

# Energy Savers Activity Book

Part of the Southern California Regional Energy Network  
Energy Efficiency Kits for Kids



This activity book is a collaborative project developed by SoCalREN, ICF, and the National Energy Education Development (NEED) Project.



*The Southern California Regional Energy Network is administered by the County of Los Angeles and funded by California utility ratepayers under the auspices of the California Public Utilities Commission.*



# Hi, I'm Fuzzy. Nice to meet you!

Welcome to your very own **Energy Savers Activity Book**.  
I'm so excited to share what's inside, but first:

## What does it mean to save energy?

Every time you watch your favorite TV show, play a video game, or just turn on a light, you're using energy.

With this book and the products in your Energy Efficiency Kit for Kids, you can learn to use less electricity in every room of your home. That's saving energy.

Doing your part to stop wasting energy means helping protect the environment for future generations of kids like you.

## Make the switch.

Energy-smart items like LED bulbs and efficient-flow showerheads can help your family save energy. You'll get products like these in your Energy Efficiency Kit for Kids at school.

**Have fun! And thanks for doing your part to save energy.**

## Did you know?

Even when a device is turned off, it could still be using energy just by being plugged in. This is called phantom or vampire power, and it's a big cause of energy waste.

*Spooky!*

# Meet my friends!

My crew of energy monsters loooooove to save energy. Let me introduce you to a few of my friends who will help you become an energy saver too.



MAX



GINGER



SPIKE



LAVENDER



FRITO



SPECSTER



SCRAGGLES



BOB

There are so many ways to save energy in my house! Let's learn about how energy works, and then see where you can save energy at home too.



# What is energy?

Energy helps us do things. It gives us light. It warms our bodies and homes. It bakes pizza and keeps milk cold. It runs our TVs and our cars. It makes us grow, move, and think. **Energy** is the power to change things. It is the ability to do work.

## Energy Is Light

Light is a form of energy we use all the time. We use it so we can see. We get most of our light from the sun. Working during the day saves money because sunlight is free.

At night, we must make our own light. Usually, we use electricity to make light. Flashlights use electricity, too. This electricity comes from batteries.

## Energy Is Heat

We use energy to make heat. The food we eat keeps our bodies warm. Sometimes, when we run or work hard, we get really hot. In the winter, our jackets and blankets hold in our body heat.

We use the energy stored in plants and other things to make heat. We burn wood and natural gas to cook food and warm our homes. Factories burn fuel to make the products they sell. Power plants burn natural gas and coal to make electricity.

## Energy Makes Things Grow

All living things need energy to grow. Plants use light from the sun to grow. Plants change the energy from the sun into sugar and store it in their roots and leaves. This is called photosynthesis.

Animals can't change light energy into sugars. Animals, including people, eat plants and use the energy stored in them to grow. Animals can store the energy from plants in their bodies.



## Energy Makes Things Move

It takes energy to make things move. Cars and motorcycles run on the energy stored in gasoline. Many toys run on the energy stored in batteries. Sail boats are pushed by the energy in the wind.

After a long day, do you ever feel too tired to move? You've run out of energy. You need to eat some food to refuel.

## Energy Runs Machines

It takes energy to run our TVs, computers, and video games—energy in the form of electricity. We use electricity many times every day. It gives us light and heat, it makes things move, and it runs our toys, electronics, and microwaves. Imagine what your life would be like without electricity.

We make electricity by burning coal, oil, gas, and even trash. We make it from the energy that holds atoms together—atoms are the building blocks of the universe. We make it with energy from the sun, the wind, and falling water. Sometimes, we use heat from inside the earth to make electricity.

