Appendix C

Price case comparisons

Table C1. Total energy supply, disposition, and price summary

(quadrillion Btu per year, unless otherwise noted)

Supply, disposition, and prices	2015	Projections								
		2020			2030			2040		
		Low oil price	Reference	High oil price	Low oil price	Reference	High oil price	Low oil price	Reference	High oil price
Production										
Crude oil and lease condensate	19.7	17.0	19.6	23.3	14.8	21.0	25.4	18.0	23.5	23.1
Natural gas plant liquids	4.4	5.8	6.1	6.4	5.8	6.5	6.9	6.1	6.7	7.0
Dry natural gas	28.0	30.1	31.4	31.8	35.6	38.9	41.8	40.0	43.4	48.0
Coal[1]	17.2	17.4	17.5	17.0	13.2	13.3	15.7	13.0	13.1	15.2
Nuclear / uranium[2]	8.3	8.1	8.1	8.1	8.2	8.2	8.2	8.2	8.2	8.2
Conventional hydroelectric power	2.3	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.9
Biomass[3]	4.1	4.2	4.2	4.4	4.2	4.4	4.6	4.3	4.6	4.9
Other renewable energy[4]	2.6	4.4	4.6	5.5	6.2	6.6	8.7	8.6	8.8	10.8
Other[5]	0.5	0.8	0.9	0.9	0.8	0.9	0.9	0.9	1.0	1.0
Total	**87.3**	**90.6**	**95.4**	**100.2**	**91.7**	**102.7**	**115.2**	**101.9**	**112.2**	**121.2**
Imports										
Crude oil	16.1	15.8	16.8	15.8	17.3	16.0	13.5	18.9	15.9	16.7
Petroleum and other liquids[6]	3.9	5.1	4.5	4.2	5.7	4.3	3.6	5.8	4.3	3.4
Natural gas[7]	2.8	2.0	2.1	2.1	1.5	1.6	1.8	1.3	1.4	2.1
Other imports[8]	0.4	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.2	0.5
Total	**23.2**	**23.1**	**23.6**	**22.2**	**24.6**	**22.0**	**19.0**	**26.2**	**21.8**	**22.7**
Exports										
Petroleum and other liquids[9]	9.0	7.1	11.6	16.0	7.2	13.5	19.5	10.5	15.2	21.0
Natural gas[10]	1.8	4.2	5.0	5.0	5.5	7.6	10.8	6.9	9.0	12.7
Coal	2.0	1.9	1.9	1.7	2.1	1.9	1.7	2.4	2.3	1.9
Total	**12.8**	**13.1**	**18.5**	**22.7**	**14.7**	**23.0**	**32.0**	**19.8**	**26.6**	**35.6**
Discrepancy[11]	**1.0**	**0.1**	**0.0**	**-0.1**	**0.2**	**0.1**	**0.2**	**0.2**	**0.3**	**0.3**
Consumption										
Petroleum and other liquids[12]	36.5	38.8	37.8	36.3	38.4	36.6	33.7	40.5	37.5	33.9
Natural gas	28.3	27.7	28.3	28.6	31.3	32.5	31.5	34.0	35.4	35.3
Coal[13]	15.5	15.5	15.6	15.1	11.1	11.3	13.5	10.5	10.7	13.1
Nuclear / uranium[2]	8.3	8.1	8.1	8.1	8.2	8.2	8.2	8.2	8.2	8.2
Conventional hydroelectric power	2.3	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.9
Biomass[14]	2.8	2.7	2.8	2.9	2.8	3.0	3.2	2.9	3.1	3.4
Other renewable energy[4]	2.6	4.4	4.6	5.5	6.2	6.6	8.7	8.6	8.8	10.8
Other[15]	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
Total	**96.7**	**100.5**	**100.5**	**99.7**	**101.4**	**101.5**	**102.0**	**108.1**	**107.1**	**108.0**
Prices (2015 dollars per unit)										
Crude oil spot prices (dollars per barrel)										
Brent	52	38	77	152	49	104	207	73	136	230
West Texas Intermediate	49	32	71	145	42	97	198	67	129	222
Natural gas at Henry Hub (dollars per million Btu)	2.62	3.85	4.43	4.40	4.65	5.06	7.92	4.54	4.86	7.74
Coal (dollars per ton)										
at the minemouth[16]	33.8	30.8	33.6	36.7	32.3	33.8	36.8	36.3	38.7	42.0
Coal (dollars per million Btu)										
at the minemouth[16]	1.69	1.57	1.68	1.82	1.63	1.71	1.86	1.80	1.91	2.08
Average end-use[17]	2.37	2.31	2.43	2.62	2.34	2.55	2.78	2.45	2.68	2.85
Average electricity (cents per kilowatthour)	10.3	10.3	10.5	10.6	10.6	10.9	11.6	10.3	10.5	11.3

Table C1. Total energy supply, disposition, and price summary *(continued)*

(quadrillion Btu per year, unless otherwise noted)

Supply, disposition, and prices	2015	Projections								
		2020			2030			2040		
		Low oil price	Reference	High oil price	Low oil price	Reference	High oil price	Low oil price	Reference	High oil price
Prices (nominal dollars per unit)										
Crude oil spot prices (dollars per barrel)										
Brent	52	42	85	166	66	141	284	121	229	397
West Texas Intermediate	49	35	79	159	58	131	272	111	217	384
Natural gas at Henry Hub (dollars per million Btu)	2.62	4.25	4.90	4.83	6.31	6.84	10.90	7.54	8.17	13.36
Coal (dollars per ton)										
at the minemouth[16]	33.8	34.0	37.1	40.3	43.8	45.8	50.6	60.2	65.1	72.5
Coal (dollars per million Btu)										
at the minemouth[16]	1.69	1.73	1.86	1.99	2.21	2.31	2.55	2.99	3.21	3.59
Average end-use[17]	2.37	2.55	2.69	2.87	3.18	3.45	3.82	4.06	4.50	4.92
Average electricity (cents per kilowatthour)	10.3	11.4	11.6	11.7	14.4	14.7	16.0	17.1	17.6	19.5

[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 hydrocarbon gas 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.
Note: Totals may not equal sum of components due to independent rounding. Data for 2015 are model results and may differ from official EIA data reports.
Sources: 2015: U.S. Energy Information Administration (EIA), *Short-Term Energy Outlook*, February 2016 and EIA, AEO2016 National Energy Modeling System run ref2016.d032416a. **Projections:** EIA, AEO2016 National Energy Modeling System runs lowprice.d041916a, ref2016.d032416a, and highprice.d041916a.

Table C2. Energy consumption by sector and source

(quadrillion Btu per year, unless otherwise noted)

