

Table L1. Transportation sector energy consumption by region and fuel, High Oil Price case

quadrillion British thermal units

Region and fuel	2022	2025	2030	2035	2040	2045	2050	Average annual percentage change, 2022–2050
World								
Motor gasoline and E85	46.7	46.6	44.7	42.1	39.8	38.7	38.6	-0.7%
Distillate fuel oil and bioDiesel	42.9	43.5	43.6	43.9	44.9	46.1	47.2	0.3%
Residual fuel oil	8.0	8.0	8.6	9.0	9.1	9.0	8.7	0.3%
Liquefied petroleum gas	0.5	0.4	0.2	0.2	0.2	0.2	0.2	-3.8%
Jet fuel	11.1	14.1	15.9	17.5	19.2	20.9	22.7	2.6%
Other liquid fuels	0.4	0.4	0.5	0.5	0.5	0.5	0.5	0.3%
Natural gas	4.2	4.9	5.5	6.3	7.2	8.3	9.7	3.0%
Electricity	1.9	2.2	3.0	4.2	5.4	6.7	8.0	5.2%
Total	115.8	120.1	122.1	123.6	126.3	130.4	135.4	0.6%
Americas								
Motor gasoline and E85	21.8	21.2	19.7	17.9	16.6	16.1	16.2	-1.1%
Distillate fuel oil and bioDiesel	11.1	11.2	11.1	11.0	11.1	11.3	11.4	0.1%
Residual fuel oil	1.3	0.9	0.8	0.9	0.9	0.9	0.9	-1.3%
Liquefied petroleum gas	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4%
Jet fuel	4.1	4.6	5.0	5.3	5.6	6.0	6.5	1.6%
Other liquid fuels	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.1%
Natural gas	1.4	1.6	1.8	1.9	2.1	2.2	2.4	1.9%
Electricity	0.1	0.2	0.5	0.9	1.3	1.6	1.8	10.8%
Total	40.1	39.8	39.0	38.1	37.8	38.2	39.4	-0.1%
United States								
Motor gasoline and E85	15.9	15.4	14.1	12.6	11.4	10.8	10.9	-1.3%
Distillate fuel oil and bioDiesel	6.7	6.7	6.3	6.1	6.1	6.0	6.0	-0.4%
Residual fuel oil	0.7	0.3	0.2	0.2	0.2	0.2	0.2	-4.8%
Liquefied petroleum gas	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.3%
Jet fuel	3.1	3.4	3.7	3.9	4.1	4.4	4.7	1.5%
Other liquid fuels	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0%
Natural gas	1.0	1.1	1.3	1.3	1.4	1.4	1.5	1.5%
Electricity	0.1	0.1	0.4	0.7	1.0	1.2	1.3	11.6%
Total	27.7	27.1	26.2	25.0	24.3	24.2	24.8	-0.4%
Canada								
Motor gasoline and E85	1.4	1.3	1.2	1.0	0.9	0.8	0.8	-2.0%
Distillate fuel oil and bioDiesel	0.8	0.8	0.9	0.9	0.9	1.0	1.0	0.9%
Residual fuel oil	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.6%
Liquefied petroleum gas	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-1.6%
Jet fuel	0.2	0.3	0.3	0.3	0.4	0.4	0.4	2.0%
Other liquid fuels	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5%
Natural gas	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.5%
Electricity	0.0	0.0	0.0	0.1	0.1	0.2	0.2	13.2%
Total	2.6	2.6	2.5	2.4	2.4	2.5	2.5	0.0%
Mexico								
Motor gasoline and E85	1.4	1.4	1.3	1.3	1.3	1.3	1.2	-0.5%
Distillate fuel oil and bioDiesel	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.4%
Residual fuel oil	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.8%
Liquefied petroleum gas	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-11.9%
Jet fuel	0.2	0.2	0.2	0.2	0.3	0.3	0.3	2.5%
Other liquid fuels	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.8%
Natural gas	0.0	0.0	0.0	0.0	0.0	0.1	0.1	12.9%
Electricity	0.0	0.0	0.0	0.0	0.0	0.1	0.1	13.7%
Total	2.1	2.1	2.0	2.1	2.1	2.2	2.3	0.3%
Brazil								

