

Sun sational!

What is Consumers Energy?



FUN FACTS

Consumers Energy
Company founded:
1886

People served:
6.6 million Michigan residents

Counties served: 68 counties
in Michigan's Lower Peninsula

Types of energy provided:
Electricity and natural gas



At Consumers Energy, we make electricity from different sources, including:

- **Solar** – The Latin word for “sun” – solar is used for heating water for home use, space heating of buildings, drying agricultural products and generating electrical energy.
- **Wind** – The term given to any natural movement of air in the atmosphere. It's also a renewable source of energy used to turn turbines to generate electricity.
- **Water** – It evaporates from lakes and oceans, forms clouds, falls to the ground as rain or snow, and then flows back to the ocean. Hydropower plants use water and gravity to make electricity. Water is a renewable energy source.
- **Natural Gas** – An odorless, colorless, tasteless, clean-burning fossil fuel. It's a natural resource. Many furnaces, clothes dryers, water heaters and stoves operate using natural gas.
- **Coal** – A fossil fuel formed by the breakdown of plant material trapped underground without access to air.



What Does Consumers Energy Provide?

Energy plays an important role in our society and world. Think about the things you do each day that use energy, whether it's watching TV, playing a video game, turning on a light, using the Internet or swimming in a heated pool.

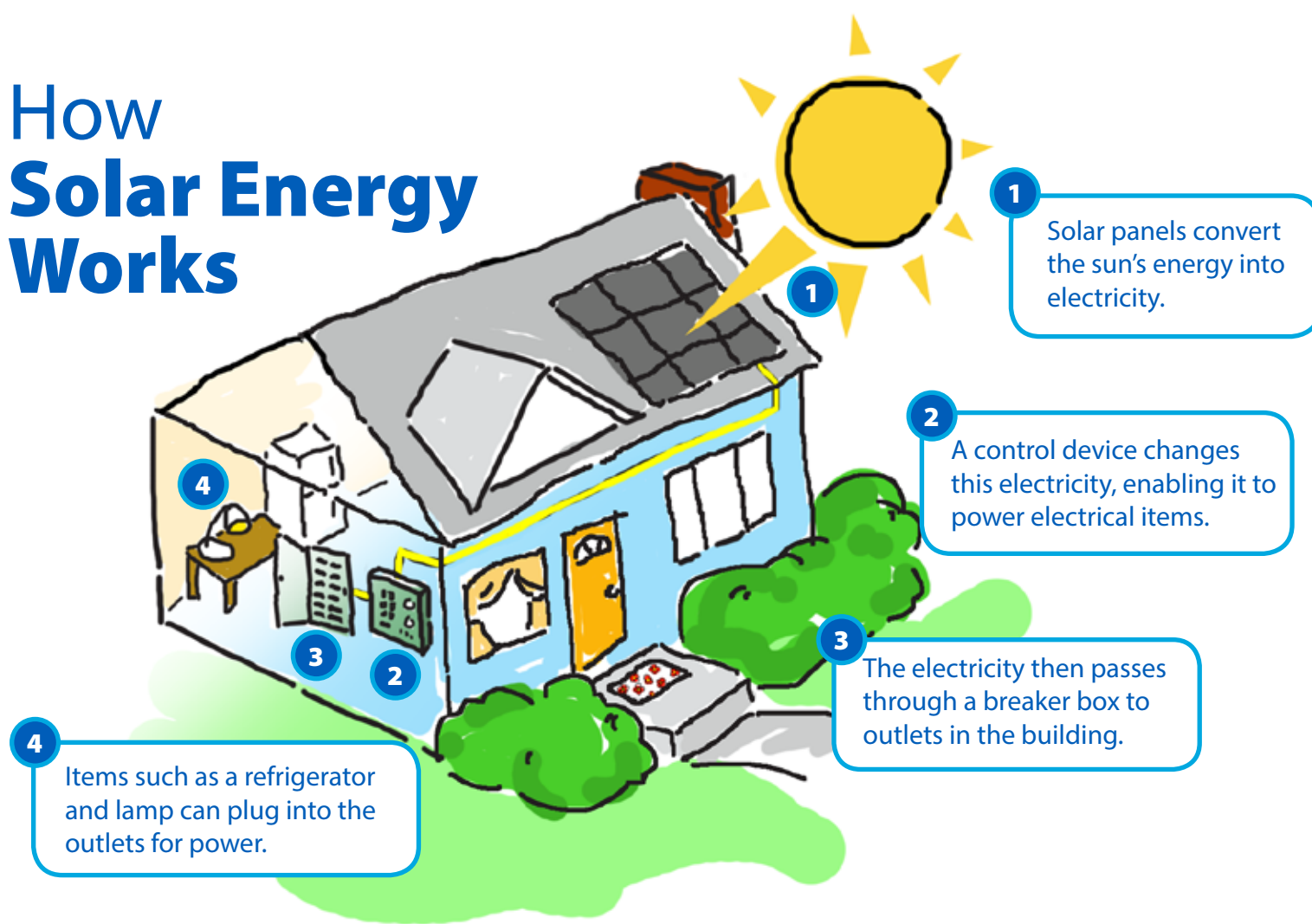
At Consumers Energy, we provide electricity and natural gas to help you do those things each day. The energy we produce helps bring wonderful benefits to millions of residents in Michigan.

