

How to Save Energy

by Kathy Furgang

How can people use less electricity to save energy?

Level	T/44
Lexile®	910L

Procedural Text

Look for the genre features noted below as you read this book. Use the features to help you understand the text.

The title clearly states the topic.

The materials needed for the procedure are listed.

The text tells how to do or make something.

Procedural Text

Directions are usually numbered.

Linking words, such as *first*, *then*, and *last*, connect steps.

Images and diagrams help show the process.

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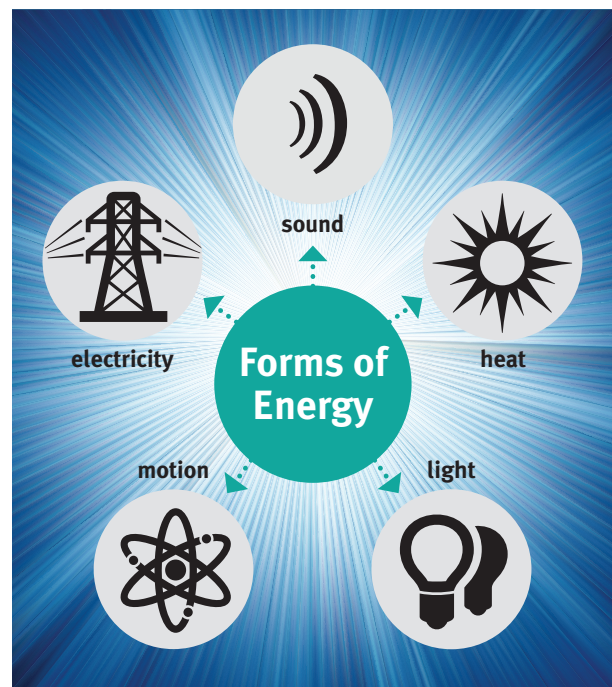
Running on Electricity



Imagine a home on a busy weekday morning. An alarm wakes everyone up. People make their way to the kitchen, where the fridge is humming. They pour some cold juice and toast some bread. Maybe someone turns on a light. These comforts of modern life are made possible because of **electricity**.

Electricity is a form of **energy**. Energy is the ability to do work or get things done. Billions of people around the world use electrical energy to do many activities throughout the day. Computers use electricity, and so do air conditioners and cell phones. Anything that plugs into an outlet or has batteries uses electricity.

All this electricity use adds up. The more electricity people use, the more energy they use.



An issue everyone faces is that using a lot of energy can have a negative impact on Earth. As a result, many people try to conserve, or save, energy. Using less energy can also save people money. One way to save energy is to use less electricity. People try to reduce the amount of electricity they use at home. Businesses and schools also try to use less electricity, too.

There are many ways to conserve electricity. Using certain products and changing habits can save money and help the planet.

Top 10 Uses of Electricity in U.S. Homes

1. Space cooling
2. Water heating
3. Lighting
4. Refrigeration
5. Space heating
6. Televisions
7. Clothes drying
8. Furnace fans and boiler pumps
9. Computers
10. Cooking

Source: U.S. Energy Information Administration, 2016



solar panel

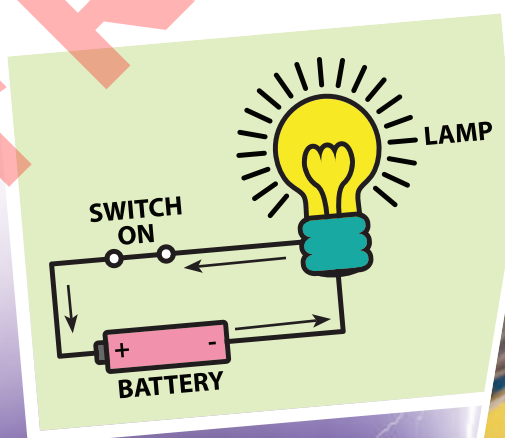
▲ To save energy, cities use solar panels to power traffic lights. A solar panel turns energy from the sun into electricity.

Where Does Electricity Come From?