Sector and source	2015	Projections								
		2020			2030			2040		
		Low oil price	Reference	High oil price	Low oil price	Reference	High oil price	Low oil price	Reference	High oil price
Energy consumption										
Residential										
Propane	0.43	0.44	0.42	0.39	0.41	0.38	0.33	0.37	0.34	0.29
Kerosene	0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.00	0.00	0.00
Distillate fuel oil	0.50	0.46	0.43	0.39	0.37	0.34	0.30	0.30	0.27	0.24
Petroleum and other liquids subtotal	0.93	0.91	0.86	0.79	0.78	0.72	0.63	0.67	0.61	0.54
Natural gas	4.77	4.90	4.87	4.87	4.83	4.80	4.72	4.76	4.73	4.62
Renewable energy[1]	0.44	0.34	0.42	0.54	0.30	0.39	0.51	0.29	0.37	0.45
Electricity	4.78	4.80	4.76	4.70	4.89	4.83	4.72	5.26	5.20	5.04
Delivered energy	**10.92**	**10.95**	**10.90**	**10.90**	**10.81**	**10.74**	**10.58**	**10.99**	**10.91**	**10.65**
Electricity related losses	9.44	9.43	9.37	9.27	8.85	8.77	8.93	9.25	9.15	9.32
Total	**20.37**	**20.37**	**20.27**	**20.17**	**19.66**	**19.50**	**19.50**	**20.24**	**20.05**	**19.97**
Commercial										
Propane	0.17	0.20	0.18	0.15	0.22	0.19	0.16	0.23	0.20	0.18
Motor gasoline[2]	0.04	0.07	0.06	0.05	0.08	0.06	0.05	0.08	0.07	0.06
Kerosene	0.00	0.01	0.00	0.00	0.01	0.01	0.00	0.01	0.01	0.00
Distillate fuel oil	0.37	0.40	0.36	0.31	0.38	0.32	0.27	0.34	0.29	0.25
Residual fuel oil	0.07	0.17	0.11	0.07	0.16	0.10	0.07	0.13	0.10	0.08
Petroleum and other liquids subtotal	0.66	0.84	0.70	0.58	0.84	0.68	0.56	0.79	0.67	0.57
Natural gas	3.32	3.49	3.45	3.47	3.59	3.53	3.41	3.85	3.81	3.60
Coal	0.06	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
Renewable energy[3]	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14	0.14
Electricity	4.64	4.71	4.69	4.66	5.13	5.09	4.99	5.67	5.62	5.50
Delivered energy	**8.81**	**9.23**	**9.03**	**8.91**	**9.74**	**9.49**	**9.14**	**10.51**	**10.28**	**9.86**
Electricity related losses	9.16	9.25	9.23	9.19	9.29	9.23	9.43	9.97	9.89	10.16
Total	**17.97**	**18.48**	**18.26**	**18.09**	**19.03**	**18.72**	**18.58**	**20.48**	**20.17**	**20.01**
Industrial[4]										
Liquefied petroleum gases and other[5]	2.38	3.05	3.10	3.03	3.59	3.66	3.57	4.17	4.22	4.06
Motor gasoline[2]	0.27	0.27	0.28	0.28	0.26	0.27	0.26	0.27	0.27	0.26
Distillate fuel oil	1.34	1.50	1.44	1.39	1.46	1.44	1.38	1.49	1.47	1.38
Residual fuel oil	0.04	0.08	0.04	0.03	0.09	0.06	0.05	0.07	0.05	0.05
Petrochemical feedstocks	0.66	0.92	0.96	0.94	1.28	1.31	1.28	1.63	1.66	1.59
Other petroleum[6]	3.38	3.64	3.59	3.73	3.75	3.82	3.71	4.23	4.15	3.97
Petroleum and other liquids subtotal	8.07	9.46	9.40	9.39	10.42	10.55	10.26	11.85	11.82	11.31
Natural gas	7.75	7.84	8.55	8.71	8.50	9.13	9.17	9.47	9.89	9.72
Natural-gas-to-liquids heat and power	0.00	0.00	0.00	0.08	0.00	0.00	0.84	0.00	0.00	1.60
Lease and plant fuel[7]	1.63	1.69	1.76	1.79	1.87	2.06	2.21	2.11	2.31	2.54
Natural gas liquefaction for export[8]	0.00	0.17	0.26	0.26	0.29	0.53	0.87	0.45	0.69	1.10
Natural gas subtotal	9.38	9.70	10.57	10.83	10.65	11.72	13.08	12.03	12.89	14.95
Metallurgical coal	0.54	0.40	0.41	0.50	0.34	0.47	0.50	0.30	0.40	0.33
Other industrial coal	0.82	0.80	0.82	0.86	0.81	0.88	0.91	0.84	0.93	0.97
Coal-to-liquids heat and power	0.00	0.00	0.00	0.00	0.00	0.00	0.65	0.00	0.00	0.75
Net coal coke imports	-0.02	-0.03	-0.01	-0.03	-0.02	0.00	-0.01	-0.01	0.01	0.00
Coal subtotal	1.34	1.17	1.23	1.34	1.13	1.35	2.05	1.13	1.34	2.04
Biofuels heat and coproducts	0.78	0.84	0.83	0.82	0.80	0.81	0.83	0.81	0.84	0.92
Renewable energy[9]	1.48	1.44	1.48	1.53	1.53	1.67	1.71	1.62	1.79	1.85
Electricity	3.27	3.54	3.61	3.71	3.77	3.98	4.05	4.08	4.26	4.28
Delivered energy	**24.33**	**26.16**	**27.11**	**27.62**	**28.31**	**30.07**	**31.99**	**31.51**	**32.94**	**35.37**
Electricity related losses	6.46	6.96	7.11	7.32	6.82	7.22	7.66	7.16	7.50	7.92
Total	**30.79**	**33.12**	**34.22**	**34.94**	**35.13**	**37.29**	**39.65**	**38.67**	**40.44**	**43.28**

Table C2. Energy consumption by sector and source *(continued)*
(quadrillion Btu per year, unless otherwise noted)

Sector and source	2015	Projections								
		2020			2030			2040		
		Low oil price	Reference	High oil price	Low oil price	Reference	High oil price	Low oil price	Reference	High oil price
Transportation										
Propane	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.02	0.02	0.02
Motor gasoline[2]	17.01	17.51	16.79	15.39	15.55	13.62	11.48	15.18	12.55	10.19
of which: E85[10]	0.05	0.04	0.04	0.18	0.08	0.22	0.56	0.14	0.28	0.63
Jet fuel[11]	2.84	3.02	2.99	2.95	3.34	3.32	3.28	3.58	3.56	3.53
Distillate fuel oil[12]	6.67	6.97	6.99	7.04	7.30	7.49	7.10	8.24	8.01	7.28
Residual fuel oil	0.45	0.38	0.37	0.36	0.41	0.42	0.43	0.45	0.45	0.47
Other petroleum[13]	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16	0.16
Petroleum and other liquids subtotal	27.14	28.05	27.32	25.91	26.77	25.01	22.46	27.64	24.75	21.66
Pipeline fuel natural gas	0.89	0.80	0.83	0.85	0.86	0.94	1.07	0.94	1.07	1.27
Compressed / liquefied natural gas	0.07	0.08	0.08	0.13	0.07	0.17	0.75	0.09	0.59	1.58
Liquid hydrogen	0.00	0.01	0.01	0.01	0.05	0.04	0.04	0.07	0.06	0.05
Electricity	0.03	0.05	0.05	0.05	0.11	0.11	0.11	0.16	0.15	0.15
Delivered energy	**28.13**	**28.98**	**28.29**	**26.95**	**27.86**	**26.28**	**24.43**	**28.90**	**26.63**	**24.72**
Electricity related losses	0.06	0.09	0.09	0.10	0.21	0.20	0.21	0.29	0.27	0.28
Total	**28.19**	**29.07**	**28.38**	**27.04**	**28.07**	**26.48**	**24.64**	**29.19**	**26.90**	**25.00**
Unspecified sector[14]	**-0.58**	**-0.60**	**-0.58**	**-0.53**	**-0.52**	**-0.46**	**-0.36**	**-0.52**	**-0.42**	**-0.30**
Delivered energy consumption for all Sectors										
Liquefied petroleum gases and other[5]	2.99	3.69	3.71	3.57	4.22	4.24	4.07	4.79	4.79	4.55
Motor gasoline[2]	16.96	17.25	16.55	15.20	15.35	13.49	11.42	15.01	12.47	10.18
of which: E85[10]	0.05	0.04	0.04	0.18	0.08	0.22	0.56	0.14	0.28	0.63
Jet fuel[11]	3.18	3.26	3.22	3.17	3.60	3.58	3.53	3.85	3.83	3.80
Kerosene	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Distillate fuel oil	8.33	9.09	8.98	8.89	9.26	9.33	8.82	10.09	9.77	8.91
Residual fuel oil	0.56	0.63	0.52	0.46	0.66	0.57	0.55	0.65	0.60	0.60
Petrochemical feedstocks	0.66	0.92	0.96	0.94	1.28	1.31	1.28	1.63	1.66	1.59
Other petroleum[15]	3.54	3.81	3.75	3.88	3.91	3.98	3.87	4.39	4.31	4.13
Petroleum and other liquids subtotal	36.23	38.66	37.70	36.14	38.29	36.51	33.55	40.43	37.44	33.77
Natural gas	15.90	16.30	16.95	17.19	16.99	17.63	18.04	18.18	19.02	19.51
Natural-gas-to-liquids heat and power	0.00	0.00	0.00	0.08	0.00	0.00	0.84	0.00	0.00	1.60
Lease and plant fuel[7]	1.63	1.69	1.76	1.79	1.87	2.06	2.21	2.11	2.31	2.54
Natural gas liquefaction for export[8]	0.00	0.17	0.26	0.26	0.29	0.53	0.87	0.45	0.69	1.10
Pipeline natural gas	0.89	0.80	0.83	0.85	0.86	0.94	1.07	0.94	1.07	1.27
Natural gas subtotal	18.43	18.96	19.80	20.17	20.00	21.16	23.02	21.67	23.09	26.02
Metallurgical coal	0.54	0.40	0.41	0.50	0.34	0.47	0.50	0.30	0.40	0.33
Other coal	0.88	0.85	0.88	0.91	0.86	0.93	0.97	0.90	0.98	1.02
Coal-to-liquids heat and power	0.00	0.00	0.00	0.00	0.00	0.00	0.65	0.00	0.00	0.75
Net coal coke imports	-0.02	-0.03	-0.01	-0.03	-0.02	0.00	-0.01	-0.01	0.01	0.00
Coal subtotal	1.40	1.23	1.28	1.39	1.18	1.40	2.11	1.19	1.39	2.10
Biofuels heat and coproducts	0.78	0.84	0.83	0.82	0.80	0.81	0.83	0.81	0.84	0.92
Renewable energy[16]	2.06	1.92	2.03	2.20	1.97	2.19	2.36	2.05	2.29	2.44
Liquid hydrogen	0.00	0.01	0.01	0.01	0.05	0.04	0.04	0.07	0.06	0.05
Electricity	12.72	13.10	13.11	13.12	13.90	14.01	13.87	15.18	15.23	14.97
Delivered energy	**71.62**	**74.73**	**74.75**	**73.85**	**76.20**	**76.12**	**75.77**	**81.40**	**80.34**	**80.28**
Electricity related losses	25.12	25.73	25.80	25.88	25.17	25.41	26.23	26.66	26.81	27.68
Total	**96.74**	**100.45**	**100.55**	**99.72**	**101.38**	**101.54**	**102.01**	**108.05**	**107.15**	**107.96**
Electric power[17]										
Distillate fuel oil	0.09	0.09	0.09	0.08	0.06	0.06	0.07	0.05	0.05	0.06
Residual fuel oil	0.17	0.06	0.06	0.06	0.04	0.04	0.04	0.03	0.03	0.03
Petroleum and other liquids subtotal	0.26	0.15	0.15	0.14	0.11	0.11	0.11	0.09	0.09	0.09
Natural gas	9.89	8.76	8.50	8.40	11.33	11.34	8.44	12.30	12.31	9.28
Steam coal	14.08	14.25	14.34	13.74	9.94	9.92	11.36	9.36	9.36	10.97
Nuclear / uranium[18]	8.34	8.12	8.12	8.12	8.25	8.25	8.25	8.25	8.25	8.25
Renewable energy[19]	4.86	7.13	7.37	8.17	9.05	9.41	11.55	11.47	11.67	13.70
Non-biogenic municipal waste	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23
Electricity imports	0.19	0.19	0.19	0.19	0.17	0.17	0.17	0.15	0.15	0.15
Total	**37.85**	**38.83**	**38.90**	**39.00**	**39.08**	**39.42**	**40.10**	**41.84**	**42.04**	**42.65**

