

Energy: part 1

What is Energy?

Energy is the ability to do work. Energy comes in different forms:

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

There are two **types of energy**:

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

Example (1). The food a person eats contains chemical energy (potential energy), and a person's body stores this energy until he or she uses it as kinetic energy during work or play.

Energy sources can be categorized as:

- **renewable** (an energy source that can be easily replenished) or
- **non-renewable** (an energy source that cannot be easily replenished)

Example (2). When people use electricity in their homes, the electrical power was probably generated :

by burning coal or a nuclear reaction (nonrenewable), or

by a hydroelectric plant on a river, or solar panels (renewable).

Example (3). The gasoline people use to fuel their cars is made either from: crude oil (nonrenewable energy), or

biofuel like ethanol, which is made from processed corn(renewable energy).

Renewable and nonrenewable energy sources can be used as:

- **primary** energy sources to produce useful energy such as heat or
- **secondary** energy sources to produce other forms of energy such as electricity.

Renewable energy sources:

1. Solar energy from the sun
2. Geothermal energy from heat inside the earth
3. Wind energy
4. Biomass from plants
5. Hydropower from flowing water

Non-renewable energy sources:

1. Petroleum products
2. Hydrocarbon gas liquids
3. Natural gas
4. Coal
5. Nuclear energy

Example (4). **Crude oil, natural gas, and coal** are called **fossil fuels** because they were formed over 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 microscopic diatoms.

Example (5). **Nuclear energy** is produced from uranium, a nonrenewable energy source whose atoms are split (through a process called **nuclear fission**) to create heat and, eventually, electricity.