section.

^e Net imports equal imports minus exports.

^f Stocks are at end of period. Includes other biofuels stocks at refineries and bulk terminals. Beginning in 2021, also includes other biofuels stocks at renewable fuel production plants.

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

^h Through 2024, consumption, which is calculated as production plus imports minus stock change, also includes amounts of exports that cannot be differentiated

from consumption. Beginning in 2025, consumption is calculated as production plus net imports minus stock change.

ⁱ There is a discontinuity in the time series between 2020 and 2021. Beginning in 2021, there is expanded coverage of other biofuels due to the incorporation of data from EIA, Form EIA-819, "Monthly Report of Biofuels, Fuels from Non-Biogenic Wastes, Fuel Oxygenates, Isooctane, and Isooctene."

^j Derived from the preliminary 2024 stocks value (456 thousand barrels), not the final 2024 value (489 thousand barrels) that is shown under "Stocks."

NA=Not available. —=No data reported. (s)=Less than 500 barrels and greater than -500 barrels.

Notes: • Mbbl = thousand barrels. MMgal = million U.S. gallons. TBtu = trillion Btu. • Other biofuels 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 other biofuels—see Table A1). • Through 2013, data are not available, or there is incomplete data coverage. Beginning in 2014, data not from 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> (Excel and CSV files) for all available annual and monthly data beginning in 2014.

Sources: See end of section.

Table 10.5 Solar Energy Consumption
(Trillion Btu)

	Small-Scale ^a Solar Energy ^b						Utility-Scale ^c Solar Energy ^b					Total ^k
	Heat ^f	Electricity ^d				Total ^g	Electricity ^e					
		Residential Sector	Commercial Sector	Industrial Sector	Total		Commercial Sector ^h	Industrial Sector ⁱ	Electric Power Sector ^j	Total		
1985 Total	NA	NA	NA	NA	NA	NA	NA	NA	(s)	(s)	(s)	
1990 Total	55	(s)	(s)	(s)	(s)	55	—	—	1	1	56	
1995 Total	63	(s)	(s)	(s)	(s)	63	—	—	2	2	64	
2000 Total	57	(s)	(s)	(s)	(s)	58	—	—	2	2	59	
2005 Total	49	(s)	1	(s)	1	50	—	—	2	2	52	
2010 Total	56	3	4	1	8	64	(s)	(s)	4	4	68	
2011 Total	58	5	6	1	12	70	(s)	(s)	6	6	76	
2012 Total	59	7	10	2	20	79	1	(s)	14	15	94	
2013 Total	61	11	14	3	28	89	1	(s)	30	31	120	
2014 Total	63	17	18	4	38	101	1	(s)	59	60	161	
2015 Total	63	24	19	5	48	112	1	(s)	83	85	197	
2016 Total	65	36	21	7	64	129	2	(s)	121	123	252	
2017 Total	68	48	26	8	82	150	2	(s)	180	182	331	
2018 Total	69	58	33	9	101	170	2	(s)	216	218	388	
2019 Total	70	71	38	10	119	189	2	(s)	243	245	435	
2020 Total	70	86	44	12	142	212	2	(s)	302	304	516	
2021 Total	75	103	52	13	168	243	2	(s)	391	393	636	
2022 Total	84	135	60	14	209	293	2	1	487	491	784	
2023 Total	92	168	67	15	250	342	2	1	562	565	907	
2024 January	6	11	4	1	16	22	(s)	(s)	33	33	55	
February	6	12	5	1	18	25	(s)	(s)	43	43	67	
March	9	17	6	1	24	33	(s)	(s)	54	55	88	
April	9	18	7	2	27	36	(s)	(s)	65	66	102	
May	10	20	8	2	29	39	(s)	(s)	76	76	116	
June	10	20	8	2	29	40	(s)	(s)	83	83	123	
July	11	20	8	2	30	41	(s)	(s)	83	84	124	
August	10	20	8	2	29	39	(s)	(s)	83	83	122	
September	9	17	7	1	26	35	(s)	(s)	70	70	105	
October	8	16	6	1	23	31	(s)	(s)	67	68	99	
November	7	13	5	1	18	25	(s)	(s)	47	47	72	
December	6	12	4	1	17	23	(s)	(s)	43	43	66	
Total	102	196	74	16	286	388	2	2	746	750	1,138	
2025 January	6	13	5	1	18	25	(s)	(s)	52	53	78	
February	7	14	5	1	20	27	(s)	(s)	56	56	83	
March	9	19	7	1	27	37	(s)	(s)	79	79	116	
April	10	20	8	2	30	40	(s)	(s)	91	91	132	
May	11	21	9	2	32	43	(s)	(s)	101	101	144	
June	11	22	9	2	32	43	(s)	1	108	109	153	
July	12	23	9	2	34	45	(s)	1	113	114	159	
August	11	21	9	2	32	43	(s)	1	108	109	151	
September	10	19	8	2	28	38	(s)	1	95	96	134	
October	9	18	7	1	26	35	(s)	1	83	84	119	
November	7	14	5	1	20	28	(s)	(s)	63	63	91	
December	7	13	5	1	19	26	(s)	(s)	52	53	78	
Total	111	216	85	17	318	429	2	5	1,001	1,009	1,438	
2026 January	6	14	5	1	21	27	(s)	1	61	61	88	
February	7	15	6	1	22	29	(s)	1	72	73	101	
March	9	21	8	2	31	40	(s)	1	98	99	139	
April	10	23	9	2	33	44	(s)	1	105	106	150	
May	11	25	10	2	37	47	(s)	1	123	124	172	
5-Month Total	43	97	39	8	143	186	1	3	459	463	650	
2025 5-Month Total	44	87	34	7	127	171	1	1	379	381	552	
2024 5-Month Total	41	79	30	6	114	155	1	1	271	272	427	

^a Data are estimates for small-scale facilities (combined generator nameplate capacity less than 1 megawatt).