Table C2. Energy consumption by sector and source *(continued)*

(quadrillion Btu per year, unless otherwise noted)

Sector and source	2015	Projections								
		2020			2030			2040		
		Low oil price	Reference	High oil price	Low oil price	Reference	High oil price	Low oil price	Reference	High oil price
Total energy consumption										
Liquefied petroleum gases and other[5]	2.99	3.69	3.71	3.57	4.22	4.24	4.07	4.79	4.79	4.55
Motor gasoline[2]	16.96	17.25	16.55	15.20	15.35	13.49	11.42	15.01	12.47	10.18
of which: E85[10]	0.05	0.04	0.04	0.18	0.08	0.22	0.56	0.14	0.28	0.63
Jet fuel[11]	3.18	3.26	3.22	3.17	3.60	3.58	3.53	3.85	3.83	3.80
Kerosene	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Distillate fuel oil	8.42	9.18	9.07	8.98	9.33	9.40	8.88	10.14	9.82	8.97
Residual fuel oil	0.73	0.69	0.58	0.52	0.70	0.62	0.59	0.68	0.64	0.63
Petrochemical feedstocks	0.66	0.92	0.96	0.94	1.28	1.31	1.28	1.63	1.66	1.59
Other petroleum[15]	3.54	3.81	3.75	3.88	3.91	3.98	3.87	4.39	4.31	4.13
Petroleum and other liquids subtotal	36.49	38.81	37.85	36.28	38.40	36.62	33.66	40.52	37.52	33.86
Natural gas	25.79	25.06	25.45	25.59	28.32	28.97	26.47	30.48	31.33	28.79
Natural-gas-to-liquids heat and power	0.00	0.00	0.00	0.08	0.00	0.00	0.84	0.00	0.00	1.60
Lease and plant fuel[7]	1.63	1.69	1.76	1.79	1.87	2.06	2.21	2.11	2.31	2.54
Natural gas liquefaction for export[8]	0.00	0.17	0.26	0.26	0.29	0.53	0.87	0.45	0.69	1.10
Pipeline natural gas	0.89	0.80	0.83	0.85	0.86	0.94	1.07	0.94	1.07	1.27
Natural gas subtotal	28.31	27.72	28.30	28.57	31.33	32.51	31.46	33.98	35.39	35.30
Metallurgical coal	0.54	0.40	0.41	0.50	0.34	0.47	0.50	0.30	0.40	0.33
Other coal	14.96	15.10	15.22	14.65	10.81	10.86	12.33	10.26	10.34	11.99
Coal-to-liquids heat and power	0.00	0.00	0.00	0.00	0.00	0.00	0.65	0.00	0.00	0.75
Net coal coke imports	-0.02	-0.03	-0.01	-0.03	-0.02	0.00	-0.01	-0.01	0.01	0.00
Coal subtotal	15.48	15.48	15.62	15.13	11.13	11.32	13.47	10.55	10.75	13.06
Nuclear / uranium[18]	8.34	8.12	8.12	8.12	8.25	8.25	8.25	8.25	8.25	8.25
Biofuels heat and coproducts	0.78	0.84	0.83	0.82	0.80	0.81	0.83	0.81	0.84	0.92
Renewable energy[20]	6.92	9.05	9.40	10.38	11.02	11.60	13.90	13.52	13.96	16.14
Liquid hydrogen	0.00	0.01	0.01	0.01	0.05	0.04	0.04	0.07	0.06	0.05
Non-biogenic municipal waste	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23	0.23
Electricity imports	0.19	0.19	0.19	0.19	0.17	0.17	0.17	0.15	0.15	0.15
Total	**96.74**	**100.45**	**100.55**	**99.72**	**101.38**	**101.54**	**102.01**	**108.05**	**107.15**	**107.96**
Energy use and related statistics										
Delivered energy use	71.62	74.73	74.75	73.85	76.20	76.12	75.77	81.40	80.34	80.28
Total energy use	96.74	100.45	100.55	99.72	101.38	101.54	102.01	108.05	107.15	107.96
Ethanol consumed in motor gasoline and E85	1.18	1.22	1.19	1.18	1.13	1.12	1.17	1.14	1.24	1.06
Population (millions)	322	335	335	335	360	360	360	381	381	381
Gross domestic product (billion 2009 dollars)	16,349	18,768	18,555	18,420	23,076	23,113	23,021	28,506	28,397	28,246
Carbon dioxide emissions (million metric tons)	5,273	5,327	5,289	5,145	5,018	4,961	4,888	5,181	5,044	5,001

[1]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.
[2]Includes ethanol and ethers blended into gasoline.
[3]Excludes 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.
[4]Includes energy for combined heat and power plants that have a non-regulatory status, and small on-site generating systems.
[5]Includes ethane, natural gasoline, and refinery olefins.
[6]Includes petroleum coke, asphalt, road oil, lubricants, still gas, and miscellaneous petroleum products.
[7]Represents natural gas used in well, field, and lease operations, and in natural gas processing plant machinery.
[8]Fuel used in facilities that liquefy natural gas for export.
[9]Includes consumption of energy produced from hydroelectric, wood and wood waste, municipal waste, and other biomass sources. Excludes ethanol in motor gasoline.
[10]E85 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.
[11]Includes only kerosene type.
[12]Diesel fuel for on- and off- road use.
[13]Includes aviation gasoline and lubricants.
[14]Represents consumption unattributed to the sectors above.
[15]Includes aviation gasoline, petroleum coke, asphalt, road oil, lubricants, still gas, and miscellaneous petroleum products.
[16]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 photovoltaic systems, and solar thermal water heaters.
[17]Includes consumption of energy by electricity-only and combined heat and power plants that have a regulatory status.
[18]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.
[19]Includes conventional hydroelectric, geothermal, wood and wood waste, biogenic municipal waste, other biomass, wind, photovoltaic, and solar thermal sources. Excludes net electricity imports.
[20]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.
Note: Includes estimated consumption for petroleum and other liquids. Totals may not equal sum of components due to independent rounding. Data for 2015 are model results and may differ from official EIA data reports.
Sources: 2015: U.S. Energy Information Administration (EIA), *Short-Term Energy Outlook*, February 2016 and EIA, AEO2016 National Energy Modeling System run ref2016.d032416a. **Projections:** EIA, AEO2016 National Energy Modeling System runs lowprice.d041916a, ref2016.d032416a, and highprice.d041916a.

