

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 2009-2035 (percent)
	2008	2009	2015	2020	2025	2030	2035	
Production								
Crude Oil and Lease Condensate	10.51	11.34	12.51	13.07	12.64	12.49	12.80	0.5%
Natural Gas Plant Liquids	2.41	2.57	2.86	3.06	3.55	3.71	3.92	1.6%
Dry Natural Gas	20.83	21.50	23.01	24.04	24.60	25.75	27.00	0.9%
Coal ¹	23.85	21.58	20.94	22.05	23.64	24.77	26.01	0.7%
Nuclear Power	8.43	8.35	8.77	9.17	9.17	9.17	9.14	0.3%
Hydropower	2.53	2.69	2.92	3.00	3.04	3.07	3.09	0.5%
Biomass ²	3.94	3.52	4.70	5.77	7.20	8.15	8.63	3.5%
Other Renewable Energy ³	1.12	1.29	2.14	2.30	2.58	2.97	3.22	3.6%
Other ⁴	0.19	0.34	0.78	0.96	0.88	0.81	0.78	3.2%
Total	73.80	73.18	78.63	83.42	87.29	90.88	94.59	1.0%
Imports								
Crude Oil	21.39	19.70	19.25	18.46	18.35	18.30	18.44	-0.3%
Liquid Fuels and Other Petroleum ⁵	6.32	5.40	5.33	5.34	5.18	5.26	5.33	-0.1%
Natural Gas	4.08	3.82	4.01	3.80	3.20	3.07	2.87	-1.1%
Other Imports ⁶	0.96	0.61	0.82	0.98	1.39	1.30	1.27	2.9%
Total	32.76	29.53	29.41	28.57	28.13	27.93	27.92	-0.2%
Exports								
Petroleum ⁷	3.78	4.17	3.27	3.54	3.62	3.75	3.92	-0.2%
Natural Gas	1.01	1.09	1.24	1.82	2.07	2.24	2.64	3.5%
Coal	2.07	1.51	1.76	1.92	1.89	1.86	1.78	0.6%
Total	6.86	6.77	6.27	7.28	7.58	7.85	8.34	0.8%
Discrepancy⁸	-0.44	1.16	-0.24	-0.21	-0.12	-0.07	-0.02	--
Consumption								
Liquid Fuels and Other Petroleum ⁹	38.46	36.62	39.10	39.38	39.84	40.55	41.70	0.5%
Natural Gas	23.85	23.31	25.77	26.00	25.73	26.58	27.24	0.6%
Coal ¹⁰	22.38	19.69	19.73	20.85	22.61	23.39	24.30	0.8%
Nuclear Power	8.43	8.35	8.77	9.17	9.17	9.17	9.14	0.3%
Hydropower	2.53	2.69	2.92	3.00	3.04	3.07	3.09	0.5%
Biomass ¹¹	3.07	2.52	3.27	3.93	4.71	5.05	5.25	2.9%
Other Renewable Energy ³	1.12	1.29	2.14	2.30	2.58	2.97	3.22	3.6%
Other ¹²	0.31	0.32	0.31	0.29	0.27	0.24	0.25	-0.9%
Total	100.14	94.79	102.02	104.92	107.95	111.03	114.19	0.7%
Prices (2009 dollars per unit)								
Petroleum (dollars per barrel)								
Imported Low Sulfur Light Crude Oil Price ¹³	100.51	61.66	94.58	108.10	117.54	123.09	124.94	2.8%
Imported Crude Oil Price ¹³	93.44	59.04	86.83	98.65	107.40	112.38	113.70	2.6%
Natural Gas (dollars per million Btu)								
Price at Henry Hub	8.94	3.95	4.66	5.05	5.97	6.40	7.07	2.3%
Wellhead Price ¹⁴	7.96	3.62	4.13	4.47	5.29	5.66	6.26	2.1%
Natural Gas (dollars per thousand cubic feet)								
Wellhead Price ¹⁴	8.18	3.71	4.24	4.59	5.43	5.81	6.42	2.1%
Coal (dollars per ton)								
Minemouth Price ¹⁵	31.54	33.26	32.36	32.85	33.22	33.25	33.92	0.1%
Coal (dollars per million Btu)								
Minemouth Price ¹⁵	1.56	1.67	1.62	1.65	1.68	1.69	1.73	0.2%
Average Delivered Price ¹⁶	2.18	2.31	2.26	2.30	2.36	2.42	2.47	0.3%
Average Electricity Price (cents per kilowatthour)	9.8	9.8	8.9	8.8	8.9	9.0	9.2	-0.2%