Motor gasoline and E85	1.5	1.5	1.4	1.4	1.4	1.4	1.4	-0.4%
Distillate fuel oil and bioDiesel	1.6	1.6	1.7	1.7	1.8	1.8	1.8	0.5%
Residual fuel oil	0.2	0.2	0.3	0.3	0.3	0.3	0.3	0.7%
Liquefied petroleum gas	0.0	0.0	0.0	0.0	0.0	0.0	0.0	7.5%
Jet fuel	0.2	0.2	0.3	0.3	0.3	0.3	0.3	0.7%
Other liquid fuels	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.7%
Natural gas	0.1	0.1	0.1	0.2	0.2	0.2	0.2	2.8%
Electricity	0.0	0.0	0.0	0.1	0.1	0.1	0.1	5.3%
Total	3.7	3.7	3.8	3.9	3.9	4.0	4.1	0.3%
Other Americas								
Motor gasoline and E85	1.6	1.6	1.6	1.6	1.7	1.8	1.9	0.7%
Distillate fuel oil and bioDiesel	1.5	1.6	1.7	1.8	1.9	2.0	2.1	1.1%
Residual fuel oil	0.3	0.4	0.4	0.4	0.4	0.4	0.4	0.7%
Liquefied petroleum gas	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.8%
Jet fuel	0.4	0.4	0.5	0.5	0.6	0.7	0.7	2.2%
Other liquid fuels	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.7%
Natural gas	0.2	0.2	0.3	0.3	0.4	0.4	0.5	2.9%
Electricity	0.0	0.0	0.0	0.0	0.0	0.1	0.1	15.2%
Total	4.0	4.2	4.5	4.7	5.0	5.4	5.7	1.2%
Europe and Eurasia								
Motor gasoline and E85	5.6	5.2	4.4	3.7	3.2	2.6	2.2	-3.2%
Distillate fuel oil and bioDiesel	12.1	11.5	10.6	10.0	9.7	9.6	9.7	-0.8%
Residual fuel oil	1.7	1.8	1.9	2.0	2.1	2.1	2.0	0.7%
Liquefied petroleum gas	0.3	0.1	0.1	0.1	0.1	0.1	0.1	-4.4%
Jet fuel	2.9	3.5	3.8	4.1	4.4	4.6	4.9	1.8%
Other liquid fuels	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.7%
Natural gas	0.5	0.8	1.0	1.2	1.4	1.7	2.0	4.9%
Electricity	0.8	0.8	1.0	1.2	1.5	1.8	2.0	3.5%
Total	23.9	23.8	23.0	22.5	22.4	22.6	23.0	-0.1%
Western Europe								
Motor gasoline and E85	3.6	3.3	2.7	2.1	1.6	1.1	0.7	-5.5%
Distillate fuel oil and bioDiesel	10.5	10.0	9.0	8.2	7.9	7.7	7.7	-1.1%
Residual fuel oil	1.6	1.7	1.9	2.0	2.0	2.0	1.9	0.7%
Liquefied petroleum gas	0.3	0.1	0.1	0.1	0.1	0.1	0.1	-4.4%
Jet fuel	2.4	3.0	3.2	3.5	3.7	3.9	4.1	1.9%
Other liquid fuels	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.7%
Natural gas	0.1	0.2	0.2	0.3	0.4	0.6	0.7	6.5%
Electricity	0.3	0.4	0.5	0.8	1.1	1.3	1.5	5.7%
Total	18.9	18.7	17.6	17.0	16.8	16.8	16.9	-0.4%
Russia								
Motor gasoline and E85	1.5	1.4	1.3	1.2	1.1	1.1	1.0	-1.5%
Distillate fuel oil and bioDiesel	1.1	1.0	1.0	1.1	1.1	1.1	1.1	0.1%
Residual fuel oil	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.6%
Liquefied petroleum gas	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.4%
Jet fuel	0.4	0.5	0.5	0.5	0.6	0.6	0.6	1.2%
Other liquid fuels	0.0	0.0	0.0	0.0	0.0	0.0	0.0	14.5%
Natural gas	0.2	0.3	0.3	0.3	0.3	0.4	0.4	1.6%
Electricity	0.3	0.3	0.3	0.3	0.3	0.3	0.3	-0.7%
Total	3.6	3.6	3.6	3.5	3.5	3.4	3.4	-0.3%
Eastern Europe and Eurasia								
Motor gasoline and E85	0.5	0.5	0.4	0.4	0.5	0.5	0.5	0.3%
Distillate fuel oil and bioDiesel	0.5	0.5	0.6	0.7	0.7	0.8	0.9	2.1%
Residual fuel oil	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-1.4%
Liquefied petroleum gas	0.0	0.0	0.0	0.0	0.0	0.0	0.0	6.2%
Jet fuel	0.1	0.1	0.1	0.1	0.1	0.2	0.2	1.9%
Other liquid fuels	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-1.4%
Natural gas	0.2	0.4	0.5	0.6	0.7	0.8	0.9	6.1%
Electricity	0.1	0.1	0.1	0.1	0.2	0.2	0.2	2.0%

