

Table A2. Energy consumption by sector and source
(quadrillion Btu per year, unless otherwise noted)

Sector and source	Reference case							Annual growth 2011-2040 (percent)
	2010	2011	2020	2025	2030	2035	2040	
Energy consumption								
Residential								
Propane	0.53	0.53	0.52	0.52	0.52	0.52	0.52	-0.0%
Kerosene	0.03	0.02	0.01	0.01	0.01	0.01	0.01	-1.8%
Distillate fuel oil.....	0.58	0.59	0.51	0.45	0.40	0.36	0.32	-2.1%
Liquid fuels and other petroleum subtotal	1.14	1.14	1.05	0.98	0.93	0.89	0.86	-1.0%
Natural gas	4.89	4.83	4.62	4.54	4.46	4.34	4.23	-0.5%
Coal	0.01	0.01	0.01	0.01	0.01	0.01	0.00	-0.9%
Renewable energy ¹	0.44	0.45	0.44	0.44	0.45	0.45	0.45	0.1%
Electricity	4.93	4.86	4.84	5.08	5.36	5.67	6.03	0.7%
Delivered energy	11.41	11.28	10.95	11.04	11.20	11.35	11.57	0.1%
Electricity related losses	10.35	10.20	9.66	10.04	10.45	10.90	11.50	0.4%
Total	21.76	21.48	20.62	21.08	21.65	22.25	23.08	0.2%
Commercial								
Propane	0.14	0.14	0.16	0.16	0.16	0.17	0.17	0.7%
Motor gasoline ²	0.06	0.05	0.05	0.06	0.06	0.06	0.06	0.5%
Kerosene	0.00	0.00	0.00	0.00	0.00	0.00	0.01	2.1%
Distillate fuel oil.....	0.41	0.42	0.34	0.33	0.32	0.31	0.30	-1.1%
Residual fuel oil	0.08	0.07	0.09	0.09	0.09	0.09	0.09	0.6%
Liquid fuels and other petroleum subtotal	0.69	0.69	0.65	0.64	0.64	0.63	0.63	-0.3%
Natural gas	3.17	3.23	3.40	3.43	3.50	3.59	3.68	0.4%
Coal	0.06	0.05	0.05	0.05	0.05	0.05	0.05	-0.0%
Renewable energy ³	0.11	0.13	0.13	0.13	0.13	0.13	0.13	0.0%
Electricity	4.54	4.50	4.72	4.97	5.22	5.47	5.72	0.8%
Delivered energy	8.57	8.60	8.95	9.22	9.54	9.86	10.21	0.6%
Electricity related losses	9.52	9.45	9.42	9.82	10.18	10.51	10.92	0.5%
Total	18.09	18.05	18.37	19.04	19.72	20.37	21.13	0.5%
Industrial⁴								
Liquefied petroleum gases.....	2.12	2.10	2.46	2.54	2.47	2.40	2.30	0.3%
Propylene.....	0.41	0.40	0.56	0.56	0.52	0.49	0.46	0.6%
Motor gasoline ²	0.28	0.27	0.32	0.32	0.32	0.32	0.32	0.6%
Distillate fuel oil.....	1.19	1.21	1.22	1.19	1.18	1.19	1.22	0.0%
Residual fuel oil	0.12	0.11	0.11	0.11	0.11	0.11	0.11	-0.1%
Petrochemical feedstocks	0.94	0.88	1.03	1.08	1.08	1.08	1.09	0.7%
Other petroleum ⁵	3.70	3.61	3.54	3.48	3.46	3.53	3.65	0.0%
Liquid fuels and other petroleum subtotal	8.76	8.57	9.25	9.28	9.14	9.11	9.16	0.2%
Natural gas	6.67	6.92	7.86	8.00	7.97	8.02	8.08	0.5%
Natural-gas-to-liquids heat and power	0.00	0.00	0.13	0.16	0.21	0.27	0.33	--
Lease and plant fuel ⁶	1.31	1.42	1.57	1.68	1.73	1.84	1.97	1.1%
Natural gas subtotal	7.98	8.34	9.56	9.84	9.91	10.13	10.38	0.8%
Metallurgical coal	0.55	0.56	0.60	0.58	0.52	0.48	0.46	-0.7%
Other industrial coal	1.06	1.04	1.00	1.00	1.00	1.02	1.05	0.0%
Coal-to-liquids heat and power	0.00	0.00	0.00	0.07	0.09	0.12	0.15	--
Net coal coke imports	-0.01	0.01	-0.01	-0.03	-0.04	-0.06	-0.05	--
Coal subtotal	1.60	1.62	1.58	1.63	1.57	1.56	1.61	-0.0%
Biofuels heat and coproducts.....	0.85	0.67	0.82	0.82	0.85	0.97	1.37	2.5%
Renewable energy ⁷	1.47	1.51	1.72	1.85	1.97	2.11	2.28	1.4%
Electricity	3.31	3.33	3.95	4.05	3.96	3.90	3.91	0.6%
Delivered energy	23.98	24.04	26.87	27.46	27.40	27.77	28.71	0.6%
Electricity related losses	6.95	6.99	7.89	8.00	7.72	7.49	7.45	0.2%
Total	30.93	31.03	34.76	35.46	35.11	35.26	36.16	0.5%