## Energy Doesn't Disappear

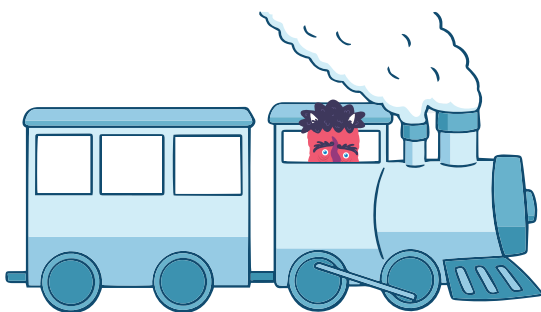
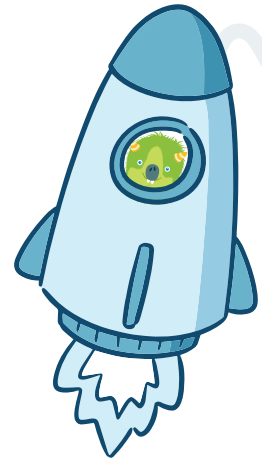
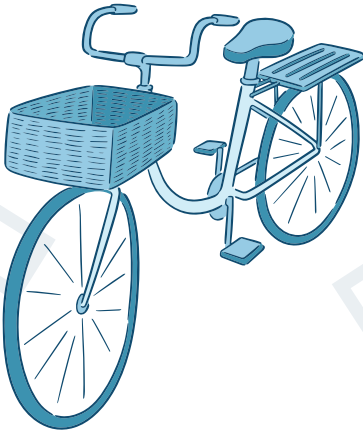
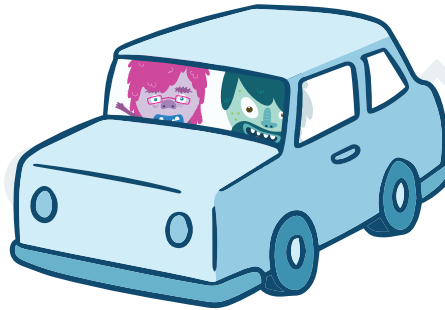
When we use energy, we don't use it up completely; we change it into other forms of energy. When we burn wood, we change its energy into heat and light. When we drive a car, we change the energy in the gasoline into heat and motion.

There will always be the same amount of energy in the world, but more and more of it will be changed into heat. Most of that heat will go into the air. It will still be there, but it will be hard to use.

# Energy Activity: Motion



We are on a monster mission to save energy. Circle all the objects that move with people power instead of with fuel.



Answer key: The skateboard, roller skate, bicycle, and row boat are fueled by people power.

# 10 Energy Sources Use Two Types of Fuel

## Renewable

Fuels that can be easily made or replenished; we can never use up renewable fuels.

## Nonrenewable

Fuels that cannot be easily made or replenished; we can use up nonrenewable fuels.



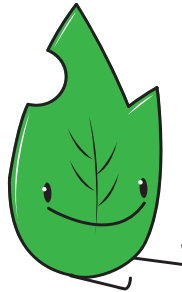
**Can you figure out which sources are renewable or nonrenewable?**

Read about the energy sources below. Circle the five that are renewable.



### WIND

Wind is moving air. We can use the energy in wind to do work.



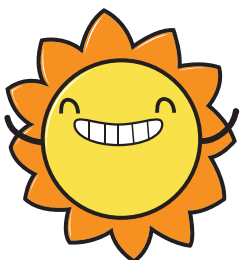
### BIOMASS

Anything that is alive, or anything that was alive a short time ago, is called biomass. Trees, crops, garbage, and animal waste are all biomass. Most of the biomass we use for energy today is wood.



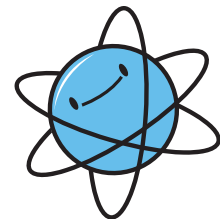
### COAL

Coal was formed millions to hundreds of millions of years ago from plants. Coal is often shiny, black rock. Coal is a fossil fuel\* that we burn for energy.



### SOLAR

The sun provides lots of energy to Earth. We call it solar energy. It travels from the sun to Earth in rays. The energy from the sun makes rain fall, wind blow, and plants grow.