Natural gas	0.2	0.2	0.3	0.5	0.7	0.8	1.0	6.7%
Electricity	0.1	0.1	0.2	0.2	0.3	0.5	0.6	5.6%
Total	5.1	5.7	7.1	8.9	10.7	12.5	14.0	3.7%
Other Asia Pacific								
Motor gasoline and E85	3.8	4.1	4.3	4.6	5.0	5.2	5.3	1.2%
Distillate fuel oil and bioDiesel	3.6	3.8	4.2	4.4	4.7	4.9	5.1	1.2%
Residual fuel oil	2.4	2.4	2.7	2.8	2.8	2.8	2.6	0.4%
Liquefied petroleum gas	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-6.8%
Jet fuel	0.9	1.5	1.8	2.1	2.4	2.6	2.9	4.3%
Other liquid fuels	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4%
Natural gas	0.2	0.2	0.3	0.4	0.5	0.7	1.0	5.9%
Electricity	0.0	0.0	0.0	0.1	0.2	0.5	0.7	16.1%
Total	10.9	12.2	13.4	14.4	15.6	16.7	17.6	1.7%
Africa and Middle East								
Motor gasoline and E85	5.5	5.8	5.9	6.1	6.4	6.8	7.3	1.0%
Distillate fuel oil and bioDiesel	5.0	5.2	5.3	5.6	6.0	6.4	6.9	1.2%
Residual fuel oil	1.2	1.3	1.5	1.5	1.5	1.5	1.4	0.8%
Liquefied petroleum gas	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-18.8%
Jet fuel	1.1	1.4	1.6	1.9	2.2	2.5	2.8	3.4%
Other liquid fuels	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.8%
Natural gas	0.5	0.5	0.5	0.5	0.6	0.7	0.8	2.1%
Electricity	0.0	0.0	0.1	0.1	0.2	0.3	0.4	9.1%
Total	13.3	14.2	15.0	15.8	16.9	18.2	19.7	1.4%
Africa								
Motor gasoline and E85	2.4	2.6	2.9	3.2	3.6	4.1	4.7	2.5%
Distillate fuel oil and bioDiesel	2.6	2.8	3.0	3.3	3.6	4.0	4.4	1.8%
Residual fuel oil	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.8%
Liquefied petroleum gas	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-34.3%
Jet fuel	0.3	0.4	0.5	0.6	0.7	0.8	0.9	3.6%
Other liquid fuels	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.8%
Natural gas	0.1	0.1	0.2	0.2	0.3	0.3	0.4	4.5%
Electricity	0.0	0.0	0.0	0.1	0.1	0.1	0.2	6.1%
Total	5.7	6.2	6.8	7.6	8.5	9.6	10.8	2.3%
Middle East								
Motor gasoline and E85	3.2	3.2	3.0	2.9	2.8	2.7	2.6	-0.7%
Distillate fuel oil and bioDiesel	2.3	2.3	2.3	2.3	2.4	2.4	2.5	0.2%
Residual fuel oil	1.0	1.2	1.3	1.3	1.3	1.3	1.3	0.8%
Liquefied petroleum gas	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-16.1%
Jet fuel	0.8	1.0	1.1	1.3	1.5	1.6	1.8	3.2%
Other liquid fuels	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.8%
Natural gas	0.3	0.3	0.3	0.3	0.3	0.3	0.4	0.6%
Electricity	0.0	0.0	0.0	0.1	0.1	0.2	0.3	12.9%
Total	7.7	8.0	8.1	8.3	8.4	8.6	8.9	0.5%

Data source: U.S. Energy Information Administration, World Energy Projection System (2023), run hp_230822.081357 and Annual Energy Outlook 2023 (March 2023), www.eia.gov/aeo

Note: Totals may not equal sum of components due to independent rounding. Quantities for the United States, Americas, and World include energy used for U.S. military transportation and the energy content of lubricants.

Table L3. Transportation sector freight transport energy consumption by region and mode, High Oil Price case

quadrillion British thermal units

Region and mode	2022	2025	2030	2035	2040	2045	2050	Average annual percentage change, 2022–2050
Americas								
Heavy-duty trucks	11.1	11.0	10.8	10.8	10.9	11.3	11.6	0.2%
Rail	0.8	0.8	0.7	0.8	0.8	0.8	0.8	0.2%
Marine vessels	1.9	1.8	1.8	1.9	1.9	1.9	1.9	0.1%
Natural gas pipeline	1.0	0.9	0.8	0.9	0.9	0.9	0.9	-0.4%
Air freighter	0.1	0.1	0.1	0.1	0.1	0.2	0.2	1.2%
Total	14.9	14.5	14.4	14.4	14.7	15.0	15.4	0.1%
Europe and Eurasia								
Heavy-duty trucks	7.4	7.3	7.1	7.1	7.3	7.7	8.2	0.3%
Rail	0.7	0.7	0.7	0.7	0.7	0.7	0.7	-0.1%
Marine vessels	2.1	2.2	2.5	2.6	2.6	2.7	2.7	0.9%
Natural gas pipeline	0.2	0.5	0.5	0.5	0.5	0.5	0.5	2.8%
Air freighter	0.4	0.4	0.4	0.5	0.5	0.5	0.6	1.1%
Total	10.9	11.0	11.1	11.3	11.7	12.1	12.6	0.5%
Asia Pacific								
Heavy-duty trucks	10.9	11.2	11.7	12.2	12.9	13.8	14.7	1.1%
Rail	0.9	1.0	1.0	1.1	1.1	1.1	1.1	0.6%
Marine vessels	6.1	6.5	7.2	7.5	7.7	7.8	7.8	0.9%
Natural gas pipeline	0.0	0.1	0.1	0.1	0.1	0.1	0.1	3.6%
Air freighter	0.8	0.7	0.7	0.7	0.7	0.7	0.7	-0.4%
Total	18.7	19.4	20.7	21.6	22.4	23.5	24.4	0.9%
Africa and Middle East								
Heavy-duty trucks	4.2	4.3	4.4	4.5	4.7	5.0	5.2	0.7%
Rail	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.7%
Marine vessels	1.4	1.5	1.7	1.8	1.8	1.8	1.8	0.9%
Natural gas pipeline	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.3%
Air freighter	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.3%
Total	6.0	6.2	6.4	6.6	6.9	7.1	7.4	0.8%
World								
Heavy-duty trucks	33.7	33.8	34.0	34.6	35.9	37.8	39.7	0.6%
Rail	2.5	2.5	2.5	2.6	2.6	2.7	2.7	0.3%
Marine vessels	11.5	12.0	13.2	13.8	14.0	14.2	14.2	0.8%
Natural gas pipeline	1.4	1.6	1.5	1.5	1.6	1.6	1.6	0.5%
Air freighter	1.4	1.3	1.3	1.4	1.5	1.5	1.6	0.3%
Total	50.5	51.1	52.6	53.9	55.6	57.7	59.8	0.6%

Data source: U.S. Energy Information Administration, World Energy Projection System (2023), run hp_230822.081357 and Annual Energy Outlook 2023 (March 2023), www.eia.gov/aeo

Note: Totals may not equal sum of components due to independent rounding.

