Economic growth case comparisons

Table B1. Total energy supply, disposition, and price summary (quadrillion Btu per year, unless otherwise noted)

-						Projections	i			
			2020			2030			2040	
Supply, disposition, and prices	2012	Low economic growth	Reference	High economic growth	Low economic growth	Reference	High economic growth	Low economic growth	Reference	High economic growth
Production										
Crude oil and lease condensate	13.87	20.31	20.36	20.39	17.40	17.71	17.82	16.04	16.00	16.40
Natural gas plant liquids	3.21	3.53	3.54	3.55	3.92	3.98	4.09	3.92	3.99	4.05
Dry natural gas	24.59	29.02	29.73	30.59	33.37	35.19	36.94	36.09	38.37	40.33
Coal ¹	20.60	21.18	21.70	22.24	21.67	22.61	23.28	21.67	22.61	23.50
Nuclear / uranium ²	8.05	8.15	8.15	8.15	8.15	8.18	8.30	8.15	8.49	9.65
Hydropower	2.67	2.84	2.81	2.83	2.84	2.87	2.90	2.86	2.90	2.92
Biomass ³	3.78	4.52	4.66	4.77	5.02	5.29	5.48	5.24	5.61	6.02
Other renewable energy ⁴	1.97	3.09	3.01	3.04	3.25	3.23	3.71	3.42	3.89	5.13
Other⁵	0.41	0.24	0.24	0.23	0.24	0.24	0.23	0.24	0.24	0.23
Total	79.15	92.88	94.19	95.80	95.87	99.30	102.74	97.63	102.09	108.23
Imports										
Crude oil	18.57	12.31	13.15	14.08	12.98	15.00	16.49	14.11	17.43	19.26
Petroleum and other liquids ⁶	4.26	4.20	4.21	4.25	4.06	4.08	4.12	3.92	3.93	4.45
Natural gas ⁷	3.21	2.38	2.39	2.46	1.87	2.01	2.12	2.21	2.28	2.41
Other imports ⁸	0.36	0.14	0.17	0.16	0.11	0.12	0.12	0.09	0.10	0.19
Total	26.40	19.03	19.92	20.95	19.02	21.22	22.84	20.34	23.73	26.30
Exports										
Petroleum and other liquids ⁹	6.29	6.32	6.30	6.29	6.85	6.91	7.00	7.63	7.70	7.75
Natural gas ¹⁰	1.63	4.49	4.30	4.28	6.96	6.96	6.93	8.26	8.09	7.90
Coal	3.22	3.13	3.13	3.11	3.53	3.55	3.57	3.77	3.79	3.73
Total	11.14	13.95	13.73	13.68	17.35	17.42	17.50	19.66	19.58	19.38
Discrepancy ¹¹	-0.61	-0.35	-0.35	-0.30	-0.17	-0.17	-0.15	-0.03	-0.07	-0.07
Consumption										
Petroleum and other liquids ¹²	35.87	35.93	36.86	37.82	33.28	35.65	37.27	32.04	35.35	38.13
Natural gas	26.20	26.73	27.65	28.60	28.08	30.03	31.92	29.78	32.32	34.62
Coal ¹³	17.34	18.01	18.56	19.11	18.08	19.01	19.66	17.83	18.75	19.75
Nuclear / uranium²	8.05	8.15	8.15	8.15	8.15	8.18	8.30	8.15	8.49	9.65
Hydropower	2.67	2.84	2.81	2.83	2.84	2.87	2.90	2.86	2.90	2.92
Biomass ¹⁴	2.53	3.22	3.35	3.46	3.69	3.95	4.13	3.92	4.26	4.63
Other renewable energy ⁴	1.97	3.09	3.01	3.04	3.25	3.23	3.71	3.42	3.89	5.13
Other ¹⁵	0.39	0.34	0.34	0.34	0.33	0.35	0.35	0.34	0.35	0.38
Total	95.02	98.31	100.73	103.36	97.71	103.27	108.23	98.34	106.31	115.22
Prices (2012 dollars per unit)										
Crude oil spot prices (dollars per barrel)										
Brent	111.65	95.51	96.57	97.79	116.23	118.99	121.23	136.52	141.46	145.21
West Texas Intermediate	94.12	93.53	94.57	95.77	114.28	116.99	119.19	134.59	139.46	143.15
Natural gas at Henry Hub										
(dollars per million Btu)	2.75	4.51	4.38	4.59	5.65	6.03	6.39	7.19	7.65	8.15
Coal (dollars per ton)										
at the minemouth 16	39.94	46.31	46.52	46.68	52.85	53.15	53.94	58.57	59.16	60.20
Coal (dollars per million Btu)										
at the minemouth ¹⁶	1.98	2.32	2.33	2.34	2.66	2.67	2.71	2.94	2.96	3.02
Average end-use ¹⁷	2.60	2.83	2.85	2.89	3.13	3.17	3.23	3.38	3.43	3.54
Average electricity (cents per kilowatthour)	9.8	10.1	10.1	10.1	10.3	10.4	10.6	10.8	11.1	11.6

Table B1. Total energy supply, disposition, and price summary (continued)

(quadrillion Btu per year, unless otherwise noted)

		Projections												
		2020				2030		2040						
Supply, disposition, and prices	2012	Low economic growth	Reference	High economic growth	Low economic growth	Reference	High economic growth	Low economic growth	Reference	High economic growth				
Prices (nominal dollars per unit)														
Crude oil spot prices (dollars per barrel)														
Brent	111.65	114.20	109.37	108.50	195.53	160.19	154.87	335.90	234.53	222.72				
West Texas Intermediate	94.12	111.84	107.11	106.25	192.24	157.49	152.27	331.15	231.22	219.57				
Natural gas at Henry Hub														
(dollars per million Btu)	2.75	5.40	4.96	5.10	9.50	8.12	8.16	17.69	12.69	12.49				
Coal (dollars per ton)														
at the minemouth 16	39.94	55.37	52.69	51.79	88.91	71.55	68.91	144.11	98.08	92.34				
Coal (dollars per million Btu)														
at the minemouth ¹⁶	1.98	2.77	2.63	2.59	4.47	3.59	3.46	7.23	4.91	4.63				
Average end-use ¹⁷	2.60	3.38	3.23	3.21	5.27	4.27	4.13	8.31	5.68	5.43				
Average electricity (cents per kilowatthour)	9.8	12.1	11.5	11.2	17.4	14.0	13.6	26.6	18.5	17.7				

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

²These 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.

