Table D1. Total energy supply, disposition, and price summary

(quadrillion Btu per year, unless otherwise noted)

Supply, disposition, and prices	2020	Projections								
		2030			2040			2050		
		Low oil and gas supply	Reference	High oil and gas supply	Low oil and gas supply	Reference	High oil and gas supply	Low oil and gas supply	Reference	High oil and gas supply
Production										
Crude oil and lease condensate	23.87	21.83	28.57	36.66	18.73	27.31	38.67	17.81	26.64	37.42
Natural gas plant liquids	6.58	6.29	7.90	9.47	5.61	7.92	10.07	5.55	8.05	10.39
Dry natural gas	35.14	32.52	39.28	44.96	30.78	41.39	50.99	30.64	44.58	55.51
Coal[1]	10.80	11.43	10.14	8.43	10.84	9.28	7.63	10.41	9.08	7.29
Nuclear / uranium[2]	8.21	7.34	6.59	5.30	7.41	6.22	4.45	7.61	6.21	3.60
Conventional hydroelectric power	2.53	2.55	2.43	2.32	2.54	2.36	2.24	2.53	2.29	2.18
Biomass[3]	4.47	4.87	4.89	4.94	4.99	5.00	5.09	5.41	5.39	5.57
Other renewable energy[4]	4.43	12.38	9.52	8.31	15.60	11.84	10.03	20.03	14.11	12.45
Other[5]	0.69	0.68	0.65	0.60	0.71	0.69	0.59	0.70	0.71	0.61
Total	**96.72**	**99.89**	**109.97**	**120.99**	**97.22**	**112.00**	**129.77**	**100.71**	**117.08**	**135.01**
Imports										
Crude oil	13.44	16.74	15.42	7.07	17.60	16.68	5.24	17.15	17.02	5.73
Petroleum and other liquids[6]	4.17	4.33	3.90	3.85	4.51	3.66	3.64	5.02	3.69	3.64
Natural gas	2.65	2.95	2.22	1.75	3.38	2.10	1.38	3.60	1.92	1.05
Other imports[7]	0.24	0.19	0.19	0.18	0.18	0.18	0.19	0.18	0.17	0.18
Total	**20.51**	**24.21**	**21.72**	**12.85**	**25.68**	**22.63**	**10.44**	**25.95**	**22.80**	**10.60**
Exports										
Petroleum and other liquids[8]	16.43	15.01	21.32	22.29	11.90	20.69	21.96	10.00	19.04	19.66
Natural gas	5.31	7.96	8.93	9.92	6.83	9.23	12.27	6.47	9.36	12.59
Coal	1.81	2.48	2.48	2.53	2.41	2.43	2.49	2.41	2.45	2.46
Total	**23.55**	**25.45**	**32.74**	**34.75**	**21.14**	**32.35**	**36.71**	**18.88**	**30.85**	**34.71**
Discrepancy[9]	**0.75**	**0.31**	**0.39**	**0.17**	**0.25**	**0.35**	**0.13**	**0.20**	**0.36**	**0.11**
Consumption										
Petroleum and other liquids[10]	33.55	36.66	36.88	37.39	37.15	37.39	38.36	38.39	39.08	40.46
Natural gas	31.89	27.10	32.12	36.30	26.98	33.86	39.62	27.41	36.70	43.46
Coal[11]	8.99	8.90	7.61	5.85	8.40	6.81	5.11	7.97	6.60	4.80
Nuclear / uranium[2]	8.21	7.34	6.59	5.30	7.41	6.22	4.45	7.61	6.21	3.60
Conventional hydroelectric power	2.53	2.55	2.43	2.32	2.54	2.36	2.24	2.53	2.29	2.18
Biomass[12]	3.05	3.10	3.12	3.16	3.16	3.18	3.27	3.34	3.40	3.57
Other renewable energy[4]	4.43	12.38	9.52	8.31	15.60	11.84	10.03	20.03	14.11	12.45
Other[13]	0.27	0.30	0.30	0.29	0.29	0.29	0.29	0.28	0.27	0.27
Total	**92.92**	**98.34**	**98.56**	**98.92**	**101.52**	**101.94**	**103.37**	**107.57**	**108.66**	**110.79**
Prices (2020 dollars per unit)										
Crude oil spot prices (dollars per barrel)										
Brent	41	79	73	63	99	87	75	109	95	84
West Texas Intermediate	39	77	71	56	97	84	67	108	91	77
Natural gas at Henry Hub (dollars per million Btu)	2.07	5.04	3.34	2.68	5.93	3.55	2.71	6.53	3.69	2.66
Coal (dollars per ton) at the minemouth[14]	34.1	29.9	29.4	29.9	31.4	32.0	32.3	34.7	34.7	36.5
Coal (dollars per million Btu) at the minemouth[14]	1.68	1.47	1.45	1.45	1.54	1.55	1.55	1.68	1.66	1.71
Average end-use[15]	2.12	2.03	1.97	1.92	2.09	1.98	1.93	2.14	2.01	1.99
Average electricity (cents per kilowatthour)	10.4	10.8	10.3	9.8	10.9	10.1	9.5	10.4	9.6	9.1

Table D1. Total energy supply, disposition, and price summary (continued)
(quadrillion Btu per year, unless otherwise noted)

Supply, disposition, and prices	2020	Projections								
		2030			2040			2050		
		Low oil and gas supply	Reference	High oil and gas supply	Low oil and gas supply	Reference	High oil and gas supply	Low oil and gas supply	Reference	High oil and gas supply
Prices (nominal dollars per unit)										
Crude oil spot prices (dollars per barrel)										
Brent	41	97	89	78	150	132	120	216	185	173
West Texas Intermediate	39	94	86	70	147	128	108	214	178	158
Natural gas at Henry Hub (dollars per million Btu)	2.07	6.17	4.08	3.33	9.01	5.40	4.33	12.94	7.21	5.48
Coal (dollars per ton)										
at the minemouth[14]	34.1	36.6	35.8	37.1	47.7	48.7	51.6	68.8	67.7	75.1
Coal (dollars per million Btu)										
at the minemouth[14]	1.68	1.80	1.77	1.80	2.34	2.36	2.47	3.34	3.25	3.52
Average end-use[15]	2.12	2.49	2.40	2.38	3.17	3.01	3.08	4.25	3.92	4.09
Average electricity (cents per kilowatthour)	10.4	13.3	12.5	12.2	16.6	15.3	15.2	20.7	18.8	18.7

[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 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 coal, coal coke (net), and electricity (net). Excludes imports of fuel used in nuclear power plants.
[8]Includes crude oil, petroleum products, ethanol, and biodiesel.
[9]Balancing item. Includes unaccounted for supply, losses, gains, and net storage withdrawals.
[10]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.
[11]Excludes coal converted to coal-based synthetic liquids and natural gas.
[12]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.
[13]Includes non-biogenic municipal waste, liquid hydrogen, and net electricity imports.
[14]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.
[15]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 2020 are model results and may differ from official EIA data reports.
Sources: 2020: Energy Information Administration (EIA), *Short-Term Energy Outlook*, October 2020 and EIA, AEO2021 National Energy Modeling System run ref2021.d113020a. **Projections:** EIA, AEO2021 National Energy Modeling System runs lowogs.d113020a, ref2021.d113020a, and highogs.d120120a.