^b See "Photovoltaic Energy" and "Solar Thermal Energy" in Glossary.

^c Data are for utility-scale facilities (combined generator nameplate capacity of 1 megawatt or more).

^d Solar photovoltaic (PV) electricity generation at small-scale facilities connected to the electric power grid (converted to Btu by multiplying by the heat content of electricity in Table A6).

^e Solar photovoltaic (PV) and solar thermal electricity net generation at utility-scale facilities (converted to Btu by multiplying by the heat content of electricity in Table A6).

^f Solar thermal direct use energy in the residential, commercial, and industrial sectors for all end uses, such as pool heating, hot water heating, and space heating.

^g Data are the sum of "Small-Scale Solar Energy Heat" and "Small-Scale Solar Energy Electricity."

^h Commercial combined-heat-and-power (CHP) and commercial electricity-only plants. See Note 2, "Classification of Power Plants Into Energy-Use Sectors," at

end of Section 7.

ⁱ Industrial combined-heat-and-power (CHP) and industrial electricity-only plants. See Note 2, "Classification of Power Plants Into Energy-Use Sectors," at end of Section 7.

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

^k Data are the sum of "Small-Scale Solar Energy Total" and "Utility-Scale Solar Energy Total."

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

Notes: • Small-scale solar energy data for all years, and utility-scale solar energy data for the current two years, 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> (Excel and CSV files) for all available annual and monthly data beginning in 1984.

Sources: See end of section.

Table 10.6 Solar Electricity Net Generation
(Million Kilowatthours)

	Small-Scale ^a Solar Generation ^b				Utility-Scale ^c Solar Generation ^b				Total
	Residential Sector	Commercial Sector	Industrial Sector	Total	Commercial Sector ^d	Industrial Sector ^e	Electric Power Sector ^f	Total	
1985 Total	NA	NA	NA	NA	NA	NA	11	11	11
1990 Total	12	16	4	32	—	—	367	367	399
1995 Total	20	28	6	54	—	—	497	497	551
2000 Total	39	53	12	104	—	—	493	493	598
2005 Total	121	166	37	324	—	—	550	550	875
2010 Total	899	1,130	250	2,280	5	2	1,206	1,212	3,492
2011 Total	1,358	1,845	409	3,612	84	7	1,727	1,818	5,429
2012 Total	2,058	3,061	678	5,797	148	14	4,164	4,327	10,123
2013 Total	3,217	4,106	909	8,232	294	17	8,724	9,036	17,268
2014 Total	4,947	5,146	1,139	11,233	371	16	17,304	17,691	28,924
2015 Total	6,999	5,689	1,451	14,139	416	21	24,456	24,893	39,032
2016 Total	10,595	6,158	2,060	18,812	529	27	35,497	36,054	54,866
2017 Total	13,942	7,685	2,364	23,990	521	42	52,724	53,287	77,277
2018 Total	17,105	9,798	2,636	29,539	525	47	63,253	63,825	93,365
2019 Total	20,914	11,002	3,041	34,957	587	85	71,265	71,937	106,894
2020 Total	25,179	12,859	3,484	41,522	586	101	88,511	89,199	130,721
2021 Total	30,182	15,124	3,858	49,164	598	137	114,523	115,258	164,422
2022 Total	39,510	17,724	4,048	61,282	669	276	142,847	143,792	205,074
2023 Total	49,273	19,751	4,382	73,406	615	326	164,590	165,530	238,937
2024 January	3,240	1,218	268	4,726	23	23	9,537	9,583	14,309
February	3,659	1,386	296	5,342	34	32	12,474	12,540	17,882
March	4,885	1,821	406	7,113	48	43	15,928	16,019	23,132
April	5,385	2,007	440	7,832	56	52	19,133	19,241	27,073
May	5,845	2,216	478	8,539	64	62	22,245	22,371	30,910
June	5,863	2,213	476	8,553	67	62	24,330	24,459	33,012
July	5,991	2,297	490	8,778	63	61	24,359	24,484	33,262
August	5,735	2,204	473	8,412	61	59	24,209	24,328	32,741
September	5,108	1,969	433	7,511	48	52	20,438	20,538	28,049
October	4,638	1,709	390	6,736	46	44	19,738	19,828	26,564
November	3,754	1,336	303	5,393	31	31	13,780	13,841	19,234
December	3,442	1,276	267	4,984	25	25	12,551	12,601	17,585
Total	57,547	21,652	4,719	83,918	566	546	218,722	219,834	303,752
2025 January	3,703	1,408	285	5,397	38	36	15,379	15,454	20,851
February	3,967	1,534	305	5,805	39	38	16,371	16,448	22,253
March	5,456	2,073	433	7,961	60	52	23,126	23,238	31,199
April	5,967	2,322	469	8,758	66	60	26,654	26,781	35,538
May	6,268	2,522	515	9,306	69	66	29,610	29,746	39,051
June	6,379	2,530	514	9,423	76	184	31,774	32,034	41,458
July	6,689	2,636	532	9,857	80	197	33,147	33,424	43,281
August	6,273	2,531	515	9,319	76	184	31,549	31,809	41,128
September	5,434	2,277	466	8,176	67	211	27,870	28,149	36,325
October	5,199	1,968	421	7,589	57	184	24,365	24,605	32,195
November	4,128	1,533	326	5,987	47	139	18,407	18,592	24,580
December	3,812	1,460	297	5,569	34	113	15,245	15,392	20,962
Total	63,274	24,795	5,080	93,148	709	1,464	293,499	295,671	388,820
2026 January	4,138	1,599	314	6,051	40	151	17,795	17,985	24,036
February	4,370	1,731	332	6,433	46	165	21,094	21,305	27,739
March	6,065	2,413	474	8,953	63	215	28,722	29,000	37,953
April	6,619	2,674	514	9,808	79	211	30,814	31,104	40,912
May	7,212	2,949	568	10,728	99	235	36,084	36,418	47,147
5-Month Total	28,405	11,366	2,202	41,973	326	977	134,510	135,813	177,786
2025 5-Month Total	25,360	9,859	2,007	37,227	272	253	111,140	111,665	148,892
2024 5-Month Total	23,016	8,648	1,887	33,551	225	212	79,317	79,754	113,305