Electricity occurs naturally on Earth. For example, lightning is a very powerful form of **static electricity**. Static electricity is the buildup of an electric charge (a small amount of electricity) on an object. When one object is rubbed against another, an electric charge forms. For instance, a person may feel a shock after walking across a carpet and then touching a doorknob. The shock is the release, or discharge, of the built-up electric charge.

▼ **Lightning occurs when electric charges build up in the clouds during a storm.**

Another example of electricity that people experience every day is **current electricity**. Current electricity is the constant flow of an **electric charge** along a wire, **similar to water** moving through a pipe. Today, most people rely on a constant flow of electricity to power their lives. Every time we use a **battery** or plug an electronic into an **outlet**, we are using current electricity. But using electricity like this didn't always exist. It took many experiments over hundreds of years for scientists to figure out how to make, or generate, electricity and put it to use.



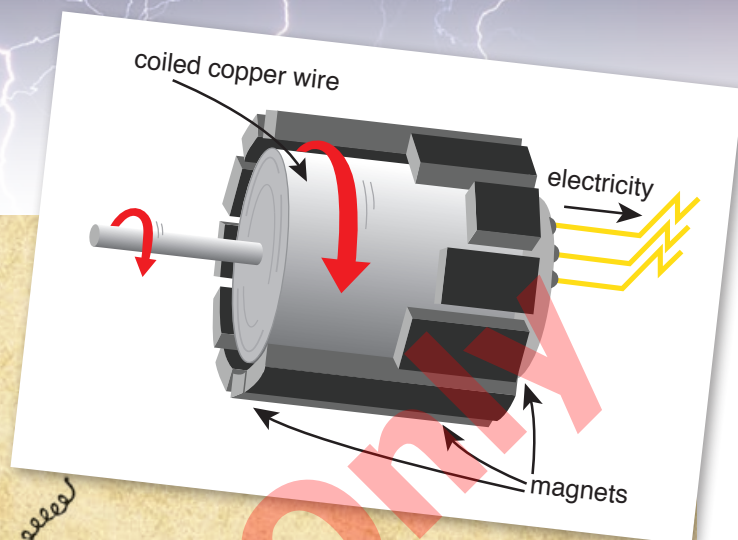
▲ **Electric charge flows along a wire to power an item.**



▲ **A Van de Graaff generator releases static electricity.**

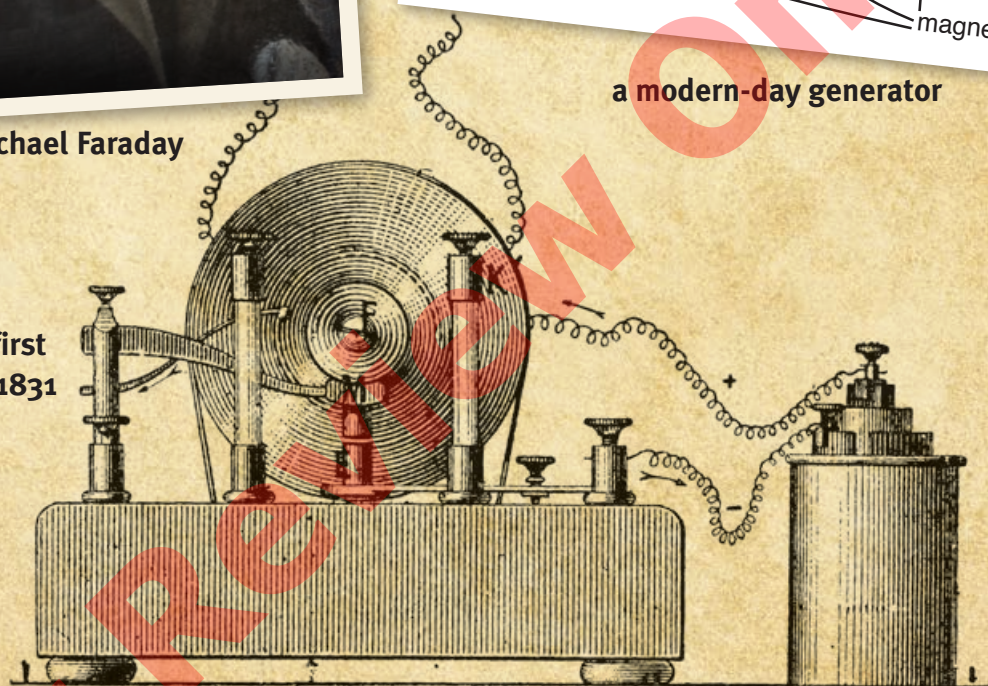


Michael Faraday



a modern-day generator

a drawing
of Faraday's first
generator in 1831



In the nineteenth century, inventors and scientists made important discoveries and developed ways to use electricity. In 1831, Michael Faraday invented a machine called a generator. The generator used magnets to convert mechanical energy into electrical energy. It released a flow of electric charge that could be used for power.

