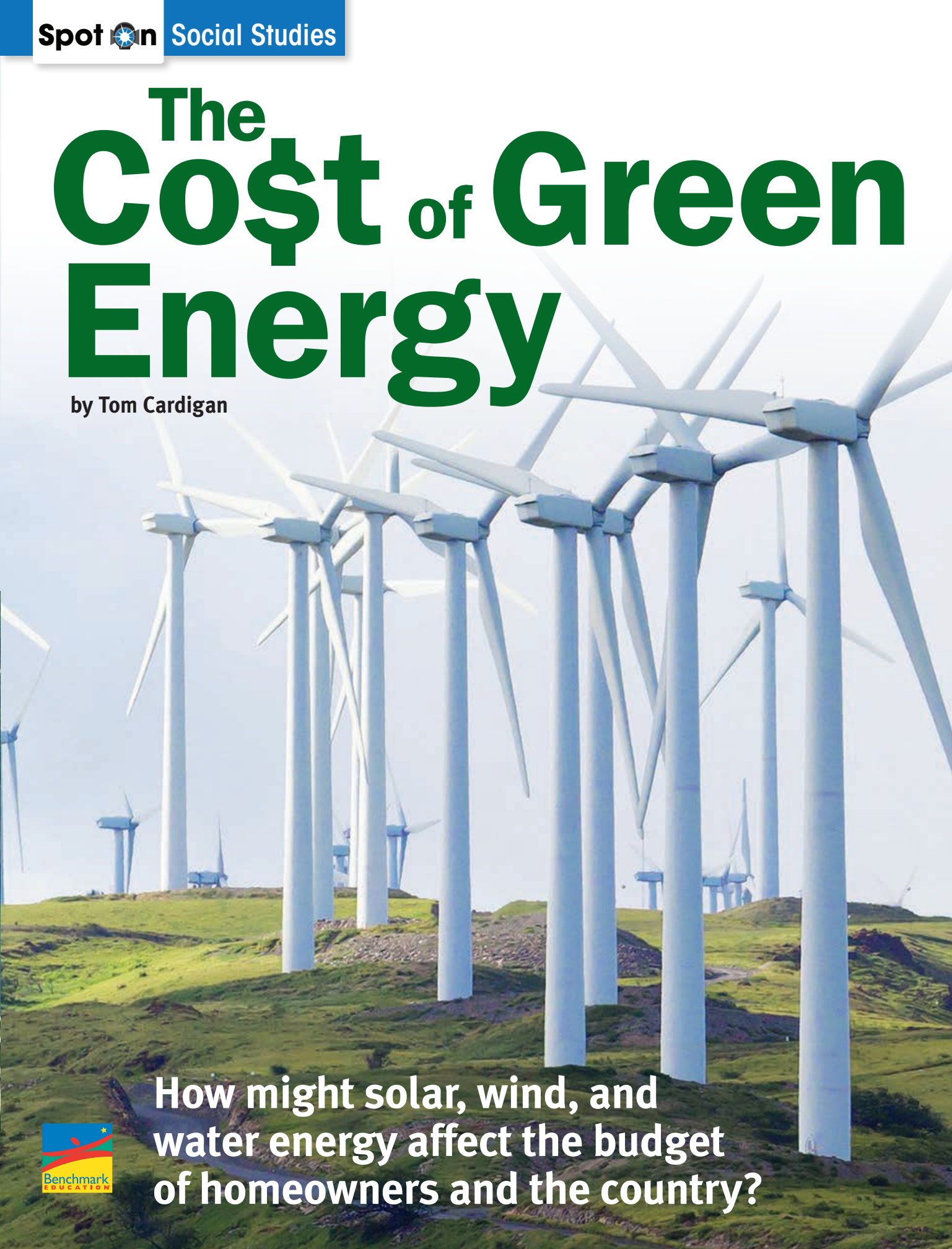
Spot On Social Studies

The Co$t of Green Energy

by Tom Cardigan



How might solar, wind, and water energy affect the budget of homeowners and the country?