³Includes 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.

⁴Includes 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.

⁵Includes non-biogenic municipal waste, liquid hydrogen, methanol, and some domestic inputs to refineries.

⁶Includes imports of finished petroleum products, unfinished oils, alcohols, ethers, blending components, and renewable fuels such as ethanol.

⁷Includes imports of liquefied natural gas that are later re-exported.

⁸Includes coal, coal coke (net), and electricity (net). Excludes imports of fuel used in nuclear power plants.

⁹Includes crude oil, petroleum products, ethanol, and biodiesel.

¹⁰Includes crude oil, petroleum products, ethanol, and biodiesel.

¹¹Balancing item. Includes unaccounted for supply, losses, gains, and net storage withdrawals.

¹²Estimated 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.

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 consumption; weighted average excludes export free-alongside-ship (f.a.s.) prices.

Btu = British thermal unit.

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

BILE BRITISH INTERNAL HIGH.

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

Sources: 2012 natural gas supply values: U.S. Energy Information Administration (EIA), Natural Gas Monthly, DOE/EIA-0130(2013/06) (Washington, DC, June 2013).

2012 coal minemouth and delivered coal prices: EIA, Annual Coal Report 2012, DOE/EIA-0584(2012) (Washington, DC, December 2013). 2012 petroleum supply values: EIA, Petroleum Supply Annual 2012, DOE/EIA-0340(2012)/1 (Washington, DC, September 2013). 2012 crude oil spot prices and natural gas spot price at Henry Hub: Thomson Reuters. Other 2012 coal values: Quarterly Coal Report, October-December 2012, DOE/EIA-0121(2012/4Q) (Washington, DC, March 2013). Other 2012 values: EIA, Monthly Energy Review, DOE/EIA-0035(2013/09) (Washington, DC, September 2013). Projections: EIA, AEO2014 National Energy Modeling System runs LOWMACRO.D112913A, REF2014.D102413A, and HIGHMACRO.D112913A.

Table B2. Energy consumption by sector and source (quadrillion Btu per year, unless otherwise noted)

						Projections	i			
			2020			2030		2040		
Sector and source	2012	Low economic growth	Reference	High economic growth	Low economic growth	Reference	High economic growth	Low economic growth	Reference	High economic growth
Energy consumption										
Residential										
Propane	0.51	0.42	0.42	0.43	0.37	0.38	0.40	0.33	0.35	0.38
Kerosene	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Distillate fuel oil	0.51	0.46	0.46	0.46	0.37	0.37	0.37	0.31	0.31	0.31
Petroleum and other liquids subtotal	1.02	0.88	0.89	0.89	0.74	0.75	0.77	0.64	0.66	0.69
Natural gas	4.26	4.50	4.56	4.61	4.25	4.43	4.64	3.91	4.21	4.55
Renewable energy ¹	0.45	0.45	0.46	0.47	0.43	0.44	0.45	0.40	0.42	0.44
Electricity	4.69	4.73	4.84	4.99	4.86	5.21	5.61	5.07	5.65	6.31
Delivered energy	10.42	10.56	10.74	10.96	10.28	10.83	11.48	10.01	10.94	11.99
Electricity related losses	9.68	9.43	9.64	9.85	9.53	10.00	10.61	9.60	10.55	11.71
Total	20.10	19.99	20.38	20.81	19.81	20.83	22.09	19.62	21.48	23.70
Commercial										
Propane	0.15	0.16	0.16	0.16	0.17	0.17	0.17	0.17	0.18	0.18
Motor gasoline ²	0.05	0.04	0.04	0.04	0.05	0.05	0.05	0.05	0.05	0.06
Kerosene	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Distillate fuel oil	0.40	0.40	0.40	0.39	0.38	0.38	0.38	0.37	0.37	0.37
Residual fuel oil	0.04	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08	0.08
Petroleum and other liquids subtotal	0.63	0.68	0.68	0.68	0.67	0.67	0.68	0.67	0.68	0.68
Natural gas	2.96	3.22	3.23	3.22	3.33	3.35	3.37	3.60	3.65	3.70
Coal	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04
Renewable energy ³	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13
Electricity	4.52	4.68	4.69	4.71	5.11	5.18	5.24	5.60	5.72	5.81
Delivered energy	8.29	8.75	8.78	8.80	9.29	9.38	9.46	10.05	10.22	10.38
Electricity related losses	9.32	9.34	9.34	9.31	10.01	9.94	9.91	10.61	10.66	10.80
Total	17.61	18.09	18.12	18.11	19.30	19.32	19.38	20.66	20.88	21.17
Industrial⁴										
Liquefied petroleum gases and other ⁵	2.25	2.85	2.90	2.93	2.95	3.05	3.06	2.82	2.90	2.93
Motor gasoline ²	0.26	0.29	0.30	0.31	0.28	0.30	0.31	0.27	0.29	0.31
Distillate fuel oil	1.20	1.32	1.40	1.48	1.28	1.41	1.52	1.28	1.42	1.56
Residual fuel oil	0.10	0.14	0.14	0.15	0.13	0.15	0.16	0.13	0.15	0.17
Petrochemical feedstocks	0.75	1.22	1.27	1.31	1.47	1.62	1.68	1.49	1.59	1.67
Other petroleum ⁶	3.50	3.35	3.56	3.80	3.17	3.58	3.91	3.22	3.75	4.19
Petroleum and other liquids subtotal	8.06	9.17	9.56	9.97	9.29	10.10	10.64	9.21	10.10	10.82
Natural gas	7.29	7.99	8.26	8.50	8.10	8.71	9.20	8.11	8.87	9.73
Natural-gas-to-liquids heat and power	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Lease and plant fuel ⁷	1.45	1.77	1.77	1.81	2.07	2.16	2.25	2.30	2.41	2.52
Natural gas subtotal	8.75	9.75	10.04	10.31	10.17	10.87	11.44	10.41	11.28	12.25
Metallurgical coal	0.55	0.54	0.58	0.65	0.49	0.55	0.65	0.41	0.47	0.64
Other industrial coal	0.93	0.95	0.99	1.04	0.92	1.00	1.10	0.92	1.01	1.20
Coal-to-liquids heat and power	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Net coal coke imports	0.00	0.00	0.00	0.01	-0.02	-0.03	-0.03	-0.04	-0.05	-0.06
Coal subtotal	1.48		1.57	1.70	1.38	1.52	1.72	1.28	1.44	1.78
Biofuels heat and coproducts	0.52	0.76	0.76	0.76	0.78	0.79	0.79	0.77	0.79	0.81
Renewable energy ⁸	1.48	1.65	1.74	1.82	1.81	2.01	2.14	2.03	2.28	2.50
Electricity	3.35	3.83	4.04	4.32	3.91	4.33	4.76	3.87	4.34	5.01
Delivered energy	23.63	26.67	27.71	28.87	27.35	29.62	31.49	27.58	30.22	33.17
Electricity related losses	6.91	7.65	8.05	8.53	7.66	8.33	8.99	7.33	8.10	9.31
Total	30.54		35.76	37.40	35.02	37.94	40.48	34.90	38.33	42.47