This led to other inventions, such as the lightbulb and radio, which need a constant flow of electricity to work. In time, inventors developed ways to deliver electric power to homes and businesses. Today, generators are still used to convert mechanical energy to electrical energy. They help produce the current electricity that people use every day.

Power to the People

The electricity people use today is generated on a large scale at power plants. According to the U.S. Energy Information Administration, there are more than 7,000 power plants in the U.S. Each power plant can supply electricity to thousands of homes.

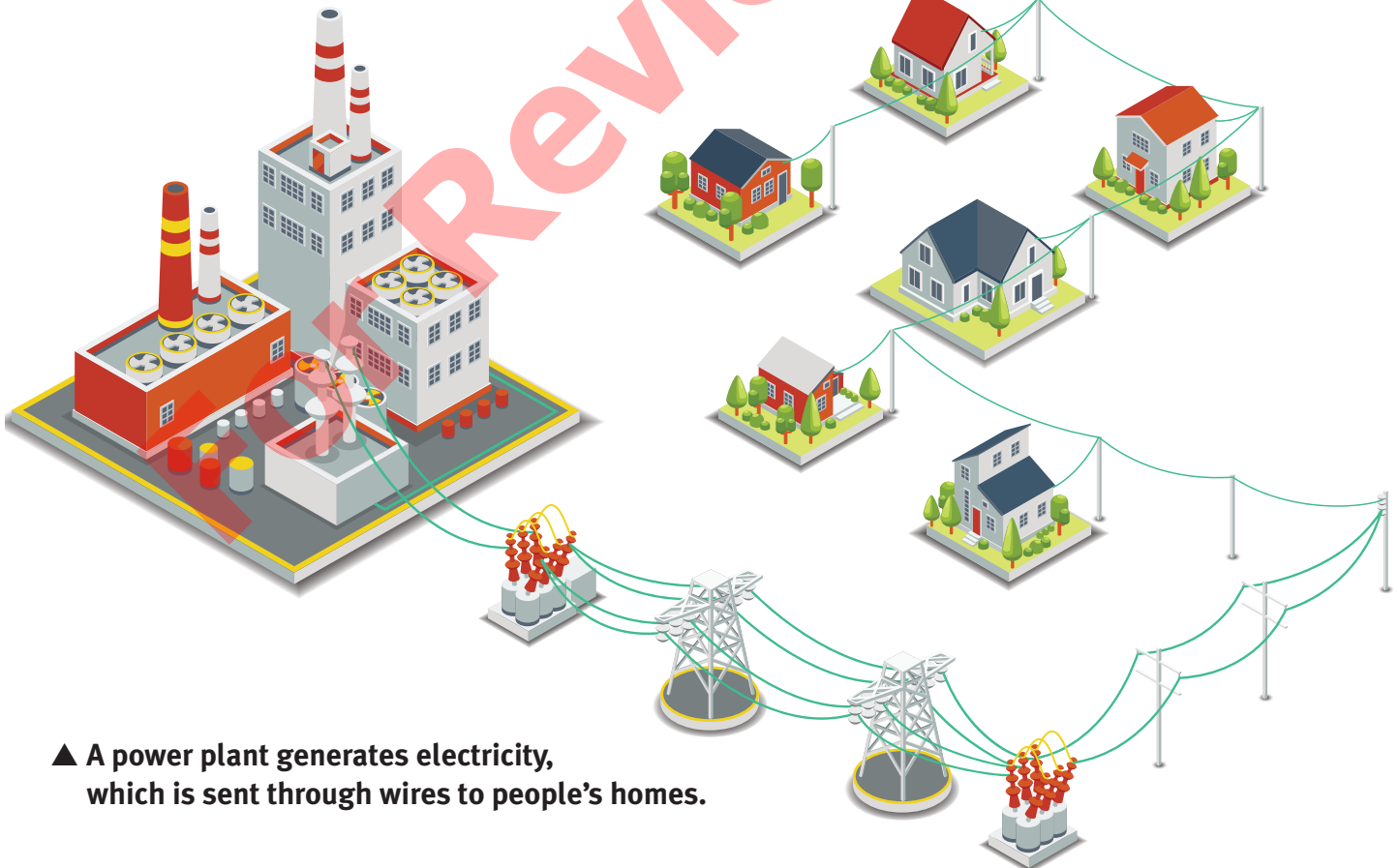
Power plants use large generators to convert energy into electricity. The electricity travels through wires from the power plant to other power stations. From there, the electricity is sent in smaller, safer amounts into a power grid that connects to homes and businesses.