^a Data are estimates for solar photovoltaic (PV) electricity generation at small-scale facilities (combined generator nameplate capacity less than 1 megawatt) connected to the electric power grid.

^b See "Photovoltaic Energy" and "Solar Thermal Energy" in Glossary.

^c Solar photovoltaic (PV) and solar thermal electricity net generation at utility-scale facilities (combined generator nameplate capacity of 1 megawatt or more).

^d Commercial combined-heat-and-power (CHP) and commercial electricity-only plants. See Note 2, "Classification of Power Plants Into Energy-Use Sectors," at end of Section 7.

^e Industrial combined-heat-and-power (CHP) and industrial electricity-only plants. See Note 2, "Classification of Power Plants Into Energy-Use Sectors," at end of Section 7.

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

NA=Not available. —=No data reported.

Notes: • Small-scale solar generation data for all years, and utility-scale solar

energy data for the current two years, 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> (Excel and CSV files) for all available annual and monthly data beginning in 1984.

Sources: • **Small-Scale Solar Generation: 1989–2013**—Calculated as small-scale solar energy consumption (see Table 10.5) divided by the heat content of electricity (see Table A6). **2014 forward**—U.S. Energy Information Administration (EIA), *Electric Power Monthly*, monthly reports, Tables 1.1, 1.2.C, 1.2.D, and 1.2.E. • **Utility-Scale Solar Generation: 1984–1988**—EIA, Form EIA-759, "Monthly Power Plant Report." **1989–1997**: EIA, Form EIA-759, "Monthly Power Plant Report," and Form EIA-867, "Annual Nonutility Power Producer Report." **1998–2000**: EIA, Form EIA-759, "Monthly Power Plant Report," and Form EIA-860B, "Annual Electric Generator Report—Nonutility." **2001–2003**: EIA, Form EIA-906, "Power Plant Report." **2004–2007**: EIA, Form EIA-906, "Power Plant Report," and Form EIA-920, "Combined Heat and Power Plant Report." **2008 forward**: EIA, Form EIA-923, "Power Plant Operations Report." • **Total**: Calculated as small-scale solar generation plus utility-scale solar generation.

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 by multiplying by the electricity heat content factor in Table A6); geothermal electricity net generation (converted to Btu by multiplying by the electricity heat content factor in Table A6), and geothermal heat pump and geothermal direct use energy; solar thermal and photovoltaic electricity net generation (converted to Btu by multiplying by the electricity heat content factor in Table A6), and solar thermal direct use energy; wind electricity net generation (converted to Btu by multiplying by the electricity heat content factor in 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), biodiesel, renewable diesel fuel, and other biofuels consumption; and losses and co-products from the production of fuel ethanol and biodiesel. In Tables 1.1, 1.2, and 10.1, renewable energy production is assumed to equal consumption for all renewable energy sources except wood and biofuels; plus wood production (which is the sum of wood consumption and densified biomass exports); plus biofuels production (which comprises fuel ethanol feedstock, biodiesel feedstock, renewable diesel fuel production, and other biofuels production).

Table 10.2a Sources

Residential Sector, Geothermal

1989–2011: Annual estimates by the U.S. Energy Information Administration (EIA) based on data from Oregon Institute of Technology, Geo-Heat Center.

2012 forward: Annual estimates assumed by EIA to be equal to that of 2011.

(For 1989 forward, 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.)

Residential Sector, Solar

1989 forward: Residential sector solar consumption is the sum of the values for "Small-Scale Solar Energy Consumption: Heat" (which includes solar thermal direct use energy in the residential, commercial, and industrial sectors) from Table 10.5 and "Small-Scale Solar Energy Consumption: Electricity, Residential Sector" from Table 10.5.

Residential Sector, Wood

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

1980–2008: Annual estimates are based on EIA, Form EIA-457, "Residential Energy Consumption Survey"; and National Oceanic and Atmospheric Administration regional heating degree-day data.

2009 forward: Annual estimates based on EIA, Form EIA-457, "Residential Energy Consumption Survey"; and residential wood consumption growth rates from EIA's *Annual Energy Outlook* data system.

(For 1973 forward, 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.)

Residential Sector, Total Renewable Energy

1949–1988: Residential sector total renewable energy consumption is equal to residential sector wood consumption.