Table D2. Energy consumption by sector and source

(quadrillion Btu per year, unless otherwise noted)

Sector and source	2020	Projections								
		2030			2040			2050		
		Low oil and gas supply	Reference	High oil and gas supply	Low oil and gas supply	Reference	High oil and gas supply	Low oil and gas supply	Reference	High oil and gas supply
Energy consumption										
Residential										
Propane	0.46	0.44	0.44	0.46	0.41	0.42	0.44	0.40	0.42	0.43
Distillate fuel oil[1]	0.43	0.37	0.37	0.38	0.32	0.32	0.33	0.27	0.28	0.28
Petroleum and other liquids subtotal	0.88	0.81	0.82	0.84	0.73	0.74	0.77	0.68	0.69	0.71
Natural gas	4.97	4.80	4.90	4.96	4.68	4.84	4.89	4.64	4.82	4.88
Renewable energy[2]	0.46	0.44	0.44	0.42	0.38	0.38	0.36	0.34	0.34	0.32
Electricity	5.05	5.19	5.26	5.33	5.56	5.67	5.75	6.03	6.18	6.25
Delivered energy	**11.36**	**11.24**	**11.42**	**11.55**	**11.36**	**11.64**	**11.77**	**11.68**	**12.03**	**12.17**
Electricity related losses	9.42	9.30	8.73	8.19	9.90	9.03	8.33	10.70	9.50	8.64
Total	**20.78**	**20.54**	**20.15**	**19.74**	**21.27**	**20.67**	**20.10**	**22.38**	**21.54**	**20.81**
Commercial										
Propane	0.17	0.18	0.18	0.18	0.20	0.20	0.20	0.22	0.22	0.22
Motor gasoline[3]	0.32	0.37	0.37	0.37	0.37	0.37	0.38	0.38	0.38	0.38
Kerosene	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Distillate fuel oil	0.31	0.32	0.32	0.33	0.29	0.30	0.31	0.27	0.28	0.29
Residual fuel oil	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Petroleum and other liquids subtotal	0.81	0.87	0.88	0.89	0.86	0.87	0.89	0.87	0.88	0.89
Natural gas	3.31	3.49	3.63	3.70	3.48	3.68	3.77	3.49	3.73	3.83
Coal	0.02	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Renewable energy[4]	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13
Electricity	4.34	4.71	4.76	4.81	4.96	5.04	5.10	5.52	5.62	5.70
Delivered energy	**8.60**	**9.21**	**9.41**	**9.55**	**9.44**	**9.74**	**9.90**	**10.02**	**10.38**	**10.57**
Electricity related losses	8.08	8.44	7.90	7.39	8.83	8.02	7.38	9.80	8.65	7.87
Total	**16.68**	**17.66**	**17.31**	**16.94**	**18.27**	**17.75**	**17.29**	**19.83**	**19.03**	**18.44**
Industrial[5]										
Liquefied petroleum gases and other[6]	3.13	4.24	4.30	4.44	4.64	4.80	5.16	4.94	5.20	5.81
Motor gasoline[3]	0.24	0.30	0.30	0.31	0.33	0.34	0.35	0.37	0.39	0.40
Distillate fuel oil	1.13	1.36	1.38	1.40	1.54	1.55	1.59	1.77	1.80	1.84
Residual fuel oil	0.03	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.05
Petrochemical feedstocks	0.58	0.63	0.65	0.64	0.64	0.66	0.65	0.64	0.66	0.65
Other petroleum[7]	3.21	3.52	3.42	3.32	3.74	3.62	3.52	3.86	3.82	3.74
Petroleum and other liquids subtotal	8.33	10.09	10.09	10.15	10.93	11.02	11.31	11.63	11.91	12.49
Natural gas	8.48	8.98	9.37	9.59	9.30	10.12	10.57	9.81	11.22	12.21
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[8]	1.87	1.74	2.13	2.51	1.69	2.29	2.91	1.67	2.44	3.07
Natural gas to liquefy gas for export[9]	0.36	0.67	0.77	0.89	0.53	0.78	1.20	0.50	0.78	1.22
Natural gas subtotal	10.71	11.38	12.26	12.99	11.51	13.20	14.68	11.99	14.44	16.49
Metallurgical coal	0.47	0.39	0.41	0.42	0.38	0.39	0.44	0.36	0.41	0.49
Other industrial coal	0.49	0.44	0.44	0.45	0.44	0.42	0.44	0.48	0.47	0.49
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	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02
Coal subtotal	0.93	0.81	0.83	0.85	0.81	0.79	0.85	0.82	0.86	0.96
Biofuels heat and coproducts	0.90	0.89	0.90	0.92	0.95	0.96	0.98	1.04	1.06	1.08
Renewable energy[10]	1.53	1.60	1.62	1.66	1.66	1.69	1.78	1.81	1.87	2.03
Electricity	3.07	3.43	3.51	3.60	3.65	3.73	3.89	3.89	4.02	4.23
Delivered energy	**25.47**	**28.22**	**29.22**	**30.17**	**29.51**	**31.38**	**33.50**	**31.19**	**34.16**	**37.27**
Electricity related losses	5.72	6.16	5.83	5.53	6.49	5.93	5.64	6.91	6.18	5.84
Total	**31.18**	**34.37**	**35.06**	**35.70**	**36.00**	**37.31**	**39.14**	**38.10**	**40.34**	**43.11**

Table D2. Energy consumption by sector and source (continued)

(quadrillion Btu per year, unless otherwise noted)

Sector and source	2020	Projections								
		2030			2040			2050		
		Low oil and gas supply	Reference	High oil and gas supply	Low oil and gas supply	Reference	High oil and gas supply	Low oil and gas supply	Reference	High oil and gas supply
Transportation										
Propane	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Motor gasoline[3]	14.83	14.68	14.80	15.10	14.20	14.33	14.73	14.29	14.58	15.08
of which: E85[11]	0.03	0.03	0.03	0.03	0.02	0.03	0.03	0.03	0.03	0.03
Jet fuel[12]	2.24	3.61	3.63	3.65	4.09	4.06	4.06	4.53	4.54	4.51
Distillate fuel oil[13]	6.15	6.15	6.24	6.39	5.92	6.02	6.25	6.04	6.21	6.51
Residual fuel oil	0.43	0.62	0.61	0.59	0.58	0.52	0.57	0.55	0.47	0.50
Other petroleum[14]	0.14	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15
Petroleum and other liquids subtotal	23.79	25.22	25.43	25.88	24.94	25.09	25.75	25.56	25.96	26.76
Pipeline and distribution fuel natural gas	0.71	0.55	0.61	0.69	0.56	0.65	0.73	0.59	0.71	0.78
Compressed / liquefied natural gas	0.09	0.14	0.16	0.16	0.24	0.29	0.26	0.36	0.45	0.41
Liquid hydrogen	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Electricity	0.04	0.10	0.10	0.10	0.23	0.23	0.22	0.42	0.41	0.39
Delivered energy	**24.62**	**26.01**	**26.31**	**26.84**	**25.97**	**26.26**	**26.97**	**26.93**	**27.54**	**28.35**
Electricity related losses	0.07	0.18	0.16	0.15	0.41	0.36	0.31	0.74	0.64	0.54
Total	**24.69**	**26.19**	**26.47**	**26.99**	**26.38**	**26.62**	**27.28**	**27.67**	**28.18**	**28.88**
Unspecified sector[15]	**-0.41**	**-0.42**	**-0.42**	**-0.44**	**-0.40**	**-0.41**	**-0.43**	**-0.41**	**-0.42**	**-0.45**
Delivered energy consumption for all sectors										
Liquefied petroleum gases and other[6]	3.76	4.86	4.94	5.08	5.26	5.44	5.81	5.57	5.84	6.47
Motor gasoline[3]	15.23	15.19	15.32	15.61	14.75	14.89	15.29	14.88	15.19	15.69
of which: E85[11]	0.03	0.03	0.03	0.03	0.02	0.03	0.03	0.03	0.03	0.03
Jet fuel[12]	2.23	3.60	3.62	3.64	4.08	4.05	4.04	4.52	4.53	4.50
Kerosene[16]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Distillate fuel oil[1]	7.77	7.95	8.06	8.24	7.83	7.94	8.22	8.10	8.31	8.65
Residual fuel oil	0.46	0.66	0.65	0.64	0.63	0.56	0.61	0.60	0.52	0.55
Petrochemical feedstocks	0.58	0.63	0.65	0.64	0.64	0.66	0.65	0.64	0.66	0.65
Other petroleum[17]	3.35	3.67	3.57	3.47	3.89	3.77	3.67	4.00	3.97	3.89
Petroleum and other liquids subtotal	33.40	36.57	36.80	37.32	37.07	37.31	38.30	38.32	39.02	40.41
Natural gas	16.85	17.40	18.07	18.40	17.70	18.93	19.49	18.30	20.22	21.32
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[8]	1.87	1.74	2.13	2.51	1.69	2.29	2.91	1.67	2.44	3.07
Natural gas to liquefy gas for export[9]	0.36	0.67	0.77	0.89	0.53	0.78	1.20	0.50	0.78	1.22
Pipeline and distribution fuel natural gas	0.71	0.55	0.61	0.69	0.56	0.65	0.73	0.59	0.71	0.78
Natural gas subtotal	19.78	20.36	21.57	22.50	20.47	22.66	24.33	21.06	24.16	26.39
Metallurgical coal	0.47	0.39	0.41	0.42	0.38	0.39	0.44	0.36	0.41	0.49
Other coal	0.50	0.45	0.46	0.46	0.46	0.44	0.45	0.49	0.48	0.50
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	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02
Coal subtotal	0.95	0.83	0.84	0.86	0.82	0.81	0.87	0.83	0.87	0.97
Biofuels heat and coproducts	0.90	0.89	0.90	0.92	0.95	0.96	0.98	1.04	1.06	1.08
Renewable energy[18]	2.12	2.18	2.19	2.21	2.18	2.20	2.27	2.28	2.34	2.48
Liquid hydrogen	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Electricity	12.49	13.43	13.63	13.84	14.40	14.67	14.96	15.86	16.24	16.56
Delivered energy	**69.64**	**74.26**	**75.94**	**77.66**	**75.89**	**78.60**	**81.70**	**79.42**	**83.69**	**87.91**
Electricity related losses	23.28	24.07	22.63	21.26	25.63	23.34	21.67	28.15	24.98	22.88
Total	**92.92**	**98.34**	**98.56**	**98.92**	**101.52**	**101.94**	**103.37**	**107.57**	**108.66**	**110.79**
Electric power[19]										
Distillate fuel oil	0.07	0.06	0.05	0.05	0.05	0.04	0.04	0.05	0.04	0.03
Residual fuel oil	0.08	0.03	0.03	0.03	0.03	0.03	0.03	0.02	0.02	0.02
Petroleum and other liquids subtotal	0.15	0.09	0.08	0.08	0.08	0.07	0.06	0.06	0.06	0.05
Natural gas	12.11	6.74	10.55	13.80	6.51	11.20	15.29	6.35	12.54	17.07
Steam coal	8.04	8.08	6.77	4.99	7.58	6.00	4.24	7.14	5.73	3.83
Nuclear / uranium[20]	8.21	7.34	6.59	5.30	7.41	6.22	4.45	7.61	6.21	3.60
Renewable energy[21]	6.99	14.96	11.97	10.65	18.17	14.22	12.30	22.58	16.41	14.63
Non-biogenic municipal waste	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12
Electricity imports	0.16	0.18	0.18	0.17	0.17	0.17	0.17	0.16	0.15	0.15
Total	**35.77**	**37.50**	**36.26**	**35.10**	**40.03**	**38.00**	**36.63**	**44.02**	**41.21**	**39.45**

