

What Is Energy?

Energy Basics

Energy Is the Ability To Do Work

Energy comes in different forms:

- Heat (thermal)
- Light (radiant)
- Motion (kinetic)
- Electrical
- Chemical
- Nuclear energy
- Gravitational

Energy is in everything. We use energy for everything we do, from making a jump shot to baking cookies to sending astronauts into space.

There are two types of energy:

- Stored (potential) energy
- Working (kinetic) energy

For example, the food you eat contains chemical energy, and your body stores this energy until you use it when you work or play.

Energy Sources Can be Categorized As Renewable or Nonrenewable

When we use electricity in our home, the electrical power was probably generated by burning coal, by a nuclear reaction, or by a hydroelectric plant at a dam. Therefore,

coal, nuclear and hydro are called energy sources. When we fill up a gas tank, the source might be petroleum or ethanol made by growing and processing corn.

Energy sources are divided into two groups — renewable (an energy source that can be easily replenished) and nonrenewable (an energy source that we are using up and cannot recreate). Renewable and nonrenewable energy sources can be used to produce secondary energy sources including electricity and hydrogen.

Renewable Energy

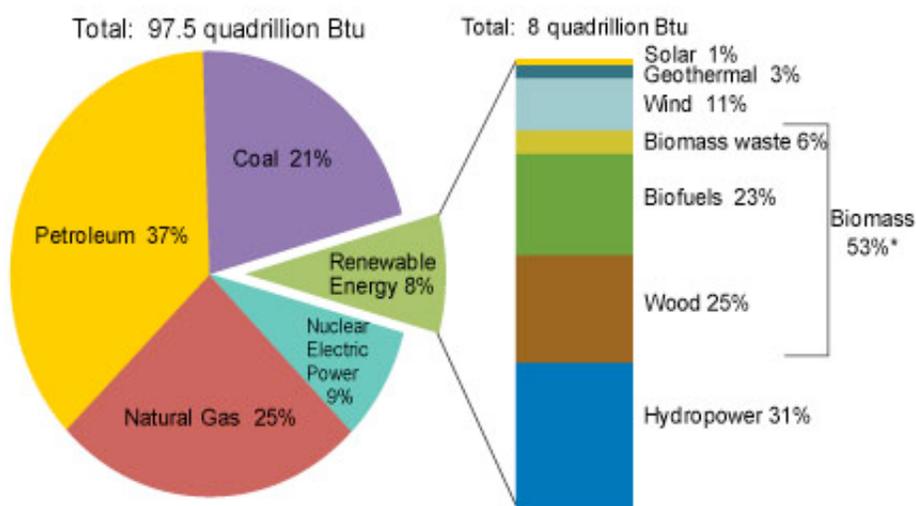
Renewable energy sources include:

- Solar energy from the sun, which can be turned into electricity and heat
- Wind
- Geothermal energy from heat inside the Earth
- Biomass from plants, which includes firewood from trees, ethanol from corn, and biodiesel from vegetable oil
- Hydropower from hydroturbines at a dam

Nonrenewable Energy

We get most of our energy from nonrenewable energy sources, which include the fossil fuels — oil, natural gas, and coal. They're called fossil fuels because they were formed over millions and millions of years by the action of heat from the Earth's core and pressure from rock and soil on the remains (or "fossils") of dead plants and creatures like

U.S. Energy Consumption by Energy Source, 2011



Source: U.S. Energy Information Administration, *Monthly Energy Review*, Table 10.1 (March 2012), preliminary 2011 data.

microscopic diatoms. Another nonrenewable energy source is the element uranium, whose atoms we split (through a process called nuclear fission) to create heat and ultimately electricity.

We use renewable and nonrenewable energy sources to generate the electricity we need for our homes, businesses, schools, and factories. Electricity "energizes" our computers, lights, refrigerators, washing machines, and air conditioners, to name only a few uses.

Most of the gasoline used in our cars and motorcycles and the diesel fuel used in our trucks are made from petroleum oil, a nonrenewable resource. Natural gas, used to heat homes, dry clothes, and cook food, is nonrenewable. The propane that fuels our outdoor grills is made from oil and natural gas, both nonrenewable.

The chart above shows what energy sources the United States used in 2011. Nonrenewable energy sources accounted for 91% of all energy used in the nation. Biomass, the largest renewable source, accounted for about half of all renewable energy and 4% of total energy consumption.