LET'S TRY IT

Using Electricity

Think about all the times you use electricity throughout the day. Make a list of items you use and the activities you do that require electricity. Create a chart like the one below.

Morning	Afternoon	Evening
toaster		TV



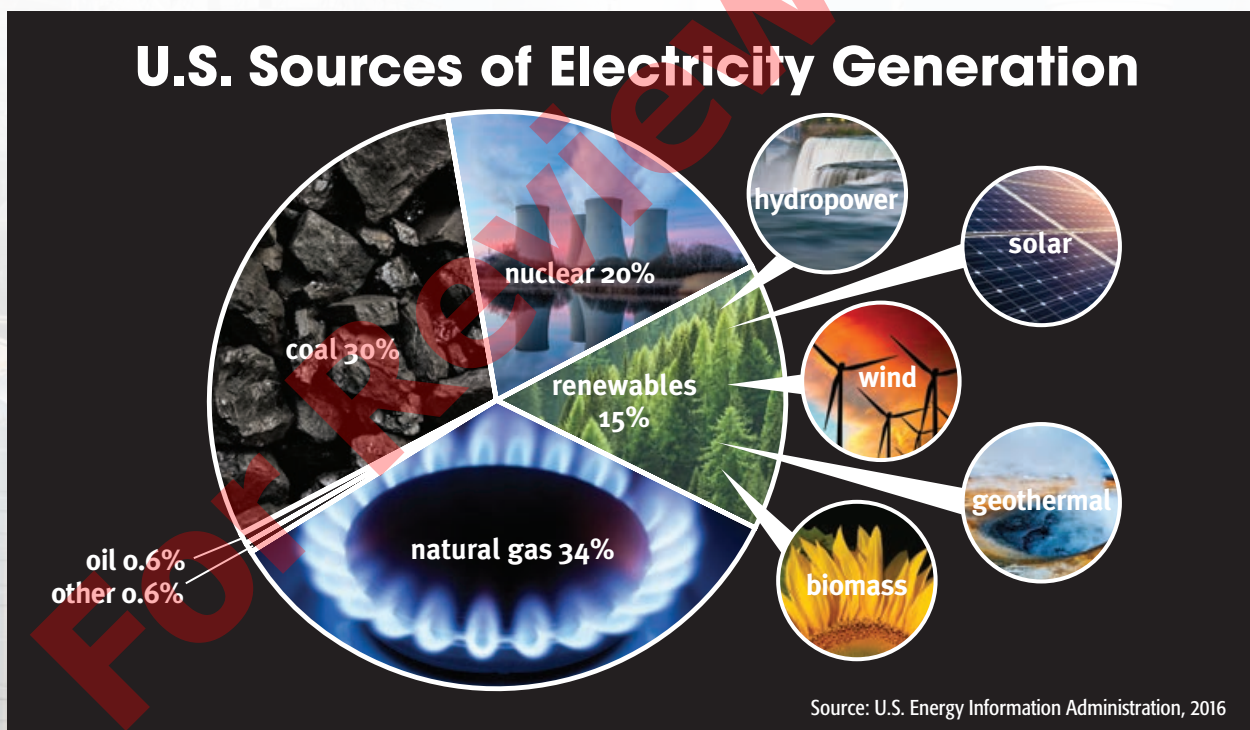
▲ A power plant generates electricity, which is sent through wires to people's homes.