Table L9. New light duty vehicle sales by technology, High Oil Price case

thousand vehicles

Region and technology	2022	2025	2030	2035	2040	2045	2050	Average annual percentage change, 2022–2050
Americas								
Electric	928.2	2,158.0	3,962.5	4,501.3	4,828.0	5,374.6	6,074.4	6.9%
Hydrogen	2.7	2.8	4.1	4.8	4.7	4.7	4.6	1.9%
Liquefied petroleum gas	4.1	1.8	1.5	1.4	1.4	1.5	1.8	-2.9%
Natural gas	258.7	228.3	348.3	363.2	271.2	212.5	186.4	-1.2%
Diesel	467.0	529.1	524.7	519.2	474.1	466.7	491.9	0.2%
Motor gasoline	19,617.0	18,663.9	16,540.7	15,604.4	15,492.3	15,623.0	15,993.5	-0.7%
Plug-in hybrid	224.0	556.9	914.5	1,512.7	1,900.0	2,188.1	2,117.2	8.4%
Other	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0%
Total	21,501.7	22,140.9	22,296.3	22,507.0	22,971.7	23,871.1	24,869.9	0.5%
United States								
Electric	804.6	1,860.5	3,251.7	3,477.6	3,509.6	3,589.0	3,690.1	5.6%
Hydrogen	2.7	2.8	4.1	4.8	4.7	4.7	4.6	1.9%
Liquefied petroleum gas	0.6	1.0	1.0	1.0	1.1	1.2	1.6	3.7%
Natural gas	0.6	1.3	0.9	0.8	0.8	0.8	0.9	1.9%
Diesel	104.2	116.5	90.5	82.1	85.7	82.4	94.3	-0.4%
Motor gasoline	13,096.7	12,921.7	10,761.7	10,136.2	10,545.8	10,713.8	10,967.1	-0.6%
Plug-in hybrid	200.8	457.7	596.6	641.8	660.4	693.4	728.9	4.7%
Other	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0%
Total	14,210.2	15,361.5	14,706.5	14,344.4	14,808.2	15,085.3	15,487.5	0.3%
Canada								
Electric	112.4	231.7	438.1	473.8	526.1	612.4	700.1	6.8%
Hydrogen	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.7%
Liquefied petroleum gas	0.3	0.1	0.0	0.0	0.0	0.1	0.1	-5.2%
Natural gas	1.7	0.4	0.0	0.0	0.0	0.0	0.2	-8.0%
Diesel	117.3	102.6	107.6	118.9	114.6	104.7	94.3	-0.8%
Motor gasoline	1,499.9	1,302.3	1,130.3	1,074.4	1,020.6	948.8	869.0	-1.9%
Plug-in hybrid	16.6	50.5	91.9	188.1	277.3	386.3	479.4	12.8%
Other	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0%
Total	1,748.1	1,687.6	1,767.9	1,855.3	1,938.7	2,052.3	2,143.0	0.7%
Mexico								
Electric	6.7	34.1	118.3	214.2	320.3	506.9	734.3	18.3%
Hydrogen	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.4%
Liquefied petroleum gas	3.2	0.6	0.5	0.4	0.3	0.2	0.2	-10.1%
Natural gas	4.5	0.6	0.6	1.5	1.5	1.2	0.8	-5.8%
Diesel	7.0	6.7	6.5	6.2	6.3	6.4	6.1	-0.5%
Motor gasoline	1,823.8	1,469.7	1,272.3	1,287.5	1,313.9	1,290.9	1,184.9	-1.5%
Plug-in hybrid	1.5	20.5	50.0	140.9	243.5	283.6	237.3	19.8%
Other	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0%
Total	1,846.8	1,532.2	1,448.2	1,650.7	1,885.8	2,089.3	2,163.7	0.6%
Brazil								
Electric	2.6	9.8	64.7	177.0	242.4	321.8	450.7	20.2%
Hydrogen	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.8%
Liquefied petroleum gas	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-3.1%
Natural gas	125.7	99.1	186.6	225.6	172.0	134.7	124.0	0.0%
Diesel	85.0	121.7	132.3	126.3	95.6	87.9	93.4	0.3%
Motor gasoline	2,230.1	1,903.1	2,192.2	2,030.6	1,636.0	1,645.3	1,927.9	-0.5%
Plug-in hybrid	4.0	21.7	141.6	446.3	584.8	665.5	553.3	19.2%
Other	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0%
Total	2,447.5	2,155.5	2,717.4	3,005.8	2,730.8	2,855.2	3,149.3	0.9%
Other Americas								