### URANIUM

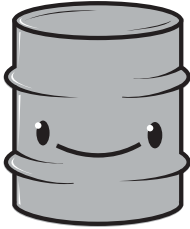
Uranium is a mineral found in rocks in the ground. We split uranium atoms to release energy in nuclear power plants.





### GEOTHERMAL

Geothermal energy is heat from inside the earth. The inside of the earth is very hot. Sometimes this heat comes near the surface. We can use this heat to warm our homes. We can generate electricity with it.



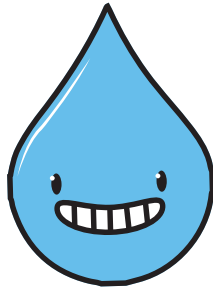
### PETROLEUM

Petroleum is a liquid that is found underground. Sometimes, we call it oil. Oil can be as thick and black as tar or as thin as water. Petroleum is a fossil fuel\* that releases a lot of energy when we burn it.



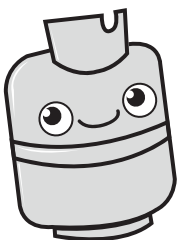
### NATURAL GAS

Natural gas is a mixture of gases you can't see, smell, or taste. We often add an odor to it so we can smell it. It has a lot of energy in it. You can burn it to make heat. Natural gas is a fossil fuel.\*



### HYDROPOWER

Hydropower is energy created by moving water. Moving water has a lot of energy. We use that energy to generate electricity.



### PROPANE

Propane is the gas we use to fuel our backyard grills and operate machines in warehouses. You cannot see it, smell it, or taste it, but you can burn it to produce heat energy. Propane is a fossil fuel.\*

