Wind & Solar Energy

TopicReads

LEVEL D-9 • Written by Elfrieda H. Hiebert

This wind turbine and generator will never run out of fuel—the wind.

Wind Energy

For thousands of years, people used energy from the Sun and the wind to keep them warm and help them work. Today, we get much of the energy we use from coal, oil, and gas. However, these fuels cannot be replaced once they run out.

To meet our future needs, scientists are exploring how people once used energy from the Sun and the wind. They hope to use these ideas again and to develop new ways to use these endless sources of energy.

One way wind energy is created is when wind blows through turbines. A turbine is like a reverse fan. In a wind turbine, the wind turns the blades that turn the generator. The generator in the wind turbine then produces electricity. Because wind is always being replaced, wind energy cannot run out.

Key Notes:

How can wind make energy?

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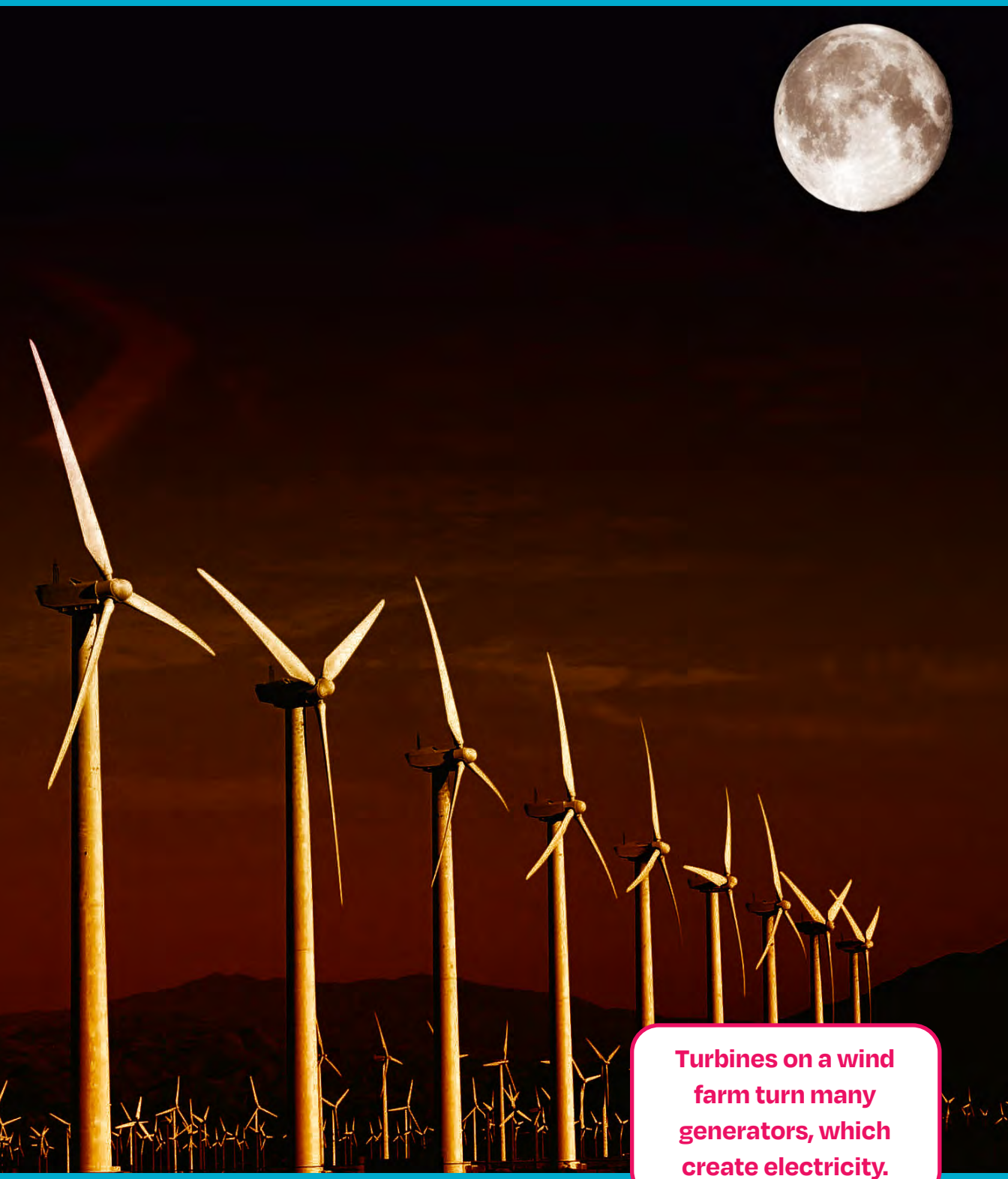

Turbines on a wind farm turn many generators, which create electricity.

Wind Farms

A wind farm is made up of many turbines that turn wind energy into electricity. Wind farms need strong, steady winds, so they are built where the usual wind speed is at least 13 miles per hour. Without wind, turbines cannot produce electricity.

In California, a wind farm with 7,000 turbines was built in a mountain pass that has strong summer winds. This California wind farm generates the electricity needed to run fans and other cooling systems.

Electricity from wind farms is cheaper today than it was 10 years ago. In addition, wind energy does not produce gases that pollute the air. Even so, some people don't like wind farms. They say wind farms take up too much land, pollute the air with noise, and spoil the beauty of the landscape.

