

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

Supply, disposition, and prices	2020	Projections								
		2030			2040			2050		
		Low economic growth	Reference	High economic growth	Low economic growth	Reference	High economic growth	Low economic growth	Reference	High economic growth
Production										
Crude oil and lease condensate.....	23.87	28.43	28.57	28.73	27.02	27.31	27.86	26.87	26.64	27.39
Natural gas plant liquids.....	6.58	7.67	7.90	7.99	7.72	7.92	8.17	7.79	8.05	8.46
Dry natural gas.....	35.14	38.31	39.28	40.06	39.91	41.39	43.73	42.35	44.58	48.50
Coal ¹	10.80	9.81	10.14	10.49	8.99	9.28	9.94	8.39	9.08	9.87
Nuclear / uranium ²	8.21	6.26	6.59	6.85	5.80	6.22	6.65	5.78	6.21	6.63
Conventional hydroelectric power.....	2.53	2.42	2.43	2.43	2.37	2.36	2.35	2.31	2.29	2.27
Biomass ³	4.47	4.74	4.89	5.12	4.77	5.00	5.47	5.04	5.39	6.35
Other renewable energy ⁴	4.43	9.41	9.52	9.72	11.46	11.84	12.22	13.69	14.11	14.99
Other ⁵	0.69	0.64	0.65	0.69	0.63	0.69	0.77	0.60	0.71	0.83
Total.....	96.72	107.69	109.97	112.08	108.67	112.00	117.16	112.82	117.08	125.29
Imports										
Crude oil.....	13.44	13.91	15.42	17.02	14.23	16.68	18.57	12.89	17.02	19.93
Petroleum and other liquids ⁶	4.17	3.65	3.90	3.92	3.48	3.66	3.85	3.51	3.69	4.01
Natural gas.....	2.65	2.18	2.22	2.30	1.99	2.10	2.24	1.70	1.92	2.22
Other imports ⁷	0.24	0.18	0.19	0.19	0.19	0.18	0.19	0.17	0.17	0.19
Total.....	20.51	19.92	21.72	23.42	19.90	22.63	24.84	18.26	22.80	26.34
Exports										
Petroleum and other liquids ⁸	16.43	21.31	21.32	21.14	20.72	20.69	20.10	18.98	19.04	18.56
Natural gas.....	5.31	8.96	8.93	8.58	9.46	9.23	8.77	9.62	9.36	8.81
Coal.....	1.81	2.53	2.48	2.48	2.44	2.43	2.41	2.46	2.45	2.41
Total.....	23.55	32.80	32.74	32.21	32.61	32.35	31.28	31.06	30.85	29.78
Discrepancy⁹.....	0.75	0.40	0.39	0.40	0.34	0.35	0.34	0.35	0.36	0.34
Consumption										
Petroleum and other liquids ¹⁰	33.55	34.78	36.88	38.95	34.23	37.39	40.94	34.70	39.08	44.14
Natural gas.....	31.89	31.04	32.12	33.33	32.01	33.86	36.80	33.96	36.70	41.48
Coal ¹¹	8.99	7.23	7.61	7.97	6.51	6.81	7.50	5.90	6.60	7.44
Nuclear / uranium ²	8.21	6.26	6.59	6.85	5.80	6.22	6.65	5.78	6.21	6.63
Conventional hydroelectric power.....	2.53	2.42	2.43	2.43	2.37	2.36	2.35	2.31	2.29	2.27
Biomass ¹²	3.05	2.96	3.12	3.34	2.93	3.18	3.64	3.06	3.40	4.28
Other renewable energy ⁴	4.43	9.41	9.52	9.72	11.46	11.84	12.22	13.69	14.11	14.99
Other ¹³	0.27	0.29	0.30	0.29	0.29	0.29	0.29	0.27	0.27	0.27
Total.....	92.92	94.41	98.56	102.89	95.61	101.94	110.38	99.67	108.66	121.51
Prices (2020 dollars per unit)										
Crude oil spot prices (dollars per barrel)										
Brent.....	41	72	73	75	84	87	91	92	95	101
West Texas Intermediate.....	39	69	71	72	81	84	88	88	91	96
Natural gas at Henry Hub (dollars per million Btu).....	2.07	3.28	3.34	3.43	3.45	3.55	3.70	3.41	3.69	4.06
Coal (dollars per ton)										
at the minemouth ¹⁴	34.1	29.4	29.4	29.6	31.1	32.0	33.0	33.2	34.7	37.0
Coal (dollars per million Btu)										
at the minemouth ¹⁴	1.68	1.44	1.45	1.46	1.51	1.55	1.59	1.60	1.66	1.76
Average end-use ¹⁵	2.12	1.94	1.97	2.01	1.92	1.98	2.07	1.90	2.01	2.19
Average electricity (cents per kilowatthour)...	10.4	10.2	10.3	10.4	9.9	10.1	10.3	9.1	9.6	10.0