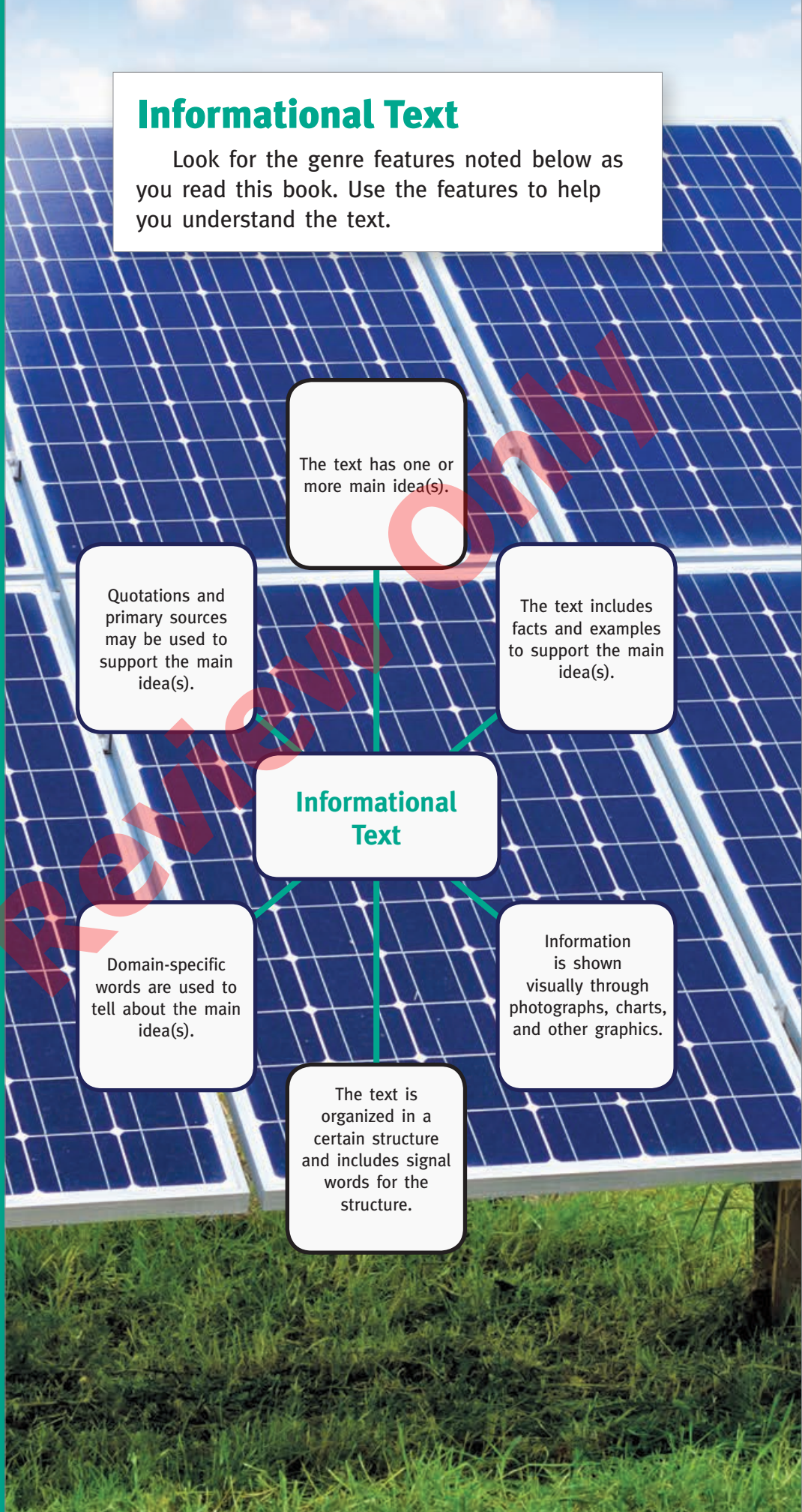
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The Cost of Green Energy

People use **energy** every day. People use energy in their homes, businesses, and schools. Towns use energy to power streetlights. Cars, trains, and buses also rely on energy to run.

In many places, people burn **fossil fuels** to generate energy. Natural gas, coal, and oil are fossil fuels. These fuel resources come from the remains of plants and animals that died millions of years ago.

Fossil fuels are nonrenewable. **Nonrenewable energy** is limited, meaning it comes from a source that can be used up. Burning fossil fuels releases pollutants into the air.



▼ According to the U.S. Energy Information Administration, U.S. oil wells produced almost 9 million barrels of crude oil per day in 2016.

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▲ **Solar panels are one example of a growing green industry.**

People also use solar, water, and wind power to produce electricity. These are **renewable energy** resources. These resources cannot be used up. They also release fewer pollutants. This is why they are often referred to as "green" energy. Many people think these resources do less damage to the environment.

