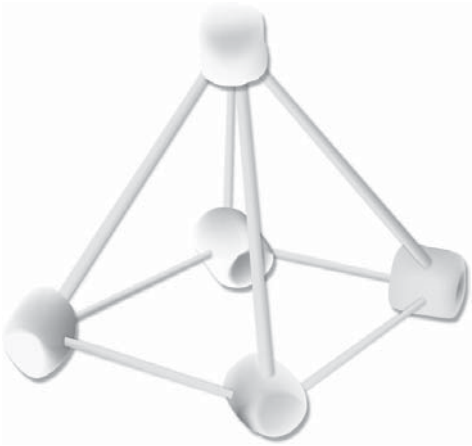
Let's Engage!

1. Use the materials in the resealable plastic bag to build a pyramid as shown below.
2. Using the materials in your bag, build as many pyramids as you can. Do not share materials with other groups.



Let's Explore!

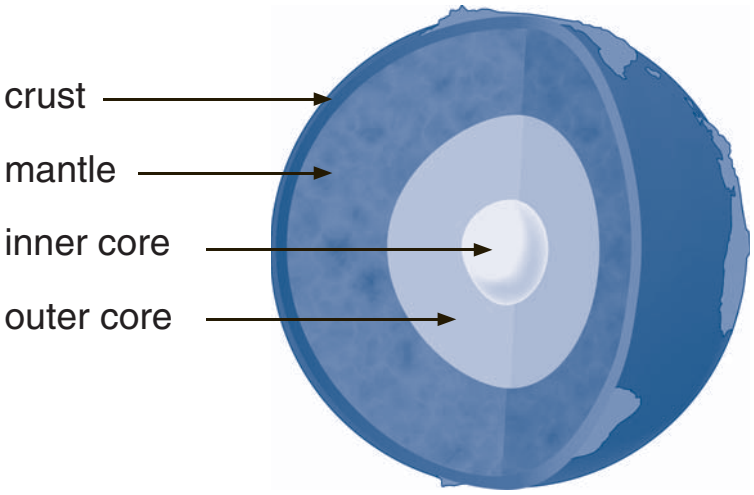
Make It Move

1. Find three ways to make the pinwheel turn.
   - Use only the materials provided by your teacher.
   - You may not touch the pinwheel blades with your hands or fingers.
2. Discuss with your group what the task and rules mean.
3. Develop a plan for completing the task.
4. Work together to make the pinwheel turn.

Let's Explain!

Natural Resources

Natural resources are things found in the natural world that are useful to people. Some of those useful resources are found in Earth's crust.



You have already learned that fossil fuels are—

- natural resources
- found in sedimentary rock formations deep inside Earth's crust
- major sources of energy

It may seem that our natural resources will never run out. There always seems to be electricity to use and fuel for cars. The fact, however, is that some natural resources are being used at a rate greater than the rate at which they can be renewed. This type of natural resource is called nonrenewable.

Since fossil fuels are formed over long periods of time and are not easily replaced, they are considered nonrenewable resources.

Alternative Energy Resources

The word *alternative* means a possibility, or substitute, for something else. Alternative energy resources are energy sources other than nonrenewable resources, or fossil fuels.

Wind

Wind is an alternative energy resource. An unlimited amount of wind energy exists on Earth.

Remember the pinwheel? Did you blow on the blades to make them turn? If you did, you used wind energy to make the pinwheel turn.

Today wind turbines are used to produce electricity. A group of wind turbines is called a wind farm.

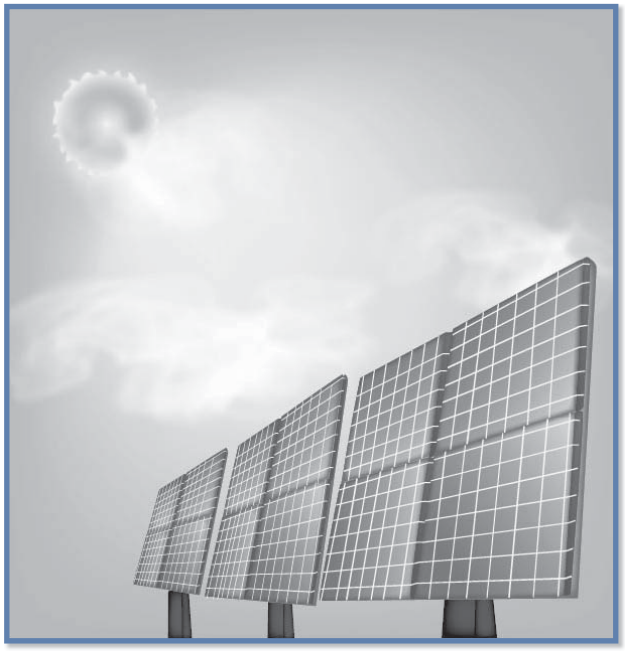
wind turbines

How is electricity produced by a turbine? Wind causes the blades of a wind turbine to turn. The turning of the blades runs the generator, producing electricity.

Solar Energy

You have already learned that the Sun is the major source of energy for Earth. The Sun provides enough energy in 1 minute to supply the world with energy for 1 year.

Energy from the Sun is called solar energy. Solar energy can be collected on solar panels. The collected solar energy is then changed into usable electrical energy.



solar panels

Geothermal Energy

Geothermal energy is heat energy found beneath Earth's crust. It collects in areas called reservoirs. Wells are drilled into geothermal reservoirs beneath Earth's surface. The hot water and steam from the reservoir go up through the wells to Earth's surface. The hot water and steam spin the turbines in a geothermal power plant. Electricity is produced.

Geothermal energy is an alternative energy resource.

Hydroelectric Energy

Hydroelectric energy is also an alternative energy resource. *Hydro-* is a prefix meaning water. Moving water contains energy. The amount of usable energy in moving water depends on how swiftly the water moves. Most often, a hydroelectric plant uses a dam to produce or generate electricity.

Think about—

- A river flows toward the ocean.
- A dam is built on the river.
- The dam holds back the water in the river.
- The water is collected in a reservoir.

Photograph by Karen Thompson

Lake Travis, Austin, Texas

Water is released from the reservoir. The moving water quickly flows through turbines at the base of the dam. The force of the moving water causes the turbines to turn.

Remember the pinwheel? Moving water caused the blades of the pinwheel to turn. As the turbines at the base of the dam turn, a generator converts, or changes, the energy of moving water into electricity.

Biofuels

The prefix *bio-* means life. Biofuels are fuels made from plants.

Think about—

- Gasoline is a fuel that is burned in a car engine to make the car run.
- Have you ever seen the word *ethanol* on a gasoline pump? Gasoline may contain ethanol. Ethanol is a biofuel made from corn.
- Ethanol is an alternative energy resource.
- Another example of a biofuel is biodiesel. Biodiesel is a fuel that can be made from vegetable oils or fats. Biodiesel is an alternative energy resource.

Let's Elaborate!

Create a poster to persuade people to—

- conserve fossil fuels
- begin using alternative energy resources

Be prepared to present your poster to the class.

Let's Evaluate!

Use your knowledge of alternative energy resources to complete the assessment.