Table C3. Energy prices by sector and source

(2012 dollars per million Btu, unless otherwise noted)

Sector and source	2015	Projections								
		2020			2030			2040		
		Low oil price	Reference	High oil price	Low oil price	Reference	High oil price	Low oil Price	Reference	High oil price
Residential										
Propane	16.9	16.1	20.2	29.2	17.0	22.4	33.6	19.4	25.6	34.5
Distillate fuel oil	19.3	14.9	22.4	36.4	17.2	27.8	46.7	21.8	33.8	50.9
Natural gas	10.1	10.3	10.7	10.6	11.6	12.0	13.6	11.9	12.3	14.4
Electricity	36.3	36.9	37.7	38.4	38.2	39.4	42.1	37.3	38.1	40.9
Commercial										
Propane	15.1	14.4	17.9	25.6	15.1	19.8	29.5	17.2	22.5	30.3
Distillate fuel oil	17.0	12.2	19.7	33.7	13.9	24.4	43.4	18.5	30.5	47.6
Residual fuel oil	6.9	4.6	11.0	21.8	6.6	15.3	30.1	10.9	19.9	33.5
Natural gas	7.7	8.9	9.3	9.1	9.9	10.4	12.0	10.0	10.4	12.4
Electricity	30.6	30.9	31.5	31.8	31.3	32.3	34.7	30.0	30.7	33.4
Industrial[1]										
Propane	12.2	11.4	15.6	24.8	12.3	17.8	29.4	14.8	21.1	30.3
Distillate fuel oil	17.0	12.2	19.7	33.6	13.9	24.4	43.4	18.5	30.5	47.6
Residual fuel oil	6.8	4.9	11.3	22.0	7.3	15.9	30.8	11.6	20.6	34.1
Natural gas[2]	3.7	5.0	5.4	5.2	5.6	6.0	7.7	5.4	5.7	7.5
Metallurgical coal	5.4	6.0	6.0	6.0	7.0	7.0	7.0	7.3	7.3	7.3
Other industrial coal	3.4	3.3	3.4	3.6	3.2	3.4	3.7	3.3	3.6	3.9
Coal to liquids	- -	- -	- -	- -	- -	- -	2.0	- -	- -	2.1
Electricity	20.3	20.5	20.9	21.1	21.4	22.1	24.0	20.8	21.2	23.5
Transportation										
Propane	18.0	17.1	21.2	30.2	18.0	23.4	34.7	20.4	26.6	35.6
E85[3]	23.3	24.1	32.0	38.1	25.4	30.8	39.3	28.5	35.0	42.2
Motor gasoline[4]	20.9	16.1	22.7	35.6	16.9	26.5	43.0	21.0	31.8	47.0
Jet fuel[5]	12.0	8.6	16.2	29.6	10.9	21.3	40.1	16.0	27.7	44.7
Diesel fuel (distillate fuel oil)[6]	19.8	15.7	23.1	37.0	17.5	28.0	46.9	22.0	34.1	51.2
Residual fuel oil	8.1	4.9	11.7	21.6	5.6	15.0	28.3	10.9	19.2	31.2
Natural gas[7]	16.6	16.4	16.6	16.4	16.1	15.5	18.8	15.5	15.9	18.5
Electricity	29.5	32.5	33.0	33.5	36.5	37.4	39.5	35.0	35.5	37.9
Electric power[8]										
Distillate fuel oil	15.0	10.9	18.4	32.4	12.9	23.5	42.5	17.4	29.4	46.6
Residual fuel oil	10.2	7.4	13.8	24.6	9.4	18.1	32.9	13.4	22.4	36.0
Natural gas	3.3	4.4	4.7	4.5	5.2	5.6	7.1	5.0	5.4	7.1
Steam coal	2.2	2.1	2.3	2.4	2.1	2.3	2.6	2.2	2.4	2.7
Average price to all users[9]										
Propane	14.9	13.9	18.0	26.9	14.8	20.1	31.1	17.1	23.2	31.9
E85[3]	23.3	24.1	32.0	38.1	25.4	30.8	39.3	28.5	35.0	42.2
Motor gasoline[4]	20.9	16.1	22.7	35.6	16.9	26.5	43.0	21.0	31.8	47.0
Jet fuel[5]	12.0	8.6	16.2	29.6	10.9	21.3	40.1	16.0	27.7	44.7
Distillate fuel oil	19.1	14.8	22.3	36.3	16.7	27.3	46.2	21.4	33.3	50.5
Residual fuel oil	8.4	5.0	11.7	22.0	6.3	15.4	29.0	11.1	19.6	31.9
Natural gas	5.3	6.4	6.7	6.6	7.0	7.4	9.4	6.9	7.4	9.6
Metallurgical coal	5.4	6.0	6.0	6.0	7.0	7.0	7.0	7.3	7.3	7.3
Other coal	2.3	2.2	2.3	2.5	2.2	2.4	2.7	2.3	2.5	2.8
Coal to liquids	- -	- -	- -	- -	- -	- -	2.0	- -	- -	2.1
Electricity	30.1	30.3	30.8	31.1	31.1	31.9	34.1	30.1	30.6	33.1
Non-renewable energy expenditures by sector (billion 2015 dollars)										
Residential	239	242	250	258	256	266	288	267	274	296
Commercial	178	186	193	198	208	216	235	223	230	251
Industrial[1]	168	184	232	309	222	301	444	275	369	509
Transportation	514	411	586	885	426	640	956	559	777	1,023
Total non-renewable expenditures	1,099	1,023	1,260	1,650	1,112	1,423	1,923	1,324	1,650	2,079
Transportation renewable expenditures	1	1	1	7	2	7	22	4	10	26
Total expenditures	**1,100**	**1,024**	**1,262**	**1,657**	**1,114**	**1,430**	**1,945**	**1,328**	**1,660**	**2,106**

Table C3. Energy prices by sector and source *(continued)*
(nominal dollars per million Btu, unless otherwise noted)

Sector and source	2015	Projections								
		2020			2030			2040		
		Low oil price	Reference	High oil price	Low oil price	Reference	High oil price	Low oil price	Reference	High oil price
Residential										
Propane	16.9	17.8	22.3	32.0	23.1	30.3	46.3	32.2	43.0	59.6
Distillate fuel oil	19.3	16.4	24.7	39.9	23.3	37.6	64.2	36.2	56.9	88.0
Natural gas	10.1	11.4	11.9	11.6	15.7	16.3	18.8	19.8	20.8	24.9
Electricity	36.3	40.7	41.7	42.1	51.8	53.3	57.9	61.9	64.2	70.7
Commercial										
Propane	15.1	15.9	19.8	28.1	20.6	26.8	40.6	28.6	37.9	52.3
Distillate fuel oil	17.0	13.5	21.8	36.9	18.8	33.1	59.7	30.7	51.2	82.2
Residual fuel oil	6.9	5.1	12.1	23.9	9.0	20.7	41.4	18.1	33.6	57.8
Natural gas	7.7	9.8	10.3	10.0	13.5	14.1	16.5	16.6	17.5	21.4
Electricity	30.6	34.1	34.8	34.9	42.5	43.7	47.7	49.9	51.7	57.6
Industrial[1]										
Propane	12.2	12.6	17.2	27.2	16.7	24.1	40.5	24.6	35.6	52.4
Distillate fuel oil	17.0	13.5	21.8	36.9	18.9	33.1	59.7	30.7	51.3	82.2
Residual fuel oil	6.8	5.4	12.4	24.1	9.9	21.6	42.3	19.2	34.7	58.9
Natural gas[2]	3.7	5.5	5.9	5.7	7.6	8.1	10.6	9.0	9.6	13.0
Metallurgical coal	5.4	6.7	6.7	6.6	9.5	9.4	9.7	12.0	12.2	12.6
Other industrial coal	3.4	3.6	3.7	4.0	4.4	4.6	5.1	5.5	6.0	6.7
Coal to liquids	- -	- -	- -	- -	- -	- -	2.8	- -	- -	3.6
Electricity	20.3	22.7	23.1	23.2	29.1	29.9	33.0	34.6	35.7	40.5
Transportation										
Propane	18.0	18.9	23.4	33.2	24.5	31.7	47.7	34.0	44.8	61.4
E85[3]	23.3	26.6	35.4	41.8	34.5	41.7	54.0	47.3	58.8	72.8
Motor gasoline[4]	20.9	17.8	25.1	39.0	23.0	35.9	59.2	34.9	53.6	81.1
Jet fuel[5]	12.0	9.5	17.9	32.5	14.8	28.8	55.1	26.5	46.6	77.2
Diesel fuel (distillate fuel oil)[6]	19.8	17.3	25.5	40.6	23.7	37.9	64.6	36.6	57.3	88.4
Residual fuel oil	8.1	5.4	12.9	23.7	7.6	20.3	38.9	18.1	32.3	53.9
Natural gas[7]	16.6	18.1	18.4	18.0	21.9	21.0	25.8	25.7	26.7	31.9
Electricity	29.5	35.9	36.5	36.8	49.6	50.5	54.4	58.2	59.8	65.5
Electric power[8]										
Distillate fuel oil	15.0	12.1	20.4	35.6	17.5	31.8	58.4	28.9	49.4	80.5
Residual fuel oil	10.2	8.2	15.2	27.0	12.7	24.4	45.2	22.2	37.8	62.1
Natural gas	3.3	4.8	5.2	4.9	7.0	7.5	9.7	8.3	9.0	12.2
Steam coal	2.2	2.4	2.5	2.7	2.8	3.1	3.5	3.7	4.0	4.7