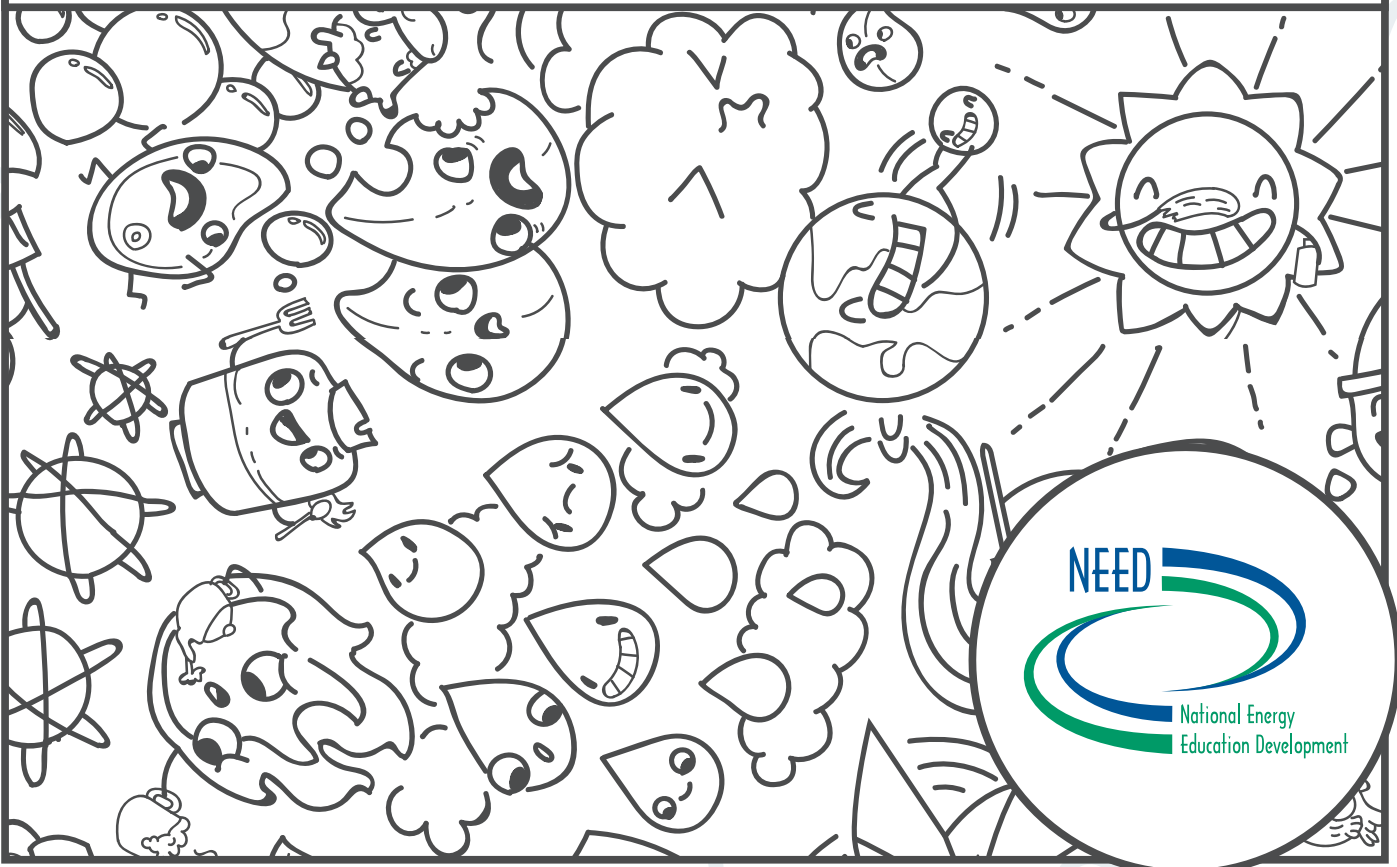


### \*Fossil Fuel:

Formed millions to hundreds of millions of years ago from the remains of living organisms. The plants and animals received their energy when they were alive from the sun. It was stored in them when they died.



# COLOR SOME ENERGY!



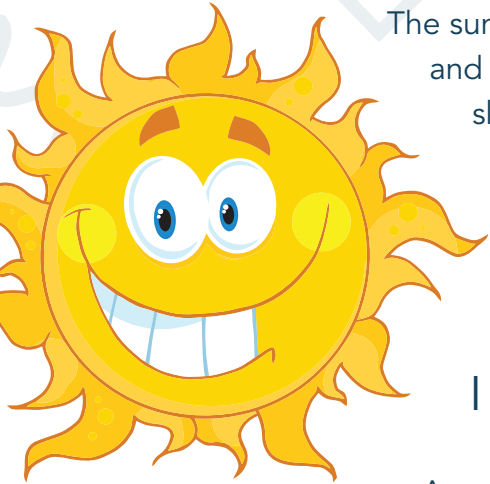


# The Tale of Annie Soakley



I'm Annie Soakley. I am a world traveler. Let me tell you about my last trip.

It began in the Pacific Ocean. I was floating in the waves with my friends. We were bobbing up and down, watching the sun rise over the mountains. What a beautiful sight!

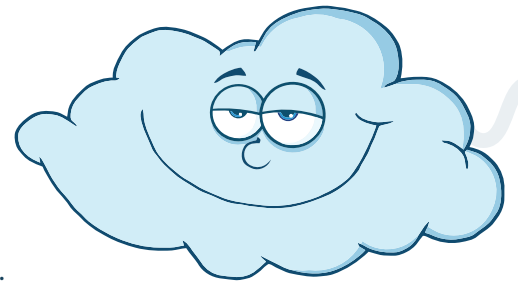


The sun climbed higher in the sky. I began to get warm. I got warmer and warmer. Suddenly, I rose out of the water. I floated toward the sky. I grew bigger. My molecules got farther and farther apart. I expanded.

I didn't look like a drop of water anymore. I was invisible. I had turned into water vapor.

I had evaporated!

As evaporation, I rose high into the sky. Many of my friends came with me. They had evaporated, too. Together, we formed clouds.



The wind pushed us through the sky. We sailed over the ocean toward land. The people on the beach were sad to see us. We blocked the sun.