Table A2. Energy consumption by sector and source (continued)
(quadrillion Btu per year, unless otherwise noted)

Sector and source	Reference case							Annual growth 2011-2040 (percent)
	2010	2011	2020	2025	2030	2035	2040	
Transportation								
Propane	0.04	0.06	0.06	0.06	0.07	0.08	0.08	1.3%
E85 ⁸	0.01	0.05	0.08	0.14	0.16	0.15	0.17	4.3%
Motor gasoline ²	16.79	16.31	14.88	13.86	13.06	12.69	12.64	-0.9%
Jet fuel ⁹	3.07	3.01	3.11	3.20	3.28	3.35	3.42	0.4%
Distillate fuel oil ¹⁰	5.82	5.91	7.28	7.52	7.61	7.73	7.90	1.0%
Residual fuel oil	0.88	0.82	0.84	0.85	0.86	0.86	0.87	0.2%
Other petroleum ¹¹	0.17	0.17	0.15	0.15	0.16	0.16	0.16	-0.1%
Liquid fuels and other petroleum subtotal	26.78	26.32	26.42	25.79	25.20	25.01	25.24	-0.1%
Pipeline fuel natural gas	0.68	0.70	0.71	0.73	0.74	0.76	0.78	0.4%
Compressed / liquefied natural gas	0.04	0.04	0.08	0.12	0.26	0.60	1.05	11.9%
Liquid hydrogen	0.00	0.00	0.00	0.00	0.00	0.00	0.00	--
Electricity	0.02	0.02	0.03	0.04	0.04	0.06	0.07	3.9%
Delivered energy	27.52	27.09	27.24	26.68	26.25	26.43	27.14	0.0%
Electricity related losses	0.05	0.05	0.06	0.07	0.09	0.11	0.13	3.5%
Total	27.57	27.13	27.30	26.75	26.33	26.54	27.27	0.0%
Delivered energy consumption for all sectors								
Liquefied petroleum gases	2.83	2.82	3.21	3.29	3.23	3.16	3.08	0.3%
Propylene	0.41	0.40	0.56	0.56	0.52	0.49	0.46	0.6%
E85 ⁸	0.01	0.05	0.08	0.14	0.16	0.15	0.17	4.3%
Motor gasoline ²	17.13	16.64	15.26	14.24	13.43	13.07	13.03	-0.8%
Jet fuel ⁹	3.07	3.01	3.11	3.20	3.28	3.35	3.42	0.4%
Kerosene	0.04	0.03	0.03	0.03	0.02	0.02	0.02	-0.3%
Distillate fuel oil	8.00	8.12	9.35	9.49	9.51	9.58	9.74	0.6%
Residual fuel oil	1.08	1.01	1.05	1.05	1.05	1.06	1.07	0.2%
Petrochemical feedstocks	0.94	0.88	1.03	1.08	1.08	1.08	1.09	0.7%
Other petroleum ¹²	3.86	3.77	3.69	3.63	3.61	3.68	3.80	0.0%
Liquid fuels and other petroleum subtotal	37.37	36.72	37.37	36.69	35.90	35.64	35.88	-0.1%
Natural gas	14.77	15.03	15.95	16.08	16.19	16.54	17.05	0.4%
Natural-gas-to-liquids heat and power	0.00	0.00	0.13	0.16	0.21	0.27	0.33	--
Lease and plant fuel ⁶	1.31	1.42	1.57	1.68	1.73	1.84	1.97	1.1%
Pipeline natural gas	0.68	0.70	0.71	0.73	0.74	0.76	0.78	0.4%
Natural gas subtotal	16.77	17.15	18.36	18.66	18.87	19.42	20.13	0.6%
Metallurgical coal	0.55	0.56	0.60	0.58	0.52	0.48	0.46	-0.7%
Other coal	1.12	1.10	1.06	1.06	1.06	1.07	1.11	0.0%
Coal-to-liquids heat and power	0.00	0.00	0.00	0.07	0.09	0.12	0.15	--
Net coal coke imports	-0.01	0.01	-0.01	-0.03	-0.04	-0.06	-0.05	--
Coal subtotal	1.67	1.67	1.64	1.69	1.63	1.61	1.67	-0.0%
Biofuels heat and coproducts	0.85	0.67	0.82	0.82	0.85	0.97	1.37	2.5%
Renewable energy ¹³	2.01	2.08	2.28	2.42	2.54	2.68	2.86	1.1%
Liquid hydrogen	0.00	0.00	0.00	0.00	0.00	0.00	0.00	--
Electricity	12.81	12.71	13.54	14.13	14.59	15.08	15.72	0.7%
Delivered energy	71.49	71.01	74.01	74.40	74.38	75.41	77.63	0.3%
Electricity related losses	26.86	26.69	27.03	27.94	28.43	29.00	30.00	0.4%
Total	98.35	97.70	101.04	102.34	102.81	104.41	107.64	0.3%
Electric power¹⁴								
Distillate fuel oil	0.08	0.06	0.08	0.08	0.08	0.08	0.08	0.9%
Residual fuel oil	0.31	0.23	0.10	0.10	0.10	0.10	0.11	-2.6%
Liquid fuels and other petroleum subtotal	0.39	0.30	0.18	0.18	0.18	0.18	0.19	-1.6%
Natural gas	7.55	7.76	8.40	8.63	9.08	9.64	9.70	0.8%
Steam coal	19.13	17.99	16.95	17.66	18.07	18.48	18.68	0.1%
Nuclear / uranium ¹⁵	8.43	8.26	9.25	9.54	9.49	9.14	9.44	0.5%
Renewable energy ¹⁶	3.85	4.74	5.49	5.77	5.93	6.38	7.44	1.6%
Electricity imports	0.09	0.13	0.08	0.07	0.05	0.03	0.06	-2.4%
Total¹⁷	39.67	39.40	40.57	42.07	43.02	44.08	45.73	0.5%