Table B1. 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 economic growth	Reference	High economic growth	Low economic growth	Reference	High economic growth	Low economic growth	Reference	High economic growth
Prices (nominal dollars per unit)										
Crude oil spot prices (dollars per barrel)										
Brent.....	41	96	89	89	158	132	130	265	185	176
West Texas Intermediate	39	92	86	86	152	128	125	254	178	168
Natural gas at Henry Hub (dollars per million Btu)	2.07	4.38	4.08	4.07	6.50	5.40	5.26	9.82	7.21	7.08
Coal (dollars per ton) at the minemouth ¹⁴	34.1	39.2	35.8	35.1	58.7	48.7	47.0	95.6	67.7	64.5
Coal (dollars per million Btu) at the minemouth ¹⁴	1.68	1.93	1.77	1.73	2.85	2.36	2.26	4.60	3.25	3.07
Average end-use ¹⁵	2.12	2.59	2.40	2.38	3.62	3.01	2.95	5.48	3.92	3.82
Average electricity (cents per kilowatthour)...	10.4	13.6	12.5	12.3	18.6	15.3	14.7	26.2	18.8	17.4

¹Includes waste coal.
²These values represent the energy obtained from uranium when it is used in light water reactors. The total energy content of uranium is much larger, but alternative processes are required to take advantage of it.
³Includes grid-connected electricity from wood and wood waste; biomass, such as corn, used for liquid fuels production; and non-electric energy demand from wood. Refer to Table A17 for details.
⁴Includes grid-connected electricity from landfill gas; biogenic municipal waste; wind; photovoltaic and solar thermal sources; and non-electric energy from renewable sources, such as active and passive solar systems. Excludes electricity imports using renewable sources and nonmarketed renewable energy. See Table A17 for selected nonmarketed residential and commercial renewable energy data.
⁵Includes non-biogenic municipal waste, liquid hydrogen, methanol, and some domestic inputs to refineries.
⁶Includes imports of finished petroleum products, unfinished oils, alcohols, ethers, blending components, and renewable fuels such as ethanol.
⁷Includes coal, coal coke (net), and electricity (net). Excludes imports of fuel used in nuclear power plants.
⁸Includes crude oil, petroleum products, ethanol, and biodiesel.
⁹Balancing item. Includes unaccounted for supply, losses, gains, and net storage withdrawals.
¹⁰Estimated 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.
¹¹Excludes coal converted to coal-based synthetic liquids and natural gas.
¹²Includes 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.
¹³Includes non-biogenic municipal waste, liquid hydrogen, and net electricity imports.
¹⁴Includes 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.
¹⁵Prices 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: 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 lowmacro.d113020a, ref2021.d113020a, and highmacro.d113020a.

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

Sector and source	2020	Projections								
		2030			2040			2050		
		Low economic growth	Reference	High economic growth	Low economic growth	Reference	High economic growth	Low economic growth	Reference	High economic growth
Energy consumption										
Residential										
Propane	0.46	0.44	0.44	0.44	0.43	0.42	0.42	0.42	0.42	0.41
Distillate fuel oil ¹	0.43	0.38	0.37	0.37	0.32	0.32	0.32	0.28	0.28	0.27
Petroleum and other liquids subtotal.....	0.88	0.82	0.82	0.82	0.75	0.74	0.74	0.69	0.69	0.69
Natural gas	4.97	4.84	4.90	4.95	4.70	4.84	4.95	4.63	4.82	4.97
Renewable energy ²	0.46	0.43	0.44	0.44	0.37	0.38	0.39	0.32	0.34	0.35
Electricity	5.05	5.14	5.26	5.34	5.46	5.67	5.79	5.88	6.18	6.29
Delivered energy	11.36	11.23	11.42	11.55	11.28	11.64	11.86	11.53	12.03	12.29
Electricity related losses	9.42	8.51	8.73	8.87	8.75	9.03	9.17	9.10	9.50	9.54
Total	20.78	19.74	20.15	20.42	20.02	20.67	21.03	20.62	21.54	21.84
Commercial										
Propane	0.17	0.18	0.18	0.18	0.20	0.20	0.20	0.21	0.22	0.23
Motor gasoline ³	0.32	0.37	0.37	0.37	0.37	0.37	0.37	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	0.32	0.30	0.30	0.30	0.28	0.28	0.28
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	0.88	0.88	0.88	0.87	0.87	0.88	0.87	0.88	0.89
Natural gas	3.31	3.61	3.63	3.64	3.62	3.68	3.73	3.65	3.73	3.78
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	4.79	4.93	5.04	5.11	5.48	5.62	5.76
Delivered energy	8.60	9.35	9.41	9.46	9.57	9.74	9.86	10.14	10.38	10.56
Electricity related losses	8.08	7.80	7.90	7.97	7.90	8.02	8.10	8.47	8.65	8.74
Total	16.68	17.15	17.31	17.43	17.48	17.75	17.96	18.61	19.03	19.30
Industrial⁵										
Liquefied petroleum gases and other ⁶	3.13	4.06	4.30	4.61	4.58	4.80	5.55	5.00	5.20	6.29
Motor gasoline ³	0.24	0.29	0.30	0.32	0.31	0.34	0.37	0.34	0.39	0.43
Distillate fuel oil.....	1.13	1.28	1.38	1.46	1.41	1.55	1.71	1.59	1.80	2.02
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	0.60	0.65	0.65	0.60	0.66	0.66	0.61	0.66	0.67
Other petroleum ⁷	3.21	3.21	3.42	3.62	3.33	3.62	3.94	3.38	3.82	4.24
Petroleum and other liquids subtotal.....	8.33	9.48	10.09	10.70	10.27	11.02	12.28	10.96	11.91	13.69
Natural gas	8.48	8.79	9.37	10.14	9.17	10.12	11.90	9.83	11.22	14.35
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	2.08	2.13	2.16	2.22	2.29	2.41	2.35	2.44	2.62
Natural gas to liquefy gas for export ⁹	0.36	0.77	0.77	0.72	0.81	0.78	0.72	0.81	0.78	0.72
Natural gas subtotal.....	10.71	11.64	12.26	13.01	12.21	13.20	15.03	12.99	14.44	17.69
Metallurgical coal	0.47	0.38	0.41	0.49	0.35	0.39	0.63	0.35	0.41	0.79
Other industrial coal	0.49	0.43	0.44	0.46	0.40	0.42	0.46	0.44	0.47	0.53
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	-0.01
Coal subtotal.....	0.93	0.78	0.83	0.93	0.73	0.79	1.08	0.76	0.86	1.31
Biofuels heat and coproducts.....	0.90	0.87	0.90	0.94	0.91	0.96	1.00	0.98	1.06	1.11
Renewable energy ¹⁰	1.53	1.50	1.62	1.81	1.48	1.69	2.12	1.61	1.87	2.70
Electricity	3.07	3.28	3.51	3.80	3.39	3.73	4.37	3.56	4.02	5.01
Delivered energy	25.47	27.56	29.22	31.19	28.99	31.38	35.87	30.86	34.16	41.51
Electricity related losses	5.72	5.44	5.83	6.31	5.44	5.93	6.92	5.50	6.18	7.60
Total	31.18	32.99	35.06	37.51	34.43	37.31	42.79	36.37	40.34	49.11