We've been producing energy since 1886, when our founder, W.A. Foote, helped brighten downtown Jackson with city streetlights. Nearly 125 years later, we continue to make Michigan a better place to live, work and grow.

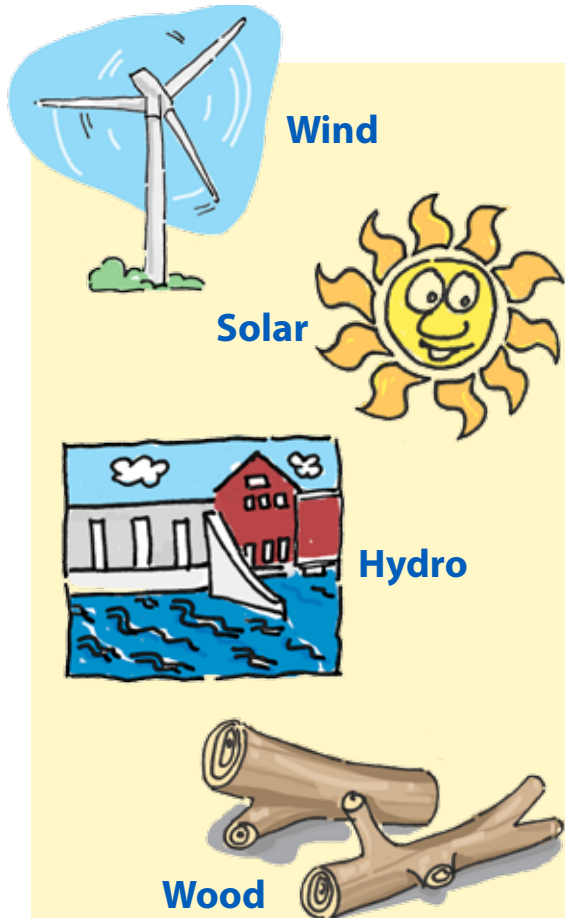
Consumers Energy

Count on Us

How Solar Energy Works



Source: Green Mountain Energy



What is Renewable Energy?

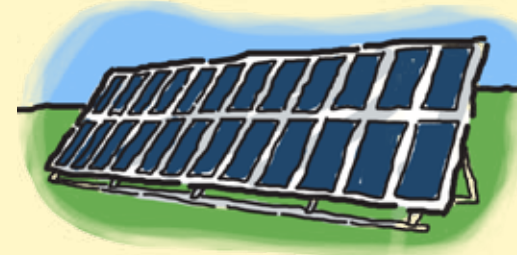
From the sun's warm rays to a fast-moving river to fossilized remains of plants and animals, our planet offers many sources of power.

As the world's engineers and scientists discover more ways to make electricity, the 6 billion people on Earth are using more power than ever before. There are many concerns as to whether or not the planet has the resources to keep up with this growing demand for more energy.

Some fuels used to make electricity are renewable or easily replenished. These include wind, solar, water and wood. Other fuels such as coal, natural gas and oil have been formed over many millions of years and aren't available again once they are used. Each fuel offers different benefits and impacts to our environment.

Knowing these facts, we have important choices to make. We can use less energy and conserve, or we can practice energy efficiency and use energy more wisely.