Table A2. Energy consumption by sector and source (continued)
(quadrillion Btu per year, unless otherwise noted)

Sector and source	Reference case							Annual growth 2011-2040 (percent)
	2010	2011	2020	2025	2030	2035	2040	
Total energy consumption								
Liquefied petroleum gases.....	2.83	2.82	3.21	3.29	3.23	3.16	3.08	0.3%
Propylene.....	0.41	0.40	0.56	0.56	0.52	0.49	0.46	0.6%
E85 ⁸	0.01	0.05	0.08	0.14	0.16	0.15	0.17	4.3%
Motor gasoline ²	17.13	16.64	15.26	14.24	13.43	13.07	13.03	-0.8%
Jet fuel ⁹	3.07	3.01	3.11	3.20	3.28	3.35	3.42	0.4%
Kerosene.....	0.04	0.03	0.03	0.03	0.02	0.02	0.02	-0.3%
Distillate fuel oil.....	8.08	8.18	9.43	9.57	9.59	9.66	9.82	0.6%
Residual fuel oil.....	1.38	1.24	1.15	1.15	1.15	1.16	1.17	-0.2%
Petrochemical feedstocks.....	0.94	0.88	1.03	1.08	1.08	1.08	1.09	0.7%
Other petroleum ¹²	3.86	3.77	3.69	3.63	3.61	3.68	3.80	0.0%
Liquid fuels and other petroleum subtotal.....	37.76	37.02	37.54	36.87	36.08	35.82	36.07	-0.1%
Natural gas.....	22.32	22.79	24.36	24.71	25.27	26.18	26.75	0.6%
Natural-gas-to-liquids heat and power.....	0.00	0.00	0.13	0.16	0.21	0.27	0.33	--
Lease and plant fuel ⁶	1.31	1.42	1.57	1.68	1.73	1.84	1.97	1.1%
Pipeline natural gas.....	0.68	0.70	0.71	0.73	0.74	0.76	0.78	0.4%
Natural gas subtotal.....	24.32	24.91	26.77	27.28	27.95	29.06	29.83	0.6%
Metallurgical coal.....	0.55	0.56	0.60	0.58	0.52	0.48	0.46	-0.7%
Other coal.....	20.26	19.09	18.01	18.72	19.12	19.55	19.79	0.1%
Coal-to-liquids heat and power.....	0.00	0.00	0.00	0.07	0.09	0.12	0.15	--
Net coal coke imports.....	-0.01	0.01	-0.01	-0.03	-0.04	-0.06	-0.05	--
Coal subtotal.....	20.81	19.66	18.59	19.35	19.70	20.09	20.35	0.1%
Nuclear / uranium ¹⁵	8.43	8.26	9.25	9.54	9.49	9.14	9.44	0.5%
Biofuels heat and coproducts.....	0.85	0.67	0.82	0.82	0.85	0.97	1.37	2.5%
Renewable energy ¹⁸	5.86	6.82	7.77	8.18	8.47	9.07	10.30	1.4%
Liquid hydrogen.....	0.00	0.00	0.00	0.00	0.00	0.00	0.00	--
Electricity imports.....	0.09	0.13	0.08	0.07	0.05	0.03	0.06	-2.4%
Total.....	98.35	97.70	101.04	102.34	102.81	104.41	107.64	0.3%
Energy use and related statistics								
Delivered energy use.....	71.49	71.01	74.01	74.40	74.38	75.41	77.63	0.3%
Total energy use.....	98.35	97.70	101.04	102.34	102.81	104.41	107.64	0.3%
Ethanol consumed in motor gasoline and E85.....	1.11	1.17	1.34	1.29	1.24	1.20	1.21	0.1%
Population (millions).....	310.06	312.38	340.45	356.46	372.41	388.35	404.39	0.9%
Gross domestic product (billion 2005 dollars).....	13,063	13,299	16,859	18,985	21,355	24,095	27,277	2.5%
Carbon dioxide emissions (million metric tons).....	5,633.6	5,470.7	5,454.6	5,501.4	5,522.8	5,606.7	5,691.1	0.1%