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

Sector and source	2020	Projections								
		2030			2040			2050		
		Low economic growth	Reference	High economic growth	Low economic growth	Reference	High economic growth	Low economic growth	Reference	High economic growth
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	13.97	14.80	15.57	12.99	14.33	15.27	12.71	14.58	15.84
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	3.26	3.63	3.91	3.42	4.06	4.62	3.57	4.54	5.37
Distillate fuel oil ¹³	6.15	5.88	6.24	6.73	5.48	6.02	6.91	5.51	6.21	7.52
Residual fuel oil.....	0.43	0.56	0.61	0.61	0.53	0.52	0.53	0.47	0.47	0.48
Other petroleum ¹⁴	0.14	0.15	0.15	0.15	0.14	0.15	0.15	0.14	0.15	0.15
Petroleum and other liquids subtotal.....	23.79	23.83	25.43	26.98	22.57	25.09	27.49	22.41	25.96	29.37
Pipeline and distribution fuel natural gas ...	0.71	0.61	0.61	0.62	0.63	0.65	0.68	0.68	0.71	0.77
Compressed / liquefied natural gas.....	0.09	0.16	0.16	0.16	0.27	0.29	0.31	0.41	0.45	0.51
Liquid hydrogen	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
Electricity	0.04	0.09	0.10	0.11	0.19	0.23	0.25	0.33	0.41	0.46
Delivered energy	24.62	24.69	26.31	27.87	23.66	26.26	28.73	23.84	27.54	31.12
Electricity related losses	0.07	0.15	0.16	0.18	0.31	0.36	0.39	0.52	0.64	0.70
Total	24.69	24.84	26.47	28.05	23.97	26.62	29.12	24.35	28.18	31.82
Unspecified sector¹⁵	-0.41	-0.31	-0.42	-0.51	-0.29	-0.41	-0.52	-0.29	-0.42	-0.56
Delivered energy consumption for all sectors										
Liquefied petroleum gases and other ⁶	3.76	4.70	4.94	5.24	5.21	5.44	6.19	5.64	5.84	6.94
Motor gasoline ³	15.23	14.54	15.32	16.05	13.59	14.89	15.81	13.35	15.19	16.44
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	3.26	3.62	3.89	3.42	4.05	4.60	3.57	4.53	5.34
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	7.64	8.06	8.60	7.31	7.94	8.94	7.46	8.31	9.77
Residual fuel oil.....	0.46	0.60	0.65	0.65	0.57	0.56	0.57	0.51	0.52	0.53
Petrochemical feedstocks.....	0.58	0.60	0.65	0.65	0.60	0.66	0.66	0.61	0.66	0.67
Other petroleum ¹⁷	3.35	3.36	3.57	3.77	3.47	3.77	4.09	3.52	3.97	4.39
Petroleum and other liquids subtotal.....	33.40	34.70	36.80	38.87	34.16	37.31	40.87	34.65	39.02	44.08
Natural gas	16.85	17.41	18.07	18.89	17.76	18.93	20.88	18.51	20.22	23.61
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	2.08	2.13	2.16	2.22	2.29	2.41	2.35	2.44	2.62
Natural gas to liquefy gas for export ⁹	0.36	0.77	0.77	0.72	0.81	0.78	0.72	0.81	0.78	0.72
Pipeline and distribution fuel natural gas ...	0.71	0.61	0.61	0.62	0.63	0.65	0.68	0.68	0.71	0.77
Natural gas subtotal.....	19.78	20.86	21.57	22.39	21.43	22.66	24.69	22.36	24.16	27.72
Metallurgical coal	0.47	0.38	0.41	0.49	0.35	0.39	0.63	0.35	0.41	0.79
Other coal	0.50	0.44	0.46	0.48	0.41	0.44	0.48	0.45	0.48	0.54
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	-0.01
Coal subtotal.....	0.95	0.80	0.84	0.95	0.74	0.81	1.09	0.78	0.87	1.33
Biofuels heat and coproducts.....	0.90	0.87	0.90	0.94	0.91	0.96	1.00	0.98	1.06	1.11
Renewable energy ¹⁸	2.12	2.07	2.19	2.39	1.98	2.20	2.64	2.06	2.34	3.18
Liquid hydrogen	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
Electricity	12.49	13.23	13.63	14.04	13.98	14.67	15.52	15.26	16.24	17.51
Delivered energy	69.64	72.52	75.94	79.56	73.21	78.60	85.80	76.08	83.69	94.93
Electricity related losses	23.28	21.89	22.63	23.33	22.40	23.34	24.58	23.59	24.98	26.58
Total	92.92	94.41	98.56	102.89	95.61	101.94	110.38	99.67	108.66	121.51
Electric power¹⁹										
Distillate fuel oil.....	0.07	0.05	0.05	0.06	0.04	0.04	0.05	0.04	0.04	0.04
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	0.08	0.08	0.09	0.07	0.07	0.07	0.05	0.06	0.06
Natural gas	12.11	10.18	10.55	10.95	10.58	11.20	12.10	11.60	12.54	13.76
Steam coal.....	8.04	6.43	6.77	7.02	5.77	6.00	6.42	5.12	5.73	6.12
Nuclear / uranium ²⁰	8.21	6.26	6.59	6.85	5.80	6.22	6.65	5.78	6.21	6.63
Renewable energy ²¹	6.99	11.87	11.97	12.17	13.86	14.22	14.58	16.02	16.41	17.26
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	0.17	0.18	0.18	0.17	0.17	0.17	0.15	0.15	0.15
Total	35.77	35.12	36.26	37.37	36.38	38.00	40.10	38.84	41.21	44.09

