

Table E4. Renewable Energy Production and Consumption by Source, Fossil Fuel Equivalency Approach (Trillion Btu)

	Production ^a				Consumption								
	Biomass			Total Renewable Energy ^e	Noncombustible (Fossil Fuel Equivalent)				Biomass				Total Renewable Energy
	Wood ^b	Bio-fuels ^c	Total ^d		Hydro-electric Power ^f	Geo-thermal ^g	Solar ^h	Wind ⁱ	Wood ^j	Waste ^k	Bio-fuels ^l	Total	
1950 Total	1,562	NA	1,562	2,978	1,415	NA	NA	NA	1,562	NA	NA	1,562	2,978
1955 Total	1,424	NA	1,424	2,784	1,360	NA	NA	NA	1,424	NA	NA	1,424	2,784
1960 Total	1,320	NA	1,320	2,928	1,608	(s)	NA	NA	1,320	NA	NA	1,320	2,928
1965 Total	1,335	NA	1,335	3,396	2,059	2	NA	NA	1,335	NA	NA	1,335	3,396
1970 Total	1,429	NA	1,431	4,070	2,634	6	NA	NA	1,429	2	NA	1,431	4,070
1975 Total	1,497	NA	1,499	4,687	3,155	34	NA	NA	1,497	2	NA	1,499	4,687
1980 Total	2,474	NA	2,475	5,428	2,900	53	NA	NA	2,474	2	NA	2,475	5,428
1985 Total	2,687	93	3,016	6,084	2,970	97	NA	(s)	2,687	236	93	3,016	6,084
1990 Total	2,216	111	2,735	6,040	3,046	171	59	29	2,216	408	111	2,735	6,040
1995 Total	2,370	198	3,099	6,557	3,205	152	68	33	2,370	531	200	3,101	6,559
2000 Total	2,262	233	3,006	6,102	2,811	164	63	57	2,262	511	236	3,008	6,104
2005 Total	2,137	561	3,101	6,221	2,703	181	58	178	2,137	403	574	3,114	6,233
2010 Total	2,217	1,868	4,553	8,312	2,539	208	90	923	2,217	468	1,821	4,506	8,266
2011 Total	2,213	2,037	4,712	9,306	3,103	212	110	1,168	2,213	462	1,941	4,616	9,210
2012 Total	2,151	1,936	4,554	8,890	2,629	212	156	1,340	2,151	467	1,899	4,517	8,853
2013 Total	2,338	2,000	4,835	9,438	2,562	214	225	1,601	2,338	496	2,026	4,861	9,464
2014 Total	2,398	2,135	5,049	9,795	2,466	214	337	1,727	2,398	516	2,099	5,013	9,758
2015 Total	2,305	2,201	5,025	9,760	2,320	212	427	1,776	2,305	518	2,185	5,008	9,743
2016 Total	2,289	2,329	5,122	10,467	2,471	210	570	2,095	2,216	503	2,333	5,053	10,399
2017 Total	2,254	2,407	5,156	11,249	2,765	210	777	2,342	2,175	495	2,364	5,035	11,128
2018 Total	2,346	2,471	5,304	11,569	2,661	209	915	2,481	2,252	487	2,355	5,094	11,360
2019 Total	2,331	2,432	5,205	11,617	2,562	201	1,016	2,633	2,227	442	2,376	5,046	11,458
2020 Total	2,066	2,194	4,700	11,578	2,501	203	1,211	2,963	1,960	440	2,136	4,535	11,413
2021 Total	2,099	2,374	4,904	12,198	2,225	205	1,520	3,345	1,979	430	2,331	4,740	12,035
2022 January	184	214	434	1,098	213	18	102	330	174	37	193	403	1,067
February	170	190	393	1,045	188	16	116	332	159	33	177	369	1,021
March	180	212	430	1,194	215	17	154	379	168	37	207	411	1,176
April	172	198	405	1,179	177	17	174	407	163	34	195	392	1,167
May	181	214	429	1,218	206	17	195	371	169	35	208	411	1,200
June	182	214	429	1,175	229	16	203	298	167	33	213	413	1,159
July	184	218	435	1,131	217	17	202	260	174	34	206	414	1,110
August	183	211	428	1,038	186	17	189	218	173	34	213	420	1,030
September	176	193	401	980	150	17	172	241	162	32	192	386	966
October	173	217	425	1,011	127	17	155	289	162	34	216	412	999
November	173	219	427	1,079	158	18	114	363	163	34	209	406	1,058
December	182	211	428	1,063	180	18	96	341	168	35	205	408	1,044
Total	2,140	2,511	5,063	13,214	2,245	205	1,872	3,827	2,002	412	2,433	4,847	12,997
2023 January	179	219	434	1,084	196	18	105	331	172	35	208	415	1,065