Total	34,421.0	35,126.2	40,602.9	45,599.0	47,650.4	48,952.9	50,518.9	1.4%
Japan								
Electric	66.1	150.0	297.9	426.6	717.6	984.4	1,222.2	11.0%
Hydrogen	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.1%
Liquefied petroleum gas	5.9	2.8	2.2	1.8	0.9	0.7	0.7	-7.5%
Natural gas	1.4	1.3	1.3	2.2	2.5	2.4	2.3	1.9%
Diesel	141.1	147.4	134.6	123.0	108.1	97.4	88.0	-1.7%
Motor gasoline	3,144.3	2,953.3	2,763.7	2,357.5	1,858.3	1,538.6	1,204.5	-3.4%
Plug-in hybrid	44.8	136.4	152.8	191.8	196.6	178.7	144.7	4.3%
Other	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0%
Total	3,403.6	3,391.2	3,352.5	3,102.9	2,884.0	2,802.1	2,662.3	-0.9%
South Korea								
Electric	75.3	94.5	359.4	720.0	1,027.1	1,127.9	1,156.9	10.2%
Hydrogen	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.9%
Liquefied petroleum gas	50.2	21.2	18.5	12.1	5.5	3.4	2.5	-10.2%
Natural gas	49.3	30.4	49.9	47.1	19.2	9.2	4.1	-8.5%
Diesel	191.0	154.9	150.3	115.8	76.4	72.7	86.7	-2.8%
Motor gasoline	1,069.5	1,125.5	899.6	579.1	335.2	252.1	189.5	-6.0%
Plug-in hybrid	14.5	81.3	142.9	172.8	105.9	74.5	54.2	4.8%
Other	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0%
Total	1,449.9	1,507.9	1,620.6	1,646.9	1,569.3	1,539.8	1,493.8	0.1%
Australia and New Zealand								
Electric	34.4	56.8	113.0	154.2	223.0	298.3	376.7	8.9%
Hydrogen	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.5%
Liquefied petroleum gas	0.4	0.0	1.5	0.8	0.6	0.3	0.2	-1.9%
Natural gas	2.4	0.1	0.4	0.2	0.1	0.1	0.0	-14.6%
Diesel	110.9	132.9	93.6	133.5	113.0	97.8	84.3	-1.0%
Motor gasoline	873.1	894.0	827.3	681.5	597.3	540.6	479.8	-2.1%
Plug-in hybrid	8.3	22.7	81.4	180.6	260.7	312.5	321.0	13.9%
Other	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0%
Total	1,029.5	1,106.5	1,117.2	1,150.9	1,194.6	1,249.6	1,262.0	0.7%
China								
Electric	4,689.7	6,024.4	7,981.4	11,042.4	11,717.7	11,627.5	11,863.0	3.4%
Hydrogen	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.8%
Liquefied petroleum gas	66.5	38.1	15.3	10.7	5.7	2.5	0.9	-14.1%
Natural gas	998.0	784.5	616.0	1,060.4	1,266.4	1,166.2	794.7	-0.8%
Diesel	43.8	32.1	18.8	40.5	31.6	22.9	16.7	-3.4%
Motor gasoline	13,193.8	10,447.4	7,458.3	6,418.2	5,423.3	4,223.2	3,303.7	-4.8%
Plug-in hybrid	1,006.7	1,609.1	3,268.5	2,063.4	1,896.9	1,441.1	1,121.3	0.4%
Other	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0%
Total	19,998.6	18,935.6	19,358.2	20,635.6	20,341.5	18,483.5	17,100.3	-0.6%
India								
Electric	17.1	51.9	415.4	1,012.3	1,877.4	3,192.6	4,939.7	22.4%
Hydrogen	0.0	0.0	0.0	0.0	0.0	0.0	0.0	6.5%
Liquefied petroleum gas	132.1	60.2	85.7	102.2	107.6	111.7	113.5	-0.5%
Natural gas	140.6	234.7	157.0	142.9	107.6	82.7	64.9	-2.7%
Diesel	1,855.0	2,425.9	3,883.5	4,733.5	4,759.7	4,626.5	4,349.3	3.1%
Motor gasoline	2,181.6	2,647.2	4,079.3	5,081.2	5,134.4	5,048.2	4,805.4	2.9%
Plug-in hybrid	4.0	19.7	258.9	513.2	1,075.5	1,482.3	1,680.5	24.1%
Other	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0%
Total	4,330.4	5,439.6	8,879.8	11,585.2	13,062.3	14,543.8	15,953.2	4.8%
Other Asia								
Electric	19.9	161.0	410.2	1,024.5	1,964.3	3,425.2	5,285.6	22.1%
Hydrogen	0.0	0.0	0.0	0.0	0.0	0.0	0.0	6.3%
Liquefied petroleum gas	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-1.4%
Natural gas	121.0	12.7	1.5	5.0	12.1	28.7	45.2	-3.5%
Diesel	1,041.3	1,278.5	1,577.6	1,562.8	1,517.2	1,515.5	1,451.2	1.2%
Motor gasoline	3,022.5	3,211.8	4,029.2	4,272.5	4,210.3	4,351.4	4,535.2	1.5%

