ENERGY AND ENERGY RESOURCES

Calculating Power

While **energy** is the ability to do work, and **work** is the transfer of energy, **power** is the rate at which work gets transferred. To calculate the amount of power used, use this formula:

$$\text{Power} = \frac{\text{energy transferred}}{\text{time}}$$

Lesson Checkpoint:
What is the difference between work and power?

Kinds of Energy

There are ... ergy of a moving ob... d or exists beca... l. The amount of ... and velocity. A... kinetic energy. T... ends on the object'... ther of these incre...

Lesson Checkpoint:
What is the difference between potential and kinetic energy?

Forms of Energy

Energy can have many forms.
Mechanical energy is the energy of a moving object such as an airplane in flight.

Thermal energy or heat energy: When a sidewalk warms up from the sun it now has thermal energy.

Electrical energy speaks for itself. Whenever electricity is used, its energy is being used.

Chemical energy is the energy that gets released when chemical bonds are broken. When a stick of dynamite blows up, the energy of the explosion is the result of the breakage of chemical bonds within the dynamite. **Fossil fuels** contain tremendous amounts of chemical energy. These fuels, including coal and natural gas, are called fossil fuels because they were formed in the earth millions of years ago. Right now, the burning of fossil fuels is the most common way we produce electricity.

Nuclear energy is the energy within the nucleus of certain atoms. The energy that gets released in an atomic explosion is called nuclear energy.

Electromagnetic energy is energy that travels in waves. Examples of this are microwaves, radio waves, and both infrared and ultraviolet radiation.

Lesson Checkpoint:
Name two forms of energy and give an example of each.

Changes in Energy's Form

When energy gets transformed from one form to another, this is called an **energy transformation**. There are many examples of this but one of the simplest is an electric toaster. Here, electricity is transformed into both thermal and electromagnetic forms: the electricity powers the waves of energy that heat the toast.

When energy is transformed, no energy is either created or destroyed and this is referred to as the **Law of Conservation of Energy**.

Lesson Checkpoint:
Define energy transformation and give your own example of it.

Alternative Energy Sources

Since there is a limited amount of fossil fuel available on the earth, people are now turning to alternative sources such as **wind power**, **solar pow**

- With **wi** ich turn generat
- **Solar** p icity right in their
- **Atomic** is case, large reactors break down radioactive atoms and release heat. This heat converts water to steam and this steam is then used to turn generators that make electricity.

Lesson Checkpoint:
Name an alternative source of energy that is used in your area and explain how it is used.