Table D2. Energy consumption by sector and source (continued)

(quadrillion Btu per year, unless otherwise noted)

Sector and source	2020	Projections								
		2030			2040			2050		
		Low oil and gas supply	Reference	High oil and gas supply	Low oil and gas supply	Reference	High oil and gas supply	Low oil and gas supply	Reference	High oil and gas supply
Total energy consumption										
Liquefied petroleum gases and other[6]	3.76	4.86	4.94	5.08	5.26	5.44	5.81	5.57	5.84	6.47
Motor gasoline[3]	15.23	15.19	15.32	15.61	14.75	14.89	15.29	14.88	15.19	15.69
of which: E85[11]	0.03	0.03	0.03	0.03	0.02	0.03	0.03	0.03	0.03	0.03
Jet fuel[12]	2.23	3.60	3.62	3.64	4.08	4.05	4.04	4.52	4.53	4.50
Kerosene[16]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Distillate fuel oil[1]	7.84	8.01	8.11	8.29	7.88	7.99	8.25	8.15	8.35	8.69
Residual fuel oil	0.54	0.70	0.68	0.67	0.65	0.59	0.64	0.61	0.53	0.57
Petrochemical feedstocks	0.58	0.63	0.65	0.64	0.64	0.66	0.65	0.64	0.66	0.65
Other petroleum[17]	3.35	3.67	3.57	3.47	3.89	3.77	3.67	4.00	3.97	3.89
Petroleum and other liquids subtotal	33.55	36.66	36.88	37.39	37.15	37.39	38.36	38.39	39.08	40.46
Natural gas	28.96	24.14	28.61	32.20	24.21	30.14	34.78	24.65	32.76	38.39
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[8]	1.87	1.74	2.13	2.51	1.69	2.29	2.91	1.67	2.44	3.07
Natural gas to liquefy gas for export[9]	0.36	0.67	0.77	0.89	0.53	0.78	1.20	0.50	0.78	1.22
Pipeline and distribution fuel natural gas	0.71	0.55	0.61	0.69	0.56	0.65	0.73	0.59	0.71	0.78
Natural gas subtotal	31.89	27.10	32.12	36.30	26.98	33.86	39.62	27.41	36.70	43.46
Metallurgical coal	0.47	0.39	0.41	0.42	0.38	0.39	0.44	0.36	0.41	0.49
Other coal	8.54	8.53	7.23	5.45	8.04	6.44	4.69	7.63	6.21	4.33
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	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02	-0.02
Coal subtotal	8.99	8.90	7.61	5.85	8.40	6.81	5.11	7.97	6.60	4.80
Nuclear / uranium[20]	8.21	7.34	6.59	5.30	7.41	6.22	4.45	7.61	6.21	3.60
Biofuels heat and coproducts	0.90	0.89	0.90	0.92	0.95	0.96	0.98	1.04	1.06	1.08
Renewable energy[22]	9.11	17.14	14.17	12.86	20.35	16.42	14.56	24.86	18.75	17.11
Liquid hydrogen	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Non-biogenic municipal waste	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12	0.12
Electricity imports	0.16	0.18	0.18	0.17	0.17	0.17	0.17	0.16	0.15	0.15
Total	**92.92**	**98.34**	**98.56**	**98.92**	**101.52**	**101.94**	**103.37**	**107.57**	**108.66**	**110.79**
Energy use and related statistics										
Delivered energy use	69.64	74.26	75.94	77.66	75.89	78.60	81.70	79.42	83.69	87.91
Total energy use	92.92	98.34	98.56	98.92	101.52	101.94	103.37	107.57	108.66	110.79
Ethanol consumed in motor gasoline and E85	1.08	1.16	1.17	1.19	1.19	1.20	1.23	1.25	1.27	1.32
Population (millions)	330.41	352.60	352.60	352.60	370.87	370.87	370.87	386.16	386.16	386.16
Gross domestic product (billion 2012 dollars)	18,171	23,195	23,289	23,504	28,501	28,371	28,498	34,270	34,365	34,405
Carbon dioxide emissions (million metric tons)	4,563	4,435	4,584	4,663	4,380	4,596	4,786	4,413	4,807	5,051

[1]Includes residential use of kerosene.
[2]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.
[3]Includes ethanol and ethers blended into gasoline.
[4]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.
[5]Includes energy for combined heat and power plants that have a non-regulatory status, and small on-site generating systems.
[6]Includes ethane, natural gasoline, and refinery olefins.
[7]Includes petroleum coke, asphalt, road oil, lubricants, still gas, and miscellaneous petroleum products.
[8]Represents natural gas used in well, field, and lease operations, and in natural gas processing plant machinery.
[9]Fuel used in facilities that liquefy natural gas for export.
[10]Includes consumption of energy produced from hydroelectric, wood and wood waste, municipal waste, and other biomass sources. Excludes ethanol in motor gasoline.
[11]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 these projections.
[12]Includes only kerosene type.
[13]Diesel fuel for on- and off- road use.
[14]Includes aviation gasoline and lubricants.
[15]Represents consumption unattributed to the sectors above.
[16]Includes aviation gasoline, petroleum coke, asphalt, road oil, lubricants, still gas, and miscellaneous petroleum products.
[17]Does not include residential use of kerosene.
[18]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.
[19]Includes consumption of energy by electricity-only and combined heat and power plants that have a regulatory status.
[20]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.
[21]Includes conventional hydroelectric, geothermal, wood and wood waste, biogenic municipal waste, other biomass, wind, photovoltaic, and solar thermal sources. Excludes net electricity imports.
[22]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 2020 are model results and may differ from official EIA data reports.
Sources: 2020: Energy Information Administration (EIA), *Short-Term Energy Outlook*, October 2020 and EIA, AEO2021 National Energy Modeling System run ref2021.d113020a. **Projections:** EIA, AEO2021 National Energy Modeling System runs lowogs.d113020a, ref2021.d113020a, and highogs.d120120a.