Table B2. Energy consumption by sector and source (continued) (quadrillion Btu per year, unless otherwise noted)

				•		Dunia -41				
			2022		1	Projections	i	1	20.12	
Sector and source	2012		2020	T	_	2030	T		2040	l
occioi ana ocarco	2012	Low economic	Reference	High economic	Low economic	Poforonco	High economic	Low economic	Reference	High economic
		growth	Kelelelice	growth	growth	Kelelelice	growth	growth	Reference	growth
Transportation										
Propane	0.05	0.05	0.05	0.05	0.05	0.06	0.06	0.06	0.07	0.08
Motor gasoline ²	16.33	14.85	15.00	15.05	11.99	12.69	12.87	10.81	12.09	12.59
of which: E85 ⁹	0.01	0.19	0.19	0.18	0.54	0.46	0.42	0.47	0.33	0.34
Jet fuel ¹⁰	3.00	3.06	3.08	3.10	3.15	3.20	3.25	3.19	3.28	3.37
Distillate fuel oil ¹¹	5.82		6.70	7.17	6.48	7.25	8.07	6.53	7.54	8.94
Residual fuel oil	0.58	0.58	0.58	0.58	0.59	0.59	0.59	0.60	0.60	0.61
Other petroleum ¹²	0.15	0.14	0.15	0.15	0.14	0.15	0.15	0.14	0.15	0.15
Petroleum and other liquids subtotal	25.93	25.02	25.55	26.10	22.40	23.94	24.99	21.34	23.73	25.74
Pipeline fuel natural gas	0.73	0.72	0.74	0.76	0.78	0.82	0.86	0.80	0.85	0.89
Compressed / liquefied natural gas	0.04 0.00	0.08	0.08	0.08	0.28 0.00	0.28 0.00	0.30	0.86 0.00	0.86	1.05 0.00
Liquid hydrogen	0.00		0.00	0.00	0.00	0.04	0.04	0.06		0.06
Electricity Delivered energy	26.72		26.40	26.98	23.50	25.08	26.20	23.05	0.06 25.50	27.75
Electricity related losses	0.05	0.06	0.06	0.06	0.08	0.08	0.08	0.11	0.12	0.12
Total	26.77	25.92	26.47	27.04	23.58	25.17	26.28	23.16	25.62	27.87
Delivered energy consumption for all sectors										
Liquefied petroleum gases and other ⁵	2.96	3.47	3.53	3.56	3.54	3.65	3.69	3.38	3.49	3.57
Motor gasoline ²	16.64	15.18	15.34	15.40	12.31	13.04	13.22	11.13	12.44	12.96
of which: E85 ⁹	0.01	0.19	0.19	0.18	0.54	0.46	0.42	0.47	0.33	0.34
Jet fuel ¹⁰	3.00	3.06	3.08	3.10	3.15	3.20	3.25	3.19	3.28	3.37
Kerosene	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Distillate fuel oil	7.93	8.52	8.95	9.51	8.51	9.41	10.34	8.49	9.63	11.17
Residual fuel oil	0.72	0.80	0.80	0.82	0.80	0.82	0.83	0.81	0.83	0.85
Petrochemical feedstocks	0.75	1.22	1.27	1.31	1.47	1.62	1.68	1.49	1.59	1.67
Other petroleum ¹³	3.64	3.49	3.70	3.94	3.31	3.73	4.06	3.36	3.89	4.34
Petroleum and other liquids subtotal	35.64	35.76	36.68	37.64	33.10	35.47	37.09	31.86	35.17	37.93
Natural gas	14.56	15.78	16.14	16.42	15.97	16.77	17.51	16.47	17.59	19.04
Natural-gas-to-liquids heat and power	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Lease and plant fuel ⁷	1.45	1.77	1.77	1.81	2.07	2.16	2.25	2.30	2.41	2.52
Pipeline natural gas	0.73	0.72	0.74	0.76	0.78	0.82	0.86	0.80	0.85	0.89
Natural gas subtotal	16.74	18.27	18.65	19.00	18.81	19.75	20.61	19.56	20.84	22.44
Metallurgical coal	0.55	0.54	0.58	0.65	0.49	0.55	0.65	0.41	0.47	0.64
Other coal	0.98	0.99	1.03	1.09	0.97	1.04	1.14	0.96	1.05	1.25
Coal-to-liquids heat and power	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Net coal coke imports	0.00	0.00	0.00	0.01	-0.02	-0.03	-0.03	-0.04	-0.05	-0.06
Coal subtotal	1.53	1.54	1.61	1.74	1.43	1.56	1.76	1.33	1.48	1.83
Biofuels heat and coproducts	0.52		0.76	0.76	0.78	0.79	0.79	0.77	0.79	0.81
Renewable energy ¹⁴	2.06	2.24	2.33	2.41	2.38	2.58	2.72	2.56	2.83	3.07
Liquid hydrogen	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Electricity	12.58 69.07	13.27 71.83	13.60 73.63	14.05 75.61	13.93 70.43	14.76 74.91	15.65 78.63	14.60 70.69	15.77 76.88	17.20 83.28
Delivered energy	••••								7 6.88 29.43	83.28 31.93
Electricity related losses Total	25.95 95.02	26.48 98.31	27.10 100.73	27.75 103.36	27.28 97.71	28.35 103.27	29.60 108.23	27.65 98.34	29.43 106.31	115.22
	33.02	JU.J I	100.73	100.00	31.11	103.27	100.23	30.34	100.51	113.22
Electric power ¹⁵										
Distillate fuel oil	0.05	0.09	0.09	0.09	0.09	0.09	0.09	0.08	0.09	0.09
Residual fuel oil	0.18	0.09	0.09	0.09	0.09	0.09	0.10	0.09	0.10	0.11
Petroleum and other liquids subtotal	0.23	0.17	0.18	0.18	0.17	0.18	0.19	0.18	0.19	0.20
Natural gas	9.46		9.00	9.60	9.27	10.28	11.31	10.21	11.48	12.18
Steam coal	15.82		16.95	17.36	16.65	17.44	17.90	16.51	17.27	17.93
Nuclear / uranium ¹⁶	8.05	8.15	8.15	8.15	8.15	8.18	8.30	8.15	8.49	9.65
Renewable energy ¹⁷	4.59	6.14	6.08	6.16	6.63	6.68	7.22	6.87	7.44	8.81
Non-biogenic municipal waste	0.23		0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23
Electricity imports	0.16		0.11	0.11	0.11	0.12	0.12	0.11	0.12	0.15
Total	38.53	39.75	40.70	41.80	41.21	43.12	45.25	42.25	45.20	49.13