1989 forward: Residential sector total renewable energy consumption is the sum of the residential sector consumption values for geothermal, solar, and wood.

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 electricity heat content factor in Table A6.

Commercial Sector, Geothermal Heat Pump and Direct Use Energy

1989–2011: Annual estimates by EIA based on data from Oregon Institute of Technology, Geo-Heat Center.

2012 forward: Annual estimates assumed by EIA to be equal to that of 2011.

(For 1989 forward, 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, Geothermal Electricity Net Generation

December 2018 forward: Commercial sector geothermal electricity net generation data from EIA, Form EIA-923, "Power Plant Operations Report," are converted to Btu by multiplying by the electricity heat content factor in Table A6.

Commercial Sector, Geothermal Total

1989–November 2018: Commercial sector geothermal total consumption is equal to commercial sector heat pump and direct use energy.

December 2018 forward: Commercial sector geothermal total consumption is the sum of the commercial sector values for geothermal heat pump and direct use energy, and geothermal electricity net generation.

Commercial Sector, Solar

1989 forward: Commercial sector solar consumption is the sum of the values for "Small-Scale Solar Energy Consumption: Electricity, Commercial Sector" from Table 10.5 and "Utility-Scale Solar Energy Consumption: Electricity, Commercial Sector" from Table 10.5.

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 electricity heat content factor in Table A6.

Commercial Sector, Wood

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

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

1984: Annual estimate assumed by EIA to be equal to that of 1983.

1985–1988: Annual estimates interpolated by EIA.

(For 1973–1988, 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.)

1989 forward: Monthly/annual commercial sector combined-heat-and-power (CHP) wood consumption data are from EIA, Form EIA-923, "Power Plant Operations Report," and predecessor forms. For 1989–2013, annual estimates for commercial sector non-CHP wood consumption are based on EIA, Form EIA-871, "Commercial Buildings Energy Consumption Survey"; U.S. heating degree days (see MER Table 1.11); and estimates of growth in commercial floor space. For 2014 forward, annual estimates for commercial sector non-CHP wood consumption are assumed by EIA to be equal to that of 2013. For 1989 forward, monthly estimates for commercial sector non-CHP wood consumption 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 total wood consumption is the sum of commercial sector CHP and non-CHP wood consumption.

Commercial Sector, Biomass Waste

1989 forward: Table 7.4c.

Commercial Sector, Fuel Ethanol (Minus Denaturant)

1981 forward: The commercial sector share of motor gasoline consumption is equal to commercial sector motor gasoline consumption from Table 3.7a divided by motor gasoline product supplied from Table 3.5. Commercial sector fuel ethanol (minus denaturant) consumption is equal to fuel ethanol (minus denaturant) consumption from Table 10.3

multiplied by the commercial sector share of motor gasoline consumption. Note that there is a discontinuity in this time series between 2014 and 2015 due to a change in the method for allocating motor gasoline consumption to the end-use sectors; beginning in 2015, the commercial and industrial sector shares of fuel ethanol consumption are larger than in 2014, while the transportation sector share is smaller.

Commercial Sector, Total Biomass

1949–1980: Commercial sector total biomass consumption is equal to commercial sector wood consumption.

1981–1988: Commercial sector total biomass consumption is the sum of the commercial sector consumption values for wood and fuel ethanol (minus denaturant).

1989 forward: Commercial sector total biomass consumption is the sum of the commercial sector consumption values for wood, waste, and fuel ethanol (minus denaturant).

Commercial Sector, Total Renewable Energy

1949–1988: Commercial sector total renewable energy consumption is equal to commercial sector total biomass consumption.

1989–2007: Commercial sector total renewable energy consumption is the sum of the commercial sector consumption values for conventional hydroelectric power, geothermal, and total biomass.

2008: Commercial sector total renewable energy consumption is the sum of the commercial sector consumption values for conventional hydroelectric power, geothermal, solar, and total biomass.

2009 forward: Commercial sector total renewable energy is the sum of the commercial sector consumption values for conventional hydroelectric power, geothermal, solar, wind, and total biomass.

Table 10.2b Sources

Industrial Sector, Hydroelectric Power

1949 forward: Industrial sector conventional hydroelectricity net generation data from Table 7.2c are converted to Btu by multiplying by the electricity heat content factor in Table A6.

Industrial Sector, Geothermal

1989–2009: Annual estimates by the U.S. Energy Information Administration (EIA) based on data from Oregon Institute of Technology, Geo-Heat Center.

2010 forward: Annual estimates assumed by EIA to be equal to that of 2009.

(For 1989 forward, 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, Solar

1989 forward: Industrial sector solar consumption is the sum of the values for "Small-Scale Solar Energy Consumption: Electricity, Industrial Sector" from Table 10.5 and "Utility-Scale Solar Energy Consumption: Electricity, Industrial Sector" from Table 10.6.

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 electricity heat content factor in Table A6.

Industrial Sector, Wood

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

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

1984: Annual estimate is from EIA, *Estimates of U.S. Biofuels Consumption 1990*, Table 1.

1985 and 1986: Annual estimates interpolated by EIA.

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

1988: Annual estimate interpolated by EIA.

(For 1973–1988, 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.)