In recent years, the use of green energy has increased in countries around the globe. The number of green energy businesses is growing. These industries create jobs each year. A recent report from the Environmental Defense Fund states that jobs in solar energy are growing "at a rate 12 times faster" than the rest of the U.S. economy.

But some people in the United States wonder if green energy will help them save money. They also wonder if it's good for the nation's economy.

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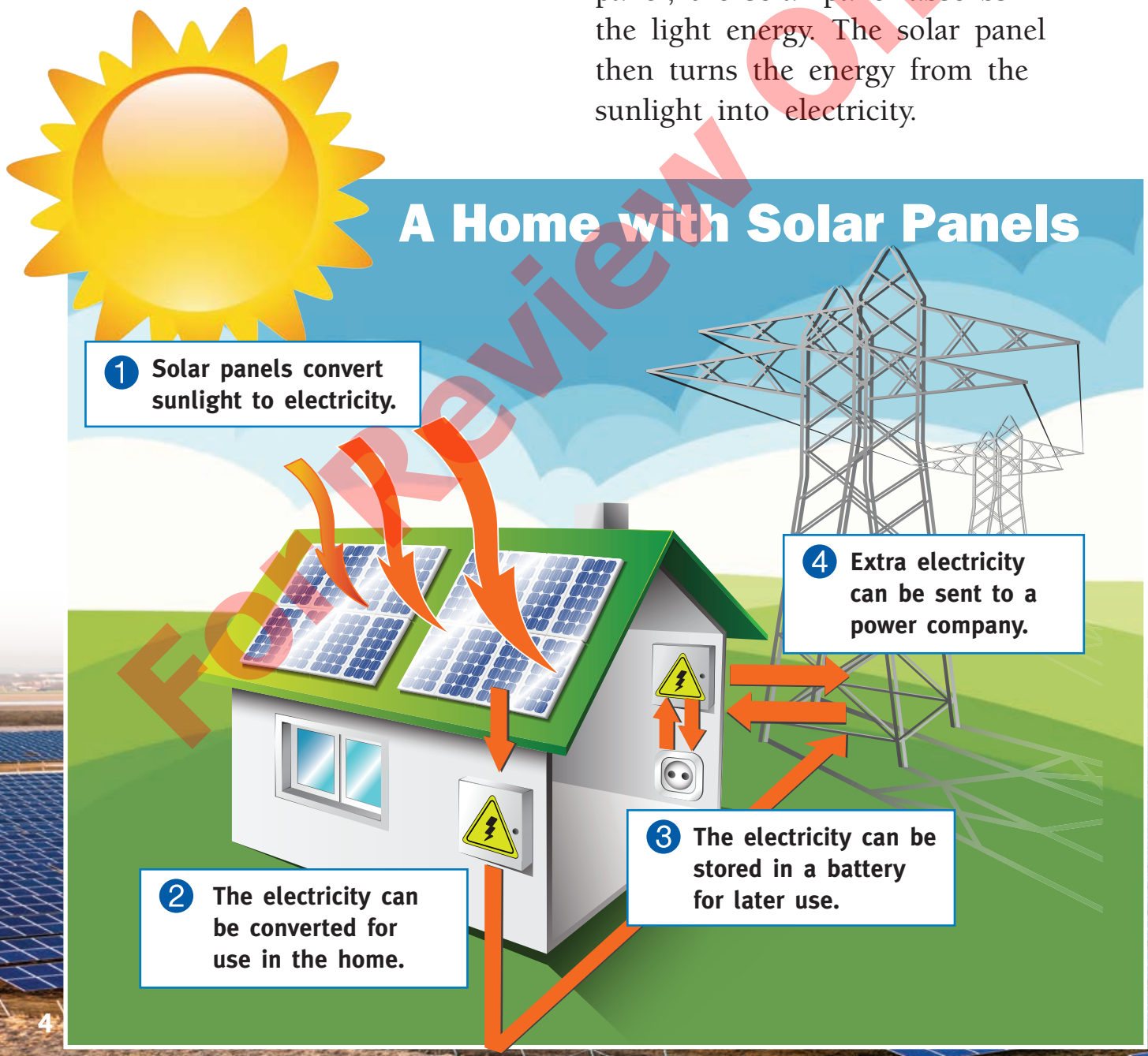
CHAPTER 1

Solar Energy

Solar energy, also called solar power, is one type of green energy. Solar power is the practice of converting sunlight into electricity.