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

Sector and source	2020	Projections								
		2030			2040			2050		
		Low economic growth	Reference	High economic growth	Low economic growth	Reference	High economic growth	Low economic growth	Reference	High economic growth
Total energy consumption										
Liquefied petroleum gases and other ⁶	3.76	4.70	4.94	5.24	5.21	5.44	6.19	5.64	5.84	6.94
Motor gasoline ³	15.23	14.54	15.32	16.05	13.59	14.89	15.81	13.35	15.19	16.44
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	3.26	3.62	3.89	3.42	4.05	4.60	3.57	4.53	5.34
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	7.70	8.11	8.66	7.35	7.99	8.99	7.49	8.35	9.81
Residual fuel oil.....	0.54	0.63	0.68	0.69	0.59	0.59	0.60	0.53	0.53	0.55
Petrochemical feedstocks.....	0.58	0.60	0.65	0.65	0.60	0.66	0.66	0.61	0.66	0.67
Other petroleum ¹⁷	3.35	3.36	3.57	3.77	3.47	3.77	4.09	3.52	3.97	4.39
Petroleum and other liquids subtotal.....	33.55	34.78	36.88	38.95	34.23	37.39	40.94	34.70	39.08	44.14
Natural gas.....	28.96	27.59	28.61	29.84	28.34	30.14	32.98	30.12	32.76	37.37
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	2.08	2.13	2.16	2.22	2.29	2.41	2.35	2.44	2.62
Natural gas to liquefy gas for export ⁹	0.36	0.77	0.77	0.72	0.81	0.78	0.72	0.81	0.78	0.72
Pipeline and distribution fuel natural gas....	0.71	0.61	0.61	0.62	0.63	0.65	0.68	0.68	0.71	0.77
Natural gas subtotal.....	31.89	31.04	32.12	33.33	32.01	33.86	36.80	33.96	36.70	41.48
Metallurgical coal.....	0.47	0.38	0.41	0.49	0.35	0.39	0.63	0.35	0.41	0.79
Other coal.....	8.54	6.87	7.23	7.50	6.19	6.44	6.89	5.57	6.21	6.66
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	-0.01
Coal subtotal.....	8.99	7.23	7.61	7.97	6.51	6.81	7.50	5.90	6.60	7.44
Nuclear / uranium ²⁰	8.21	6.26	6.59	6.85	5.80	6.22	6.65	5.78	6.21	6.63
Biofuels heat and coproducts.....	0.90	0.87	0.90	0.94	0.91	0.96	1.00	0.98	1.06	1.11
Renewable energy ²²	9.11	13.93	14.17	14.56	15.84	16.42	17.21	18.08	18.75	20.44
Liquid hydrogen.....	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01
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	0.17	0.18	0.18	0.17	0.17	0.17	0.15	0.15	0.15
Total.....	92.92	94.41	98.56	102.89	95.61	101.94	110.38	99.67	108.66	121.51
Energy use and related statistics										
Delivered energy use.....	69.64	72.52	75.94	79.56	73.21	78.60	85.80	76.08	83.69	94.93
Total energy use.....	92.92	94.41	98.56	102.89	95.61	101.94	110.38	99.67	108.66	121.51
Ethanol consumed in motor gasoline and E85 .	1.08	1.11	1.17	1.22	1.09	1.20	1.27	1.12	1.27	1.38
Population (millions).....	330.41	347.34	352.60	361.20	359.52	370.87	388.96	368.08	386.16	414.46
Gross domestic product (billion 2012 dollars)...	18,171	21,560	23,289	24,934	25,105	28,371	31,763	28,886	34,365	39,840
Carbon dioxide emissions (million metric tons).	4,562.5	4,361.1	4,583.5	4,804.4	4,269.1	4,595.8	5,011.3	4,309.7	4,806.9	5,405.8

