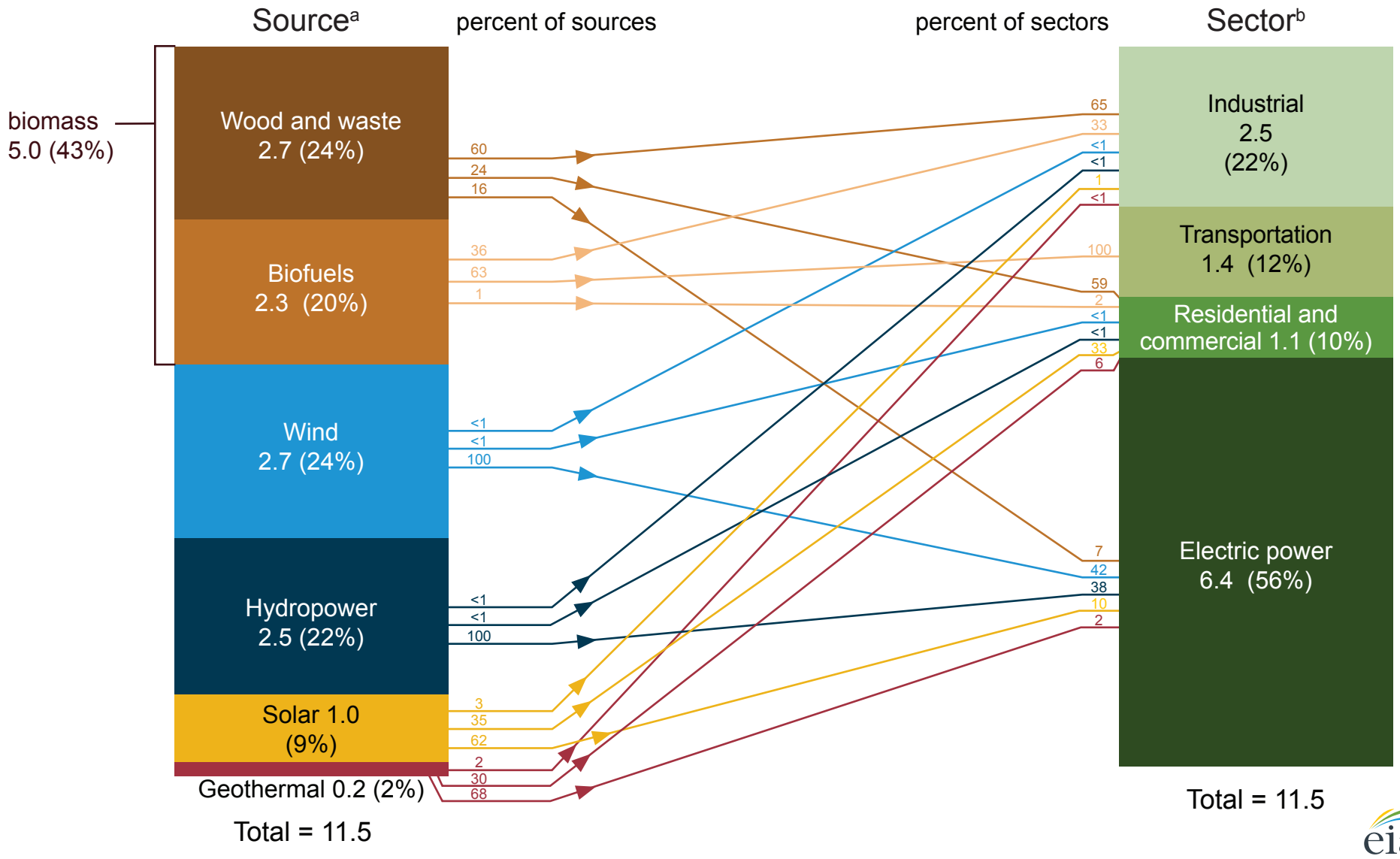
U.S. primary renewable energy consumption by source and sector, 2019

Quadrillion British thermal units (Btu)



a Each energy source is measured in different physical units and converted to common British thermal units (Btu). See U.S. Energy Information Administration (EIA), *Monthly Energy Review*, Appendix A. Noncombustible renewable energy sources are converted to Btu using the "Fossil Fuel Equivalency Approach", see EIA's *Monthly Energy Review*, Appendix E.

b Industrial, commercial, and electric power sectors include primary energy consumption by combined-heat-and-power (CHP) and electricity-only plants contained within the sector. Energy consumed by these plants reflects the approximate heat rates for electricity in EIA's *Monthly Energy Review*, Appendix A.