We passed over them and headed for the mountains. The wind kept pushing us. We reached the mountains as the sun set. The air over the mountains was cold. It made me cold. As I cooled, I grew smaller. My molecules got closer together. I turned into a drop of water again.

I condensed.

I was too heavy for the cloud to hold me. I began falling toward the earth. I was a rain drop! My friends condensed, too. The weather person on TV called us **precipitation**, which is water falling to the earth.



Gravity was pulling us down. Soon, other drops of water joined us and we turned into a small creek.

As we flowed down the mountain, more creeks joined us and we grew. We turned into a roaring river.



We were moving very fast. We had a lot of **energy**.

Suddenly, we found ourselves in a long tunnel. A machine called a turbine was at the end of the tunnel. We rushed through the turbine, making it spin. The turbine used our energy to make electricity.

We flowed back into the river. The river made its way through farms and towns until it reached the ocean. I floated out into the waves, glad to be home again. It had been an exciting trip through the **water cycle**.



# Energy Activity:

## Energy at Home



Saving energy is good for the earth—plus, it helps save money on your electric bills. The more you know about how you use energy at home, the more you can save! Take this short quiz to discover your inner energy-saving monster.



Circle the correct answer for each question. To learn more, draw a line from the question to the correct answer on the next page...

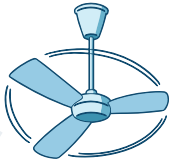


- 1. True or False: LED bulbs last at least 15 times longer than traditional lightbulbs.**

True False

- 2. What percentage of energy used by traditional, incandescent lightbulbs results in light?**

100% 50% 25% 10%

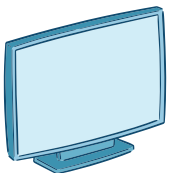


- 3. True or False: Ceiling fans lower the temperature in a room.**

True False

- 4. True or False: Making sure all doors are closed to the outside is a good way to save energy.**

True False



- 5. True or False: Electronic devices like TVs and video game consoles use energy even when shut off.**

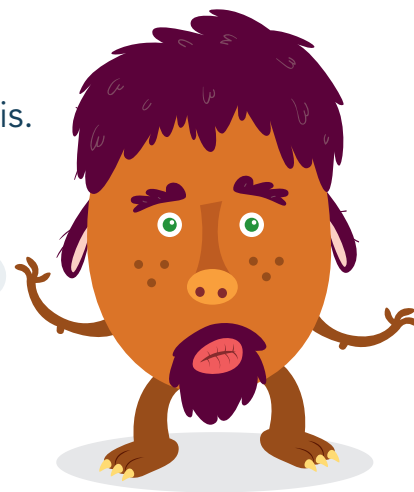
True False

- 6. How many gallons of water can a family of four save each year, if everyone shuts off the faucet when brushing their teeth?**

3,000 gallons 7,500 gallons 11,000 gallons 15,000 gallons



like this.



**True.** If you're keeping all doors closed to the outside, you're preventing outdoor air from circulating within your home. However, if you're closing doors within your home, you're disrupting the air flow and making your heating and cooling system work harder.

**True.** Your electronic devices can still use energy if they're plugged into an outlet. You can save energy (and money) by connecting your devices to a smart power strip and turning it off when you're not using them.

**True.** Traditional incandescent bulbs last about 1,200 hours; LEDs have a lifespan of around 18,000 hours!

**10%.** Only 10% of the energy used by a traditional incandescent bulb results in light. The other 90% comes off as heat! That's why it is important to turn off the lights any time you leave a room.

**False.** Ceiling fans circulate air and can create a wind-like effect, but they don't actually change a room's temperature. If you're keeping ceiling fans on when you're not in a room, you're just wasting energy and money!

**11,000 gallons.** A family of four can save up to 11,000 gallons of water each year just by shutting off the faucet when brushing their teeth. When you leave the water on, you waste an average of four gallons—roughly the weight of a video game console!