Table D3. Energy prices by sector and source

(2020 dollars per million Btu, unless otherwise noted)

Sector and source	2020	Projections								
		2030			2040			2050		
		Low oil and gas supply	Reference	High oil and gas supply	Low oil and gas supply	Reference	High oil and gas supply	Low oil and gas supply	Reference	High oil and gas supply
Residential										
Propane	17.30	23.36	21.30	18.11	27.89	24.16	20.38	30.11	26.16	22.26
Distillate fuel oil	17.75	25.80	24.85	23.13	28.84	26.68	24.00	30.32	27.80	25.32
Natural gas	10.14	12.28	10.99	10.42	13.75	11.44	10.71	14.44	11.76	10.86
Electricity	35.77	38.18	36.54	35.11	38.75	36.14	34.48	37.52	34.96	33.26
Commercial										
Propane	12.77	18.89	17.34	14.97	22.00	19.30	16.51	23.46	20.63	17.90
Distillate fuel oil	17.83	20.89	20.21	18.48	24.26	22.10	19.41	25.80	23.27	20.80
Residual fuel oil	5.25	12.05	11.26	9.98	14.95	13.35	11.26	16.61	14.49	12.68
Natural gas	7.23	9.46	8.20	7.67	10.61	8.45	7.77	11.19	8.69	7.83
Electricity	31.33	32.35	30.75	29.45	31.96	29.63	28.19	29.93	27.80	26.34
Industrial[1]										
Propane	7.62	13.66	11.85	9.56	16.73	13.83	11.00	18.37	15.24	12.39
Distillate fuel oil	17.75	20.89	19.96	18.23	23.96	21.81	19.14	25.55	23.01	20.57
Residual fuel oil	5.42	13.92	13.19	11.89	16.66	15.14	13.13	18.34	16.42	14.53
Natural gas[2]	3.06	5.92	4.20	3.52	6.84	4.36	3.51	7.39	4.48	3.46
Metallurgical coal	4.02	3.14	3.11	3.07	3.51	3.45	3.40	3.90	3.83	3.78
Other industrial coal	2.82	2.90	2.87	2.83	2.95	2.90	2.84	3.05	2.96	2.90
Coal to liquids	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
Electricity	20.71	20.89	19.56	18.62	21.09	18.98	17.84	20.04	18.06	16.78
Transportation										
Propane	11.99	17.43	16.35	14.33	20.27	18.01	15.64	21.46	19.10	16.80
E85[3]	21.06	28.09	27.14	24.64	32.58	30.51	26.16	34.52	31.85	27.76
Motor gasoline[4]	18.75	23.93	23.28	21.25	27.72	25.94	22.39	29.26	26.99	23.60
Jet fuel[5]	9.57	17.35	16.44	14.72	21.21	18.93	16.29	23.08	20.52	18.08
Diesel fuel (distillate fuel oil)[6]	18.33	24.64	23.95	22.45	28.12	25.75	23.35	29.64	26.90	24.66
Residual fuel oil	9.21	11.47	11.72	11.33	14.39	14.33	12.30	15.85	16.23	14.33
Natural gas[7]	13.01	14.17	12.76	12.04	14.18	11.58	10.46	14.40	11.35	10.04
Electricity	34.84	36.84	34.84	33.33	37.96	34.53	32.70	36.30	32.72	30.58
Electric power[8]										
Distillate fuel oil	17.71	20.20	19.12	17.43	23.29	21.08	18.34	24.97	22.38	19.90
Residual fuel oil	8.29	15.36	14.67	13.16	17.98	16.38	14.26	18.91	16.94	15.05
Natural gas	2.45	5.15	3.61	2.96	6.11	3.77	2.92	6.82	3.90	2.82
Steam coal	1.96	1.92	1.83	1.72	1.96	1.81	1.66	1.98	1.79	1.63
Uranium	0.69	0.70	0.70	0.70	0.72	0.72	0.72	0.74	0.74	0.74
Average price to all users[9]										
Propane	14.35	19.81	17.97	15.21	23.29	20.11	16.86	24.83	21.47	18.23
E85[3]	21.06	28.09	27.14	24.64	32.58	30.51	26.16	34.52	31.85	27.76
Motor gasoline[4]	18.74	23.94	23.28	21.26	27.73	25.94	22.40	29.27	27.00	23.61
Jet fuel[5]	9.57	17.35	16.44	14.72	21.21	18.93	16.29	23.08	20.52	18.08
Distillate fuel oil	18.18	23.79	23.11	21.38	26.99	24.83	22.16	28.46	25.92	23.46
Residual fuel oil	8.84	11.78	11.94	11.44	14.68	14.47	12.43	16.12	16.26	14.36
Natural gas	4.53	7.53	5.70	4.86	8.60	5.85	4.78	9.21	5.90	4.63
Metallurgical coal	4.02	3.14	3.11	3.07	3.51	3.45	3.40	3.90	3.83	3.78
Other coal	2.02	1.98	1.91	1.83	2.02	1.89	1.79	2.06	1.89	1.79
Coal to liquids	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
Electricity	30.53	31.70	30.13	28.84	31.93	29.52	27.98	30.56	28.24	26.61
Non-renewable energy expenditures by sector (billion 2020 dollars)										
Residential	247	277	265	256	301	279	268	314	291	278
Commercial	173	204	195	187	218	201	191	228	210	199
Industrial[1]	152	240	215	195	292	250	227	331	285	263
Transportation	412	570	558	520	658	614	549	720	671	611
Total non-renewable expenditures	984	1,291	1,232	1,159	1,468	1,345	1,234	1,593	1,458	1,350
Transportation renewable expenditures	1	1	1	1	1	1	1	1	1	1
Total expenditures	**985**	**1,292**	**1,233**	**1,159**	**1,469**	**1,345**	**1,235**	**1,594**	**1,459**	**1,351**

Table D3. Energy prices by sector and source (continued)

(nominal dollars per million Btu, unless otherwise noted)