Plug-in hybrid	4.3	81.3	255.9	612.6	894.7	1,013.3	730.0	20.1%
Other	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0%
Total	4,209.0	4,745.4	6,274.5	7,477.4	8,598.7	10,334.1	12,047.2	3.8%
Africa and Middle East								
Electric	29.5	162.6	333.6	626.7	959.2	1,584.4	2,452.8	17.1%
Hydrogen	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.2%
Liquefied petroleum gas	8.9	3.8	0.3	0.1	0.0	0.0	0.0	-20.5%
Natural gas	102.4	21.3	7.6	15.5	27.3	21.9	18.2	-6.0%
Diesel	100.1	129.5	169.7	178.5	173.3	191.3	202.1	2.5%
Motor gasoline	3,295.6	4,004.4	4,285.9	4,074.9	3,778.9	4,004.5	4,182.1	0.9%
Plug-in hybrid	10.0	59.0	238.2	615.7	842.4	945.5	690.1	16.3%
Other	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0%
Total	3,546.5	4,380.5	5,035.4	5,511.5	5,781.1	6,747.5	7,545.3	2.7%
Africa								
Electric	2.1	14.9	73.1	174.5	249.8	402.0	683.4	22.9%
Hydrogen	0.0	0.0	0.0	0.0	0.0	0.0	0.0	7.1%
Liquefied petroleum gas	0.0	0.0	0.0	0.0	0.0	0.0	0.0	20.8%
Natural gas	8.8	5.2	2.2	2.4	1.4	1.0	0.7	-8.6%
Diesel	73.4	91.8	128.8	148.4	153.2	176.2	190.9	3.5%
Motor gasoline	662.4	817.2	1,018.4	1,092.8	1,142.3	1,338.4	1,462.0	2.9%
Plug-in hybrid	1.0	6.0	28.0	60.1	90.7	104.7	89.0	17.4%
Other	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0%
Total	747.8	935.0	1,250.6	1,478.3	1,637.4	2,022.3	2,426.1	4.3%
Middle East								
Electric	27.4	147.7	260.5	452.2	709.4	1,182.4	1,769.4	16.0%
Hydrogen	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.2%
Liquefied petroleum gas	8.9	3.8	0.3	0.1	0.0	0.0	0.0	-20.7%
Natural gas	93.6	16.1	5.4	13.1	25.9	20.9	17.5	-5.8%
Diesel	26.7	37.7	40.9	30.1	20.1	15.1	11.2	-3.1%
Motor gasoline	2,633.2	3,187.2	3,267.5	2,982.1	2,636.6	2,666.0	2,720.0	0.1%
Plug-in hybrid	9.0	53.0	210.2	555.6	751.7	840.8	601.1	16.2%
Other	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0%
Total	2,798.8	3,445.5	3,784.8	4,033.2	4,143.7	4,725.2	5,119.3	2.2%
World								
Electric	7,877.8	11,763.9	20,047.7	28,388.3	35,262.2	41,837.8	48,874.6	6.7%
Hydrogen	2.7	2.8	4.1	4.8	4.7	4.7	4.6	1.9%
Liquefied petroleum gas	531.7	218.8	329.9	289.1	231.6	196.1	166.7	-4.1%
Natural gas	2,159.4	1,809.5	1,601.9	2,117.5	2,275.8	2,255.6	1,957.8	-0.3%
Diesel	8,537.2	9,359.4	10,499.0	10,301.7	10,026.5	9,128.4	8,433.5	0.0%
Motor gasoline	58,543.9	54,618.3	48,219.9	45,127.7	41,569.3	39,701.6	38,339.8	-1.5%
Plug-in hybrid	2,338.1	4,750.4	8,017.5	8,333.9	8,746.0	8,886.2	7,842.2	4.4%
Other	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0%
Total	79,991.0	82,523.0	88,720.0	94,563.0	98,116.0	102,010.4	105,619.2	1.0%

Data source: U.S. Energy Information Administration, World Energy Projection System (2023), run hp_230822.081357 and Annual Energy Outlook 2023 (March 2023), www.eia.gov/aeo

Note: Totals may not equal sum of components due to independent rounding.