¹Includes residential use of kerosene.
²Includes 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.
³Includes ethanol and ethers blended into gasoline.
⁴Excludes 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.
⁵Includes energy for combined heat and power plants that have a non-regulatory status, and small on-site generating systems.
⁶Includes ethane, natural gasoline, and refinery olefins.
⁷Includes petroleum coke, asphalt, road oil, lubricants, still gas, and miscellaneous petroleum products.
⁸Represents natural gas used in well, field, and lease operations, and in natural gas processing plant machinery.
⁹Fuel used in facilities that liquefy natural gas for export.
¹⁰Includes consumption of energy produced from hydroelectric, wood and wood waste, municipal waste, and other biomass sources. Excludes ethanol in motor gasoline.
¹¹E85 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.
¹²Includes only kerosene type.
¹³Diesel fuel for on- and off- road use.
¹⁴Includes aviation gasoline and lubricants.
¹⁵Represents consumption unattributed to the sectors above.
¹⁶Does not include residential use of kerosene.
¹⁷Includes aviation gasoline, petroleum coke, asphalt, road oil, lubricants, still gas, and miscellaneous petroleum products.
¹⁸Includes 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.
¹⁹Includes consumption of energy by electricity-only and combined heat and power plants that have a regulatory status.
²⁰These 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.
²¹Includes conventional hydroelectric, geothermal, wood and wood waste, biogenic municipal waste, other biomass, wind, photovoltaic, and solar thermal sources. Excludes net electricity imports.
²²Includes 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: 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 lowmacro.d113020a, ref2021.d113020a, and highmacro.d113020a.

Table B3. Energy prices by sector and source
(2020 dollars per million Btu, unless otherwise noted)