Note: Sum of components may not equal total due to independent rounding. See "Extended Chart Notes" on next page.

Sources: EIA, *Monthly Energy Review* (April 2020), Tables 10.1, 10.2a, 10.2b, and 10.2c.

Extended Chart Notes

The U.S. Energy Information Administration (EIA) *U.S. primary renewable energy consumption by source and sector* chart illustrates renewable energy that is consumed (used) in the United States. The data are from EIA's *Monthly Energy Review* (MER). The chart does not show energy production, nor the losses associated with energy production.

Sources:

Renewable energy sources are measured in different physical units: liquid fuels in barrels or gallons, biomass gases in cubic feet, and electricity in kilowatthours. EIA converts each source into common British thermal units (Btu) to allow comparison among different types of energy. See MER Appendices A and E for further explanation.

Wood: Wood and wood products used as fuel. Includes round wood (cord wood), limb wood, wood chips, bark, saw dust, forest residues, charcoal, pulp waste, spent pulping liquor, densified biomass (which includes wood pellets), and other wood-based solids and liquids.

Waste: Organic non-fossil material of biological origin that is a byproduct or a discarded product. Includes municipal solid waste from biogenic sources, landfill gas, sludge waste, agricultural crop byproducts, straw, and other biomass solids, liquids, and gases; but excludes wood and wood-derived fuels (including black liquor), biofuels feedstock, biodiesel, and fuel ethanol. Note: EIA biomass waste data also include energy crops grown specifically for energy production, which would not normally constitute waste.

Biofuels: Liquid fuels and blending components produced from biomass feedstocks, such as corn or soy. Includes fuel ethanol, biodiesel, and other renewable diesel fuels.

Wind: Kinetic energy present in wind motion that can be converted to mechanical energy for driving pumps, mills, and electric power generators.

Hydropower: Hydroelectric power. The use of flowing water to produce electrical energy.

Solar: The radiant energy of the sun, which can be converted into other forms of energy, such as heat or electricity. Includes large (utility-scale) and small-scale (customer-sited, rooftop, etc.) solar thermal, photovoltaic (PV), and direct-use energy.

Geothermal: Hot water or steam extracted from geothermal reservoirs in the earth's crust. Water or steam extracted from geothermal reservoirs can be used for geothermal heat pumps, water heating, or electricity generation. Ground-source heat pumps use ambient-temperature, near-surface soil, rock, or ground water as a heat source or sink to increase the efficiency of the heat pump cycle in commercial and residential buildings.

Sectors:

Industrial: Includes energy consumed for manufacturing (NAICS codes 31-33); agriculture, forestry, fishing, and hunting (NAICS code 11); mining, including oil and gas extraction (NAICS code 21); construction (NAICS code 23); and industrial owned biomass, wind, hydropower, solar, and geothermal generators that produce electricity and/or useful thermal output primarily to support the above-mentioned industrial activities.

Transportation: Includes biofuels used by automobiles; trucks; buses; motorcycles; trains, subways, and other rail vehicles; aircraft; and ships, barges, and other waterborne vehicles whose primary purpose is transporting people and/or goods from one physical location to another. Vehicles whose primary purpose is not transportation (e.g., construction cranes and bulldozers, farming vehicles, and warehouse forklifts) are classified in the sector of their primary use.

Residential: Includes energy used for space heating, water heating, air conditioning, lighting, refrigeration, cooking, and running a variety of other appliances in the living quarters of private households. Includes small-scale (customer-sited, rooftop, etc.) solar and solar thermal heat energy used in the sector.

Commercial: Includes energy consumed by businesses; federal, state, and local governments; other private and public organizations, such as religious, social, or fraternal groups; institutional living quarters; sewage treatment facilities; and commercially owned biomass, wind, hydropower, solar, and geothermal generators that produce electricity and/or useful thermal output primarily to support the activities of the above-mentioned commercial establishments.

Electric power sector: An energy-consuming sector that consists of electricity only and combined heat and power (CHP) plants whose primary business is to sell electricity, or electricity and heat, to the public--i.e., NAICS code 22 plants. Includes large, utility-scale biomass, wind, hydropower, solar, and geothermal plants.