Table L10. Light-duty vehicle stocks by technology, High Oil Price case

million vehicles

Region and technology	2022	2025	2030	2035	2040	2045	2050	Average annual percentage change, 2022–2050
Americas								
Electric	3.4	9.6	26.6	45.4	63.1	78.6	92.5	12.6%
Hydrogen	0.0	0.0	0.0	0.1	0.1	0.1	0.1	5.5%
Liquefied petroleum gas	0.1	0.1	0.1	0.1	0.0	0.0	0.0	-5.1%
Natural gas	5.0	5.7	7.1	8.2	8.2	7.3	6.6	1.0%
Diesel	7.0	8.0	9.2	10.5	11.2	11.4	11.4	1.7%
Motor gasoline	389.2	388.0	375.6	355.6	339.1	329.3	324.4	-0.6%
Plug-in hybrid	1.3	2.8	6.9	13.0	20.9	29.6	36.6	12.7%
Other	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0%
Total	406.0	414.1	425.5	432.7	442.7	456.4	471.5	0.5%
United States								
Electric	3.0	8.3	22.4	36.6	48.6	57.2	62.5	11.5%
Hydrogen	0.0	0.0	0.0	0.1	0.1	0.1	0.1	5.5%
Liquefied petroleum gas	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.5%
Natural gas	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.3%
Diesel	1.4	1.7	1.8	1.9	2.0	2.0	2.0	1.2%
Motor gasoline	270.2	266.9	252.7	234.7	221.8	215.8	214.9	-0.8%
Plug-in hybrid	1.1	2.4	5.0	7.6	9.8	11.6	12.9	9.1%
Other	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0%
Total	275.8	279.4	282.1	280.8	282.3	286.6	292.4	0.2%
Canada								
Electric	0.4	1.0	2.9	4.9	6.7	8.0	9.1	12.2%
Hydrogen	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-76.9%
Liquefied petroleum gas	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-11.4%
Natural gas	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-12.6%
Diesel	1.2	1.3	1.5	1.7	1.8	1.8	1.7	1.3%
Motor gasoline	22.9	22.7	21.6	19.9	18.1	16.5	15.1	-1.5%
Plug-in hybrid	0.1	0.3	0.7	1.5	2.5	3.9	5.4	14.4%
Other	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0%
Total	24.6	25.4	26.8	28.0	29.1	30.2	31.3	0.9%
Mexico								
Electric	0.0	0.1	0.6	1.6	3.0	5.2	8.1	23.9%
Hydrogen	0.0	0.0	0.0	0.0	0.0	0.0	0.0	10.2%
Liquefied petroleum gas	0.1	0.1	0.1	0.0	0.0	0.0	0.0	-9.7%
Natural gas	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-0.6%
Diesel	0.4	0.3	0.1	0.1	0.1	0.1	0.1	-3.7%
Motor gasoline	22.3	23.6	25.5	26.9	27.4	27.0	25.8	0.5%
Plug-in hybrid	0.0	0.1	0.3	0.9	2.0	3.3	4.3	25.1%
Other	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0%
Total	22.8	24.1	26.6	29.6	32.5	35.6	38.3	1.9%
Brazil								
Electric	0.0	0.0	0.3	1.0	2.2	3.6	5.4	26.0%
Hydrogen	0.0	0.0	0.0	0.0	0.0	0.0	0.0	10.6%
Liquefied petroleum gas	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.5%
Natural gas	2.1	2.4	3.2	4.1	4.2	3.6	3.4	1.7%
Diesel	0.7	1.0	1.5	2.0	2.3	2.3	2.1	4.3%
Motor gasoline	45.3	45.2	45.1	43.0	40.6	38.9	37.8	-0.6%
Plug-in hybrid	0.0	0.1	0.6	2.5	5.2	8.4	10.7	26.4%
Other	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0%
Total	48.1	48.7	50.7	52.6	54.5	56.8	59.5	0.8%
Other Americas								

Total	544.9	607.2	705.2	786.8	848.3	903.6	955.6	2.0%
Japan								
Electric	0.3	0.7	1.7	3.6	6.7	10.6	15.0	14.8%
Hydrogen	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-64.1%
Liquefied petroleum gas	0.1	0.1	0.1	0.1	0.0	0.0	0.0	-7.2%
Natural gas	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.0%
Diesel	1.7	2.0	2.3	2.3	2.1	1.9	1.8	0.1%
Motor gasoline	63.8	59.9	53.6	47.7	41.5	35.2	29.1	-2.8%
Plug-in hybrid	0.3	0.6	1.3	2.1	2.8	3.1	3.1	9.1%
Other	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0%
Total	66.3	63.4	59.1	55.9	53.2	51.0	49.0	-1.1%
South Korea								
Electric	0.4	0.6	1.9	5.0	9.3	13.1	15.6	14.3%
Hydrogen	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-79.8%
Liquefied petroleum gas	1.8	1.4	0.8	0.5	0.2	0.1	0.1	-10.6%
Natural gas	0.9	0.9	0.8	0.7	0.6	0.4	0.2	-4.3%
Diesel	6.4	6.0	4.7	3.1	2.0	1.5	1.3	-5.6%
Motor gasoline	13.5	15.0	16.1	14.5	11.0	7.4	4.9	-3.6%
Plug-in hybrid	0.1	0.3	1.0	1.8	2.1	1.9	1.4	11.6%
Other	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0%
Total	23.0	24.2	25.4	25.6	25.2	24.5	23.4	0.1%
Australia and New Zealand								
Electric	0.1	0.3	0.8	1.5	2.4	3.6	5.0	14.2%
Hydrogen	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-52.9%
Liquefied petroleum gas	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-4.6%
Natural gas	0.1	0.1	0.0	0.0	0.0	0.0	0.0	-11.5%
Diesel	1.6	2.0	2.2	2.5	2.5	2.4	2.2	1.0%
Motor gasoline	14.8	15.4	16.0	15.7	14.7	13.3	11.9	-0.8%
Plug-in hybrid	0.0	0.1	0.4	1.2	2.5	3.9	5.2	19.2%
Other	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0%
Total	16.7	17.9	19.5	20.9	22.1	23.3	24.3	1.3%
China								
Electric	15.7	33.2	68.1	116.7	169.3	208.9	233.7	10.1%
Hydrogen	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-78.4%
Liquefied petroleum gas	1.2	1.3	1.3	1.1	0.7	0.3	0.2	-6.9%
Natural gas	16.7	18.4	20.2	21.5	22.2	22.9	22.8	1.1%
Diesel	3.3	3.1	2.5	1.7	0.9	0.7	0.6	-5.7%
Motor gasoline	284.8	304.3	305.3	269.5	205.4	149.7	118.6	-3.1%
Plug-in hybrid	3.7	8.4	23.2	31.9	39.5	42.3	38.8	8.7%
Other	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0%
Total	325.5	368.7	420.5	442.4	438.1	424.9	414.7	0.9%
India								
Electric	0.1	0.2	1.8	5.9	14.4	28.1	49.0	26.8%
Hydrogen	0.0	0.0	0.0	0.0	0.0	0.0	0.0	15.6%
Liquefied petroleum gas	2.2	2.0	1.7	1.8	1.9	2.0	2.2	-0.1%
Natural gas	1.5	2.2	2.6	3.0	3.0	2.7	2.2	1.3%
Diesel	21.0	27.1	42.2	59.7	75.6	88.1	93.5	5.5%
Motor gasoline	24.7	30.4	44.8	63.3	80.9	94.7	101.2	5.2%
Plug-in hybrid	0.0	0.1	0.8	3.1	8.2	14.9	22.3	32.7%
Other	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0%
Total	49.6	61.8	94.0	137.0	184.1	230.6	270.4	6.2%
Other Asia Pacific								
Electric	0.1	0.5	2.4	6.8	15.0	29.4	50.5	26.4%
Hydrogen	0.0	0.0	0.0	0.0	0.0	0.0	0.0	14.7%
Liquefied petroleum gas	0.2	0.2	0.1	0.0	0.0	0.0	0.0	-23.5%
Natural gas	2.0	1.8	1.4	0.8	0.3	0.2	0.4	-5.6%
Diesel	14.9	17.2	21.6	25.4	27.9	28.9	28.1	2.3%
Motor gasoline	46.5	51.1	59.8	68.1	74.4	78.4	79.9	2.0%