Table B2. Energy consumption by sector and source (continued)

(quadrillion Btu per year, unless otherwise noted)

						Projections							
			2020			2030			2040				
Sector and source	2012	Low economic growth	Reference	High economic growth	Low economic growth	Reference	High economic growth	Low economic growth	Reference	High economic growth			
Total energy consumption													
Liquefied petroleum gases and other ⁵	2.96	3.47	3.53	3.56	3.54	3.65	3.69	3.38	3.49	3.57			
Motor gasoline ²	16.64	15.18	15.34	15.40	12.31	13.04	13.22	11.13	12.44	12.96			
of which: E85 ⁹	0.01	0.19	0.19	0.18	0.54	0.46	0.42	0.47	0.33	0.34			
Jet fuel ¹⁰	3.00	3.06	3.08	3.10	3.15	3.20	3.25	3.19	3.28	3.37			
Kerosene	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01			
Distillate fuel oil	7.98	8.61	9.03	9.60	8.59	9.50	10.43	8.57	9.72	11.26			
Residual fuel oil	0.90	0.89	0.89	0.91	0.89	0.91	0.93	0.90	0.93	0.96			
Petrochemical feedstocks	0.75	1.22	1.27	1.31	1.47	1.62	1.68	1.49	1.59	1.67			
Other petroleum ¹³	3.64	3.49	3.70	3.94	3.31	3.73	4.06	3.36	3.89	4.34			
Petroleum and other liquids subtotal	35.87	35.93	36.86	37.82	33.28	35.65	37.27	32.04	35.35	38.13			
Natural gas	24.02	24.25	25.14	26.03	25.23	27.05	28.82	26.68	29.07	31.21			
Natural-gas-to-liquids heat and power	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00			
Lease and plant fuel ⁷	1.45	1.77	1.77	1.81	2.07	2.16	2.25	2.30	2.41	2.52			
Pipeline natural gas	0.73	0.72	0.74	0.76	0.78	0.82	0.86	0.80	0.85	0.89			
Natural gas subtotal	26.20	26.73	27.65	28.60	28.08	30.03	31.92	29.78	32.32	34.62			
Metallurgical coal	0.55	0.54		0.65	0.49	0.55	0.65	0.41	0.47	0.64			
Other coal	16.79	17.47	17.98	18.45	17.62	18.49	19.04	17.47	18.32	19.18			
Coal-to-liquids heat and power	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00			
Net coal coke imports	0.00	0.00	0.00	0.01	-0.02	-0.03	-0.03	-0.04		-0.06			
Coal subtotal	17.34	18.01	18.56	19.11	18.08	19.01	19.66	17.83		19.75			
Nuclear / uranium ¹⁶	8.05	8.15	8.15	8.15	8.15	8.18	8.30	8.15		9.65			
Biofuels heat and coproducts	0.52		0.76	0.76	0.78	0.79	0.79	0.77	0.79	0.81			
Renewable energy ¹⁸	6.65	8.38	8.40	8.58	9.00	9.26	9.95	9.43		11.88			
Liquid hydrogen	0.00		0.00	0.00	0.00	0.00	0.00	0.00		0.00			
Non-biogenic municipal waste	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23		0.23			
Electricity imports	0.16		0.11	0.11	0.11	0.12	0.12	0.11	0.12	0.15			
Total	95.02	98.31	100.73	103.36	97.71	103.27	108.23	98.34	106.31	115.22			
Energy use and related statistics													
Delivered energy use	69.07	71.83	73.63	75.61	70.43	74.91	78.63	70.69	76.88	83.28			
Total energy use	95.02	98.31	100.73	103.36	97.71	103.27	108.23	98.34	106.31	115.22			
Ethanol consumed in motor gasoline and E85	1.09	1.21	1.22	1.22	1.25	1.25	1.25	1.25		1.34			
Population (millions)	314.58	332.91	334.47	336.27	354.64	359.03	364.05	372.79		389.40			
Gross domestic product (billion 2005 dollars).	13,593	15,918	16,753	17,594	18,910	21,139	22,725	23,158		29,154			
Carbon dioxide emissions (million metric tons)	5,290	5,327	5,476	5,633	5,195	5,527	5,778	5,170	,	5,972			