Table C3. Energy prices by sector and source *(continued)*

(nominal dollars per million Btu, unless otherwise noted)

Sector and source	2015	Projections								
		2020			2030			2040		
		Low oil price	Reference	High oil price	Low oil price	Reference	High oil price	Low oil price	Reference	High oil price
Average price to all users[9]										
Propane	14.9	15.4	19.9	29.5	20.1	27.2	42.8	28.4	39.0	55.1
E85[3]	23.3	26.6	35.4	41.8	34.5	41.7	54.0	47.3	58.8	72.8
Motor gasoline[4]	20.9	17.8	25.1	39.0	23.0	35.9	59.2	34.9	53.6	81.1
Jet fuel[5]	12.0	9.5	17.9	32.5	14.8	28.8	55.1	26.5	46.6	77.2
Distillate fuel oil	19.1	16.4	24.7	39.8	22.7	36.9	63.6	35.5	56.1	87.2
Residual fuel oil	8.4	5.6	13.0	24.1	8.6	20.8	39.9	18.4	32.9	55.1
Natural gas	5.3	7.0	7.4	7.2	9.6	10.0	12.9	11.5	12.4	16.6
Metallurgical coal	5.4	6.7	6.7	6.6	9.5	9.4	9.7	12.0	12.2	12.6
Other coal	2.3	2.4	2.6	2.7	3.0	3.2	3.7	3.8	4.2	4.8
Coal to liquids	- -	- -	- -	- -	- -	- -	2.8	- -	- -	3.6
Electricity	30.1	33.4	34.1	34.2	42.2	43.1	47.0	50.0	51.6	57.2
Non-renewable energy expenditures by sector (billion nominal dollars)										
Residential	239	267	276	283	347	360	396	443	462	510
Commercial	178	206	213	217	282	292	323	370	387	434
Industrial[1]	168	203	256	340	301	407	611	457	620	879
Transportation	514	454	647	972	579	866	1,315	929	1,307	1,767
Total non-renewable expenditures	1,099	1,130	1,392	1,811	1,509	1,925	2,645	2,199	2,776	3,590
Transportation renewable expenditures	1	1	1	7	3	9	30	7	17	46
Total expenditures	**1,100**	**1,131**	**1,394**	**1,819**	**1,512**	**1,934**	**2,676**	**2,205**	**2,793**	**3,636**

[1]Includes energy for combined heat and power plants that have a non-regulatory status, and small on-site generating systems.
[2]Excludes use for lease and plant fuel.
[3]E85 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.
[4]Sales weighted-average price for all grades. Includes Federal, State, and local taxes.
[5]Kerosene-type jet fuel. Includes Federal and State taxes while excluding county and local taxes.
[6]Diesel fuel for on-road use. Includes Federal and State taxes while excluding county and local taxes.
[7]Natural gas used as fuel in motor vehicles, trains, and ships. Includes estimated motor vehicle fuel taxes and estimated dispensing costs or charges.
[8]Includes electricity-only and combined heat and power plants that have a regulatory status.
[9]Weighted 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 2015 are model results and may differ from official EIA data reports.
Sources: 2015: U.S. Energy Information Administration (EIA), *Short-Term Energy Outlook*, February 2016 and EIA, AEO2016 National Energy Modeling System run ref2016.d032416a. **Projections:** EIA, AEO2016 National Energy Modeling System runs lowprice.d041916a, ref2016.d032416a, and highprice.d041916a.

Table C4. Petroleum and other liquids supply and disposition

(million barrels per day, unless otherwise noted)

Supply and disposition	2015	Projections								
		2020			2030			2040		
		Low oil price	Reference	High oil price	Low oil price	Reference	High oil price	Low oil price	Reference	High oil price
Crude oil										
Domestic crude production[1]	9.42	8.13	9.38	11.16	7.10	10.06	12.14	8.62	11.26	11.02
Alaska	0.48	0.41	0.41	0.41	0.00	0.24	0.24	0.00	0.15	0.15
Lower 48 states	8.94	7.72	8.96	10.75	7.09	9.82	11.90	8.61	11.11	10.88
Net imports	6.88	6.51	6.97	6.49	7.13	6.57	4.47	7.86	6.10	5.54
Gross imports	7.28	7.14	7.60	7.12	7.76	7.20	6.04	8.49	7.12	7.47
Exports	0.40	0.63	0.63	0.63	0.63	0.63	1.57	0.63	1.02	1.93
Other crude supply[2]	-0.11	0.01	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00
Total crude supply	**16.19**	**14.65**	**16.36**	**17.66**	**14.23**	**16.63**	**16.61**	**16.48**	**17.36**	**16.56**
Net product imports	-2.24	-0.71	-3.26	-5.83	-0.28	-4.32	-6.83	-1.76	-4.66	-7.24
Gross refined product imports[3]	0.66	1.13	1.11	0.79	1.71	1.30	0.82	1.91	1.63	1.10
Unfinished oil imports	0.55	0.64	0.53	0.54	0.65	0.46	0.45	0.66	0.39	0.35
Blending component imports	0.67	0.72	0.58	0.62	0.63	0.45	0.45	0.53	0.30	0.32
Exports	4.12	3.21	5.48	7.78	3.28	6.52	8.56	4.86	6.98	9.01
Refinery processing gain[4]	1.03	0.97	1.05	1.14	0.92	0.98	0.95	1.03	0.99	0.94
Product stock withdrawal	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Natural gas plant liquids	3.25	4.33	4.57	4.82	4.32	4.90	5.17	4.53	4.99	5.25
Supply from renewable sources	1.01	1.11	1.08	1.08	1.03	1.03	1.08	1.04	1.12	1.22
Ethanol	0.89	0.92	0.89	0.89	0.84	0.84	0.88	0.85	0.93	0.79
Domestic production	0.94	0.93	0.90	0.89	0.88	0.87	0.89	0.89	0.91	0.69
Net imports	-0.05	-0.01	-0.01	0.00	-0.04	-0.03	-0.01	-0.03	0.02	0.11
Stock withdrawal	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Biodiesel	0.11	0.15	0.15	0.16	0.04	0.10	0.16	0.04	0.10	0.16
Domestic production	0.08	0.11	0.11	0.12	0.00	0.06	0.12	0.00	0.06	0.12
Net imports	0.03	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04
Stock withdrawal	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Other biomass-derived liquids[5]	0.00	0.04	0.04	0.04	0.14	0.09	0.04	0.14	0.09	0.27
Domestic production	0.00	0.04	0.04	0.04	0.14	0.09	0.04	0.14	0.09	0.27
Net imports	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Stock withdrawal	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Liquids from gas	0.00	0.00	0.00	0.04	0.00	0.00	0.45	0.00	0.00	0.85
Liquids from coal	0.00	0.00	0.00	0.00	0.00	0.00	0.24	0.00	0.00	0.28
Other[6]	0.21	0.22	0.28	0.30	0.24	0.30	0.32	0.28	0.32	0.35
Total primary supply[7]	**19.46**	**20.56**	**20.08**	**19.22**	**20.45**	**19.52**	**17.98**	**21.60**	**20.12**	**18.21**
Product supplied										
by fuel										
Liquefied petroleum gases and other[8]	2.46	2.88	2.90	2.80	3.32	3.34	3.22	3.76	3.80	3.61
Motor gasoline[9]	9.18	9.35	8.97	8.26	8.33	7.35	6.28	8.15	6.84	5.65
of which: E85[10]	0.03	0.03	0.03	0.12	0.06	0.15	0.39	0.10	0.19	0.43
Jet fuel[11]	1.54	1.58	1.56	1.54	1.74	1.73	1.71	1.87	1.86	1.84
Distillate fuel oil[12]	3.96	4.36	4.31	4.26	4.43	4.46	4.22	4.82	4.67	4.27
of which: Diesel	3.76	3.99	3.97	3.96	4.13	4.19	3.98	4.56	4.43	4.06
Residual fuel oil	0.26	0.30	0.25	0.23	0.31	0.27	0.26	0.30	0.28	0.27
Other[13]	2.02	2.12	2.11	2.16	2.34	2.39	2.33	2.73	2.70	2.59
by sector										
Residential and commercial	0.90	0.98	0.89	0.78	0.92	0.80	0.68	0.84	0.74	0.64
Industrial[14]	4.47	5.36	5.35	5.33	6.01	6.10	5.94	6.85	6.89	6.60
Transportation	14.04	14.51	14.11	13.37	13.78	12.84	11.53	14.18	12.69	11.11
Electric power[15]	0.12	0.07	0.07	0.07	0.05	0.05	0.05	0.04	0.04	0.04
Unspecified sector[16]	-0.30	-0.32	-0.31	-0.29	-0.28	-0.25	-0.19	-0.28	-0.23	-0.16
Total product supplied	**19.42**	**20.59**	**20.11**	**19.26**	**20.47**	**19.54**	**18.01**	**21.63**	**20.14**	**18.24**
Discrepancy[17]	0.04	-0.03	-0.03	-0.03	-0.02	-0.03	-0.03	-0.03	-0.03	-0.03