The most common way to make solar electricity is to absorb the sunlight with solar panels.

When sunlight strikes a solar panel, the solar panel absorbs the light energy. The solar panel then turns the energy from the sunlight into electricity.



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Sometimes, this energy is used instantly. For example, some street signs are solar-powered. These street signs have solar panels, and the solar panels turn sunlight into electricity that immediately powers the street signs.

Other times, this energy is stored. Solar panels absorb energy and convert it to electricity that can be stored in a battery for later use. Extra electricity can also be sent back into the electric grid. The grid is a network of power lines connected to a power station.

Once solar energy is turned into electricity, it can be used to power most electronic devices. These include lights, computers, cars, and more.

▼ **A group of solar panels is called a solar farm.**

Sun = Energy

Solar panels are not the only way to obtain energy from the sun. Actually, all energy on Earth comes from the sun. Even the energy in fossil fuels.

Plants absorb sunlight and convert it to energy. Fossil fuels were formed from living things that died millions of years ago. These include plants from long ago.

The plants eventually became fossils. When fossil fuels are burned, they release energy from the sun that was trapped ages before.



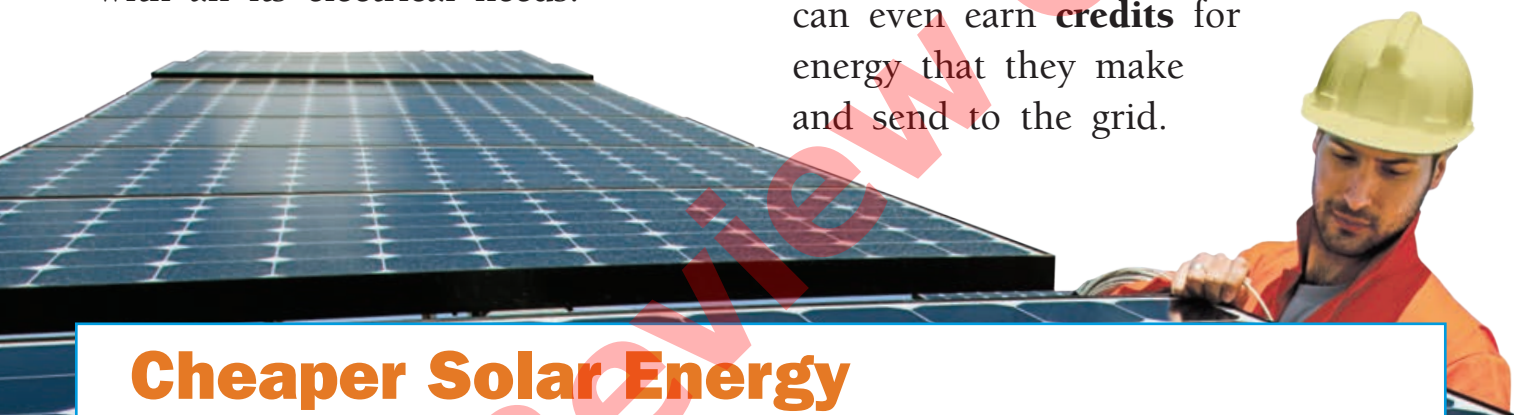
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Solar: Does It Save People Money?

Solar energy is the most reliable form of renewable energy. Sunlight is free. And there's a lot of it. According to Mehran Moalem, a professor at the University of California, Berkeley, covering just "1.2 percent of the Sahara Desert" with solar panels could provide the entire world with all its electrical needs.