[|] Includes 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.
| Includes ethanol and ethers blended into gasoline. | Includes 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.
| Includes pereity for combined heat and power plants that have a non-regulatory status, and small on-site generating systems.
| Includes petroleum coke, asphalt, road oil, lubricants, still gas, and miscellaneous petroleum products.
| Represents natural gas used in well, field, and lease operations, in natural gas processing plant machinery, and for liquefaction in export facilities.
| Includes consumption of energy produced from hydroelectric, wood and wood waste, municipal waste, and other biomass sources. Excludes ethanol in motor gasoline.
| Includes consumption of energy produced from hydroelectric, wood and wood waste, municipal waste, and other biomass sources. Excludes ethanol varies seasonally. The annual average ethanol content of 74 percent is used for this forecast.

| Includes only kerosene type. | Includes aviation gasoline and lubricants. | Includes aviation gasoline and lubricants. | Includes aviation gasoline, petroleum coke, asphalt, road oil, lubricants, still gas, and miscellaneous petroleum products. | Includes aviation gasoline, petroleum coke, asphalt, road oil, lubricants, still gas, and miscellaneous petroleum products. | Includes 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 photovolvalic

net electricity imports.

19 Includes 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.

Btu = British thermal unit.

Note: Includes estimated consumption for petroleum and other liquids. Totals may not equal sum of components due to independent rounding. Data for 2012 are model results and may differ from official EIA data reports.

Sources: 2012 consumption based on: U.S. Energy Information Administration (EIA), Monthly Energy Review, DOE/EIA-0035(2013/09) (Washington, DC, September 2013). 2012 population and gross domestic product: IHS Global Insight Industry and Employment models, May 2013. 2012 carbon dioxide emissions and emission factors: EIA, Monthly Energy Review, DOE/EIA-0035(2013/09) (Washington, DC, September 2013). Projections: EIA, AEO2014 National Energy Modeling System runs LOWMACRO.D112913A, REF2014.D102413A, and HIGHMACRO.D112913A.

Table B3. Energy prices by sector and source

(2012 dollars per million Btu, unless otherwise noted)