Earth's Resources

Power plants need an energy source in order to make electricity. An energy source can be **nonrenewable** or **renewable**. Most power plants in the United States use nonrenewable resources, such as coal, oil, and natural gas. These resources are limited in supply because they take millions of years to form. If we use nonrenewable resources too fast, they can run out. Oil, natural gas, and coal are also referred to as **fossil fuels**.

According to the U.S. Energy Information Administration, 65 percent of the U.S.'s electricity is generated using fossil fuels. Power plants burn these fossil fuels to start the process of generating electricity.

Some power plants use renewable resources to generate electricity. These resources, such as water and wind, are constantly replaced by nature and are in endless supply.



ENERGY SOURCES

Nonrenewables	Renewables
Coal: solid fossil fuel from ancient living things	Hydropower: moving water
Oil: liquid fossil fuel found in underground rock layers	Biomass: plant material and animal waste
Natural gas: gaseous fossil fuel found underground	Wind: moving air
Nuclear: energy from splitting uranium atoms	Solar: energy from sunlight
	Geothermal: heat from below Earth's surface

The Impact of Electricity

Carbon Dioxide

Earth's atmosphere contains a mixture of gases that allow life to exist on the planet. Carbon dioxide (CO_2) is one of these gases. Carbon dioxide is a colorless and odorless gas that is naturally found in Earth's atmosphere. Carbon dioxide in the atmosphere helps to warm Earth. The gas is also part of a natural cycle that sustains human, animal, and plant life.

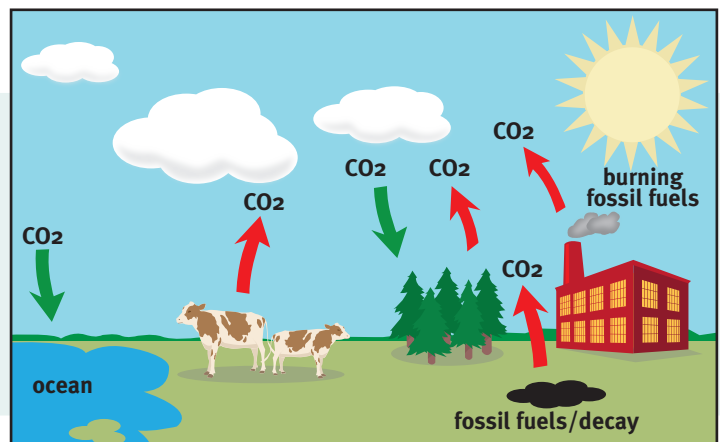
Carbon dioxide is released into the air when people and animals exhale. The gas is absorbed by plants and trees (they also give off CO_2). CO_2 is also absorbed by the oceans and soil. Without carbon dioxide, plants and trees would not grow, and Earth would be very cold.

Carbon dioxide is also released into the atmosphere when fossil fuels, such as coal and natural gas, are burned. Burning fossil fuels produces more carbon dioxide than Earth needs. This excess carbon dioxide can negatively impact the environment. To help the environment, people are working to reduce the amount of carbon dioxide released into the air. First, they figure out how their actions lead to excess carbon dioxide. Then they can think of ways to change their actions so that less carbon dioxide is released.

Carbon Cycle

Red arrows:
release carbon dioxide

Green arrows:
absorb carbon dioxide



The Carbon Footprint

A footprint is a mark a person leaves behind. A carbon footprint is the total amount of carbon dioxide and other gases that is produced and “left behind” by using energy.

Every time people use energy from a nonrenewable resource, they add to their carbon footprint. Therefore, someone who uses more nonrenewable energy has a bigger carbon footprint than someone who uses mostly renewable energy.

People add to their carbon footprint in a number of ways. These include:

- using electricity from a nonrenewable resource
- heating and cooling homes and businesses
- using gasoline-powered transportation (car, bus, train, boat, or plane)
- growing, cooking, and transporting food
- transporting and getting rid of garbage

What Contributes To a Carbon Footprint?