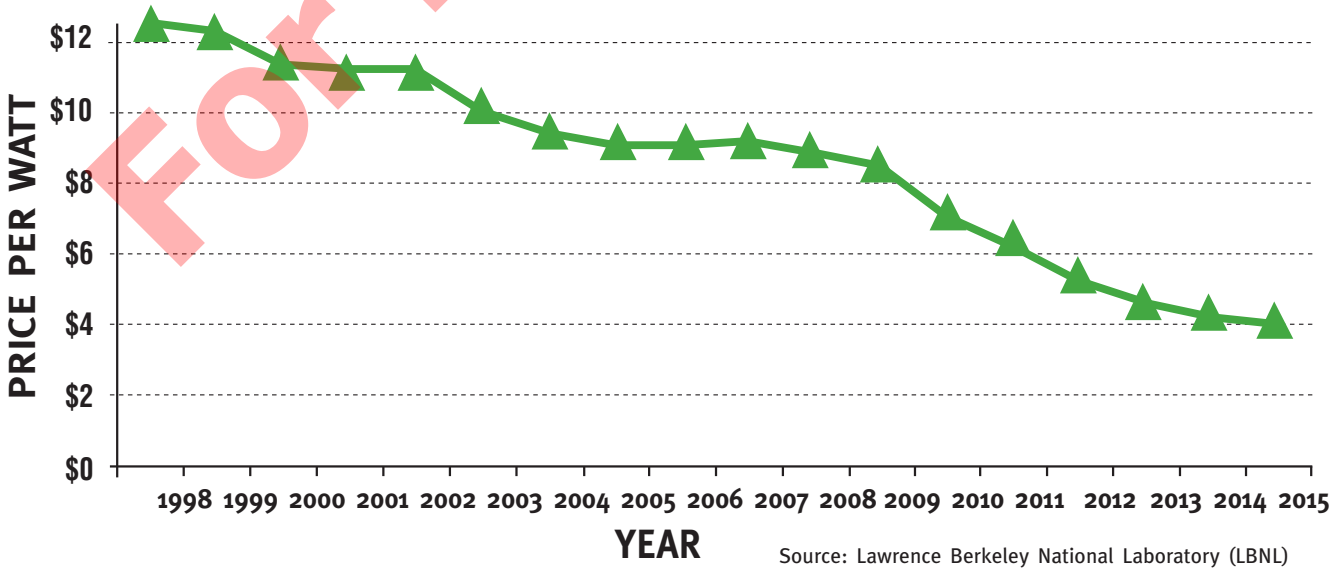
But can consumers save money by using solar panels? First, **consumers** need to buy the solar panels. Then the panels need to be installed on the home's roof, which costs money.

As a result, consumers have to pay a lot of money to switch to solar power. But over time, they earn that money back. By making their own electricity, they can save on monthly energy bills. They can even earn **credits** for energy that they make and send to the grid.



Cheaper Solar Energy

This chart shows the cost of complete solar panel installation in homes. This cost has declined over the years.



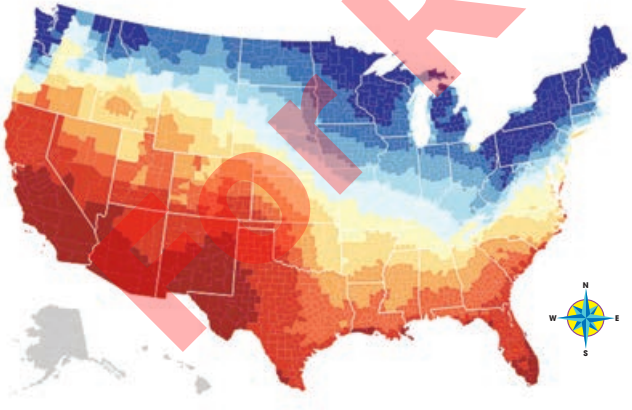
Source: Lawrence Berkeley National Laboratory (LBNL)

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The amount of energy that solar panels make depends on the amount of sunlight they absorb. People in sunny areas might get enough sunlight to make all the electricity they need. But people in less sunny areas might not. They might have to pay for some electricity from their power company.

Average U.S. Daily Sunlight

The National Aeronautics and Space Administration has mapped the average daily sunlight. A kilojoule is a measure of solar power. Areas with more sunlight are likely to make more power using solar panels.



less kilojoules ◀ ▶ more kilojoules

Source: North America Land Data Assimilation System (NLDAS) Daily Sunlight (Insolation), years 1979–2011, on CDC WONDER Online Database, released 2012



Cashing In on Solar

For some farmers, harvesting electricity is really paying off!

A growing number of farmers have found a new way to make money. They are using land that was used to grow crops, to make electricity. They have invested in solar farming. A solar farm has thousands of solar panels. These panels cover many acres of land. The panels absorb sunlight. The farmer then sells the electricity to the power company.

Today, about 14 gigawatts of energy comes from U.S. solar farms. That is enough solar energy to power 2.3 million homes.

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Solar: Does It Help the Economy?