Table C4. Petroleum and other liquids supply and disposition *(continued)*

(million barrels per day, unless otherwise noted)

Supply and disposition	2015	Projections								
		2020			2030			2040		
		Low oil price	Reference	High oil price	Low oil price	Reference	High oil price	Low oil price	Reference	High oil price
Domestic refinery distillation capacity[18]	18.0	19.0	19.0	19.2	19.0	19.0	19.3	19.0	19.0	19.3
Capacity utilization rate (percent)[19].....	91.1	79.2	87.7	93.8	77.0	88.9	87.5	88.8	92.5	86.9
Net import share of product supplied (percent)..	23.7	28.3	18.6	3.6	33.5	11.6	-13.0	28.3	7.4	-8.5
Net expenditures for imported crude oil and petroleum products (billion 2015 dollars)	128	88	207	399	126	268	455	221	348	609

[1]Includes lease condensate.
[2]Strategic petroleum reserve stock additions plus unaccounted for crude oil and crude oil stock withdrawals.
[3]Includes other hydrocarbons and alcohols.
[4]The volumetric amount by which total output is greater than input due to the processing of crude oil into products which, in total, have a lower specific gravity than the crude oil processed.
[5]Includes pyrolysis oils, biomass-derived Fischer-Tropsch liquids, biobutanol, and renewable feedstocks used for the on-site production of diesel and gasoline.
[6]Includes domestic sources of other blending components, other hydrocarbons, and ethers.
[7]Total crude supply, net product imports, refinery processing gain, product stock withdrawal, natural gas plant liquids, supply from renewable sources, liquids from gas, liquids from coal, and other supply.
[8]Includes ethane, natural gasoline, and refinery olefins.
[9]Includes ethanol and ethers blended into gasoline.
[10]E85 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.
[11]Includes only kerosene type.
[12]Includes distillate fuel oil from petroleum and biomass feedstocks.
[13]Includes kerosene, aviation gasoline, petrochemical feedstocks, lubricants, waxes, asphalt, road oil, still gas, special naphthas, petroleum coke, crude oil product supplied, methanol, and miscellaneous petroleum products.
[14]Includes energy for combined heat and power plants that have a non-regulatory status, and small on-site generating systems.
[15]Includes consumption of energy by electricity-only and combined heat and power plants that have a regulatory status.
[16]Represents consumption unattributed to the sectors above.
[17]Balancing item. Includes unaccounted for supply, losses, and gains.
[18]End-of-year operable capacity.
[19]Rate is calculated by dividing the gross annual input to atmospheric crude oil distillation units by their operable refining capacity in barrels per calendar day.
Note: Totals may not equal sum of components due to independent rounding. Data for 2015 are model results and may differ from official EIA data reports.
Sources: 2015: U.S. Energy Information Administration (EIA), *Short-Term Energy Outlook*, February 2016 and EIA, AEO2016 National Energy Modeling System run ref2016.d032416a. **Projections:** EIA, AEO2016 National Energy Modeling System runs lowprice.d041916a, ref2016.d032416a, and highprice.d041916a.

Table C5. Petroleum and other liquids prices

(2015 dollars per gallon, unless otherwise noted)

Sector and fuel	2015	Projections								
		2020			2030			2040		
		Low oil price	Reference	High oil price	Low oil price	Reference	High oil price	Low oil price	Reference	High oil price
Crude oil prices (2015 dollars per barrel)										
Brent spot	52	38	77	152	49	104	207	73	136	230
West Texas Intermediate spot	49	32	71	145	42	97	198	67	129	222
Average imported refiners acquisition cost[1]	46	30	69	142	40	95	191	66	126	213
Brent / West Texas Intermediate spread	3.7	6.1	5.4	7.1	6.6	6.9	8.9	6.0	7.1	7.6
Delivered sector product prices										
Residential										
Propane	1.55	1.47	1.84	2.66	1.55	2.04	3.07	1.77	2.33	3.15
Distillate fuel oil	2.66	2.05	3.08	5.00	2.35	3.82	6.42	2.99	4.65	7.00
Commercial										
Distillate fuel oil	2.34	1.68	2.71	4.63	1.90	3.36	5.96	2.53	4.19	6.54
Residual fuel oil	1.04	0.69	1.64	3.26	0.99	2.29	4.51	1.63	2.98	5.01
Residual fuel oil (2015 dollars per barrel)	44	29	69	137	41	96	189	68	125	210
Industrial[2]										
Propane	1.12	1.04	1.42	2.27	1.12	1.63	2.69	1.35	1.93	2.77
Distillate fuel oil	2.34	1.68	2.71	4.62	1.90	3.36	5.96	2.53	4.19	6.54
Residual fuel oil	1.01	0.73	1.68	3.29	1.09	2.39	4.60	1.73	3.08	5.11
Residual fuel oil (2015 dollars per barrel)	42	31	71	138	46	100	193	73	130	214
Transportation										
Propane	1.64	1.57	1.94	2.76	1.65	2.14	3.17	1.87	2.43	3.25
E85[3]	2.21	2.30	3.05	3.62	2.42	2.93	3.74	2.71	3.33	4.01
Ethanol wholesale price	2.22	2.74	2.77	2.78	2.11	2.28	2.55	2.29	2.60	2.93
Motor gasoline[4]	2.52	1.94	2.74	4.28	2.04	3.19	5.17	2.53	3.81	5.61
Jet fuel[5]	1.62	1.16	2.18	3.99	1.47	2.87	5.41	2.15	3.74	6.04
Diesel fuel (distillate fuel oil)[6]	2.72	2.15	3.18	5.09	2.40	3.85	6.45	3.03	4.68	7.04
Residual fuel oil	1.21	0.73	1.75	3.23	0.84	2.25	4.23	1.63	2.87	4.67
Residual fuel oil (2015 dollars per barrel)	51	31	73	136	35	94	178	69	121	196
Electric power[7]										
Distillate fuel oil	2.07	1.50	2.53	4.45	1.77	3.23	5.84	2.39	4.04	6.41
Residual fuel oil	1.53	1.12	2.06	3.68	1.40	2.70	4.92	2.00	3.36	5.38
Residual fuel oil (2015 dollars per barrel)	64	47	87	154	59	114	207	84	141	226
Average prices, all sectors[8]										
Propane	1.36	1.27	1.65	2.46	1.35	1.83	2.84	1.56	2.12	2.91
Motor gasoline[4]	2.52	1.94	2.74	4.28	2.04	3.19	5.17	2.53	3.81	5.61
Jet fuel[5]	1.62	1.16	2.18	3.99	1.47	2.87	5.41	2.15	3.74	6.04
Distillate fuel oil	2.63	2.04	3.07	4.99	2.30	3.75	6.36	2.93	4.58	6.94
Residual fuel oil	1.26	0.75	1.76	3.29	0.94	2.30	4.35	1.66	2.93	4.78
Residual fuel oil (2015 dollars per barrel)	53	32	74	138	40	97	183	70	123	201
Average	**2.18**	**1.65**	**2.44**	**3.97**	**1.75**	**2.85**	**4.82**	**2.21**	**3.42**	**5.16**

Table C5. Petroleum and other liquids prices *(continued)*

(nominal dollars per gallon, unless otherwise noted)