				•		Projections	1					
			2020			2030			2040			
Sector and source	2012	Low economic growth	Reference	High economic growth	Low economic growth	Reference	High economic growth	Low economic growth	Reference	High economic growth		
Residential												
Propane	24.12	23.76	23.79	24.21	25.45	25.75	26.02	27.09	27.64	27.99		
Distillate fuel oil	27.30	24.26	24.67	25.12	27.69	28.60	29.24	31.27	32.64	33.97		
Natural gas	10.46	11.58	11.59	12.22	12.92	13.50	14.06	14.90	15.98	17.10		
Electricity	34.83	36.20	36.15	36.03	36.93	36.98	37.33	38.37	38.83	39.81		
Commercial												
Propane	20.75	20.29	20.33	20.81	22.40	22.79	23.13	24.51	25.17	25.62		
Distillate fuel oil	26.81	21.40	21.77	22.47	24.90	25.66	26.23	28.31	29.72	31.07		
Residual fuel oil	22.84	14.19	14.40	14.52	17.39	17.92	18.26	20.36	20.99	21.89		
Natural gas	8.11	9.50	9.49	9.96	10.72	11.19	11.62	12.26	13.08	13.94		
Electricity	29.55	30.42	30.80	30.98	30.65	31.26	32.26	31.56	33.01	34.76		
Industrial ¹	21.00	20.60	20.64	21.14	22.06	22.27	22.64	25 10	25.04	26.22		
Propane Distillate fuel oil	21.09	20.60	20.64	21.14	22.86	23.27	23.64	25.10	25.84	26.32		
	27.41	21.86	22.22	22.77 15.03	25.46	26.11	26.65	28.77	29.92	31.25		
Residual fuel oil	20.90	14.67	14.88		17.82	18.29	18.61	20.80	21.48	22.37		
Natural gas ²	3.77	5.84	5.79	6.08	6.57	6.99	7.37	8.11	8.59	9.25		
Metallurgical coal	7.25	8.48	8.43	8.42	9.57	9.51	9.57	10.21	10.20	10.43		
Other industrial coal	3.24	3.58	3.59	3.61	3.86	3.88	3.95	4.16	4.19	4.26		
Coal to liquids Electricity	19.50	20.54	20.77	20.98	 21.45	21.99	22.77	22.94	24.05	25.45		
Lieutiony	19.50	20.54	20.77	20.90	21.40	21.55	22.11	22.54	24.00	20.40		
Transportation												
Propane	25.14	24.82	24.85	25.45	26.51	26.81	27.08	28.14	28.82	29.20		
E85 ³	35.06	25.36	25.61	27.09	25.63	27.91	29.07	29.82	35.49	36.50		
Motor gasoline ⁴	30.68	25.48	25.59	26.22	27.98	28.54	28.90	30.76	32.67	33.65		
Jet fuel ⁵	22.99	19.12	19.47	19.95	22.89	23.71	24.33	26.92	28.07	29.36		
Diesel fuel (distillate fuel oil) ⁶	28.80	26.44	26.80	27.38	30.07	30.68	31.22	33.34	34.53	35.85		
Residual fuel oil	20.07	12.26	12.46	12.67	15.08	15.50	15.83	17.91	18.55	19.41		
Natural gas ⁷	14.64	15.44	15.62	16.41	15.95	16.63	17.25	18.26	19.67	20.83		
Electricity	31.43	29.38	29.86	30.23	31.08	31.68	32.54	32.45	34.19	35.88		
Electric power ⁸												
Distillate fuel oil	24.12	20.27	20.66	21.19	23.77	24.65	25.25	27.39	28.81	30.14		
Residual fuel oil	20.68	13.65	13.86	13.98	16.72	17.14	17.46	19.76	20.42	21.32		
Natural gas	3.44	5.06	5.07	5.37	6.04	6.49	6.89	7.63	8.16	8.78		
Steam coal	2.39	2.59	2.61	2.64	2.90	2.93	2.95	3.16	3.19	3.24		
Average price to all users ⁹												
Propane	23.24	22.51	22.54	23.02	24.30	24.66	25.00	26.12	26.79	27.24		
E85 ³	35.06	25.36	25.61	27.09	25.63	27.91	29.07	29.82	35.49	36.50		
Motor gasoline ⁴	30.44	25.48	25.58	26.22	27.97	28.53	28.90	30.76	32.67	33.64		
Jet fuel⁵	22.99	19.12	19.47	19.95	22.89	23.71	24.33	26.92	28.07	29.36		
Distillate fuel oil	28.36	25.33	25.70	26.30	28.99	29.67	30.24	32.32	33.54	34.94		
Residual fuel oil	20.41	12.95	13.15	13.36	15.85	16.32	16.68	18.74	19.42	20.34		
Natural gas	5.38	7.15	7.09	7.42	8.10	8.49	8.86	9.81	10.38	11.16		
Metallurgical coal	7.25	8.48	8.43	8.42	9.57	9.51	9.57	10.21	10.20	10.43		
Other coal	2.44	2.66	2.67	2.70	2.96	2.98	3.02	3.22	3.25	3.31		
Coal to liquids												
Electricity	28.85	29.62	29.72	29.70	30.26	30.56	31.20	31.65	32.63	33.90		
Non-renewable energy expenditures by												
sector (billion 2012 dollars)												
Residential	234.06	244.36	249.25	258.05	254.20	272.82	296.05	271.38	306.56	350.21		
Commercial	173.25	187.07	189.44	192.88	208.45	215.91	225.21	239.06	255.39	273.61		
Industrial ¹	213.75	265.70	279.45	299.80	306.22	343.02	376.63	342.35	390.91	450.69		
Transportation	755.09	613.11	632.05	662.34	606.78	667.67	711.94	655.67	772.91	874.31		
Total non-renewable expenditures												
Transportation renewable expenditures	0.50	4.86	4.89	4.77	13.77	12.96	12.35	14.14	11.80	12.43		
Total expenditures												

Table B3. Energy prices by sector and source (continued)

(nominal dollars per million Btu, unless otherwise noted)

		Projections											
			2020			2030			2040				
Sector and source	2012	Low economic growth	Reference	High economic growth	Low economic growth	Reference	High economic growth	Low economic growth	Reference	High economic growth			
Residential													
Propane	24.12	28.41	26.94	26.86	42.82	34.67	33.24	66.64	45.83	42.93			
Distillate fuel oil	27.30	29.00	27.94	27.87	46.59	38.50	37.35	76.92	54.12	52.10			
Natural gas	10.46	13.84	13.13	13.56	21.74	18.18	17.97	36.65	26.49	26.23			
Electricity	34.83	43.29	40.94	39.97	62.12	49.78	47.70	94.41	64.39	61.06			
Commercial													
Propane	20.75	24.26	23.02	23.08	37.69	30.68	29.55	60.30	41.74	39.29			
Distillate fuel oil	26.81	25.59	24.66	24.93	41.89	34.54	33.51	69.64	49.27	47.65			
Residual fuel oil	22.84	16.97	16.31	16.11	29.25	24.12	23.33	50.10	34.80	33.58			
Natural gas	8.11	11.36	10.75	11.06	18.03	15.07	14.84	30.16	21.68	21.38			
Electricity	29.55	36.38	34.88	34.37	51.56	42.08	41.21	77.65	54.73	53.32			
Industrial ¹													
Propane	21.09	24.64	23.38	23.45	38.45	31.32	30.20	61.77	42.83	40.37			
Distillate fuel oil	27.41	26.14	25.17	25.26	42.83	35.15	34.04	70.79	49.61	47.93			
Residual fuel oil	20.90	17.55	16.85	16.68	29.98	24.62	23.77	51.17	35.61	34.32			
Natural gas ²	3.77	6.98	6.56	6.75	11.06	9.41	9.41	19.96	14.25	14.19			
Metallurgical coal	7.25	10.14	9.55	9.34	16.10	12.81	12.22	25.13	16.91	16.00			
Other industrial coal	3.24	4.28	4.07	4.00	6.50	5.23	5.05	10.22	6.95	6.54			
Coal to liquids	5.24	7.20	4 .07	7.00	0.50	5.25	5.05	10.22	0.33	0.5-			
Electricity	19.50	24.56	23.52	23.28	36.09	29.60	29.09	56.45	39.88	39.03			
Transportation													
Propane	25.14	29.68	28.14	28.23	44.59	36.09	34.60	69.24	47.79	44.78			
E85 ³	35.06	30.32	29.00	30.05	43.12	37.57	37.14	73.38	58.85	55.99			
Motor gasoline ⁴	30.68	30.46	28.98	29.09	47.06	38.42	36.92	75.69	54.17	51.61			
Jet fuel ⁵	22.99	22.87	22.06	22.14	38.51	31.91	31.08	66.24	46.53	45.04			
Diesel fuel (distillate fuel oil) ⁶	28.80	31.62	30.35	30.38	50.59	41.30	39.89	82.02	57.25	54.99			
Residual fuel oil	20.07	14.66	14.11	14.05	25.37	20.86	20.23	44.06	30.76	29.77			
Natural gas ⁷	14.64	18.46	17.69	18.21	26.83	22.38	22.04	44.93	32.61	31.95			
Electricity	31.43	35.13	33.82	33.54	52.29	42.65	41.56	79.83	56.68	55.04			
Electric power ⁸													
Distillate fuel oil	24.12	24.23	23.40	23.51	39.98	33.18	32.26	67.38	47.77	46.22			
Residual fuel oil	20.68	16.33	15.70	15.51	28.13	23.08	22.30	48.61	33.86	32.70			
Natural gas	3.44	6.05	5.75	5.96	10.16	8.74	8.80	18.76	13.53	13.47			
· ·													
Steam coal	2.39	3.10	2.96	2.93	4.88	3.94	3.77	7.78	5.29	4.97			