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 2009-2035 (percent)
	2008	2009	2015	2020	2025	2030	2035	
Prices (nominal dollars per unit)								
Petroleum (dollars per barrel)								
Imported Low Sulfur Light Crude Oil Price ¹³ . . .	99.57	61.66	103.24	130.60	155.46	178.45	199.37	4.6%
Imported Crude Oil Price ¹³	92.57	59.04	94.78	119.18	142.05	162.92	181.43	4.4%
Natural Gas (dollars per million Btu)								
Price at Henry Hub	8.86	3.95	5.09	6.10	7.90	9.28	11.28	4.1%
Wellhead Price ¹⁴	7.89	3.62	4.51	5.40	6.99	8.21	9.99	4.0%
Natural Gas (dollars per thousand cubic feet)								
Wellhead Price ¹⁴	8.10	3.71	4.63	5.55	7.18	8.43	10.24	4.0%
Coal (dollars per ton)								
Minemouth Price ¹⁵	31.25	33.26	35.32	39.69	43.93	48.21	54.13	1.9%
Coal (dollars per million Btu)								
Minemouth Price ¹⁵	1.55	1.67	1.77	1.99	2.22	2.45	2.76	2.0%
Average Delivered Price ¹⁶	2.16	2.31	2.47	2.78	3.12	3.50	3.95	2.1%
Average Electricity Price (cents per kilowatthour)	9.7	9.8	9.7	10.7	11.8	13.0	14.7	1.6%

¹Includes waste coal.

²Includes 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.

³Includes 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.

⁴Includes non-biogenic municipal waste, liquid hydrogen, methanol, and some domestic inputs to refineries.

⁵Includes imports of finished petroleum products, unfinished oils, alcohols, ethers, blending components, and renewable fuels such as ethanol.

⁶Includes coal, coal coke (net), and electricity (net).

⁷Includes crude oil and petroleum products.

⁸Balancing item. Includes unaccounted for supply, losses, gains, and net storage withdrawals.

⁹Includes 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.

¹⁰Excludes coal converted to coal-based synthetic liquids and natural gas.

¹¹Includes 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.

¹²Includes non-biogenic municipal waste and net electricity imports.

¹³Weighted average price delivered to U.S. refiners.

¹⁴Represents lower 48 onshore and offshore supplies.

¹⁵Includes reported prices for both open market and captive mines.

¹⁶Prices weighted by consumption; weighted average excludes residential and commercial prices, and 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 2008 and 2009 are model results and may differ slightly from official EIA data reports.

Sources: 2008 natural gas supply values: U.S. Energy Information Administration (EIA), *Natural Gas Annual 2008*, DOE/EIA-0131(2008) (Washington, DC, March 2010). 2009 natural gas supply values and natural gas wellhead price: EIA, *Natural Gas Monthly*, DOE/EIA-0130(2010/07) (Washington, DC, July 2010). 2008 natural gas wellhead price: Bureau of Energy Management, Regulation and Enforcement; and EIA, *Natural Gas Annual 2008*, DOE/EIA-0131(2008) (Washington, DC, March 2010). 2008 and 2009 coal minemouth and delivered coal prices: EIA, *Annual Coal Report 2009*, DOE/EIA-0584(2009) (Washington, DC, October 2010). 2009 petroleum supply values and 2008 crude oil and lease condensate production: EIA, *Petroleum Supply Annual 2009*, DOE/EIA-0340(2009)/1 (Washington, DC, July 2010). Other 2008 petroleum supply values: EIA, *Petroleum Supply Annual 2008*, DOE/EIA-0340(2008)/1 (Washington, DC, June 2009). 2008 and 2009 low sulfur light crude oil price: EIA, Form EIA-856, "Monthly Foreign Crude Oil Acquisition Report." Other 2008 and 2009 coal values: *Quarterly Coal Report, October-December 2009*, DOE/EIA-0121(2009/4Q) (Washington, DC, April 2010). Other 2008 and 2009 values: EIA, *Annual Energy Review 2009*, DOE/EIA-0384(2009) (Washington, DC, August 2010). **Projections:** EIA, AEO2011 National Energy Modeling System run REF2011.D020911A.