1989 forward: Monthly/annual industrial sector combined-heat-and-power (CHP) wood consumption data are from EIA, Form EIA-923, "Power Plant Operations Report," and predecessor forms. Annual estimates for industrial sector non-CHP wood consumption are based on EIA, Form EIA-846, "Manufacturing Energy Consumption Survey" (for 2023 forward, the annual estimates are assumed by EIA to be equal to that of 2022). For 1989 forward, monthly estimates for industrial sector non-CHP wood consumption 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 total wood consumption is the sum of industrial sector CHP and non-CHP wood consumption.

Industrial Sector, Biomass Waste

1981: Annual estimate is calculated as total waste consumption (from EIA, *Estimates of U.S. Biofuels Consumption 1990*, Table 8) minus electric power sector waste consumption (from MER, Table 10.2c).

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

1984: Annual estimate is calculated as total waste consumption (from EIA, *Estimates of U.S. Biofuels Consumption 1990*, Table 8) minus electric power sector waste consumption (from MER, Table 10.2c).

1985 and 1986: Annual estimates interpolated by EIA.

1987: Annual estimate is calculated as total waste consumption (from EIA, *Estimates of U.S. Biofuels Consumption 1990*, Table 8) minus electric power sector waste consumption (from MER, Table 10.2c).

1988: Annual estimate interpolated by EIA.

(For 1973–1988, 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.)

1989 forward: Monthly/annual industrial sector combined-heat-and-power (CHP) consumption data are from Table 7.4c. Annual estimates for industrial sector non-CHP waste consumption are 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 (for 2014 forward, the annual estimates are assumed by EIA to be equal to that of 2013). For 1989 forward, monthly estimates for industrial sector non-CHP waste consumption 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 total waste consumption is the sum of industrial sector CHP and non-CHP waste consumption.

Industrial Sector, Fuel Ethanol (Minus Denaturant)

1981 forward: The industrial sector share of motor gasoline consumption is equal to industrial sector motor gasoline consumption from Table 3.7b divided by motor gasoline product supplied from Table 3.5. Industrial sector fuel ethanol (minus denaturant) consumption is equal to fuel ethanol (minus denaturant) consumption from Table 10.3 multiplied by the industrial sector share of motor gasoline consumption. Note that there is a discontinuity in this time series between 2014 and 2015 due to a change in the method for allocating motor gasoline consumption to the end-use sectors; beginning in 2015, the commercial and industrial sector shares of fuel ethanol consumption are larger than in 2014, while the transportation sector share is smaller.

Industrial Sector, Biomass Losses and Co-products

1981 forward: Calculated as fuel ethanol losses and co-products from Table 10.3 plus biodiesel losses and co-products from Table 10.4a.

Industrial Sector, Total Biomass

1949–1980: Industrial sector total biomass consumption is equal to industrial sector wood consumption.

1981 forward: Industrial sector total biomass consumption is the sum of the industrial sector consumption values for wood, waste, fuel ethanol (minus denaturant), and biomass losses and co-products.

Industrial Sector, Total Renewable Energy

1949–1988: Industrial sector total renewable energy consumption is the sum of the industrial sector consumption values for conventional hydroelectric power and total biomass.

1989–2009: Industrial sector total renewable energy consumption is the sum of the industrial sector consumption values for conventional hydroelectric power, geothermal, and total biomass.

2010: Industrial sector total renewable energy consumption is the sum of the industrial sector consumption values for conventional hydroelectric power, geothermal, solar, and total biomass.

2011 forward: Industrial sector total renewable energy consumption is the sum of the industrial sector consumption values for conventional hydroelectric power, geothermal, solar, wind, and total biomass.

Table 10.2c Sources

Transportation Sector, Fuel Ethanol (Minus Denaturant)

1981 forward: The transportation sector share of motor gasoline consumption is equal to transportation sector motor gasoline consumption from Table 3.7c divided by motor gasoline product supplied from Table 3.5. Transportation sector fuel ethanol (minus denaturant) consumption is equal to fuel ethanol (minus denaturant) consumption from Table 10.3 multiplied by the transportation sector share of motor gasoline consumption. Note that there is a discontinuity in this time series between 2014 and 2015 due to a change in the method for allocating motor gasoline consumption to the end-use sectors; beginning in 2015, the commercial and industrial sector shares of fuel ethanol consumption are larger than in 2014, while the transportation sector share is smaller.

Transportation Sector, Biodiesel

2001 forward: Transportation sector biodiesel consumption is assumed to equal total biodiesel consumption from Table 10.4a.

Transportation Sector, Renewable Diesel Fuel

2011 forward: Transportation sector renewable diesel fuel consumption is assumed to equal total renewable diesel fuel consumption from Table 10.4b.

Transportation Sector, Other Biofuels

2014 forward: Transportation sector other biofuels consumption is assumed to equal total other biofuels consumption from Table 10.4c.

Transportation Sector, Total Renewable Energy

1981–2000: Transportation sector total renewable energy consumption is equal to transportation sector fuel ethanol (minus denaturant) consumption.

2001–2010: Transportation sector total renewable energy consumption is the sum of the transportation sector consumption values for fuel ethanol (minus denaturant) and biodiesel.

2011–2013: Transportation sector total renewable energy consumption is the sum of the transportation sector consumption values for fuel ethanol (minus denaturant), biodiesel, and renewable diesel fuel.

2014 forward: Transportation sector total renewable energy consumption is the sum of the transportation sector consumption values for fuel ethanol (minus denaturant), biodiesel, renewable diesel fuel, and other biofuels.

Electric Power Sector, Hydroelectric Power

1949 forward: Electric power sector conventional hydroelectricity net generation data from Table 7.2b are converted to Btu by multiplying by the electricity heat content factor in Table A6.