Sector and source	2020	Projections								
		2030			2040			2050		
		Low economic growth	Reference	High economic growth	Low economic growth	Reference	High economic growth	Low economic growth	Reference	High economic growth
Residential										
Propane	17.30	19.89	21.30	22.80	21.72	24.16	27.23	23.07	26.16	30.74
Distillate fuel oil	17.75	24.26	24.85	25.08	25.80	26.68	27.48	26.69	27.80	29.12
Natural gas	10.14	10.66	10.99	11.05	11.35	11.44	11.56	11.51	11.76	12.09
Electricity	35.77	36.20	36.54	37.19	35.28	36.14	37.63	32.91	34.96	37.09
Commercial										
Propane	12.77	16.15	17.34	18.51	17.44	19.30	21.60	18.34	20.63	23.93
Distillate fuel oil	17.83	19.33	20.21	20.42	21.20	22.10	22.90	22.13	23.27	24.60
Residual fuel oil	5.25	10.91	11.26	11.33	12.83	13.35	13.65	13.83	14.49	15.30
Natural gas	7.23	7.93	8.20	8.26	8.32	8.45	8.63	8.36	8.69	9.10
Electricity	31.33	30.43	30.75	31.26	28.98	29.63	30.73	26.16	27.80	29.13
Industrial¹										
Propane	7.62	10.88	11.85	13.05	11.91	13.83	16.32	12.82	15.24	18.94
Distillate fuel oil	17.75	19.35	19.96	20.13	20.92	21.81	22.59	21.88	23.01	24.34
Residual fuel oil	5.42	12.83	13.19	13.24	14.65	15.14	15.40	15.78	16.42	17.05
Natural gas ²	3.06	4.16	4.20	4.28	4.25	4.36	4.50	4.19	4.48	4.84
Metallurgical coal	4.02	3.08	3.11	3.14	3.38	3.45	3.53	3.71	3.83	4.01
Other industrial coal	2.82	2.85	2.87	2.89	2.84	2.90	2.96	2.85	2.96	3.07
Coal to liquids	--	--	--	--	--	--	--	--	--	--
Electricity	20.71	19.26	19.56	19.91	18.38	18.98	19.62	16.81	18.06	18.98
Transportation										
Propane	11.99	15.09	16.35	17.34	16.43	18.01	19.93	17.17	19.10	21.83
E85 ³	21.06	25.67	27.14	27.74	28.60	30.51	31.28	29.37	31.85	33.35
Motor gasoline ⁴	18.75	21.94	23.28	23.81	24.43	25.94	26.60	24.98	26.99	28.27
Jet fuel ⁵	9.57	15.74	16.44	16.82	18.04	18.93	19.83	19.55	20.52	21.76
Diesel fuel (distillate fuel oil) ⁶	18.33	23.21	23.95	24.21	25.00	25.75	26.54	25.97	26.90	28.24
Residual fuel oil	9.21	12.28	11.72	12.26	13.55	14.33	14.45	15.69	16.23	16.90
Natural gas ⁷	13.01	11.88	12.76	13.11	11.32	11.58	11.75	10.83	11.35	11.76
Electricity	34.84	34.37	34.84	35.37	33.40	34.53	35.62	30.62	32.72	34.24
Electric power⁸										
Distillate fuel oil	17.71	18.50	19.12	19.47	20.11	21.08	22.02	21.20	22.38	23.74
Residual fuel oil	8.29	14.18	14.67	14.82	15.82	16.38	16.87	16.31	16.94	17.78
Natural gas	2.45	3.58	3.61	3.67	3.69	3.77	3.90	3.61	3.90	4.23
Steam coal	1.96	1.80	1.83	1.86	1.76	1.81	1.86	1.69	1.79	1.87
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 users⁹										
Propane										
E85 ³	14.35	16.81	17.97	19.21	18.10	20.11	22.64	19.00	21.47	25.17
Motor gasoline ⁴	21.06	25.67	27.14	27.74	28.60	30.51	31.28	29.37	31.85	33.35
Jet fuel ⁵	18.74	21.95	23.28	23.82	24.43	25.94	26.61	24.99	27.00	28.27
Distillate fuel oil	9.57	15.74	16.44	16.82	18.04	18.93	19.83	19.55	20.52	21.76
Residual fuel oil	18.18	22.27	23.11	23.27	23.95	24.83	25.59	24.77	25.92	27.25
Natural gas	8.84	12.39	11.94	12.44	13.72	14.47	14.63	15.71	16.26	16.93
Metallurgical coal	4.53	5.62	5.70	5.71	5.81	5.85	5.87	5.69	5.90	6.10
Other coal	4.02	3.08	3.11	3.14	3.38	3.45	3.53	3.71	3.83	4.01
Coal to liquids	--	--	--	--	--	--	--	--	--	--
Electricity	30.53	29.92	30.13	30.48	28.93	29.52	30.25	26.68	28.24	29.22
Non-renewable energy expenditures by sector (billion 2020 dollars)										
Residential	247	256	265	273	264	279	295	264	291	314
Commercial	173	190	195	199	192	201	211	194	210	225
Industrial ¹	152	194	215	239	216	250	309	236	285	382
Transportation	412	500	558	602	527	614	690	546	671	793
Total non-renewable expenditures	984	1,139	1,232	1,312	1,199	1,345	1,504	1,240	1,458	1,715
Transportation renewable expenditures	1	1	1	1	1	1	1	1	1	1
Total expenditures	985	1,140	1,233	1,313	1,200	1,345	1,505	1,241	1,459	1,716

Table B3. Energy prices by sector and source (continued)
(nominal dollars per million Btu, unless otherwise noted)

Sector and source	2020	Projections								
		2030			2040			2050		
		Low economic growth	Reference	High economic growth	Low economic growth	Reference	High economic growth	Low economic growth	Reference	High economic growth
Residential	17.30	26.56	26.00	27.06	40.89	36.74	38.77	66.41	51.08	53.59
Propane	17.75	32.38	30.32	29.77	48.59	40.58	39.13	76.86	54.29	50.76
Distillate fuel oil	10.14	14.23	13.41	13.11	21.38	17.40	16.46	33.15	22.96	21.07
Natural gas	35.77	48.32	44.59	44.15	66.44	54.96	53.58	94.76	68.26	64.65
Electricity										
Commercial	12.77	21.56	21.16	21.98	32.85	29.36	30.76	52.82	40.29	41.71
Propane	17.83	25.80	24.66	24.24	39.92	33.61	32.61	63.71	45.44	42.88
Distillate fuel oil	5.25	14.56	13.74	13.45	24.15	20.31	19.43	39.83	28.29	26.67
Residual fuel oil	7.23	10.58	10.00	9.80	15.66	12.85	12.29	24.07	16.96	15.86
Natural gas	31.33	40.62	37.52	37.10	54.57	45.07	43.75	75.33	54.28	50.78
Electricity										
Industrial¹	7.62	14.53	14.46	15.49	22.43	21.03	23.24	36.91	29.75	33.00
Propane	17.75	25.83	24.35	23.90	39.40	33.17	32.16	63.00	44.94	42.42
Distillate fuel oil	5.42	17.13	16.10	15.72	27.58	23.02	21.93	45.44	32.06	29.71
Residual fuel oil	3.06	5.55	5.12	5.08	8.00	6.64	6.41	12.06	8.75	8.43
Natural gas ²	4.02	4.11	3.80	3.72	6.37	5.24	5.03	10.68	7.49	7.00
Metallurgical coal	2.82	3.81	3.50	3.43	5.36	4.41	4.21	8.22	5.79	5.35
Other industrial coal	17.30	26.56	26.00	27.06	40.89	36.74	38.77	66.41	51.08	53.59
Coal to liquids	--	--	--	--	--	--	--	--	--	--
Electricity	20.71	25.71	23.87	23.64	34.61	28.86	27.94	48.41	35.26	33.08
Transportation										
Propane	11.99	20.14	19.95	20.58	30.93	27.39	28.38	49.42	37.29	38.05
E85 ³	21.06	34.26	33.12	32.93	53.86	46.40	44.53	84.57	62.20	58.12
Motor gasoline ⁴	18.75	29.29	28.40	28.26	46.00	39.44	37.88	71.93	52.70	49.27
Jet fuel ⁵	9.57	21.02	20.07	19.96	33.97	28.79	28.24	56.28	40.06	37.92
Diesel fuel (distillate fuel oil) ⁶	18.33	30.99	29.22	28.73	47.08	39.16	37.79	74.77	52.53	49.22
Residual fuel oil	9.21	16.39	14.30	14.56	25.52	21.80	20.57	45.18	31.69	29.46
Natural gas ⁷	13.01	15.86	15.57	15.56	21.31	17.61	16.73	31.17	22.16	20.50
Electricity	34.84	45.88	42.52	41.99	62.90	52.51	50.72	88.16	63.89	59.68
Electric power⁸										
Distillate fuel oil	17.71	24.70	23.34	23.10	37.87	32.07	31.35	61.04	43.71	41.38
Residual fuel oil	8.29	18.93	17.91	17.59	29.80	24.91	24.02	46.95	33.08	31.00
Natural gas	2.45	4.77	4.41	4.36	6.95	5.74	5.55	10.40	7.62	7.37
Steam coal	1.96	2.41	2.23	2.21	3.32	2.75	2.65	4.85	3.49	3.26
Uranium	0.69	0.94	0.86	0.83	1.35	1.09	1.02	2.13	1.44	1.28