Plug-in hybrid	0.1	0.3	1.4	3.9	8.0	12.4	14.8	19.1%
Other	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0%
Total	63.8	71.1	86.7	105.0	125.6	149.3	173.7	3.6%
Africa and Middle East								
Electric	0.1	0.6	2.3	6.1	12.0	20.9	33.7	23.8%
Hydrogen	0.0	0.0	0.0	0.0	0.0	0.0	0.0	15.8%
Liquefied petroleum gas	0.4	0.4	0.3	0.2	0.1	0.0	0.0	-17.2%
Natural gas	3.8	3.7	3.1	1.7	0.9	0.6	0.5	-6.9%
Diesel	4.0	4.4	5.2	5.9	6.5	6.9	7.2	2.2%
Motor gasoline	88.4	97.9	110.7	117.6	119.5	120.2	118.8	1.1%
Plug-in hybrid	0.0	0.2	1.3	4.4	9.4	15.3	19.1	24.0%
Other	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0%
Total	96.7	107.3	122.9	136.0	148.4	163.9	179.4	2.2%
Africa								
Electric	0.0	0.1	0.5	1.8	4.0	7.2	11.8	30.8%
Hydrogen	0.0	0.0	0.0	0.0	0.0	0.0	0.0	18.7%
Liquefied petroleum gas	0.3	0.3	0.2	0.1	0.0	0.0	0.0	-31.8%
Natural gas	0.3	0.3	0.3	0.3	0.2	0.1	0.1	-4.8%
Diesel	3.7	4.1	4.6	5.1	5.7	6.3	6.7	2.1%
Motor gasoline	32.7	35.6	40.1	43.3	45.4	48.1	50.7	1.6%
Plug-in hybrid	0.0	0.0	0.2	0.6	1.4	2.4	3.2	27.9%
Other	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0%
Total	37.0	40.3	45.9	51.2	56.7	64.1	72.6	2.4%
Middle East								
Electric	0.1	0.5	1.8	4.3	8.0	13.7	21.9	22.3%
Hydrogen	0.0	0.0	0.0	0.0	0.0	0.0	0.0	14.1%
Liquefied petroleum gas	0.1	0.2	0.2	0.1	0.1	0.0	0.0	-13.5%
Natural gas	3.5	3.4	2.8	1.4	0.7	0.4	0.4	-7.2%
Diesel	0.2	0.4	0.6	0.7	0.8	0.7	0.5	2.8%
Motor gasoline	55.7	62.3	70.5	74.4	74.1	72.1	68.1	0.7%
Plug-in hybrid	0.0	0.2	1.2	3.8	8.0	12.9	15.9	23.5%
Other	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0%
Total	59.7	67.0	77.1	84.8	91.7	99.8	106.8	2.1%
World								
Electric	27.1	60.9	146.6	274.4	423.7	576.8	723.7	12.4%
Hydrogen	0.1	0.1	0.1	0.1	0.1	0.1	0.1	1.3%
Liquefied petroleum gas	9.6	7.7	6.3	6.2	5.5	4.9	4.3	-2.8%
Natural gas	35.7	39.5	43.1	44.4	44.2	43.8	43.6	0.7%
Diesel	178.5	182.5	187.5	189.8	194.8	196.5	190.6	0.2%
Motor gasoline	1,157.8	1,185.9	1,183.7	1,122.8	1,027.1	938.9	876.9	-1.0%
Plug-in hybrid	10.1	23.8	61.8	99.4	134.6	162.1	172.3	10.7%
Other	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0%
Total	1,418.8	1,500.3	1,629.0	1,737.1	1,829.9	1,923.1	2,011.5	1.3%

Data source: U.S. Energy Information Administration, World Energy Projection System (2023), run hp_230822.081357 and Annual Energy Outlook 2023 (March 2023), www.eia.gov/aeo

Note: Totals may not equal sum of components due to independent rounding.