Electric Power Sector, Geothermal

1960 forward: Electric power sector geothermal electricity net generation data from Table 7.2b are converted to Btu by multiplying by the electricity heat content factor in Table A6.

Electric Power Sector, Solar

1984 forward: Electric power sector solar electricity net generation data from Table 7.2b are converted to Btu by multiplying by the electricity heat content factor in Table A6.

Electric Power Sector, Wind

1983 forward: Electric power sector wind electricity net generation data from Table 7.2b are converted to Btu by multiplying by the electricity heat content factor in Table A6.

Electric Power Sector, Wood

1949 forward: Table 7.4b.

Electric Power Sector, Biomass Waste

1970 forward: Table 7.4b.

Electric Power Sector, Total Biomass

1949–1969: Electric power sector total biomass consumption is equal to electric power sector wood consumption.

1970 forward: Electric power sector total biomass consumption is the sum of the electric power sector consumption values for wood and biomass waste.

Electric Power Sector, Total Renewable Energy

1949–1959: Electric power sector total renewable energy consumption is the sum of the electric power sector consumption values for hydroelectric power and total biomass.

1960–1982: Electric power sector total renewable energy consumption is the sum of the electric power sector consumption values for hydroelectric power, geothermal, and total biomass.

1983: Electric power sector total renewable energy consumption is the sum of the electric power sector consumption values for hydroelectric power, geothermal, wind, and total biomass.

1984 forward: Electric power sector total renewable energy consumption is the sum of the electric power sector consumption values for hydroelectric power, geothermal, solar, wind, and total biomass.

Table 10.3 Sources

Feedstock

1981 forward: 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

1981 forward: 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% of fuel ethanol production; these data are converted to Btu by multiplying by 4.661 million Btu per barrel (the estimated quantity-weighted factor of natural gasoline and conventional motor gasoline used as denaturant).

2009–2020: U.S. Energy Information Administration (EIA), *Petroleum Supply Annual* (PSA), annual reports, Table 1. Data in thousand barrels for net production of natural gasoline at “renewable fuels and oxygenate plants” are multiplied by -1; these data are converted to Btu by multiplying by 4.638 million Btu per barrel (the approximate heat content of natural gasoline). 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 5.222 million Btu per barrel (the approximate heat content of motor gasoline blending components). Total denaturant is the sum of the values for natural gasoline, conventional motor gasoline, and motor gasoline blending components.

2021–2024: EIA, PSA, annual reports. Data in thousand barrels for net production of natural gasoline at biofuels plants are multiplied by -1; these data are converted to Btu by multiplying by 4.638 million Btu per barrel (the approximate heat content of natural gasoline). Data in thousand barrels for net production of conventional motor gasoline and motor gasoline blending components at biofuels plants are multiplied by -1; these data are converted to Btu by multiplying by 5.222 million Btu per barrel (the approximate heat content of motor gasoline blending components). Total denaturant is the sum of the values for natural gasoline, conventional motor gasoline, and motor gasoline blending components.

2025 and 2026: EIA, *Petroleum Supply Monthly* (PSM), monthly reports. Data in thousand barrels for net production of natural gasoline at biofuels plants are multiplied by -1; these data are converted to Btu by multiplying by 4.638 million Btu per barrel (the approximate heat content of natural gasoline). Data in thousand barrels for net production of conventional motor gasoline and motor gasoline blending components at biofuels plants are multiplied by -1; these data are converted to Btu by multiplying by 5.222 million Btu per barrel (the approximate heat content of motor gasoline blending components). Total denaturant is the sum of the values for natural gasoline, 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.”

2009–2020: EIA, PSA, annual reports, Table 1, data for net production of fuel ethanol at “renewable fuels and oxygenate plants.”

2021–2024: EIA, PSA, annual reports, data for net production of fuel ethanol at biofuels plants.

2025 and 2026: EIA, PSM, monthly reports, data for net production of fuel ethanol at biofuels plants.

Trade, Stocks, and Stock Change

1992–2024: EIA, PSA, annual reports.

2025 and 2026: EIA, PSM, monthly reports.

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% 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).

2009–2024: EIA, PSA, annual reports. Calculated as fuel ethanol refinery and blender net inputs minus fuel ethanol adjustments.

2025 and 2026: EIA, PSM, monthly reports. Calculated as fuel ethanol refinery and blender net inputs minus fuel ethanol adjustments.

Consumption Minus Denaturant

1981 forward: 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 10.4a Sources

Biodiesel Feedstock

2001 forward: Calculated as biodiesel production in thousand barrels multiplied by 5.433 million Btu per barrel (the biodiesel feedstock factor—see "Biodiesel Feedstock" entry in the "Thermal Conversion Factor Source Documentation" at the end of Appendix A).

Biodiesel Losses and Co-products

2001 forward: Calculated as biodiesel feedstock minus biodiesel production.

Biodiesel 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, U.S. Census Bureau, "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, U.S. Census Bureau, "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, U.S. Census Bureau, M311K data, multiplied by the EIA 2008 annual value's share of the M311K 2008 annual value.

2009 and 2010: EIA, *Monthly Biodiesel Production Report*, monthly reports, Table 1.

2011–2020: EIA, *Petroleum Supply Annual* (PSA), annual reports, Table 1, data for "renewable fuels except fuel ethanol."

2021–2024: EIA, PSA, annual reports, data for biodiesel.