¹Includes wood used for residential heating. See Table A4 and/or Table A17 for estimates of nonmarketed renewable energy consumption for geothermal heat pumps, solar thermal water heating, and electricity generation from wind and solar photovoltaic sources.

²Includes ethanol (blends of 15 percent or less) and ethers blended into gasoline.

³Excludes ethanol. Includes commercial sector consumption of wood and wood waste, landfill gas, municipal waste, and other biomass for combined heat and power. See Table A5 and/or Table A17 for estimates of nonmarketed renewable energy consumption for solar thermal water heating and electricity generation from wind and solar photovoltaic sources.

⁴Includes energy for combined heat and power plants that have a non-regulatory status, and small on-site generating systems.

⁵Includes petroleum coke, asphalt, road oil, lubricants, still gas, and miscellaneous petroleum products.

⁶Represents natural gas used in well, field, and lease operations, in natural gas processing plant machinery, and for liquefaction in export facilities.

⁷Includes consumption of energy produced from hydroelectric, wood and wood waste, municipal waste, and other biomass sources. Excludes ethanol blends (15 percent or less) in motor gasoline.

⁸E85 refers to a blend of 85 percent ethanol (renewable) and 15 percent motor gasoline (nonrenewable). To address cold starting issues, the percentage of ethanol varies seasonally. The annual average ethanol content of 74 percent is used for this forecast.

⁹Includes only kerosene type.

¹⁰Diesel fuel for on- and off- road use.

¹¹Includes aviation gasoline and lubricants.

¹²Includes unfinished oils, natural gasoline, motor gasoline blending components, aviation gasoline, lubricants, still gas, asphalt, road oil, petroleum coke, and miscellaneous petroleum products.

¹³Includes electricity generated for sale to the grid and for own use from renewable sources, and non-electric energy from renewable sources. Excludes ethanol and nonmarketed renewable energy consumption for geothermal heat pumps, buildings photovoltaic systems, and solar thermal water heaters.

¹⁴Includes consumption of energy by electricity-only and combined heat and power plants that have a regulatory status.

¹⁵These values represent the energy obtained from uranium when it is used in light water reactors. The total energy content of uranium is much larger, but alternative processes are required to take advantage of it.

¹⁶Includes conventional hydroelectric, geothermal, wood and wood waste, biogenic municipal waste, other biomass, wind, photovoltaic, and solar thermal sources. Excludes net electricity imports.

¹⁷Includes non-biogenic municipal waste not included above.

¹⁸Includes conventional hydroelectric, geothermal, wood and wood waste, biogenic municipal waste, other biomass, wind, photovoltaic, and solar thermal sources. Excludes ethanol, net electricity imports, and nonmarketed renewable energy consumption for geothermal heat pumps, buildings photovoltaic systems, and solar thermal water heaters.

Btu = British thermal unit.

-- = Not applicable.

Note: Totals may not equal sum of components due to independent rounding. Data for 2010 and 2011 are model results and may differ slightly from official EIA data reports.

Sources: 2010 and 2011 consumption based on: U.S. Energy Information Administration (EIA), *Annual Energy Review 2011*, DOE/EIA-0384(2011) (Washington, DC, September 2012). 2010 and 2011 population and gross domestic product: IHS Global Insight Industry and Employment models, August 2012. 2010 and 2011 carbon dioxide emissions: EIA, *Annual Energy Review 2011*, DOE/EIA-0384(2011) (Washington, DC, September 2012). 2010 carbon dioxide emissions: EIA, *Monthly Energy Review*, DOE/EIA-0035(2011/10) (Washington, DC, October 2011). 2011 carbon dioxide emissions: EIA, *Monthly Energy Review*, DOE/EIA-0035(2011/11) (Washington, DC, November 2011).