

Table A17. Renewable energy consumption by sector and source
(quadrillion Btu per year)

Sector and source	Reference case							Annual growth 2013-2040 (percent)
	2012	2013	2020	2025	2030	2035	2040	
Marketed renewable energy¹								
Residential (wood).....	0.44	0.58	0.41	0.39	0.38	0.36	0.35	-1.8%
Commercial (biomass)	0.11	0.12	0.12	0.12	0.12	0.12	0.12	0.0%
Industrial².....	2.24	2.20	2.33	2.39	2.39	2.39	2.49	0.5%
Conventional hydroelectric power.....	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.0%
Municipal waste ³	0.17	0.19	0.19	0.19	0.19	0.19	0.19	0.2%
Biomass.....	1.32	1.28	1.33	1.39	1.39	1.38	1.42	0.4%
Biofuels heat and coproducts.....	0.73	0.72	0.80	0.80	0.80	0.81	0.86	0.6%
Transportation	1.18	1.26	1.43	1.42	1.42	1.46	1.57	0.8%
Ethanol used in E85 ⁴	0.01	0.01	0.02	0.08	0.13	0.16	0.19	9.9%
Ethanol used in gasoline blending.....	1.05	1.06	1.07	1.00	0.95	0.96	1.05	0.0%
Biodiesel used in distillate blending.....	0.11	0.19	0.27	0.21	0.21	0.21	0.21	0.4%
Biobutanol.....	0.00	0.00	0.00	0.00	0.00	0.00	0.00	--
Liquids from biomass.....	0.00	0.00	0.01	0.02	0.02	0.02	0.02	22.0%
Renewable diesel and gasoline ⁵	0.00	0.00	0.06	0.11	0.11	0.11	0.11	--
Electric power⁶.....	4.53	4.78	6.13	6.43	6.72	7.26	7.99	1.9%
Conventional hydroelectric power.....	2.61	2.53	2.77	2.79	2.79	2.80	2.81	0.4%
Geothermal.....	0.15	0.16	0.26	0.37	0.50	0.60	0.67	5.5%
Biogenic municipal waste ⁷	0.23	0.23	0.27	0.27	0.27	0.27	0.27	0.6%
Biomass.....	0.17	0.18	0.32	0.45	0.50	0.58	0.74	5.3%
Dedicated plants.....	0.10	0.12	0.14	0.16	0.18	0.21	0.32	3.8%
Cofiring.....	0.07	0.07	0.18	0.29	0.33	0.37	0.42	7.0%
Solar thermal.....	0.01	0.01	0.03	0.03	0.03	0.03	0.03	5.1%
Solar photovoltaic.....	0.03	0.08	0.28	0.29	0.31	0.36	0.45	6.8%
Wind.....	1.34	1.59	2.19	2.23	2.32	2.63	3.02	2.4%
Total marketed renewable energy.....	8.50	8.95	10.42	10.76	11.04	11.60	12.52	1.3%
Sources of ethanol								
from corn and other starch.....	1.08	1.09	1.10	1.09	1.10	1.11	1.19	0.3%
from cellulose.....	0.00	0.00	0.01	0.01	0.01	0.01	0.01	--
Net imports.....	-0.02	-0.02	-0.03	-0.02	-0.03	-0.01	0.02	--
Total.....	1.06	1.07	1.09	1.08	1.08	1.12	1.23	0.5%

Table A17. Renewable energy consumption by sector and source (continued)
(quadrillion Btu per year)

Sector and source	Reference case							Annual growth 2013-2040 (percent)
	2012	2013	2020	2025	2030	2035	2040	
Nonmarketed renewable energy⁸								
Selected consumption								
Residential.....	0.04	0.06	0.13	0.17	0.23	0.28	0.35	7.0%
Solar hot water heating	0.01	0.01	0.01	0.01	0.01	0.01	0.01	1.8%
Geothermal heat pumps	0.01	0.01	0.02	0.02	0.03	0.03	0.03	4.1%
Solar photovoltaic	0.02	0.04	0.09	0.13	0.18	0.24	0.29	8.0%
Wind	0.00	0.00	0.01	0.01	0.01	0.01	0.01	6.9%
Commercial	0.13	0.14	0.17	0.20	0.25	0.32	0.39	3.9%
Solar thermal	0.08	0.08	0.09	0.09	0.10	0.10	0.11	1.1%
Solar photovoltaic	0.04	0.05	0.08	0.11	0.15	0.20	0.27	6.1%
Wind	0.00	0.00	0.00	0.00	0.00	0.01	0.01	9.0%

¹Includes nonelectric renewable energy groups for which the energy source is bought and sold in the marketplace, although all transactions may not necessarily be marketed, and marketed renewable energy inputs for electricity entering the marketplace on the electric power grid. Excludes electricity imports; see Table A2. Actual heat rates used to determine fuel consumption for all renewable fuels except hydroelectric, geothermal, solar, and wind. Consumption at hydroelectric, geothermal, solar, and wind facilities is determined by using the fossil fuel equivalent of 9,516 Btu per kilowatthour.

²Includes combined heat and power plants that have a non-regulatory status, and small on-site generating systems.

³Includes municipal waste, landfill gas, and municipal sewage sludge. All municipal waste is included, although a portion of the municipal waste stream contains petroleum-derived plastics and other non-renewable sources.

⁴Excludes motor gasoline component of E85.

⁵Renewable feedstocks for the on-site production of diesel and gasoline.

⁶Includes consumption of energy by electricity-only and combined heat and power plants that have a regulatory status.

⁷Includes biogenic municipal waste, landfill gas, and municipal sewage sludge. Incremental growth is assumed to be for landfill gas facilities. Only biogenic municipal waste is included. The U.S. Energy Information Administration estimates that in 2013 approximately 0.3 quadrillion Btus were consumed from a municipal waste stream containing petroleum-derived plastics and other non-renewable sources. See U.S. Energy Information Administration, *Methodology for Allocating Municipal Solid Waste to Biogenic and Non-Biogenic Energy* (Washington, DC, May 2007).

⁸Includes selected renewable energy consumption data for which the energy is not bought or sold, either directly or indirectly as an input to marketed energy. The U.S. Energy Information Administration does not estimate or project total consumption of nonmarketed renewable energy.

-- = Not applicable.

Btu = British thermal unit.

Note: Totals may not equal sum of components due to independent rounding. Data for 2012 and 2013 are model results and may differ from official EIA data reports.

Sources: 2012 and 2013 ethanol: U.S. Energy Information Administration (EIA), *Monthly Energy Review*, DOE/EIA-0035(2014/11) (Washington, DC, November 2014). 2012 and 2013 electric power sector: EIA, Form EIA-860, "Annual Electric Generator Report" (preliminary). Other 2012 and 2013 values: EIA, Office of Energy Analysis. Projections: EIA, AEO2015 National Energy Modeling System run REF2015.D021915A.