Appendix A

Reference case

Table A1. Total energy supply, disposition, and price summary

(quadrillion Btu per year, unless otherwise noted)

Supply, disposition, and prices	Reference case							Annual growth 2012-2040 (percent)
	2011	2012	2020	2025	2030	2035	2040	
Production								
Crude oil and lease condensate	12.20	13.87	20.36	19.19	17.71	16.81	16.00	0.5%
Natural gas plant liquids	3.11	3.21	3.54	3.84	3.98	4.08	3.99	0.8%
Dry natural gas	23.04	24.59	29.73	32.57	35.19	36.89	38.37	1.6%
Coal[1]	22.22	20.60	21.70	22.36	22.61	22.68	22.61	0.3%
Nuclear / uranium[2]	8.26	8.05	8.15	8.15	8.18	8.23	8.49	0.2%
Hydropower	3.11	2.67	2.81	2.84	2.87	2.89	2.90	0.3%
Biomass[3]	3.90	3.78	4.66	5.08	5.29	5.44	5.61	1.4%
Other renewable energy[4]	1.70	1.97	3.01	3.09	3.23	3.44	3.89	2.5%
Other[5]	0.80	0.41	0.24	0.24	0.24	0.24	0.24	-2.0%
Total	**78.35**	**79.15**	**94.19**	**97.36**	**99.30**	**100.70**	**102.09**	**0.9%**
Imports								
Crude oil	19.52	18.57	13.15	13.70	15.00	16.12	17.43	-0.2%
Petroleum and other liquids[6]	5.21	4.26	4.21	4.20	4.08	4.00	3.93	-0.3%
Natural gas[7]	3.56	3.21	2.39	2.04	2.01	2.06	2.28	-1.2%
Other imports[8]	0.43	0.36	0.17	0.15	0.12	0.11	0.10	-4.5%
Total	**28.71**	**26.40**	**19.92**	**20.09**	**21.22**	**22.29**	**23.73**	**-0.4%**
Exports								
Petroleum and other liquids[9]	5.95	6.29	6.30	6.48	6.91	7.40	7.70	0.7%
Natural gas[10]	1.52	1.63	4.30	5.45	6.96	7.60	8.09	5.9%
Coal	2.75	3.22	3.13	3.31	3.55	3.81	3.79	0.6%
Total	**10.22**	**11.14**	**13.73**	**15.24**	**17.42**	**18.81**	**19.58**	**2.0%**
Discrepancy[11]	**-0.27**	**-0.61**	**-0.35**	**-0.24**	**-0.17**	**-0.11**	**-0.07**	**- -**
Consumption								
Petroleum and other liquids[12]	36.56	35.87	36.86	36.28	35.65	35.37	35.35	-0.1%
Natural gas	24.91	26.20	27.65	28.97	30.03	31.10	32.32	0.8%
Coal[13]	19.62	17.34	18.56	19.03	19.01	18.82	18.75	0.3%
Nuclear / uranium[2]	8.26	8.05	8.15	8.15	8.18	8.23	8.49	0.2%
Hydropower	3.11	2.67	2.81	2.84	2.87	2.89	2.90	0.3%
Biomass[14]	2.60	2.53	3.35	3.74	3.95	4.10	4.26	1.9%
Other renewable energy[4]	1.70	1.97	3.01	3.09	3.23	3.44	3.89	2.5%
Other[15]	0.35	0.39	0.34	0.35	0.35	0.33	0.35	-0.4%
Total	**97.11**	**95.02**	**100.73**	**102.45**	**103.27**	**104.28**	**106.31**	**0.4%**
Prices (2012 dollars per unit)								
Crude oil spot prices (dollars per barrel)								
Brent	113.24	111.65	96.57	108.99	118.99	129.77	141.46	0.8%
West Texas Intermediate	96.55	94.12	94.57	106.99	116.99	127.77	139.46	1.4%
Natural gas at Henry Hub (dollars per million Btu)	4.07	2.75	4.38	5.23	6.03	6.92	7.65	3.7%
Coal (dollars per ton)								
at the minemouth[16]	41.74	39.94	46.52	49.67	53.15	56.37	59.16	1.4%
Coal (dollars per million Btu)								
at the minemouth[16]	2.07	1.98	2.33	2.49	2.67	2.82	2.96	1.4%
Average end-use[17]	2.61	2.60	2.85	3.02	3.17	3.29	3.43	1.0%
Average electricity (cents per kilowatthour)	10.1	9.8	10.1	10.1	10.4	10.7	11.1	0.4%

Table A1. Total energy supply, disposition, and price summary (continued)

(quadrillion Btu per year, unless otherwise noted)