Sector and fuel	2015	Projections								
		2020			2030			2040		
		Low oil price	Reference	High oil price	Low oil price	Reference	High oil price	Low oil price	Reference	High oil price
Crude oil prices (nominal dollars per barrel)										
Brent spot	52	42	85	166	66	141	284	121	229	397
West Texas Intermediate spot	49	35	79	159	58	131	272	111	217	384
Average imported refiners acquisition cost[1]	46	33	76	156	55	128	263	109	212	369
Delivered sector product prices										
Residential										
Propane	1.55	1.62	2.03	2.92	2.11	2.76	4.22	2.94	3.93	5.44
Distillate fuel oil	2.66	2.26	3.40	5.49	3.20	5.16	8.83	4.97	7.83	12.09
Commercial										
Distillate fuel oil	2.34	1.85	2.99	5.08	2.58	4.54	8.20	4.21	7.04	11.30
Residual fuel oil	1.04	0.76	1.81	3.58	1.34	3.09	6.20	2.70	5.02	8.65
Industrial[2]										
Propane	1.12	1.15	1.57	2.49	1.53	2.20	3.69	2.24	3.25	4.78
Distillate fuel oil	2.34	1.85	2.99	5.08	2.59	4.54	8.20	4.21	7.04	11.30
Residual fuel oil	1.01	0.81	1.86	3.61	1.49	3.23	6.33	2.88	5.19	8.82
Transportation										
Propane	1.64	1.73	2.14	3.03	2.24	2.89	4.36	3.10	4.09	5.61
E85[3]	2.21	2.53	3.37	3.98	3.28	3.97	5.14	4.51	5.60	6.93
Ethanol wholesale price	2.22	3.02	3.06	3.05	2.86	3.09	3.50	3.80	4.38	5.06
Motor gasoline[4]	2.52	2.14	3.02	4.70	2.77	4.32	7.11	4.20	6.40	9.68
Jet fuel[5]	1.62	1.28	2.41	4.38	2.00	3.89	7.44	3.58	6.29	10.42
Diesel fuel (distillate fuel oil)[6]	2.72	2.38	3.51	5.59	3.26	5.21	8.88	5.03	7.88	12.15
Residual fuel oil	1.21	0.80	1.93	3.55	1.14	3.04	5.82	2.71	4.83	8.06
Electric power[7]										
Distillate fuel oil	2.07	1.66	2.80	4.89	2.41	4.37	8.04	3.97	6.79	11.06
Residual fuel oil	1.53	1.23	2.28	4.04	1.90	3.66	6.77	3.32	5.65	9.30
Average prices, all sectors[8]										
Propane	1.36	1.40	1.82	2.70	1.83	2.48	3.91	2.60	3.56	5.03
Motor gasoline[4]	2.52	2.14	3.02	4.70	2.77	4.32	7.11	4.20	6.40	9.68
Jet fuel[5]	1.62	1.28	2.41	4.38	2.00	3.89	7.44	3.58	6.29	10.42
Distillate fuel oil	2.63	2.25	3.39	5.47	3.12	5.08	8.75	4.87	7.71	11.98
Residual fuel oil (nominal dollars per barrel)	53	35	81	152	54	131	251	116	207	347
Average	**2.18**	**1.82**	**2.70**	**4.35**	**2.37**	**3.86**	**6.64**	**3.68**	**5.76**	**8.91**

[1]Weighted average price delivered to U.S. refiners.
[2]Includes combined heat and power plants that have a non-regulatory status, and small on-site generating systems.
[3]E85 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.
[4]Sales weighted-average price for all grades. Includes Federal, State, and local taxes.
[5]Includes only kerosene type.
[6]Diesel fuel for on-road use. Includes Federal and State taxes while excluding county and local taxes.
[7]Includes electricity-only and combined heat and power plants that have a regulatory status.
[8]Weighted averages of end-use fuel prices are derived from the prices in each sector and the corresponding sectoral consumption.
Note: Data for 2015 are model results and may differ from official EIA data reports.
Sources: 2015: U.S. Energy Information Administration (EIA), *Short-Term Energy Outlook*, February 2016 and EIA, AEO2016 National Energy Modeling System run ref2016.d032416a. **Projections:** EIA, AEO2016 National Energy Modeling System runs lowprice.d041916a, ref2016.d032416a, and highprice.d041916a.

Table C6. International petroleum and other liquids supply, disposition, and prices

(million barrels per day, unless otherwise noted)

Supply, disposition, and prices	2015	Projections								
		2020			2030			2040		
		Low oil price	Reference	High oil price	Low oil price	Reference	High oil price	Low oil price	Reference	High oil price
Crude oil spot prices										
(2015 dollars per barrel)										
Brent	52	38	77	152	49	104	207	73	136	230
West Texas Intermediate	49	32	71	145	42	97	198	67	129	222
(nominal dollars per barrel)										
Brent	52	42	85	166	66	141	284	121	229	397
West Texas Intermediate	49	35	79	159	58	131	272	111	217	384
Petroleum and other liquids consumption[1]										
OECD										
United States (50 states)	19.42	20.59	20.11	19.26	20.47	19.54	18.01	21.63	20.14	18.24
United States territories	0.30	0.31	0.31	0.31	0.34	0.34	0.34	0.38	0.38	0.38
Canada	2.39	2.45	2.39	2.32	2.48	2.39	2.39	2.64	2.51	2.57
Mexico and Chile	2.30	2.48	2.38	2.27	2.61	2.50	2.44	3.05	2.87	2.84
OECD Europe[2]	13.83	13.98	13.70	13.28	13.98	13.65	13.36	14.43	13.98	13.60
Japan	4.14	4.02	3.91	3.69	3.80	3.66	3.48	3.60	3.40	3.33
South Korea	2.38	2.50	2.41	2.25	2.54	2.44	2.32	2.67	2.55	2.49
Australia and New Zealand	1.28	1.37	1.35	1.32	1.43	1.41	1.40	1.55	1.53	1.55
Total OECD consumption	**46.03**	**47.70**	**46.56**	**44.69**	**47.65**	**45.93**	**43.73**	**49.94**	**47.35**	**45.01**
Non-OECD										
Russia	3.35	3.68	3.65	3.51	3.77	3.75	3.68	3.58	3.59	3.58
Other Europe and Eurasia[3]	2.07	2.22	2.18	2.11	2.46	2.43	2.39	2.56	2.53	2.53
China	11.18	12.87	12.71	12.43	14.65	14.81	14.95	15.53	16.36	17.15
India	3.97	4.67	4.54	4.32	6.07	5.94	5.59	8.35	8.26	7.41
Other Asia[4]	8.15	9.67	9.40	9.01	11.74	11.42	10.76	14.41	14.29	13.46
Middle East	8.29	10.31	9.96	9.76	11.42	11.28	11.47	13.21	13.23	14.09
Africa	3.86	4.64	4.54	4.40	5.62	5.50	5.43	7.03	6.93	6.99
Brazil	3.15	3.52	3.41	3.24	4.14	4.06	3.93	4.80	4.71	4.58
Other Central and South America	3.85	4.23	4.11	3.98	4.57	4.41	4.18	5.00	4.89	4.65
Total non-OECD consumption	**47.87**	**55.82**	**54.49**	**52.77**	**64.43**	**63.60**	**62.38**	**74.45**	**74.79**	**74.44**
Total consumption	**93.90**	**103.51**	**101.05**	**97.46**	**112.08**	**109.52**	**106.11**	**124.39**	**122.14**	**119.44**
Petroleum and other liquids production										
OPEC[5]										
Middle East	27.76	32.44	30.87	27.42	36.70	34.29	29.33	41.63	39.38	31.71
North Africa	2.13	3.51	1.99	2.12	3.73	2.32	2.11	4.03	2.94	2.28
West Africa	4.21	4.51	4.35	4.08	5.04	4.58	3.53	6.21	5.07	3.57
South America	3.24	4.17	2.96	2.59	5.46	3.33	2.85	6.76	3.88	3.21
Total OPEC production	**37.33**	**44.63**	**40.17**	**36.21**	**50.93**	**44.52**	**37.81**	**58.63**	**51.28**	**40.77**
Non-OPEC										
OECD										
United States (50 states)	14.95	14.73	16.33	18.51	13.60	17.26	20.32	15.49	18.62	19.76
Canada	4.54	5.11	5.43	5.14	4.68	5.55	6.16	4.63	6.01	8.25
Mexico and Chile	2.64	2.54	2.46	2.75	2.69	2.58	3.35	3.11	3.24	5.06
OECD Europe[2]	3.79	3.47	3.44	3.40	3.11	3.10	3.03	2.86	2.78	2.80
Japan and South Korea	0.22	0.17	0.20	0.16	0.19	0.21	0.17	0.20	0.22	0.18
Australia and New Zealand	0.51	0.67	0.66	0.75	0.60	0.61	1.08	0.56	0.76	1.53
Total OECD production	**26.65**	**26.68**	**28.51**	**30.71**	**24.87**	**29.31**	**34.12**	**26.84**	**31.63**	**37.58**
Non-OECD										
Russia	10.95	10.44	10.62	9.68	11.75	11.22	9.80	12.56	12.21	11.17
Other Europe and Eurasia[3]	3.23	3.78	3.69	3.18	4.93	4.63	4.03	5.12	4.50	5.75
China	4.69	4.91	4.90	4.86	5.36	5.44	5.65	5.70	6.24	6.78
Other Asia[4]	4.03	3.91	3.92	3.88	3.63	3.65	3.65	3.60	3.62	3.68
Middle East	1.14	1.04	1.02	1.02	0.84	0.83	0.83	0.70	0.69	0.70
Africa	2.33	2.42	2.48	2.46	2.46	2.73	2.56	2.56	2.83	2.75
Brazil	3.15	3.57	3.59	3.21	5.25	5.00	4.73	6.45	6.15	6.03
Other Central and South America	2.18	2.14	2.15	2.25	2.06	2.19	2.93	2.22	2.99	4.24
Total non-OECD production	**31.70**	**32.20**	**32.37**	**30.55**	**36.28**	**35.69**	**34.18**	**38.92**	**39.23**	**41.09**
Total petroleum and other liquids production	**95.68**	**103.51**	**101.05**	**97.46**	**112.08**	**109.52**	**106.11**	**124.39**	**122.14**	**119.44**
OPEC market share (percent)	39.0	43.1	39.8	37.2	45.4	40.7	35.6	47.1	42.0	34.1