### Did you know?

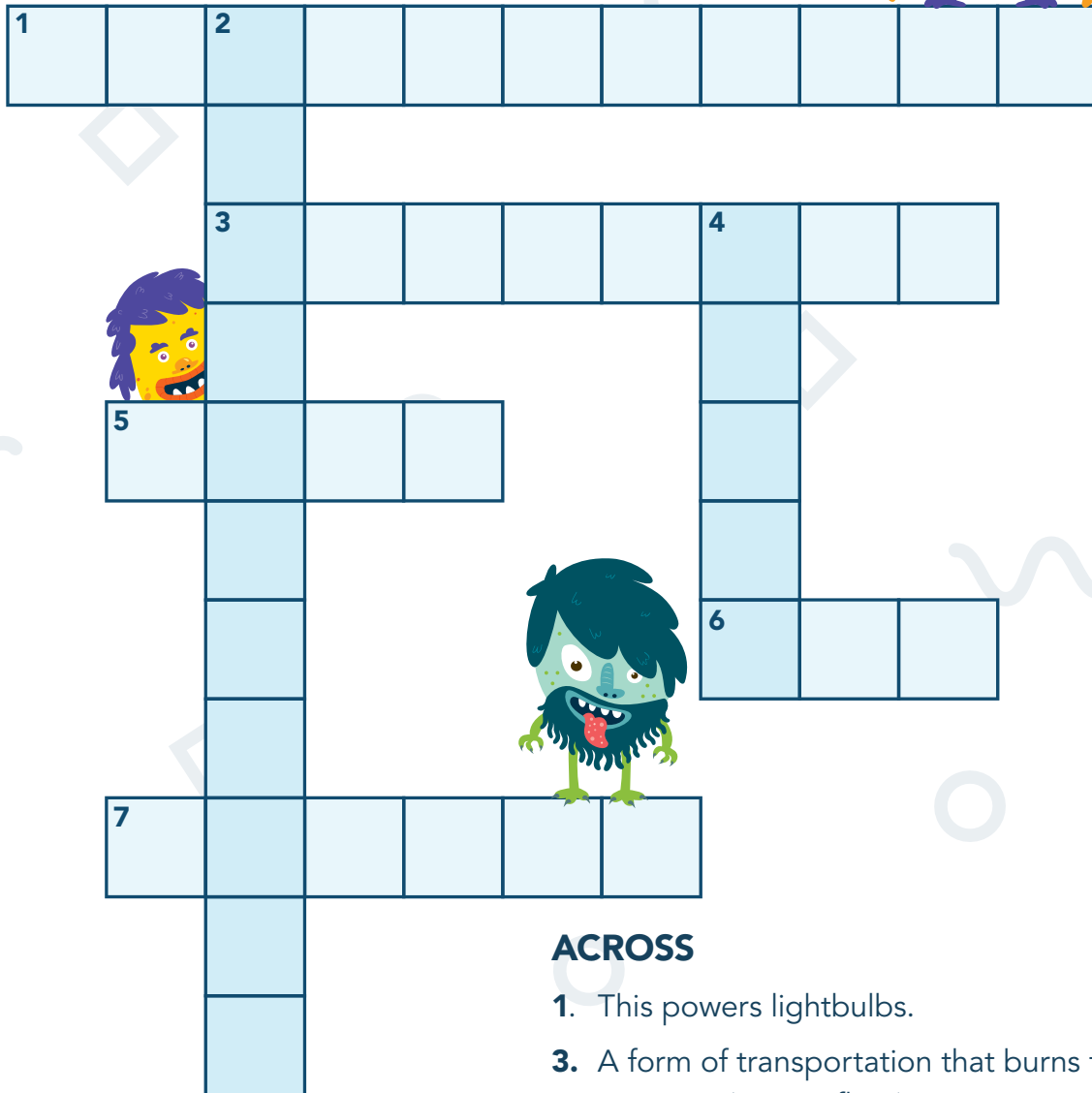
If you have ENERGY STAR® appliances in your home, you're already saving energy!



# Energy Activity: Crossword Puzzle



Use the clues below to fill in the crossword puzzle with the correct words.