February	161	198	390	1,059	172	16	123	357	152	31	189	373	1,042
March	181	221	436	1,177	184	18	163	376	167	34	220	421	1,161
April	161	212	405	1,156	171	17	194	369	153	32	207	392	1,143
May	174	228	435	1,190	239	17	221	278	163	34	234	430	1,185
June	167	229	428	1,093	186	16	224	238	155	32	231	418	1,083
July	173	232	438	1,122	190	17	237	242	163	33	224	420	1,104
August	179	230	441	1,111	184	16	225	245	165	33	235	433	1,102
September	171	226	427	1,032	146	17	197	245	157	31	222	410	1,015
October	168	232	433	1,076	135	18	180	311	157	33	234	424	1,067
November	170	230	433	1,049	147	18	137	315	160	33	219	413	1,029
December	182	248	465	1,097	164	18	121	328	166	36	235	437	1,069
Total	2,066	2,705	5,165	13,246	2,114	205	2,127	3,634	1,931	394	2,659	4,984	13,065
2024 January	168	225	427	1,064	189	18	129	301	160	34	212	406	1,043
February	157	227	414	1,120	173	16	158	358	145	31	221	397	1,103
March	169	241	443	1,257	201	16	203	393	156	33	233	422	1,236
April	163	222	416	1,246	167	17	239	408	152	31	219	401	1,232
May	168	232	432	1,248	195	16	272	333	156	33	240	428	1,244
June	160	237	428	1,245	183	16	290	328	149	30	233	412	1,229
July	166	252	449	1,181	183	17	291	241	154	32	251	437	1,169
August	172	250	453	1,189	184	17	286	248	159	31	244	434	1,170
September	165	235	430	1,084	144	16	245	249	154	30	231	414	1,068
October	162	247	440	1,170	137	16	232	345	150	32	246	427	1,157
10-Month Total ...	1,650	2,368	4,333	11,803	1,756	165	2,345	3,203	1,535	315	2,329	4,180	11,650
2022 10-Month Total ...	1,714	2,227	4,267	11,099	1,803	169	1,869	2,992	1,604	326	2,204	4,134	10,967
2021 10-Month Total ...	1,785	2,080	4,209	11,071	1,908	169	1,662	3,123	1,670	343	2,019	4,032	10,895

^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 total fossil fuels heat rate factors in Table A6).

^g Geothermal electricity net generation (converted to Btu by multiplying by the total fossil fuels heat rate factors 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 total fossil fuels heat rate factors in Table A6), and solar thermal direct use energy.

ⁱ Wind electricity net generation (converted to Btu by multiplying by the total fossil fuels heat rate factors 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.

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

Sources: • **Biomass:** Table 10.1. • **Hydroelectric Power and Wind:** Calculated as electricity net generation (see Table 7.2a) multiplied by the total fossil fuels heat rate factors (see Table A6). • **Geothermal:** Calculated as geothermal electricity net generation (see Table 7.2a) multiplied by the total fossil fuels heat rate factors (see Table A6); plus geothermal heat pump and direct use energy in the residential, commercial, and industrial sectors (see Tables 10.2a and 10.2b). • **Solar:** Calculated as solar electricity net generation (see Table 7.2a) multiplied by the total fossil fuels heat rate factors (see Table A6); plus solar thermal direct use energy (see Table 10.5). • **Total Production:** Calculated as the sum of biomass production and noncombustible consumption. • **Total Consumption:** Calculated as the sum of biomass consumption and noncombustible consumption.