Sector and source	2020	Projections								
		2030			2040			2050		
		Low oil and gas supply	Reference	High oil and gas supply	Low oil and gas supply	Reference	High oil and gas supply	Low oil and gas supply	Reference	High oil and gas supply
Residential										
Propane	17.30	28.62	26.00	22.49	42.37	36.74	32.54	59.66	51.08	45.77
Distillate fuel oil	17.75	31.61	30.32	28.74	43.81	40.58	38.33	60.07	54.29	52.06
Natural gas	10.14	15.04	13.41	12.95	20.88	17.40	17.10	28.61	22.96	22.33
Electricity	35.77	46.77	44.59	43.62	58.88	54.96	55.07	74.33	68.26	68.37
Commercial										
Propane	12.77	23.14	21.16	18.59	33.43	29.36	26.37	46.48	40.29	36.79
Distillate fuel oil	17.83	25.59	24.66	22.95	36.86	33.61	31.00	51.13	45.44	42.76
Residual fuel oil	5.25	14.77	13.74	12.39	22.72	20.31	17.98	32.90	28.29	26.07
Natural gas	7.23	11.59	10.00	9.53	16.12	12.85	12.41	22.18	16.96	16.11
Electricity	31.33	39.63	37.52	36.58	48.56	45.07	45.01	59.31	54.28	54.15
Industrial[1]										
Propane	7.62	16.73	14.46	11.88	25.42	21.03	17.57	36.40	29.75	25.47
Distillate fuel oil	17.75	25.59	24.35	22.64	36.40	33.17	30.57	50.62	44.94	42.29
Residual fuel oil	5.42	17.05	16.10	14.77	25.32	23.02	20.96	36.35	32.06	29.88
Natural gas[2]	3.06	7.25	5.12	4.37	10.39	6.64	5.61	14.64	8.75	7.12
Metallurgical coal	4.02	3.85	3.80	3.81	5.33	5.24	5.42	7.73	7.49	7.77
Other industrial coal	2.82	3.55	3.50	3.52	4.48	4.41	4.53	6.03	5.79	5.96
Coal to liquids	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
Electricity	20.71	25.59	23.87	23.13	32.04	28.86	28.48	39.71	35.26	34.50
Transportation										
Propane	11.99	21.35	19.95	17.80	30.79	27.39	24.97	42.52	37.29	34.54
E85[3]	21.06	34.41	33.12	30.61	49.50	46.40	41.77	68.39	62.20	57.08
Motor gasoline[4]	18.75	29.31	28.40	26.40	42.11	39.44	35.76	57.97	52.70	48.52
Jet fuel[5]	9.57	21.26	20.07	18.29	32.22	28.79	26.02	45.74	40.06	37.17
Diesel fuel (distillate fuel oil)[6]	18.33	30.19	29.22	27.88	42.73	39.16	37.29	58.72	52.53	50.69
Residual fuel oil	9.21	14.05	14.30	14.07	21.86	21.80	19.64	31.41	31.69	29.47
Natural gas[7]	13.01	17.36	15.57	14.95	21.54	17.61	16.70	28.54	22.16	20.63
Electricity	34.84	45.13	42.52	41.40	57.67	52.51	52.21	71.92	63.89	62.87
Electric power[8]										
Distillate fuel oil	17.71	24.74	23.34	21.65	35.39	32.07	29.29	49.48	43.71	40.92
Residual fuel oil	8.29	18.81	17.91	16.34	27.32	24.91	22.77	37.46	33.08	30.94
Natural gas	2.45	6.31	4.41	3.68	9.28	5.74	4.67	13.51	7.62	5.81
Steam coal	1.96	2.36	2.23	2.14	2.97	2.75	2.66	3.93	3.49	3.35
Uranium	0.69	0.86	0.86	0.87	1.09	1.09	1.15	1.46	1.44	1.52

Table D3. Energy prices by sector and source (continued)

(nominal dollars per million Btu, unless otherwise noted)

Sector and source	2020	Projections								
		2030			2040			2050		
		Low oil and gas supply	Reference	High oil and gas supply	Low oil and gas supply	Reference	High oil and gas supply	Low oil and gas supply	Reference	High oil and gas supply
Average price to all users[9]										
Propane	14.35	24.26	21.92	18.89	35.38	30.58	26.93	49.19	41.93	37.48
E85[3]	21.06	34.41	33.12	30.61	49.50	46.40	41.77	68.39	62.20	57.08
Motor gasoline[4]	18.74	29.33	28.41	26.40	42.13	39.46	35.77	57.99	52.71	48.53
Jet fuel[5]	9.57	21.26	20.07	18.29	32.22	28.79	26.02	45.74	40.06	37.17
Distillate fuel oil	18.18	29.14	28.20	26.56	41.00	37.76	35.39	56.39	50.61	48.24
Residual fuel oil	8.84	14.43	14.57	14.21	22.31	22.01	19.85	31.94	31.74	29.52
Natural gas	4.53	9.22	6.96	6.04	13.06	8.90	7.63	18.25	11.53	9.51
Metallurgical coal	4.02	3.85	3.80	3.81	5.33	5.24	5.42	7.73	7.49	7.77
Other coal	2.02	2.43	2.33	2.27	3.07	2.88	2.86	4.08	3.69	3.69
Coal to liquids	- -	- -	- -	- -	- -	- -	- -	- -	- -	- -
Electricity	30.53	38.84	36.76	35.83	48.51	44.89	44.68	60.54	55.14	54.71
Non-renewable energy expenditures by sector (billion nominal dollars)										
Residential	247	339	323	318	457	425	427	621	569	571
Commercial	173	251	238	232	330	305	305	452	411	410
Industrial[1]	152	294	262	243	444	381	362	656	557	540
Transportation	412	698	681	646	999	934	876	1,427	1,311	1,255
Total non-renewable expenditures	984	1,581	1,504	1,439	2,230	2,045	1,970	3,157	2,847	2,776
Transportation renewable expenditures	1	1	1	1	1	1	1	2	2	2
Total expenditures	**985**	**1,582**	**1,505**	**1,440**	**2,232**	**2,046**	**1,972**	**3,159**	**2,849**	**2,778**

[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 and fuel used for liquefaction in export facilities.
[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 these projections.
[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 2020 are model results and may differ from official EIA data reports.
Sources: 2020: Energy Information Administration (EIA), *Short-Term Energy Outlook*, October 2020 and EIA, AEO2021 National Energy Modeling System run ref2021.d113020a. **Projections:** EIA, AEO2021 National Energy Modeling System runs lowogs.d113020a, ref2021.d113020a, and highogs.d120120a.

Table D4. Petroleum and other liquids supply and disposition

(million barrels per day, unless otherwise noted)

Supply and disposition	2020	Projections								
		2030			2040			2050		
		Low oil and gas supply	Reference	High oil and gas supply	Low oil and gas supply	Reference	High oil and gas supply	Low oil and gas supply	Reference	High oil and gas supply
Crude oil										
Domestic crude production[1]	11.47	10.51	13.77	17.71	9.02	13.17	18.64	8.60	12.87	18.08
Alaska	0.46	0.46	0.57	0.60	0.41	0.56	1.00	0.25	0.62	0.91
Lower 48 states	11.01	10.04	13.20	17.12	8.62	12.62	17.64	8.36	12.26	17.17
Net imports	2.83	6.56	3.81	-0.33	7.89	4.26	-1.49	7.71	4.50	-1.10
Gross imports	6.05	7.54	6.94	3.17	7.89	7.47	2.35	7.71	7.62	2.56
Exports	3.22	0.97	3.13	3.50	0.00	3.21	3.84	0.00	3.13	3.66
Other crude supply[2]	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total crude supply	**14.34**	**17.07**	**17.58**	**17.38**	**16.92**	**17.43**	**17.16**	**16.31**	**17.37**	**16.99**
Net product imports	-3.22	-4.46	-5.85	-6.40	-3.67	-5.46	-5.92	-2.42	-4.63	-4.80
Gross refined product imports[3]	0.97	0.86	0.74	0.72	1.02	0.75	0.80	1.20	0.76	0.80
Unfinished oil imports	0.56	0.64	0.58	0.59	0.67	0.56	0.56	0.69	0.55	0.55
Blending component imports	0.36	0.52	0.48	0.46	0.41	0.36	0.27	0.47	0.39	0.31
Exports	5.11	6.48	7.64	8.17	5.78	7.13	7.56	4.78	6.33	6.45
Refinery processing gain[4]	0.96	1.11	1.01	0.89	1.20	1.09	0.92	1.17	1.09	0.91
Product stock withdrawal	-0.08	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Natural gas plant liquids	5.03	4.88	6.12	7.34	4.36	6.15	7.80	4.34	6.26	8.07
Supply from renewable sources	0.97	1.14	1.14	1.15	1.15	1.15	1.16	1.24	1.21	1.23
Ethanol	0.80	0.87	0.87	0.89	0.89	0.89	0.92	0.93	0.95	0.98
Domestic production	0.88	1.00	1.01	1.03	1.07	1.08	1.10	1.18	1.20	1.23
Net imports	-0.08	-0.14	-0.14	-0.14	-0.18	-0.18	-0.18	-0.25	-0.25	-0.25
Stock withdrawal	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Biodiesel	0.12	0.14	0.14	0.13	0.14	0.13	0.13	0.18	0.14	0.13
Domestic production	0.11	0.13	0.13	0.13	0.13	0.13	0.12	0.17	0.13	0.12
Net imports	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
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]	0.05	0.13	0.13	0.13	0.13	0.12	0.11	0.14	0.12	0.11
Domestic production	0.03	0.11	0.11	0.10	0.10	0.09	0.08	0.11	0.09	0.08
Net imports	0.02	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.03
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	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Liquids from coal	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Other[6]	0.21	0.25	0.23	0.21	0.26	0.25	0.21	0.25	0.26	0.21
Total primary supply[7]	**18.21**	**19.99**	**20.24**	**20.57**	**20.22**	**20.62**	**21.31**	**20.90**	**21.55**	**22.60**
Product supplied										
by fuel										
Liquefied petroleum gases and other[8]	2.99	4.00	4.16	4.29	4.21	4.57	4.94	4.44	4.86	5.51
Motor gasoline[9]	8.22	8.25	8.32	8.48	8.03	8.10	8.32	8.11	8.28	8.55
of which: E85[10]	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
Jet fuel[11]	1.08	1.74	1.75	1.76	1.97	1.96	1.96	2.18	2.19	2.17
Distillate fuel oil[12]	3.75	3.80	3.85	3.93	3.74	3.79	3.92	3.87	3.96	4.12
of which: Diesel	3.46	3.41	3.45	3.54	3.36	3.41	3.53	3.49	3.58	3.74
Residual fuel oil	0.22	0.30	0.30	0.29	0.28	0.26	0.28	0.27	0.23	0.25
Other[13]	1.79	1.92	1.88	1.83	2.01	1.97	1.92	2.06	2.05	2.02
by sector										
Residential and commercial	0.97	0.97	0.98	1.00	0.93	0.94	0.97	0.91	0.92	0.95
Industrial[14]	5.03	6.23	6.36	6.44	6.64	6.95	7.29	7.05	7.47	8.10
Transportation	12.30	12.99	13.10	13.33	12.84	12.92	13.26	13.16	13.37	13.79
Electric power[15]	0.07	0.04	0.04	0.04	0.04	0.03	0.03	0.03	0.03	0.02
Unspecified sector[16]	-0.21	-0.21	-0.21	-0.22	-0.20	-0.20	-0.22	-0.21	-0.21	-0.23
Total product supplied	**18.05**	**20.01**	**20.26**	**20.59**	**20.25**	**20.65**	**21.33**	**20.94**	**21.58**	**22.63**
Discrepancy[17]	0.15	-0.02	-0.02	-0.02	-0.03	-0.03	-0.02	-0.03	-0.03	-0.02