Solar Facts



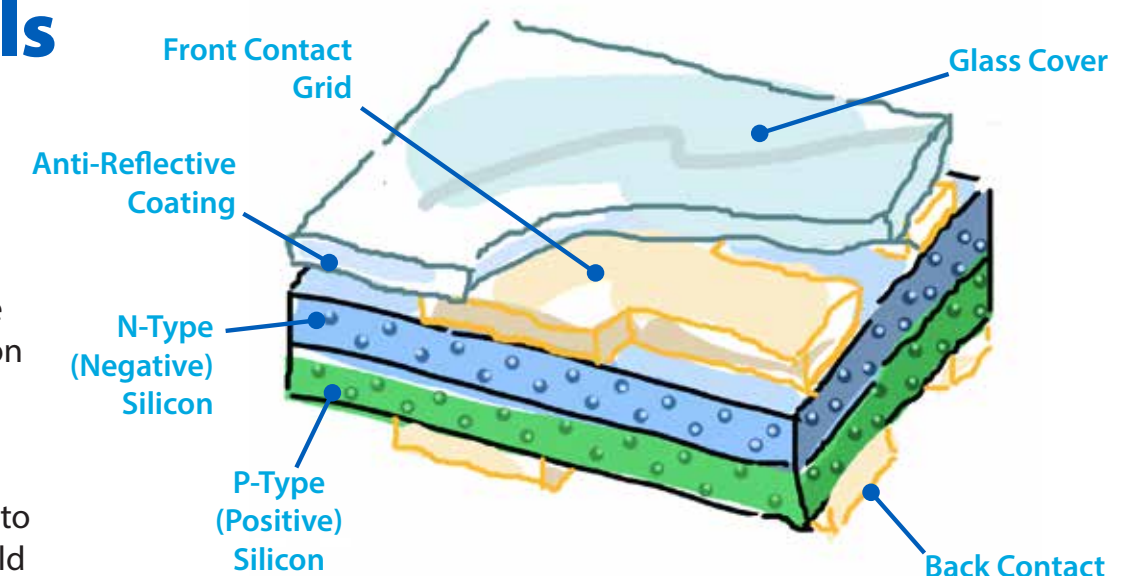
- Fossil fuels are simply a form of stored solar energy through photosynthesis.
- Albert Einstein earned a Nobel Prize in physics for explaining photovoltaic effect (creation of electricity from the sun's rays).
- At any given time, the Earth receives 174 petawatts of energy from the sun. This is equivalent to 174 trillion kilowatts and is 6,000 times our worldwide energy usage.
- The largest solar electric plant in the world is located in Germany, who has half the solar resource of the United States.
- The total amount of fossil fuels used by humans since the beginning of civilization is equivalent to less than 30 days of sunshine.

Source: <http://www.solarteksystemsusa.com/10-fun-facts-about-solar.html>

How Solar Cells Work

The Solar Cell Sandwich

N-Type silicon has free electrons. P-type silicon has free holes – the absence of electrons. When N-Type and P-Type silicon come into contact, an electric field forms within the cell.



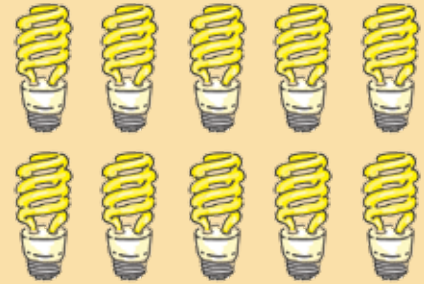
Solar Info to Know

The average Michigan household uses 7,200 kilowatt hours of electricity each year. Solar panels designed for homes have different wattage ratings ranging from 200-250 watts.

Using panels with a rating of 250 watts, how many solar panels would be required for the average home and your home to be completely powered by solar energy?

Question: What is a kilowatt hour?

Ten 100 watt bulbs = 1,000 watts or 1 kilowatt



Answer:

Running ten 100 watt bulbs for one hour equals 1 kilowatt hour

Calculate the number of panels needed by an average home

$$\frac{7,200 \text{ KWH}^*}{(1.2 \times 250) \text{ watt panels}} = \frac{\text{See answer at bottom of page}}{\text{panels needed}}$$

*average electricity used by Michigan resident

Calculate the Amount of Space Needed to Install 24 panels

$$(3.5 \times 5.5) \times 24 = \frac{\text{square feet}}{\text{space needed}}$$

average panel size panels

Most solar panels are about 3.5 feet wide by 5.5 feet tall. How much space will you need to install the number of panels needed to provide power to the home?

Calculate the number of panels needed at your home

$$\frac{\text{_____}}{(1.2 \times 250) \text{ watt panels}} = \frac{\text{_____}}{\text{panels needed}}$$

(*annual KWH at your home)

*ask your parents to help you find this on your energy bill

Calculate the Amount of Space Needed for Panels at Your Home

$$(3.5 \times 5.5) \times \frac{\text{_____}}{\text{panels needed (your home)}} = \frac{\text{_____}}{\text{space needed}} \text{ square feet}$$



Find more fun activities, games and more by visiting: www.ConsumersEnergy.com/kids