Table C6. International petroleum and other liquids supply, disposition, and prices *(continued)*

(million barrels per day, unless otherwise noted)

Supply, disposition, and prices	2015	Projections								
		2020			2030			2040		
		Low oil price	Reference	High oil price	Low oil price	Reference	High oil price	Low oil price	Reference	High oil price
Selected world production subtotals:										
Crude oil and equivalents[6]	80.13	86.11	82.77	78.52	93.24	89.12	83.45	103.39	99.74	92.92
Tight oil	5.34	4.19	5.44	7.73	4.17	6.96	10.17	5.55	10.35	12.84
Bitumen[7]	2.32	2.99	3.08	3.08	2.88	3.18	3.68	2.99	3.31	4.80
Refinery processing gain[8]	2.45	2.46	2.53	2.55	2.78	2.73	2.67	3.23	2.94	2.95
Natural gas plant liquids	10.37	11.74	12.32	12.87	12.67	13.24	14.34	13.82	13.88	15.69
Liquids from renewable sources[9]	2.32	2.42	2.54	2.54	2.99	3.31	3.35	3.55	4.11	4.13
Liquids from coal[10]	0.25	0.25	0.27	0.31	0.04	0.26	0.88	0.00	0.50	1.48
Liquids from natural gas[11]	0.29	0.31	0.32	0.37	0.11	0.57	1.10	0.12	0.65	1.92
Liquids from kerogen[12]	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Crude oil production[6]										
OPEC[5]										
Middle East	24.38	29.14	27.07	23.60	33.28	30.10	25.10	38.06	34.74	27.03
North Africa	1.78	2.95	1.61	1.63	3.03	1.82	1.46	3.18	2.20	1.46
West Africa	4.19	4.37	4.28	3.93	4.91	4.51	3.36	6.09	4.99	3.37
South America	3.05	3.88	2.75	2.38	5.11	3.09	2.60	6.42	3.64	2.96
Total OPEC production	**33.40**	**40.34**	**35.72**	**31.54**	**46.33**	**39.52**	**32.51**	**53.75**	**45.57**	**34.83**
Non-OPEC										
OECD										
United States (50 states)	9.42	8.13	9.38	11.16	7.10	10.06	12.14	8.62	11.26	11.02
Canada	3.72	4.42	4.57	4.34	3.95	4.53	5.33	3.89	4.96	7.40
Mexico and Chile	2.31	2.19	2.16	2.46	2.35	2.29	3.07	2.77	2.96	4.78
OECD Europe[2]	2.95	2.36	2.31	2.29	1.90	1.88	1.81	1.51	1.47	1.44
Japan and South Korea	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Australia and New Zealand	0.39	0.53	0.53	0.62	0.46	0.49	0.96	0.41	0.64	1.39
Total OECD production	**18.81**	**17.63**	**18.96**	**20.88**	**15.77**	**19.24**	**23.30**	**17.20**	**21.29**	**26.04**
Non-OECD										
Russia	10.17	9.84	9.84	8.79	10.90	10.49	8.51	11.28	11.53	9.21
Other Europe and Eurasia[3]	3.00	3.48	3.43	2.90	4.49	4.36	3.62	4.46	4.23	5.11
China	4.28	4.38	4.34	4.27	4.57	4.40	4.23	4.68	4.67	4.49
Other Asia[4]	3.18	3.01	2.98	2.95	2.57	2.52	2.52	2.28	2.25	2.25
Middle East	1.11	0.99	1.00	0.99	0.80	0.81	0.81	0.67	0.67	0.67
Africa	1.94	1.94	2.01	1.99	2.15	2.25	2.02	2.26	2.34	2.05
Brazil	2.43	2.80	2.77	2.39	4.07	3.78	3.46	5.08	4.67	4.52
Other Central and South America	1.81	1.69	1.72	1.80	1.58	1.75	2.46	1.73	2.52	3.75
Total non-OECD production	**27.92**	**28.15**	**28.09**	**26.10**	**31.14**	**30.36**	**27.64**	**32.44**	**32.87**	**32.05**
Total crude oil production[6]	**80.13**	**86.11**	**82.77**	**78.52**	**93.24**	**89.12**	**83.45**	**103.39**	**99.74**	**92.92**
OPEC market share (percent)	41.7	46.8	43.2	40.2	49.7	44.3	39.0	52.0	45.7	37.5

[1]Estimated consumption. Includes both OPEC and non-OPEC consumers in the regional breakdown.
[2]OECD Europe = Austria, Belgium, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Israel, Italy, Luxembourg, the Netherlands, Norway, Poland, Portugal, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey, and the United Kingdom.
[3]Other Europe and Eurasia = Albania, Armenia, Azerbaijan, Belarus, Bosnia and Herzegovina, Bulgaria, Croatia, Georgia, Kazakhstan, Kosovo, Kyrgyzstan, Latvia, Lithuania, Macedonia, Malta, Moldova, Montenegro, Romania, Serbia, Tajikistan, Turkmenistan, Ukraine, and Uzbekistan.
[4]Other Asia = Afghanistan, Bangladesh, Bhutan, Brunei, Cambodia (Kampuchea), Fiji, French Polynesia, Guam, Hong Kong, India (for production), Indonesia, Kiribati, Laos, Malaysia, Macau, Maldives, Mongolia, Myanmar (Burma), Nauru, Nepal, New Caledonia, Niue, North Korea, Pakistan, Papua New Guinea, Philippines, Samoa, Singapore, Solomon Islands, Sri Lanka, Taiwan, Thailand, Tonga, Vanuatu, and Vietnam.
[5]OPEC = Organization of the Petroleum Exporting Countries = Algeria, Angola, Ecuador, Iran, Iraq, Kuwait, Libya, Nigeria, Qatar, Saudi Arabia, the United Arab Emirates, and Venezuela.
[6]Includes crude oil, lease condensate, tight oil (shale oil), extra-heavy oil, and bitumen (oil sands).
[7]Includes diluted and upgraded/synthetic bitumen (syncrude).
[8]The volumetric amount by which total output is greater than input due to the processing of crude oil into products which, in total, have a lower specific gravity than the crude oil processed.
[9]Includes liquids produced from energy crops.
[10]Includes liquids converted from coal via the Fischer-Tropsch coal-to-liquids process.
[11]Includes liquids converted from natural gas via the Fischer-Tropsch natural-gas-to-liquids process.
[12]Includes liquids produced from kerogen (oil shale, not to be confused with tight oil (shale oil)).
OECD = Organization for Economic Cooperation and Development.
Note: Totals may not equal sum of components due to independent rounding. Data for 2015 are model results and may differ from official EIA data reports.
Sources: 2015: U.S. Energy Information Administration (EIA), *Short-Term Energy Outlook*, February 2016 and EIA, AEO2016 National Energy Modeling System run ref2016.d032416a. **Projections:** Energy Information Administration (EIA), AEO2016 National Energy Modeling System runs lowprice.d041916a, ref2016.d032416a, and highprice.d041916a; and EIA, Generate World Oil Balance application.