Table D4. Petroleum and other liquids supply and disposition (continued)

(million barrels per day, unless otherwise noted)

Supply and disposition	2020	Projections								
		2030			2040			2050		
		Low oil and gas supply	Reference	High oil and gas supply	Low oil and gas supply	Reference	High oil and gas supply	Low oil and gas supply	Reference	High oil and gas supply
Domestic refinery distillation capacity[18]	18.7	19.1	19.1	19.4	19.1	19.1	19.4	19.1	19.1	19.4
Capacity utilization rate (percent)[19]	79.7	90.5	93.1	90.6	89.8	92.3	89.4	86.7	91.9	88.5
Total gross imports	7.99	9.59	8.77	4.97	10.04	9.18	4.03	10.11	9.36	4.25
Total gross exports	8.44	7.59	10.91	11.82	5.96	10.52	11.58	5.03	9.70	10.36
Total net imports	-0.44	2.00	-2.14	-6.84	4.08	-1.34	-7.55	5.08	-0.35	-6.11
Net import share of product supplied (percent)	-2.4	10.0	-10.6	-33.3	20.2	-6.5	-35.4	24.3	-1.6	-27.0
Expenditures for imported crude oil and petroleum products (billion 2020 dollars)	96	224	191	82	291	240	74	320	267	89

[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 withdraw al, 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 these projections.
[11]Includes only kerosene type.
[12]Includes distillate fuel oil from petroleum and biomass feedstocks and kerosene use in the residential sector.
[13]Includes aviation gasoline, petrochemical feedstocks, lubricants, waxes, asphalt, road oil, still gas, special naphthas, petroleum coke, crude oil product supplied, methanol, miscellaneous petroleum products, and kerosene not used in the residential sector.
[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 2020 are model results and may differ from official EIA data reports.
Sources: 2020: Energy Information Administration (EIA), *Short-Term Energy Outlook*, October 2020 and EIA, AEO2021 National Energy Modeling System run ref2021.d113020a. **Projections:** EIA, AEO2021 National Energy Modeling System runs lowogs.d113020a, ref2021.d113020a, and highogs.d120120a.

Table D5. Petroleum and other liquids prices

(2020 dollars per gallon, unless otherwise noted)

Sector and fuel	2020	Projections								
		2030			2040			2050		
		Low oil and gas supply	Reference	High oil and gas supply	Low oil and gas supply	Reference	High oil and gas supply	Low oil and gas supply	Reference	High oil and gas supply
Crude oil prices (2020 dollars per barrel)										
Brent spot	41	79	73	63	99	87	75	109	95	84
West Texas Intermediate spot	39	77	71	56	97	84	67	108	91	77
Average imported refiners acquisition cost[1]	37	76	70	60	94	82	71	105	90	79
Brent / West Texas Intermediate spread	2	2	2	7	2	3	8	1	4	7
Delivered sector product prices										
Residential										
Propane	1.58	2.14	1.95	1.66	2.55	2.21	1.86	2.75	2.39	2.04
Distillate fuel oil	2.44	3.54	3.41	3.18	3.96	3.67	3.30	4.16	3.82	3.48
Commercial										
Distillate fuel oil	2.45	2.87	2.78	2.54	3.33	3.04	2.67	3.54	3.20	2.86
Residual fuel oil	0.79	1.80	1.69	1.49	2.24	2.00	1.69	2.49	2.17	1.90
Residual fuel oil (2020 dollars per barrel)	33	76	71	63	94	84	71	104	91	80
Industrial[2]										
Propane	0.70	1.25	1.08	0.87	1.53	1.26	1.01	1.68	1.39	1.13
Distillate fuel oil	2.44	2.87	2.74	2.50	3.29	3.00	2.63	3.51	3.16	2.83
Residual fuel oil	0.81	2.08	1.97	1.78	2.49	2.27	1.97	2.75	2.46	2.18
Residual fuel oil (2020 dollars per barrel)	34	87	83	75	105	95	83	115	103	91
Transportation										
Propane	1.10	1.59	1.50	1.31	1.85	1.65	1.43	1.96	1.75	1.54
E85[3]	2.00	2.67	2.58	2.34	3.10	2.90	2.49	3.28	3.03	2.64
Ethanol wholesale price	1.39	1.48	1.40	1.36	1.52	1.51	1.44	1.46	1.44	1.39
Motor gasoline[4]	2.26	2.87	2.80	2.55	3.32	3.11	2.69	3.50	3.23	2.83
Jet fuel[5]	1.29	2.34	2.22	1.99	2.86	2.56	2.20	3.12	2.77	2.44
Diesel fuel (distillate fuel oil)[6]	2.52	3.38	3.29	3.08	3.86	3.54	3.21	4.07	3.69	3.39
Residual fuel oil	1.38	1.72	1.75	1.70	2.15	2.15	1.84	2.37	2.43	2.15
Residual fuel oil (2020 dollars per barrel)	58	72	74	71	90	90	77	100	102	90
Electric power[7]										
Distillate fuel oil	2.43	2.77	2.63	2.39	3.20	2.90	2.52	3.43	3.07	2.73
Residual fuel oil	1.24	2.30	2.20	1.97	2.69	2.45	2.13	2.83	2.54	2.25
Residual fuel oil (2020 dollars per barrel)	52	97	92	83	113	103	90	119	107	95
Average prices, all sectors[8]										
Propane	1.31	1.81	1.64	1.39	2.13	1.84	1.54	2.27	1.96	1.67
Motor gasoline[4]	2.25	2.88	2.80	2.55	3.32	3.11	2.69	3.50	3.23	2.83
Jet fuel[5]	1.29	2.34	2.22	1.99	2.86	2.56	2.20	3.12	2.77	2.44
Distillate fuel oil	2.50	3.27	3.17	2.94	3.71	3.41	3.05	3.91	3.56	3.22
Residual fuel oil	1.32	1.76	1.79	1.71	2.20	2.17	1.86	2.41	2.43	2.15
Residual fuel oil (2020 dollars per barrel)	56	74	75	72	92	91	78	101	102	90
Average	**1.90**	**2.44**	**2.33**	**2.11**	**2.82**	**2.54**	**2.18**	**2.98**	**2.66**	**2.29**

