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**A Thing of the Past?**

When it gets dark outside, we turn on the lights. When it gets cold in the winter, we turn up the heat. When we need to get some work done, connect with a friend, or just relax, we turn on our computers. If you are like most people, you do all of these things without giving them much thought. But each of these actions requires one thing: electricity.

Electricity is most often generated by power plants that burn fossil fuels: oil, coal or natural gas. Although we have relied on these resources for over a century, most scientists agree that we need to find other sources of power.

Name Date

Oil, coal, and natural gas are called fossil fuels because they come from organisms that lived before the dinosaurs ever walked the earth. Most of the fossil fuels we use today

came from tiny plants called plankton that lived during the Paleozoic era—roughly 300 million years ago. These plankton lived in oceans, rivers, and swamps. When the plankton died, their bodies fell to the bottom of the water. The dead plankton mixed into the mud and sand. As time passed, more and more layers of mud or sand piled on top of the dead plankton. The mud and sand hardened into rock. As more layers of rock formed, more and more weight pressed on the plankton. Over millions of years, the pressure from the weight turned the plankton into oil, coal, or natural gas.

Because these fossil fuels were created hundreds of millions of years ago, there is a limited supply of them. Once we run out of the fuels that are buried deep beneath the ground, there will be no way to make more. But the fact that we are running out of fossil fuels is not the only reason why we need to find another source of power. Burning fossil fuels pollutes the environment and contributes to global warming. When fossil fuels are burned, they release carbon dioxide, methane, and other greenhouse gases. These gases trap heat near the surface of the planet. Many scientists believe that this causes global warming, which is an increase in the temperature of the earth. Over time, global warming could have very dangerous consequences for the planet.

Scientists have studied several different sources of energy that would serve as alternatives to fossil fuels. These alternative sources are called renewable resources. Renewable resources will not run out because they are constantly replenished by nature. Sunlight, wind, water, and heat from the earth are examples of renewable resources. All of these resources are continually being produced by nature. We are not in any danger of running out of sunlight, wind, water, or heat from the earth any time soon. All four of these natural resources can be used to make electricity without causing serious damage to the environment.

Solar power uses sunlight to provide electricity. Energy from the sun can be collected in devices called solar cells. Solar cells are flat panels that can be attached to rooftops, machines, generators, or even calculators. When sunlight hits the surface of the solar panel, a special material called silicon transforms the light into energy. The solar energy is then either used to power a battery or generate electricity. Solar energy can be used for many different things, such as heating a home, powering electronics, or even supplying energy to satellites far in outer space.

Wind power is, of course, created by the wind. Wind turbines are large structures that look a bit like giant fans. Turbines transform the wind into energy. When the wind blows, the turbine’s blades spin around. The spinning blades are connected to a generator. As the blades spin, the generator produces electricity. One very large wind turbine can create enough electricity to provide power to nearly 600 homes. A group of wind turbines located in one area is called a wind farm. Wind farms can be built on land or on coastal waters. The electricity created by wind farms can be used to provide power for tens of thousands of homes and businesses.

Hydropower is another example of a renewable resource at work. Hydropower comes from moving water. As rivers and streams run toward the ocean, they create rapids. Rapids are fast-flowing areas of water. Rapids, waterfalls, and powerful currents can be used to generate electricity. Using hydropower is not a modern idea. People first used water to create electricity in the late 1800’s. The first hydroelectric power plant was built at Niagara Falls, a large waterfall located on the border of New York and Canada. The electricity generated by the waterfall powered all of the street lamps in the city of Niagara Falls. Today, hydropower provides about 20% of the world’s electricity.

Yet another source of energy is geothermal energy. Geothermal energy comes from the heat inside the earth. Geothermal energy is created in the center of the earth, also known as the earth’s core. The core of the earth can reach nearly 10,000 degrees Fahrenheit—hotter than the surface of the sun! This heat radiates out from the core toward the earth’s surface. Along the way, it heats underground stores of water. By digging deep wells, we can reach the hot water and steam trapped within the earth. As the hot steam rises up through the well, it pushes a turbine. The turbine then powers a generator, which creates electricity for homes and businesses. Today, 25 countries across the world have geothermal power plants.

Fossil fuels have become a necessary part of everyday life for billions of people in the world. People depend on fossil fuels for heating their homes, providing electricity, and powering their vehicles. But fossil fuels are far from perfect. Our supplies of fossil fuels are limited. Burning fossil fuels causes harm to the environment. For these reasons, the world must stop relying upon oil, coal, and natural gas and start using renewable resources. One day, fossil fuels may truly be a thing of the past.