2025 and 2026: EIA, *Petroleum Supply Monthly* (PSM), monthly reports, data for biodiesel.

Biodiesel Trade

2001–2011: 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); and 3824.90.40.30, "Biodiesel/Mixes" (data for July 2010–2011). 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); and 3824.90.40.30, "Biodiesel <70%" (data for 2011). (The data above are converted from pounds to gallons by dividing by 7.4.) 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.

2012–2018: EIA, PSA, annual reports, Tables 25 and 31, data for "biomass-based diesel fuel."

2019–2020: EIA, PSA, annual reports, Tables 25 and 31, data for biodiesel.

2021–2024: EIA, PSA, annual reports, data for biodiesel.

2025 and 2026: EIA, PSM, monthly reports, data for biodiesel.

Biodiesel Stocks and Stock Change

2009–2018: EIA, Form EIA-22M, "Monthly Biodiesel Production Survey," data for biodiesel; and Form EIA-810, "Monthly Refinery Report," Form EIA-812, "Monthly Product Pipeline Report," and Form EIA-815, "Monthly Bulk Terminal and Blender Report," data for "biomass-based diesel fuel."

2019–September 2020: EIA, Form EIA-22M, "Monthly Biodiesel Production Survey," Form EIA-810, "Monthly Refinery Report," and Form EIA-815, "Monthly Bulk Terminal and Blender Report," data for biodiesel.

October 2020–December 2020: EIA, Form EIA-810, "Monthly Refinery Report," Form EIA-815, "Monthly Bulk Terminal and Blender Report," and Form EIA-819, "Monthly Report of Biofuels, Fuels from Non-Biogenic Wastes, Fuel Oxygenates, Isooctane, and Isooctene," data for biodiesel.

2021–2024: EIA, PSA, annual reports, data for biodiesel.

2025 and 2026: EIA, PSM, monthly reports, data for biodiesel.

Biodiesel 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.

Table 10.4b Sources

Renewable Diesel Fuel Production

2011–2020: U.S. Environmental Protection Agency, "RINs Generated Transactions—Generation Summary Report," updated on September 10, 2021. Data are for volumes (in gallons); for "domestic" producer type; for fuel "non-ester renewable diesel."

2021–2024: EIA, PSA, annual reports, data for renewable diesel fuel.

2025 and 2026: EIA, PSM, monthly reports, data for renewable diesel fuel.

Renewable Diesel Fuel Trade

2012–2020: EIA, PSA, annual reports, Table 25, data for "other renewable diesel fuel."

2021–2024: EIA, PSA, annual reports, data for renewable diesel fuel.

2025 and 2026: EIA, PSM, monthly reports, data for renewable diesel fuel.

Renewable Diesel Fuel Stocks and Stock Change

2011–2020: EIA, Form EIA-810, "Monthly Refinery Report," and Form EIA-815, "Monthly Bulk Terminal and Blender Report," data for "other renewable diesel fuel."

2021–2024: EIA, PSA, annual reports, data for renewable diesel fuel.

2025 and 2026: EIA, PSM, monthly reports, data for renewable diesel fuel.

Renewable Diesel Fuel Consumption

2011–2024: Calculated as renewable diesel fuel production plus renewable diesel fuel imports minus renewable diesel fuel stock change.

2025 and 2026: Calculated as renewable diesel fuel production plus renewable diesel fuel net imports minus renewable diesel fuel stock change.

Table 10.4c Sources

Other Biofuels Production

2014–2020: U.S. Environmental Protection Agency, “RINs Generated Transactions—Generation Summary Report,” updated on September 10, 2021. Data are for volumes (in gallons); for “domestic” producer type; for fuels “renewable heating oil,” “renewable jet fuel,” “naphtha,” “LPG,” “butanol,” “cellulosic diesel,” and “cellulosic renewable gasoline blendstock.”

2021–2024: EIA, PSA, annual reports, data for other biofuels.

2025 and 2026: EIA, PSM, monthly reports, data for other biofuels.

Other Biofuels Trade

2014–2020: EIA, PSA, annual reports, Table 25, data for “other renewable fuels.”

2021–2024: EIA, PSA, annual reports, data for other biofuels.

2025 and 2026: EIA, PSM, monthly reports, data for other biofuels.

Other Biofuels Stocks and Stock Change

2014–2020: EIA, Form EIA-810, “Monthly Refinery Report,” and Form EIA-815, “Monthly Bulk Terminal and Blender Report,” data for “other renewable fuels.”

2021–2024: EIA, PSA, annual reports, data for other biofuels.

2025 and 2026: EIA, PSM, monthly reports, data for other biofuels.

Other Biofuels Consumption

2014–2024: Calculated as other biofuels production plus other biofuels imports minus other biofuels stock change.

2025 and 2026: Calculated as other biofuels production plus other biofuels net imports minus other biofuels stock change.

Table 10.5 Sources

Small-Scale Solar Energy Consumption: Heat

Annual Data

1989–2009: Annual estimates by the U.S. Energy Information Administration (EIA) based on EIA, Form EIA-63A, “Annual Solar Thermal Collector/Reflector Shipments Report.” Solar energy consumption by solar thermal non-electric applications (mainly in the residential sector, but with some in the commercial and industrial sectors) is based on assumptions about the stock of equipment in place and other factors.

2010 forward: Annual estimates based on residential solar hot water heating and commercial solar thermal growth rates from EIA’s *Annual Energy Outlook* (AEO) data system.