Table D5. Petroleum and other liquids prices (continued)
(nominal dollars per gallon, unless otherwise noted)

Sector and fuel	2020	Projections								
		2030			2040			2050		
		Low oil and gas supply	Reference	High oil and gas supply	Low oil and gas supply	Reference	High oil and gas supply	Low oil and gas supply	Reference	High oil and gas supply
Crude oil prices (nominal dollars per barrel)										
Brent spot	41	97	89	78	150	132	120	216	185	173
West Texas Intermediate spot	39	94	86	70	147	128	108	214	178	158
Average imported refiners acquisition cost[1]	37	93	85	75	143	125	113	208	176	163
Delivered sector product prices										
Residential										
Propane	1.58	2.62	2.38	2.06	3.87	3.36	2.98	5.46	4.67	4.19
Distillate fuel oil	2.44	4.34	4.17	3.95	6.02	5.57	5.27	8.25	7.46	7.15
Commercial										
Distillate fuel oil	2.45	3.51	3.39	3.15	5.06	4.62	4.26	7.02	6.24	5.87
Residual fuel oil	0.79	2.21	2.06	1.86	3.40	3.04	2.69	4.93	4.23	3.90
Industrial[2]										
Propane	0.70	1.53	1.32	1.09	2.33	1.92	1.61	3.33	2.72	2.33
Distillate fuel oil	2.44	3.51	3.35	3.11	5.00	4.56	4.20	6.95	6.17	5.81
Residual fuel oil	0.81	2.55	2.41	2.21	3.79	3.45	3.14	5.44	4.80	4.47
Transportation										
Propane	1.10	1.95	1.82	1.63	2.82	2.50	2.28	3.89	3.41	3.16
E85[3]	2.00	3.27	3.15	2.91	4.71	4.41	3.97	6.50	5.92	5.43
Ethanol wholesale price	1.39	1.81	1.71	1.69	2.31	2.30	2.31	2.90	2.81	2.87
Motor gasoline[4]	2.26	3.52	3.41	3.17	5.05	4.73	4.29	6.94	6.31	5.81
Jet fuel[5]	1.29	2.87	2.71	2.47	4.35	3.89	3.51	6.17	5.41	5.02
Diesel fuel (distillate fuel oil)[6]	2.52	4.14	4.01	3.83	5.87	5.38	5.12	8.06	7.21	6.97
Residual fuel oil	1.38	2.10	2.14	2.11	3.27	3.26	2.94	4.70	4.74	4.41
Electric power[7]										
Distillate fuel oil	2.43	3.40	3.21	2.98	4.86	4.41	4.02	6.79	6.00	5.62
Residual fuel oil	1.24	2.82	2.68	2.45	4.09	3.73	3.41	5.61	4.95	4.63
Average prices, all sectors[8]										
Propane	1.31	2.22	2.00	1.73	3.24	2.80	2.46	4.50	3.83	3.43
Motor gasoline[4]	2.25	3.52	3.41	3.17	5.05	4.73	4.29	6.94	6.31	5.81
Jet fuel[5]	1.29	2.87	2.71	2.47	4.35	3.89	3.51	6.17	5.41	5.02
Distillate fuel oil	2.50	4.00	3.87	3.65	5.63	5.19	4.86	7.74	6.95	6.63
Residual fuel oil (nominal dollars per barrel)	56	91	92	89	140	138	125	201	200	186
Average	**1.90**	**2.99**	**2.84**	**2.62**	**4.28**	**3.87**	**3.48**	**5.91**	**5.20**	**4.72**

[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 these projections.
[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 2020 are model results and may differ from official EIA data reports.
Sources: 2020: Energy Information Administration (EIA), *Short-Term Energy Outlook*, October 2020 and EIA, AEO2021 National Energy Modeling System run ref2021.d113020a. **Projections:** EIA, AEO2021 National Energy Modeling System runs lowogs.d113020a, ref2021.d113020a, and highogs.d120120a.

Table D6. Natural gas supply, disposition, and prices
(trillion cubic feet, unless otherwise noted)

Supply, disposition, and prices	2020	Projections								
		2030			2040			2050		
		Low oil and gas supply	Reference	High oil and gas supply	Low oil and gas supply	Reference	High oil and gas supply	Low oil and gas supply	Reference	High oil and gas supply
Supply										
Dry gas production[1]	33.89	31.36	37.88	43.36	29.68	39.92	49.17	29.55	42.99	53.53
Supplemental natural gas[2]	0.07	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06
Net imports	**-2.67**	**-5.01**	**-6.69**	**-8.13**	**-3.47**	**-7.09**	**-10.81**	**-2.90**	**-7.40**	**-11.45**
Pipeline[3]	-0.42	-0.78	-1.84	-2.48	-0.15	-2.13	-3.15	0.27	-2.46	-3.70
Liquefied natural gas	-2.25	-4.23	-4.85	-5.65	-3.32	-4.96	-7.66	-3.17	-4.95	-7.75
Total supply	**31.29**	**26.41**	**31.26**	**35.29**	**26.28**	**32.89**	**38.42**	**26.72**	**35.65**	**42.14**
Consumption by sector	**30.76**	**26.12**	**30.97**	**35.01**	**26.00**	**32.65**	**38.22**	**26.42**	**35.39**	**41.92**
Residential	4.78	4.62	4.72	4.77	4.51	4.66	4.71	4.46	4.64	4.69
Commercial	3.19	3.36	3.49	3.56	3.35	3.54	3.63	3.36	3.59	3.69
Industrial[4]	10.31	10.96	11.81	12.51	11.08	12.71	14.13	11.54	13.90	15.88
Other industrial[4]	8.16	8.64	9.02	9.23	8.95	9.74	10.17	9.45	10.80	11.75
Lease and plant fuel[5]	1.80	1.67	2.05	2.42	1.63	2.21	2.80	1.61	2.35	2.96
Fuel used to liquefy gas for export[6]	0.35	0.65	0.74	0.86	0.51	0.76	1.16	0.49	0.75	1.17
Natural gas-to-liquids heat and power[7]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Natural gas to liquids production[8]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Transportation	0.77	0.67	0.75	0.82	0.77	0.91	0.96	0.92	1.13	1.16
Motor vehicles, trains, and ships	0.08	0.14	0.16	0.15	0.23	0.28	0.25	0.35	0.44	0.40
Pipeline and distribution fuel	0.68	0.53	0.59	0.67	0.54	0.63	0.71	0.57	0.69	0.76
Electric power[9]	11.71	6.52	10.20	13.35	6.30	10.83	14.79	6.14	12.13	16.51
Discrepancy[10]	**0.53**	**0.29**	**0.29**	**0.28**	**0.28**	**0.23**	**0.20**	**0.29**	**0.26**	**0.21**
Natural gas spot price at Henry Hub										
(2020 dollars per million Btu)	2.07	5.04	3.34	2.68	5.93	3.55	2.71	6.53	3.69	2.66
(nominal dollars per million Btu)	2.07	6.17	4.08	3.33	9.01	5.40	4.33	12.94	7.21	5.48
Delivered prices										
(2020 dollars per thousand cubic feet)										
Residential	10.54	12.76	11.42	10.83	14.28	11.89	11.13	15.00	12.22	11.28
Commercial	7.51	9.83	8.52	7.97	11.03	8.78	8.07	11.63	9.02	8.14
Industrial[11]	3.18	6.15	4.36	3.65	7.11	4.54	3.65	7.68	4.66	3.60
Transportation[12]	13.52	14.72	13.25	12.51	14.73	12.03	10.87	14.97	11.79	10.43
Electric power[9]	2.53	5.32	3.73	3.06	6.32	3.90	3.02	7.05	4.03	2.92
Average[13]	**4.69**	**7.81**	**5.91**	**5.04**	**8.91**	**6.07**	**4.96**	**9.55**	**6.12**	**4.80**
(nominal dollars per thousand cubic feet)										
Residential	10.54	15.63	13.94	13.45	21.70	18.08	17.77	29.73	23.86	23.20
Commercial	7.51	12.04	10.39	9.90	16.75	13.35	12.89	23.04	17.62	16.73
Industrial[11]	3.18	7.53	5.32	4.54	10.79	6.90	5.83	15.21	9.09	7.39
Transportation[12]	13.52	18.04	16.17	15.53	22.38	18.30	17.35	29.65	23.02	21.44
Electric power[9]	2.53	6.52	4.55	3.80	9.60	5.93	4.82	13.97	7.88	6.00
Average[13]	**4.69**	**9.56**	**7.21**	**6.26**	**13.54**	**9.23**	**7.91**	**18.92**	**11.96**	**9.86**

