
WHAT THE FUTURE HOLDS
THE FUTURE OF ENERGY
FROM SOLAR CELLS TO FLYING WIND FARMS
BY M. M. EBOCH

TABLE OF CONTENTS

Words in bold are in the glossary.

INTRODUCTION

A GROWING NEED FOR POWER

Think of all the things you use that need **electricity**. Electricity turns on the lights. It can be used to heat and cool buildings. It charges cell phones. It runs computers, microwaves, refrigerators, and more.

Yet the use of electricity is fairly new. The first U.S. **power plants** opened in 1882. They each served only a few buildings. In 1925, half of the homes in the United States had electricity. Now few homes are without it.

Electricity changed society in huge ways. It is easier and safer than using candles, oil lamps, or open fires. Many modern devices won't work without it. Our power use grows every year as we get more devices and use them more often. At the same time, the world's population is growing. More people using more technology means a greater need for power. People in the U.S. now use 16 times more electricity than they did in 1950. How can we keep up with this demand?

Look around your kitchen. How many electrical devices do you see?

FACT

Energy cannot be created or destroyed. It can be transferred, and it can change forms. It can also be stored over time.

HOW WE MAKE ELECTRICITY

The sun is a huge source of energy. Plants and animals take in energy from the sun. They store that energy in chemical form. When they die, the energy gets changed to other forms. Some plants and animals that died long ago broke down to become coal, oil, and natural gas. These substances are called **fossil fuels**. They are formed from the remains of living things from long ago. Most of our energy today comes from fossil fuels. That's likely to be true for many years. But we can't count on fossil fuels forever.

Many power plants burn fossil fuels. Doing this converts stored chemical energy to heat energy. The heat is used to boil water and make steam. That's how the heat energy changes into kinetic energy, or the energy of motion. In the form of steam, tiny water droplets race through the air. The moving steam turns a large fan, called a **turbine**. A **generator** then converts the motion energy into electrical energy. Electrical energy can move through wires to wherever we need it.

Power plants create energy people can use, but burning fossil fuels releases smoke that is harmful to the environment.

FACT

Like electricity, natural gas can be sent directly into buildings. Then it may be used for heat or to power appliances such as gas stoves.

CHAPTER 1

WHAT IS JUST AHEAD?

Earth has limited amounts of fossil fuels. People could run out of them in the next 100 years. Plus, burning fossil fuels causes **pollution**. Using fossil fuels is harmful to human health and to the environment. It adds to **climate change**.

Knowing what may happen in the future helps us decide what to do now. Scientists study how the environment is changing. They predict what will happen if we keep using fossil fuels. Then they can suggest changes for a healthier future.

We must switch to different ways of making electricity. We have many alternatives to fossil fuels. Some power plants don't need to burn coal or natural gas. These power plants cause less pollution. They use **renewable energy**, so they will never run out. These forms of energy are growing in popularity.

Most vehicles use gasoline, a product made from oil. Oil is a fossil fuel.

FACT

Nearly half of Americans live in areas with unhealthy air. Cars and other vehicles are the worst polluters.