Table B3. Energy prices by sector and source (continued)

(nominal dollars per million Btu, unless otherwise noted)

		Projections													
			2020			2030			2040						
Sector and source	2012	Low economic growth	Reference	High economic growth	Low economic growth	Reference	High economic growth	Low economic growth	Reference	High economic growth					
Average price to all users ⁹															
Propane	23.24	26.91	25.53	25.54	40.88	33.20	31.93	64.27	44.42	41.78					
E85 ³	35.06	30.32	29.00	30.05	43.12	37.57	37.14	73.38	58.85	55.99					
Motor gasoline4	30.44	30.46	28.98	29.09	47.06	38.41	36.92	75.68	54.17	51.60					
Jet fuel ⁵	22.99	22.87	22.06	22.14	38.51	31.91	31.08	66.24	46.53	45.04					
Distillate fuel oil	28.36	30.29	29.11	29.18	48.78	39.94	38.63	79.52	55.61	53.60					
Residual fuel oil	20.41	15.48	14.90	14.82	26.67	21.97	21.31	46.10	32.20	31.20					
Natural gas	5.38	8.55	8.04	8.23	13.62	11.43	11.32	24.13	17.22	17.12					
Metallurgical coal	7.25	10.14	9.55	9.34	16.10	12.81	12.22	25.13	16.91	16.00					
Other coal	2.44	3.17	3.03	2.99	4.97	4.02	3.86	7.92	5.39	5.08					
Coal to liquids															
Electricity	28.85	35.42	33.66	32.95	50.90	41.13	39.85	77.86	54.11	52.00					
Non-renewable energy expenditures by															
sector (billion nominal dollars) Residential	234.06	292.19	282.30	286.31	427.62	367.27	378.21	667.71	508.27	537.16					
	173.25	292.19		214.01	350.66	290.65	287.71	588.19	423.44	419.68					
CommercialIndustrial 1	213.75	317.71	214.56	332.63			481.15	842.31	648.12	691.29					
	755.09	733.13	316.50		515.14	461.77									
Transportation			715.87	734.87	1,020.75	898.80	909.52	,	1,281.47	, -					
Total non-renewable expenditures	0.50		,	5.29	,	,	,		2,861.30	,					
Transportation renewable expenditures Total expenditures		5.81 1,572.53	5.54 1,534.77		23.16 2,337.33	17.45 2,035.94	15.78 2,072.36	34.80 3,746.19	19.56 2,880.86	19.06 3,008.25					

¹Includes energy for combined heat and power plants that have a non-regulatory status, and small on-site generating systems.
²Excludes use for lease and plant fuel.
³E85 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.
¹Sales weighted-average price for all grades. Includes Federal, State and local taxes.
¹Kerosene-type jet fuel. Includes Federal and State taxes while excluding county and local taxes.
¹Natural gas used as fuel in motor vehicles, trains, and ships. Price includes estimated motor vehicle fuel taxes and estimated dispensing costs or charges.
¹Includes electricity-only and combined heat and power plants that have a regulatory status.
³Weighted averages of end-use fuel prices are derived from the prices shown in each sector and the corresponding sectoral consumption.
Btu = British thermal unit.
-- Not applicable.
Note: Data for 2012 are model results and may differ from official EIA data reports.
Sources: 2012 prices for motor gasoline, distillate fuel oil, and jet fuel are based on prices in the U.S. Energy Information Administration (EIA), *Petroleum Marketing Monthly*, DOE/EIA-0380(2013/08) (Washington, DC, August 2013). 2012 residential, commercial, and industrial natural gas delivered prices: EIA, *Natural Gas Monthly*, DOE/EIA-0380(2013/08) (Washington, DC, June 2013). 2012 transportation sector natural gas delivered prices are model results. 2012 electric power sector flistillate and residual fuel oil prices: EIA, *Monthly Energy Review*, DOE/EIA-035(2013/09) (Washington, DC, September 2013). 2012 electric power sector natural gas prices: EIA, *Electric Power Monthly*, DOE/EIA-026, April 2012 and April 2013, Table 4.2, and EIA, *State Energy Data Report 2011*, DOE/EIA-0213 and EIA, AEO2014 National Energy Modeling System runs LOWMACRO.D112913A, REF2014.D102413A, and HIGHMACRO.D112913A.