Supply, disposition, and prices	Reference case							Annual growth 2012-2040 (percent)
	2011	2012	2020	2025	2030	2035	2040	
Prices (nominal dollars per unit)								
Crude oil spot prices (dollars per barrel)								
Brent	111.26	111.65	109.37	134.25	160.19	193.27	234.53	2.7%
West Texas Intermediate	94.86	94.12	107.11	131.78	157.49	190.30	231.22	3.3%
Natural gas at Henry Hub (dollars per million Btu)	4.00	2.75	4.96	6.45	8.12	10.31	12.69	5.6%
Coal (dollars per ton)								
at the minemouth[16]	41.01	39.94	52.69	61.18	71.55	83.96	98.08	3.3%
Coal (dollars per million Btu)								
at the minemouth[16]	2.04	1.98	2.63	3.07	3.59	4.21	4.91	3.3%
Average end-use[17]	2.56	2.60	3.23	3.72	4.27	4.90	5.68	2.8%
Average electricity (cents per kilowatthour)	9.9	9.8	11.5	12.5	14.0	16.0	18.5	2.3%

[1]Includes waste coal.
[2]These 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.
[3]Includes grid-connected electricity from wood and wood waste; biomass, such as corn, used for liquid fuels production; and non-electric energy demand from wood. Refer to Table A17 for details.
[4]Includes grid-connected electricity from landfill gas; biogenic municipal waste; wind; photovoltaic and solar thermal sources; and non-electric energy from renewable sources, such as active and passive solar systems. Excludes electricity imports using renewable sources and nonmarketed renewable energy. See Table A17 for selected nonmarketed residential and commercial renewable energy data.
[5]Includes non-biogenic municipal waste, liquid hydrogen, methanol, and some domestic inputs to refineries.
[6]Includes imports of finished petroleum products, unfinished oils, alcohols, ethers, blending components, and renewable fuels such as ethanol.
[7]Includes imports of liquefied natural gas that are later re-exported.
[8]Includes coal, coal coke (net), and electricity (net). Excludes imports of fuel used in nuclear power plants.
[9]Includes crude oil, petroleum products, ethanol, and biodiesel.
[10]Includes re-exported liquefied natural gas.
[11]Balancing item. Includes unaccounted for supply, losses, gains, and net storage withdrawals.
[12]Estimated consumption. Includes petroleum-derived fuels and non-petroleum derived fuels, such as ethanol and biodiesel, and coal-based synthetic liquids. Petroleum coke, which is a solid, is included. Also included are natural gas plant liquids and crude oil consumed as a fuel. Refer to Table A17 for detailed renewable liquid fuels consumption.
[13]Excludes coal converted to coal-based synthetic liquids and natural gas.
[14]Includes grid-connected electricity from wood and wood waste, non-electric energy from wood, and biofuels heat and coproducts used in the production of liquid fuels, but excludes the energy content of the liquid fuels.
[15]Includes non-biogenic municipal waste, liquid hydrogen, and net electricity imports.
[16]Includes reported prices for both open market and captive mines. Prices weighted by production, which differs from average minemouth prices published in EIA data reports where it is weighted by reported sales.
[17]Prices weighted by consumption; weighted average excludes export free-alongside-ship (f.a.s.) prices.
Btu = British thermal unit.
- - = Not applicable.
Note: Totals may not equal sum of components due to independent rounding. Data for 2011 and 2012 are model results and may differ from official EIA data reports.
Sources: 2011 natural gas supply values: U.S. Energy Information Administration (EIA), *Natural Gas Annual 2011*, DOE/EIA-0131(2011) (Washington, DC, December 2012). 2012 natural gas supply values: EIA, *Natural Gas Monthly*, DOE/EIA-0130(2013/06) (Washington, DC, June 2013). 2011 and 2012 coal minemouth and delivered coal prices: EIA, *Annual Coal Report 2012*, DOE/EIA-0584(2012) (Washington, DC, December 2013). 2012 petroleum supply values and 2011 crude oil and lease condensate production: EIA, *Petroleum Supply Annual 2012*, DOE/EIA-0340(2012)/1 (Washington, DC, September 2013). Other 2011 petroleum supply values: EIA, *Petroleum Supply Annual 2011*, DOE/EIA-0340(2011)/1 (Washington, DC, August 2012). 2011 and 2012 crude oil spot prices and natural gas spot price at Henry Hub: Thomson Reuters. Other 2011 and 2012 coal values: *Quarterly Coal Report, October-December 2012*, DOE/EIA-0121(2012/4Q) (Washington, DC, March 2013). Other 2011 and 2012 values: EIA, *Monthly Energy Review*, DOE/EIA-0035(2013/09) (Washington, DC, September 2013). **Projections:** EIA, AEO2014 National Energy Modeling System run REF2014.D102413A.