[1]Marketed production (wet) minus extraction losses.
[2]Synthetic natural gas, propane air, coke oven gas, refinery gas, biomass gas, air injected for Btu stabilization, and manufactured gas commingled and distributed with natural gas.
[3]Natural gas imported to and exported from Canada and Mexico.
[4]Includes energy for combined heat and power plants that have a non-regulatory status, and small on-site generating systems.
[5]Represents natural gas used in well, field, and lease operations, and in natural gas processing plant machinery.
[6]Fuel used in facilities that liquefy natural gas for export.
[7]Includes any natural gas used in the process of converting natural gas to liquid fuel that is not actually converted.
[8]Includes any natural gas converted into liquid fuel.
[9]Includes consumption of energy by electricity-only and combined heat and power plants that have a regulatory status.
[10]Balancing item. Natural gas lost as a result of converting flow data measured at varying temperatures and pressures to a standard temperature and pressure and the merger of different data reporting systems which vary in scope, format, definition, and respondent type. In addition, 2020 values include net storage injections.
[11]Excludes use for lease and plant fuel and fuel used for liquefaction in export facilities. Includes energy for combined heat and power plants that have a non-regulatory status, and small on-site generating systems.
[12]Natural gas used as fuel in motor vehicles, trains, and ships. Price includes estimated motor vehicle fuel taxes and estimated dispensing costs or charges.
[13]Weighted average prices. Weights used are the sectoral consumption values excluding lease, plant, pipeline and distribution fuel, and fuel used for liquefaction in export facilities.
- - = Not applicable.
Note: Totals may not equal sum of components due to independent rounding. Data for 2020 are model results and may differ from official EIA data reports.
Sources: 2020: Energy Information Administration (EIA), *Short-Term Energy Outlook*, October 2020 and EIA, AEO2021 National Energy Modeling System run ref2021.d113020a. **Projections:** EIA, AEO2021 National Energy Modeling System runs lowogs.d113020a, ref2021.d113020a, and highogs.d120120a.

Table D7. Oil and gas supply

Production and supply	2020	Projections								
		2030			2040			2050		
		Low oil and gas supply	Reference	High oil and gas supply	Low oil and gas supply	Reference	High oil and gas supply	Low oil and gas supply	Reference	High oil and gas supply
Crude oil										
Lower 48 average wellhead price[1] (2020 dollars per barrel)	**37**	**77**	**70**	**57**	**96**	**84**	**68**	**106**	**91**	**78**
Production (million barrels per day)[2]										
United States total	11.47	10.51	13.77	17.71	9.02	13.17	18.64	8.60	12.87	18.08
Lower 48 onshore	9.18	8.33	10.77	14.43	7.53	10.81	14.66	7.43	10.91	15.05
Tight oil[3]	7.54	6.93	9.37	13.03	6.05	9.37	13.27	5.94	9.49	13.71
Carbon dioxide enhanced oil recovery	0.32	0.38	0.38	0.38	0.34	0.34	0.32	0.33	0.29	0.29
Other	1.32	1.02	1.02	1.01	1.14	1.10	1.08	1.16	1.13	1.05
Lower 48 offshore	1.83	1.71	2.43	2.69	1.09	1.81	2.98	0.92	1.35	2.12
State	0.02	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Federal	1.81	1.70	2.42	2.68	1.08	1.81	2.97	0.92	1.34	2.12
Alaska	0.46	0.46	0.57	0.60	0.41	0.56	1.00	0.25	0.62	0.91
Onshore	0.36	0.39	0.48	0.51	0.30	0.41	0.75	0.18	0.45	0.67
State offshore	0.09	0.07	0.08	0.08	0.11	0.14	0.25	0.07	0.17	0.25
Federal offshore	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Natural gas plant liquids production (million barrels per day)										
United States total	5.03	4.88	6.13	7.34	4.36	6.15	7.80	4.34	6.26	8.07
Lower 48 onshore	4.81	4.69	5.84	7.03	4.19	5.84	7.30	4.17	5.96	7.59
Lower 48 offshore	0.19	0.14	0.23	0.25	0.13	0.26	0.40	0.14	0.24	0.39
Alaska	0.02	0.05	0.06	0.06	0.04	0.06	0.10	0.02	0.06	0.09
Natural gas										
Natural gas spot price at Henry Hub (2020 dollars per million Btu)	2.07	5.04	3.34	2.68	5.93	3.55	2.71	6.53	3.69	2.66
Dry production (trillion cubic feet)[4]										
United States total	33.89	31.36	37.88	43.36	29.68	39.92	49.17	29.55	42.99	53.53
Lower 48 onshore	32.35	30.29	36.33	41.68	28.52	38.06	46.32	28.32	41.10	50.71
Tight gas	6.00	3.85	4.90	6.76	3.08	4.95	7.41	2.75	5.75	8.28
Shale gas and tight oil plays[3]	23.16	24.12	29.24	32.79	23.65	31.40	37.26	24.12	33.94	41.09
Coalbed methane	0.86	0.89	0.77	0.71	0.61	0.56	0.51	0.43	0.41	0.39
Other	2.33	1.42	1.42	1.42	1.18	1.15	1.14	1.02	0.99	0.96
Lower 48 offshore	1.21	0.75	1.20	1.33	0.83	1.51	2.45	0.90	1.53	2.42
State	0.06	0.02	0.02	0.02	0.01	0.01	0.01	0.01	0.01	0.01
Federal	1.14	0.73	1.18	1.31	0.82	1.50	2.43	0.89	1.52	2.41
Alaska	0.33	0.33	0.34	0.35	0.34	0.35	0.40	0.32	0.36	0.40
Supplemental gas supplies[5] (trillion cubic feet)	**0.07**	**0.06**	**0.06**	**0.06**	**0.06**	**0.06**	**0.06**	**0.06**	**0.06**	**0.06**
Total lower 48 wells drilled (thousands)	**14.2**	**27.4**	**29.1**	**31.6**	**28.9**	**31.0**	**30.9**	**29.9**	**31.3**	**29.3**

[1]Represents lower 48 onshore and offshore supplies.
[2]Includes lease condensate.
[3]Tight oil represents resources in low-permeability reservoirs, including shale and chalk formations.
[4]Marketed production (wet) minus extraction losses.
[5]Synthetic natural gas, propane air, coke oven gas, refinery gas, biomass gas, air injected for Btu stabilization, and manufactured gas commingled and distributed with natural gas.

Note: Totals may not equal sum of components due to independent rounding. Data for 2020 are model results and may differ from official EIA data reports.
Sources: 2020: Energy Information Administration (EIA), *Short-Term Energy Outlook*, October 2020 and EIA, AEO2021 National Energy Modeling System run ref2021.d113020a. **Projections:** EIA, AEO2021 National Energy Modeling System runs lowogs.d113020a, ref2021.d113020a, and highogs.d120120a.