Table B4. Macroeconomic indicators

(billion 2005 chain-weighted dollars, unless otherwise noted)

						Projections				
			2020			2030			2040	
Indicators	2012	Low economic growth	Reference	High economic growth	Low economic growth	Reference	High economic growth	Low economic growth	Reference	High economic growth
Real gross domestic product	13,593	15,918	16,753	17,594	18,910	21,139	22,725	23,158	26,670	29,154
Components of real gross domestic product										
Real consumption	9,603	11,020	11,592	12,118	12,576	14,220	15,309	14,671	17,635	19,162
Real investment	1,914	2,554	2,876	3,256	3,174	3,740	4,288	4,137	4,925	5,702
Real government spending	2,481	2,374	2,443	2,505	2,425	2,623	2,708	2,587	2,917	3,005
Real exports	1,837	2,778	2,863	2,962	4,703	5,056	5,438	7,707	8,186	9,273
Real imports	2,238	2,738	2,925	3,127	3,746	4,213	4,667	5,339	6,328	7,128
Energy intensity (thousand Btu per 2005 dollar of GDP)										
Delivered energy	5.08	4.51	4.40	4.30	3.72	3.54	3.46	3.05	2.88	2.86
Total energy	6.99	6.18	6.01	5.87	5.17	4.89	4.76	4.25	3.99	3.95
Price indices										
GDP chain-type price index (2005=1.000)	1.154	1.380	1.307	1.280	1.941	1.553	1.474	2.839	1.913	1.770
Consumer price index (1982-4=1.00)										
All-urban	2.30	2.77	2.63	2.58	3.99	3.20	3.04	6.01	4.05	3.76
Energy commodities and services	2.46	2.68	2.55	2.54	4.08	3.33	3.21	6.51	4.56	4.39
Wholesale price index (1982=1.00)	2.02	2.35	2.22	2.20	3.28	2.62	2.51	4.79	3.21	3.06
All commodities Fuel and power	2.02	2.55	2.42	2.20	4.00	3.30	3.23	6.72	4.73	4.61
Metals and metal products	2.12	2.54	2.42	2.41	3.41	2.77	2.75	4.67	3.22	3.28
Industrial commodities excluding energy	1.94	2.34	2.43	2.13	3.41	2.77	2.73	4.07	2.78	2.64
industrial commodities excluding energy	1.54	2.21	2.14	2.13	3.07	2.41	2.30	4.21	2.70	2.04
Interest rates (percent, nominal)	0.44	5 00	0.05	0.40	7.00		0.00	7.45	4.00	0.05
Federal funds rate	0.14	5.28	3.85	3.40	7.03	4.14	3.63	7.45	4.22	3.85
10-year treasury note	1.80	6.02	4.14	3.61	7.26	4.36	3.83	7.84	4.52	4.05
AA utility bond rate	3.83	8.91	6.60	5.59	10.42	6.88	5.99	11.30	7.22	6.35
Value of shipments (billion 2005 dollars)										
Non-industrial and service sectors	21,359	24,672	26,033	27,492	28,252	31,782	34,301	31,742	37,135	40,577
Total industrial	6,147	7,439	7,960	8,614	8,400	9,537	10,672	9,475	10,994	12,985
Agriculture, mining, and construction	1,623	2,011	2,226	2,470	2,040	2,389	2,717	2,159	2,551	2,945
Manufacturing	4,525	5,428	5,735	6,144	6,360	7,148	7,955	7,315	8,443	10,041
Energy-intensive	1,616	1,861	1,931	2,012	2,003	2,171	2,292	2,105	2,303	2,484
Non-energy-intensive Total shipments	2,909 27,506	3,567 32,111	3,803 33,994	4,131 36,105	4,358 36,651	4,977 41,319	5,663 44,973	5,210 41,217	6,140 48,129	7,557 53,563
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Population and employment (millions)	0440				0=40			.=		
Population, with armed forces overseas	314.6	332.9	334.5	336.3	354.6	359.0	364.1	372.8	380.5	389.4
Population, aged 16 and over	249.2	265.6	266.7	268.0	284.4	287.6	291.4	301.4	307.3	314.0
Population, over age 65	43.4	56.2	56.2	56.3	72.7	73.0	73.3	79.1	79.8	80.6 178.4
Employment, nonfarm	133.7	145.4	148.4	153.5	155.0	158.6	166.4	163.0	169.2	
Employment, manufacturing	11.9	12.2	12.8	13.7	11.1	12.5	13.9	9.5	11.0	13.1
Key labor indicators										
Labor force (millions)	155.0	162.4	163.5	165.0	168.3	170.9	174.7	176.9	181.2	189.8
Non-farm labor productivity (1992=1.00) Unemployment rate (percent)	1.11 8.08	1.21 5.87	1.25 5.49	1.27 5.07	1.41 5.38	1.53 5.10	1.58 4.80	1.64 5.27	1.85 5.12	1.94 4.72
,	0.00	0.01	00	0.07	0.00	33		J,	52	
Key indicators for energy demand	40.00:	40.045	40 = 45	40.00:	44.00:	45.000	40 ===	47.000	40 =0 :	00.055
Real disposable personal income	10,304	12,212	12,710	13,204	14,681	15,926	16,752	17,688	19,724	20,650
Housing starts (millions)	0.84	1.25	1.75	2.38	1.09	1.71	2.50	1.02	1.66	2.59
Commercial floorspace (billion square feet)	82.4	88.6	89.1	89.8	96.5	98.2	100.0	105.6	108.9	112.3
Unit sales of light-duty vehicles (millions)	14.43	15.16	16.23	17.06	15.49	17.23	17.93	15.27	17.93	19.42

GDP = Gross domestic product.
Btu = British thermal unit.
Sources: 2012: IHS Global Insight, Global Insight Industry and Employment models, May 2013. Projections: U.S. Energy Information Administration, AEO2014 National Energy Modeling System runs LOWMACRO.D112913A, REF2014.D102413A, and HIGHMACRO.D112913A.

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