Table B3. Energy prices by sector and source (continued)
(nominal dollars per million Btu, unless otherwise noted)

Sector and source	2020	Projections								
		2030			2040			2050		
		Low economic growth	Reference	High economic growth	Low economic growth	Reference	High economic growth	Low economic growth	Reference	High economic growth
Average price to all users⁹										
Propane	14.35	22.44	21.92	22.81	34.09	30.58	32.23	54.71	41.93	43.87
E85 ³	21.06	34.26	33.12	32.93	53.86	46.40	44.53	84.57	62.20	58.12
Motor gasoline ⁴	18.74	29.31	28.41	28.27	46.01	39.46	37.89	71.97	52.71	49.28
Jet fuel ⁵	9.57	21.02	20.07	19.96	33.97	28.79	28.24	56.28	40.06	37.92
Distillate fuel oil	18.18	29.73	28.20	27.62	45.11	37.76	36.44	71.32	50.61	47.50
Residual fuel oil	8.84	16.54	14.57	14.76	25.83	22.01	20.83	45.22	31.74	29.52
Natural gas	4.53	7.51	6.96	6.78	10.94	8.90	8.37	16.38	11.53	10.64
Metallurgical coal	4.02	4.11	3.80	3.72	6.37	5.24	5.03	10.68	7.49	7.00
Other coal	2.02	2.51	2.33	2.29	3.47	2.88	2.77	5.16	3.69	3.45
Coal to liquids	--	--	--	--	--	--	--	--	--	--
Electricity	30.53	39.95	36.76	36.18	54.47	44.89	43.08	76.83	55.14	50.93
Non-renewable energy expenditures by sector (billion nominal dollars)										
Residential	247	341	323	324	496	425	420	760	569	547
Commercial	173	253	238	236	362	305	300	558	411	393
Industrial ¹	152	259	262	283	407	381	439	681	557	667
Transportation	412	667	681	714	992	934	982	1,572	1,311	1,383
Total non-renewable expenditures	984	1,521	1,504	1,558	2,258	2,045	2,142	3,570	2,847	2,989
Transportation renewable expenditures	1	1	1	1	1	1	1	2	2	2
Total expenditures	985	1,522	1,505	1,559	2,259	2,046	2,143	3,573	2,849	2,991

¹Includes energy for combined heat and power plants that have a non-regulatory status, and small on-site generating systems.
²Excludes use for lease and plant fuel and fuel used for liquefaction in export facilities.
³E85 refers to a blend of 85 percent ethanol (renewable) and 15 percent motor gasoline (nonrenewable). To address cold starting issues, the percentage of ethanol varies seasonally. The annual average ethanol content of 74 percent is used for these projections.
⁴Sales weighted-average price for all grades. Includes Federal, State, and local taxes.
⁵Kerosene-type jet fuel. Includes Federal and State taxes while excluding county and local taxes.
⁶Diesel fuel for on-road use. Includes Federal and State taxes while excluding county and local taxes.
⁷Natural gas used as fuel in motor vehicles, trains, and ships. Includes estimated motor vehicle fuel taxes and estimated dispensing costs or charges.
⁸Includes electricity-only and combined heat and power plants that have a regulatory status.
⁹Weighted 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: 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 lowmacro.d113020a, ref2021.d113020a, and highmacro.d113020a.