## DOWN

2. The process of a drop of water becoming invisible.
4. These are the building blocks of the universe.

## ACROSS

1. This powers lightbulbs.
3. A form of transportation that burns fuel to move. (Hint: It flies.)
5. In the United States, ethanol is made from what plant?
6. Without this, it would be too cold to live on Earth.
7. Turn these off when you leave a room.



# Energy Activity: Explore Your Home Energy Usage

Taking a shower, watching TV, and doing dishes are a few ways we use energy at home each day.



Answer the questions below to learn more about the ways your home uses energy.



1. How many people live in your home? \_\_\_\_\_
2. Count all the lightbulbs in the bathroom(s). How many lightbulbs are there? \_\_\_\_\_
3. Count the lightbulbs in all the bedrooms, including the closets. How many lightbulbs are there? \_\_\_\_\_
4. Count the lightbulbs in the kitchen and dining room. How many lightbulbs are there? \_\_\_\_\_
5. Count the lightbulbs in the rest of your home—family room, hallway(s), utility/laundry room, office, TV room, etc. How many lightbulbs are there? \_\_\_\_\_
6. Count the lightbulbs on the outside of your home. How many lightbulbs are there? \_\_\_\_\_
7. Add lines 1–6. How many lightbulbs do you have in your entire home? \_\_\_\_\_
8. If each person in your home was using a light in a different room for four hours at a time, how many hours a day are being used in total?  
Hint: For three people in your home using three different lights (3 people x 4 hours = 12 hours a day). \_\_\_\_\_
9. Use all the hours from question 8. If it costs two cents (\$0.02) of electricity per hour, how much does it cost in total? Hint: 12 hours x \$0.02 = \$0.24. \_\_\_\_\_
10. An average shower uses 17 gallons of water and an average bath uses 30 gallons of water.
  - How many people in your home take a shower? \_\_\_\_\_
  - How many people in your home take a bath? \_\_\_\_\_
  - Add the first two lines together. How many gallons of water does your household use each day for bathing? \_\_\_\_\_

# Saving Energy

Most of the energy we use today comes from coal, oil, and natural gas. They are fossil fuels. They take millions or even hundreds of millions of years to form. We can't quickly make more. They are **nonrenewable**. We need to save energy whenever we can. You can help!

## Save Electricity

You use a lot of electricity every day. Use only what you need. Don't turn on two lights if you only need one. Remember to turn off the lights when you leave a room. Turn off the TV and video games, too. Unplug devices you aren't using. On a sunny day, read by a window.

Keep the refrigerator door closed. Know what you want before you open the door. If you're pouring a drink, don't leave the door open. It takes a lot of energy to cool things.

If the air conditioner is on, keep doors and windows closed. Don't go in and out, in and out. If you can, just use a fan and wear light clothes instead of using the air conditioner. These are simple ways to save energy.

## Save Gasoline

It takes a lot of energy to operate a car. Walk or ride your bike wherever you can. If you and some of your friends are going to the same place, go together or carpool. Take the bus instead of asking for a ride to school.

## Save Heat

It takes a lot of energy to heat houses and water. If the heat is on, keep doors and windows closed. Wear warm clothes instead of turning up the heat. At night, use blankets to stay warm.

When you take a bath, use only the water you need. Don't stand in the shower for a long time. Heating water uses energy.

## You Can Make a Difference

The things you do every day make a difference. If everyone saves just a little energy, it adds up to a lot. When you save energy, you save money, too. You have more money to spend on other things.

Saving energy also helps protect the environment.



# Be an energy saver!



**Congratulations!** You're on your way to becoming an energy saver just like me.

Make a pledge to save energy by listing 10 things you can do to save. (We've even given you a head start!) Don't forget to share what you have learned with all your family and friends.

1. Have an adult help me install the energy-smart items in my Energy Efficiency Kit for Kids.

2.

3.

4.

5.

6.

7.

8.

9.

10.





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