Monthly Data

1989–2013: Monthly estimates for each year are obtained by allocating a given year’s annual value to the months in that year. Each month’s allocator is the average of that month’s “Small-Scale Solar Energy Consumption: Electricity, Total” values in 2014 and 2015. The allocators, when rounded, are as follows: January—5%; February—6%; March—8%; April—9%; May—10%; June—10%; July—10%; August—10%; September—9%; October—9%; November—7%; and December—7%.

2014 forward: Once all 12 months of "Small-Scale Solar Energy Consumption: Electricity, Total" data are available for a given year, they are used as allocators and applied to the annual estimate in order to derive monthly estimates for that year. Initial monthly estimates for the current year use the previous year's allocators.

Small-Scale Solar Energy Consumption: Electricity, Residential Sector

Beginning in 2014, monthly and annual data for residential sector small-scale solar photovoltaic generation are from EIA, *Electric Power Monthly*, Table 1.2.E. Those data are converted to consumption data in Btu by multiplying by the electricity heat content factor in MER Table A6.

Backcasts for earlier periods are developed as follows:

Annual Data

1989–2003: Annual growth rates are calculated based on small-scale solar electricity consumption in all sectors.

Consumption is estimated using information on shipments of solar panels from EIA, Form EIA-63B, "Annual Photovoltaic Cell/Module Shipments Report," and assumptions about the stock of equipment in place and other factors. The growth rates are applied to more recent data to create historical annual estimates.

2004–2008: Annual growth rates based on commercial sector solar photovoltaic growth rates from EIA's *Annual Energy Outlook* (AEO) data system are applied to more recent data to create historical annual estimates.

2009–2013: Annual growth rates based on residential sector solar photovoltaic growth rates from EIA's *Annual Energy Outlook* (AEO) data system are applied to more recent data to create historical annual estimates.

Monthly Data

1989–2013: See "Small-Scale Solar Energy Consumption: Heat, Monthly Data."

Small-Scale Solar Energy Consumption: Electricity, Commercial Sector

Beginning in 2014, monthly and annual data for commercial sector small-scale solar photovoltaic generation are from EIA, *Electric Power Monthly*, Table 1.2.C. Those data are converted to consumption data in Btu by multiplying by the electricity heat content factor in MER Table A6.

Backcasts for earlier periods are developed as follows:

Annual Data

1989–2003: Annual growth rates based on EIA, Form EIA-63B, "Annual Photovoltaic Cell/Module Shipments Report," are applied to more recent data to create historical annual estimates. (See "Small-Scale Solar Energy Consumption: Electricity, Residential Sector" sources above for details.)

2004–2013: Annual growth rates based on commercial sector solar photovoltaic growth rates from EIA's *Annual Energy Outlook* (AEO) data system are applied to more recent data to create historical annual estimates.

Monthly Data

1989–2013: See "Small-Scale Solar Energy Consumption: Heat, Monthly Data."

Small-Scale Solar Energy Consumption: Electricity, Industrial Sector

Beginning in 2014, monthly and annual data for industrial sector small-scale solar photovoltaic generation are from EIA, *Electric Power Monthly*, Table 1.2.D. Those data are converted to consumption data in Btu by multiplying by the electricity heat content factor in MER Table A6.

Backcasts for earlier periods are developed as follows:

Annual Data

1989–2003: Annual growth rates based on EIA, Form EIA-63B, "Annual Photovoltaic Cell/Module Shipments Report," are applied to more recent data to create historical annual estimates. (See "Small-Scale Solar Energy Consumption: Electricity, Residential Sector" sources above for details.)

2004–2013: Annual growth rates based on commercial sector solar photovoltaic growth rates from EIA's *Annual Energy Outlook* (AEO) data system are applied to more recent data to create historical annual estimates.

Monthly Data

1989–2013: See "Small-Scale Solar Energy Consumption: Heat, Monthly Data."

Small-Scale Solar Energy Consumption: Electricity, Total

1989 forward: Small-scale solar energy consumption for total electricity is the sum of the small-scale solar energy consumption (for electricity) values for the residential, commercial, and industrial sectors.

Small-Scale Solar Energy Consumption: Total

1989 forward: Small-scale solar energy consumption total is the sum of small-scale solar energy consumption values for heat and total electricity.

Utility-Scale Solar Energy Consumption: Electricity, Commercial Sector

2008 forward: Commercial sector solar photovoltaic and solar thermal electricity net generation data from EIA, Form EIA-923, "Power Plant Operations Report," are converted to Btu by multiplying by the electricity heat content factor in Table A6.

Utility-Scale Solar Energy Consumption: Electricity, Industrial Sector

2010 forward: Industrial sector solar photovoltaic and solar thermal electricity net generation data from EIA, Form EIA-923, "Power Plant Operations Report," are converted to Btu by multiplying by the electricity heat content factor in Table A6.

Utility-Scale Solar Energy Consumption: Electricity, Electric Power Sector

1984 forward: Electric power sector solar photovoltaic and solar thermal electricity net generation data from Table 7.2b are converted to Btu by multiplying the electricity heat content factor in Table A6.

Utility-Scale Solar Energy Consumption: Electricity, Total

1984 forward: Utility-scale solar energy consumption for total electricity is the sum of the utility-scale solar energy consumption (for electricity) values for the commercial, industrial, and electric power sectors.

Solar Energy Consumption: Total

1984 forward: Total solar energy consumption is the sum of the values for total small-scale solar energy consumption and total utility-scale solar energy consumption.