Table B4. Macroeconomic indicators
(billion 2012 chain-weighted dollars, unless otherwise noted)

Indicators	2020	Projections								
		2030			2040			2050		
		Low economic growth	Reference	High economic growth	Low economic growth	Reference	High economic growth	Low economic growth	Reference	High economic growth
Real gross domestic product	18,171	21,560	23,289	24,934	25,105	28,371	31,763	28,886	34,365	39,840
Components of real gross domestic product										
Real consumption	12,557	15,185	16,466	17,531	18,293	20,943	22,973	21,237	25,740	28,931
Real investment	2,575	3,299	3,662	3,977	4,062	4,816	5,534	4,856	6,279	7,561
Real government spending	3,367	3,422	3,531	3,671	3,567	3,793	4,101	3,779	4,123	4,660
Real exports	2,198	3,209	3,588	3,787	3,911	4,567	5,140	5,060	6,072	7,201
Real imports	2,965	4,010	4,589	4,692	5,305	6,578	6,714	6,826	8,977	9,291
Energy intensity (thousand Btu per 2012 dollar of GDP)										
Delivered energy	3.83	3.36	3.26	3.19	2.92	2.77	2.70	2.63	2.44	2.38
Total energy	5.11	4.38	4.23	4.13	3.81	3.59	3.48	3.45	3.16	3.05
Price indices										
GDP chain-type price index (2012=1.00)	1.133	1.514	1.383	1.342	2.136	1.724	1.610	3.266	2.213	1.971
Consumer price index (1982-4=1.00)										
All-urban	2.58	3.49	3.19	3.08	4.86	3.93	3.61	7.31	5.00	4.32
Energy commodities and services	1.95	2.87	2.65	2.55	4.24	3.49	3.20	6.79	4.77	4.16
Wholesale price index (1982=1.00)										
All commodities	1.93	2.65	2.41	2.32	3.54	2.88	2.64	5.14	3.58	3.10
Fuel and power	1.40	2.32	2.14	2.06	3.47	2.86	2.64	5.60	3.93	3.47
Metals and metal products	2.21	2.96	2.65	2.68	3.06	2.65	2.68	3.23	2.65	2.67
Industrial commodities excluding energy....	2.06	2.74	2.47	2.39	3.56	2.89	2.66	5.07	3.51	3.05
Interest rates (percent, nominal)										
Federal funds rate	0.37	2.94	1.78	2.03	3.78	2.63	2.88	3.78	2.63	2.88
10-year treasury note	0.81	3.92	2.77	3.19	4.21	2.95	3.36	4.22	2.94	3.37
AA utility bond rate	2.64	5.36	3.71	3.83	5.53	3.86	3.86	5.49	3.78	3.89
Value of shipments (billion 2012 dollars)										
Non-industrial and service sectors	22,985	27,811	29,650	31,535	33,047	36,598	39,983	38,297	44,300	49,101
Total industrial	8,168	8,954	9,707	10,552	9,793	11,076	12,888	10,939	12,874	15,835
Agriculture, mining, and construction	2,535	2,745	2,954	3,137	3,005	3,304	3,620	3,399	3,822	4,263
Manufacturing	5,632	6,209	6,753	7,415	6,788	7,772	9,268	7,540	9,051	11,572
Energy-intensive	2,399	2,677	2,841	3,032	2,853	3,145	3,583	3,057	3,502	4,236
Non-energy-intensive	3,233	3,532	3,912	4,383	3,935	4,628	5,685	4,483	5,550	7,335
Total shipments	31,152	36,765	39,356	42,087	42,840	47,674	52,870	49,236	57,174	64,936
Population and employment (millions)										
Population, with armed forces overseas	330	347	353	361	360	371	389	368	386	414
Population, aged 16 and over	266	283	287	293	295	304	317	304	318	339
Population, aged 65 and over	56	73	73	74	80	81	82	84	86	88
Employment, nonfarm	142	155	162	171	163	172	183	172	183	194
Employment, manufacturing	12.2	11.7	12.0	12.4	11.4	11.7	12.1	11.7	11.7	12.3
Key labor indicators										
Labor force (millions)	161	170	174	182	178	184	197	184	194	213
Non-farm labor productivity (2012=1.00)	1.09	1.22	1.27	1.33	1.38	1.50	1.65	1.54	1.75	2.03
Unemployment rate (percent)	8.65	4.54	4.09	3.87	4.54	4.20	3.87	5.67	4.63	4.40
Key indicators for energy demand										
Real disposable personal income	15,994	17,471	18,826	19,948	20,532	23,184	24,874	23,330	27,813	29,876
Housing starts (millions)	1.35	1.04	1.29	1.50	0.94	1.19	1.43	0.91	1.21	1.42
Commercial floorspace (billion square feet)....	94	102	103	104	111	113	116	119	124	129
Unit sales of light-duty vehicles (millions)	13.6	14.8	16.3	17.2	13.6	16.4	18.5	11.2	16.5	20.5

GDP = Gross domestic product.
Btu = British thermal unit.
Sources: 2020: IHS Markit, Macroeconomic model, #DRI#. Projections: U.S. Energy Information Administration, AEO2021 National Energy Modeling System runs lowmacro.d113020a, ref2021.d113020a, and highmacro.d113020a.