Key Notes:

Where are wind farms built?

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Solar panels on this roof in Hawaii receive direct sunlight.

Solar Energy

The Sun has an endless supply of energy. A few minutes of the Sun's light could run all the machines in the world for a year. To be used as electricity, however, the Sun's energy, or solar energy, must be stored.

A house that receives direct sunlight will be warmer at night because the Sun was shining on it. Solar energy warmed the house. A toaster or TV won't work in the same way, though. These machines cannot use solar energy directly.

Solar cells can change solar energy into electricity. Many calculators run on solar cells. However, although many calculators and other machines use solar cells, solar power is not a major power source today. Scientists are still looking for better and cheaper ways to store the Sun's energy.

Key Notes:

How can solar energy be used?

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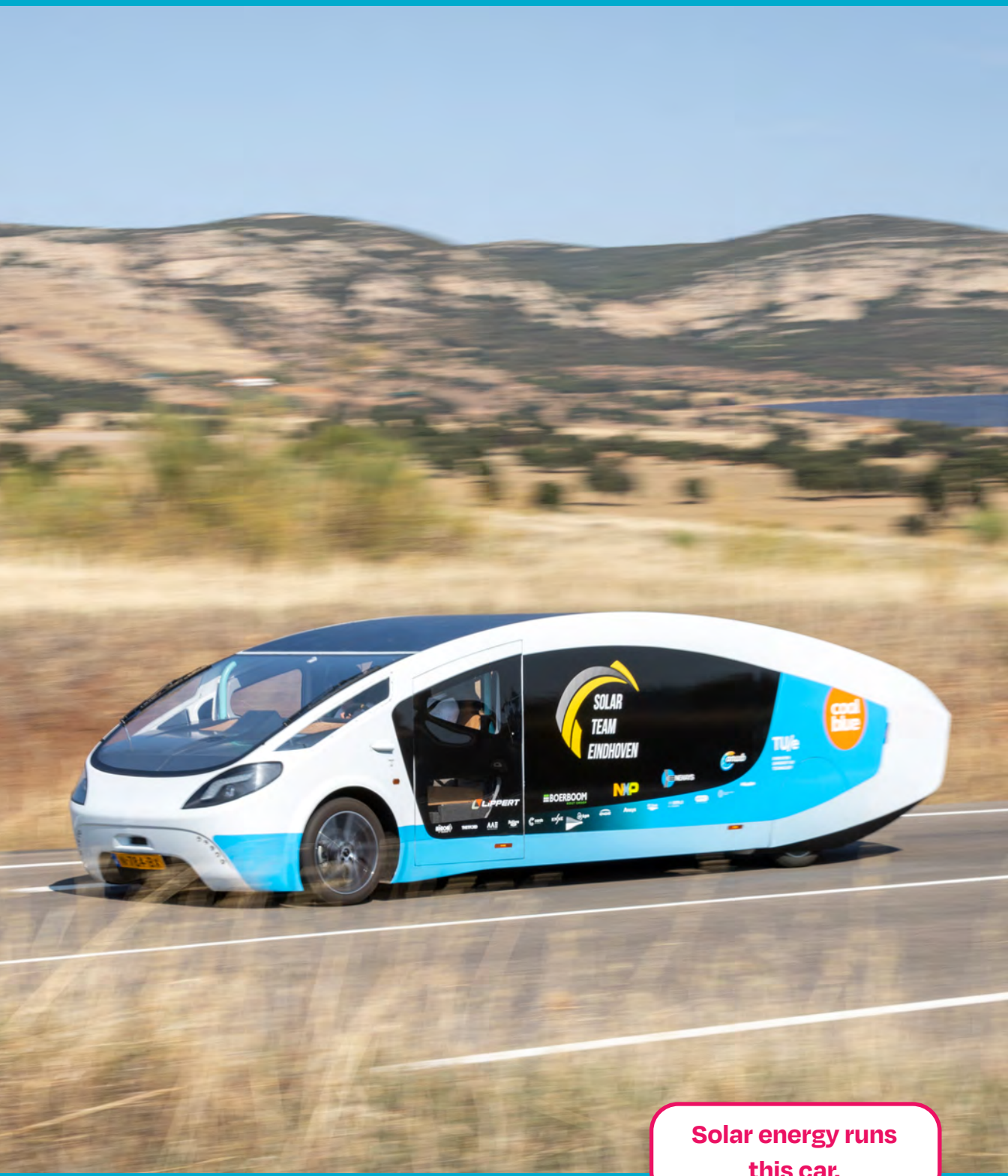

Solar energy runs this car.

Solar Cars

In the year 2000, a solar-powered car traveled 4,400 miles and set a distance record. The car was tiny and light and held only one person. Its source, or energy, was the solar cells on its roof.

To go that distance, the car used about the same amount of energy as a toaster. On cloudy or rainy days, the car used solar energy stored in a battery. When the battery power ran out, the car couldn't move until the Sun shone, restarting the solar cells and storing energy in the battery.

This example shows that while solar cells may someday be a common energy source, they are not yet ready for everyday use. Scientists keep working on solar cars, though, because they use less energy and do not pollute the air.

Key Notes:

How do solar cars work?

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