The number of people using solar power can affect the U.S. economy in different ways.

If people use solar power to generate electricity, then it is likely that they are using less coal, oil, or gas. This impacts jobs in the fossil fuel industry. The Environmental Defense Fund's Climate Corps says that the number of fossil fuel jobs has dwindled in recent years. Some people think this decline in jobs might be due to people using more green energy resources.

According to the Energy Information Administration, the number of jobs at U.S. coal mines has dropped by 12 percent since 2010. This has led to unemployment in coal mining communities.

But overall, green energy is good for U.S. job growth. In 2016, more than 70,000 new jobs were created in the field of solar energy. In fact, when it comes to electricity, the U.S. Department of Energy reported that the solar energy industry now employs more Americans than coal, oil, and gas combined.

Solar energy is also a very clean way to make electricity. It emits no harmful chemicals into the air. As a result, it does not create breathing or health problems, and therefore does not increase national health care costs.

▼ **This solar farm in China could capture enough energy to sell to other countries.**



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New Ideas in Solar Energy

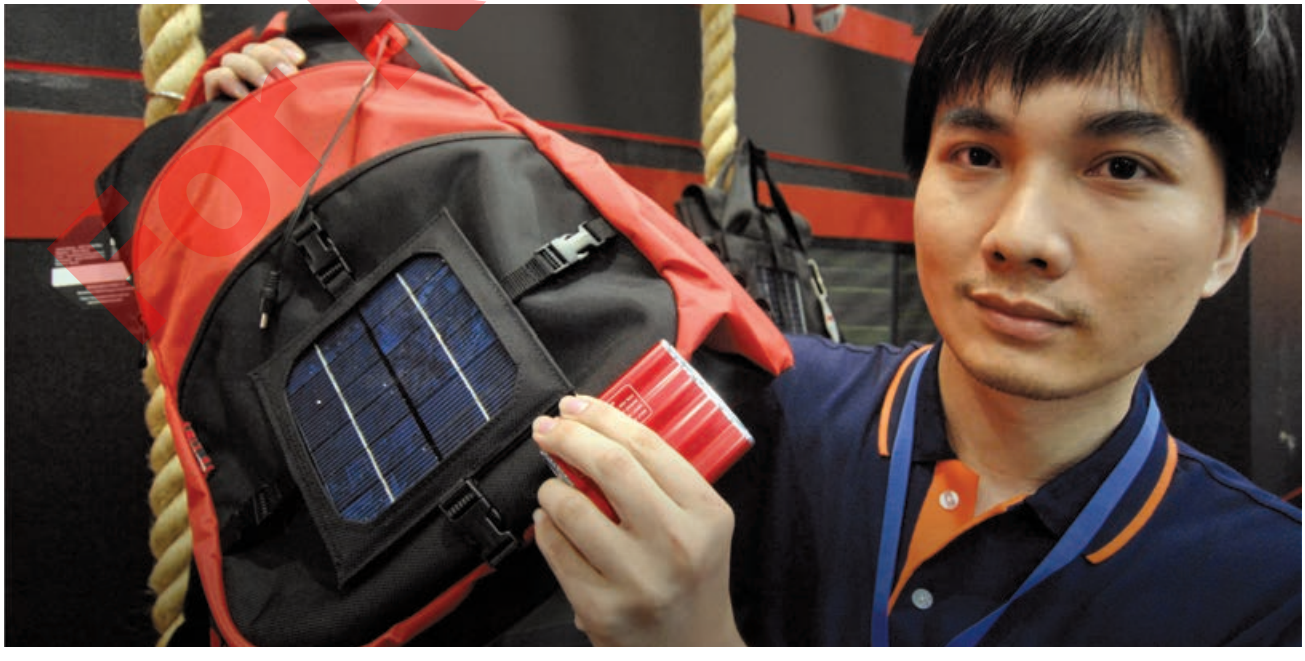
Solar energy technology is constantly improving. Inventors have patented backpacks, glass bricks, and roads that absorb sunlight and turn it into electricity.

One car company has already produced solar roofing. And solar-powered watches have been available for some time.

Another idea is a special paint that works like solar panels. The paint absorbs energy from the sun and turns it into electricity. It can be used on cars, the outer walls of buildings, and more.



Solar cookers, like the one used by this woman in Mali, use sunlight instead of electricity to cook food.



▼ This backpack has solar panels that can be used to charge devices like cell phones.

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