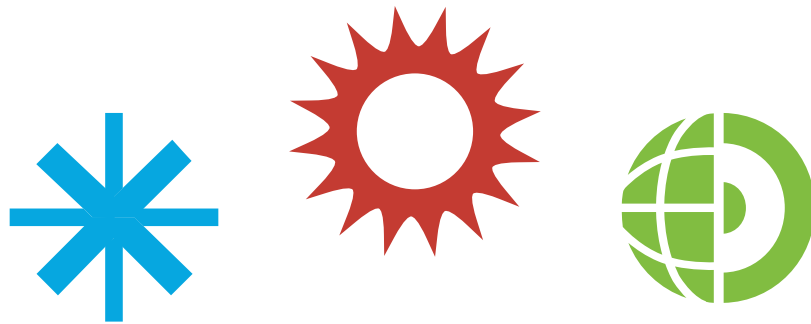
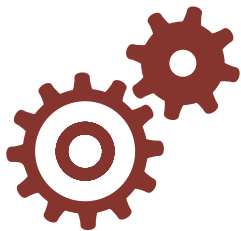
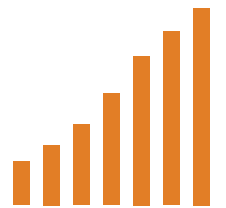


POWER UP!



Energy
is All
Around
Us



Coloring and Activity Book

Welcome to the National Renewable Energy Laboratory (NREL) and the Department of Energy's Golden Field Office (DOE-GFO). NREL researches renewable energy and energy efficiency. The Golden Field Office supports NREL's work in many different ways. NREL and the DOE-GFO work together to make sure that scientists and engineers can research cool new technologies to make or save energy!

What is a laboratory?

A laboratory is where scientists and engineers can do research safely. We have many different tools to help us do research and a lot of safety equipment to make sure no one gets hurt while they are doing their research.

Laboratories serve many purposes and are designed for different reasons. NREL is a national laboratory. Much like National Parks (Yellowstone, Rocky Mountain, etc.) the United States government maintains many national labs throughout our country. Thousands of scientists and engineers work for the Department of Energy studying all different areas of science. This helps our nation be a leader in the research and development of new technologies throughout the world!

Circle all the items you might find in a lab



Teddy Bear



Safety Goggles



Lab Notebook



Flask



Microscope



Chewing Gum



Scale



Soda Can

How do we use energy? We use energy for many things.

Transportation



Getting from one place to another

Electricity



For all our electronics and anything we need to plug in

Heat



To heat our homes and water for baths and cleaning

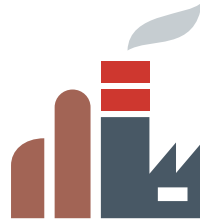
Where does our energy come from?

Our energy can come from many sources, but right now much of it comes from fossil fuels. These are all non-renewable sources. Once they are used they cannot be used again.

Gasoline from Oil



Electricity from Coal



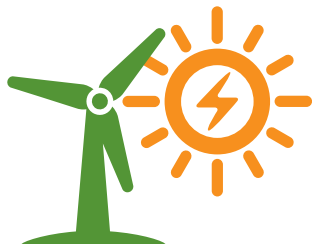
Heat from Natural Gas



At NREL, we are researching ways to harness renewable resources, like the sun, wind and plants (biomass).

We can get:

Electricity from Wind and Sun



Heat and Fuel from Biomass

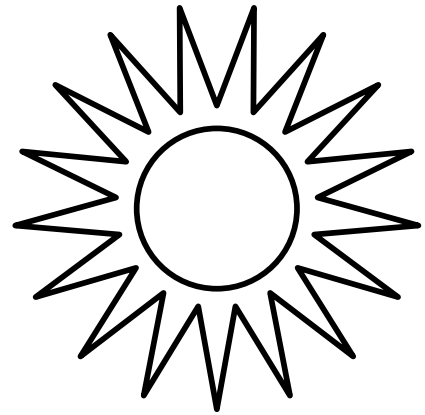


MATERIALS SCIENTIST

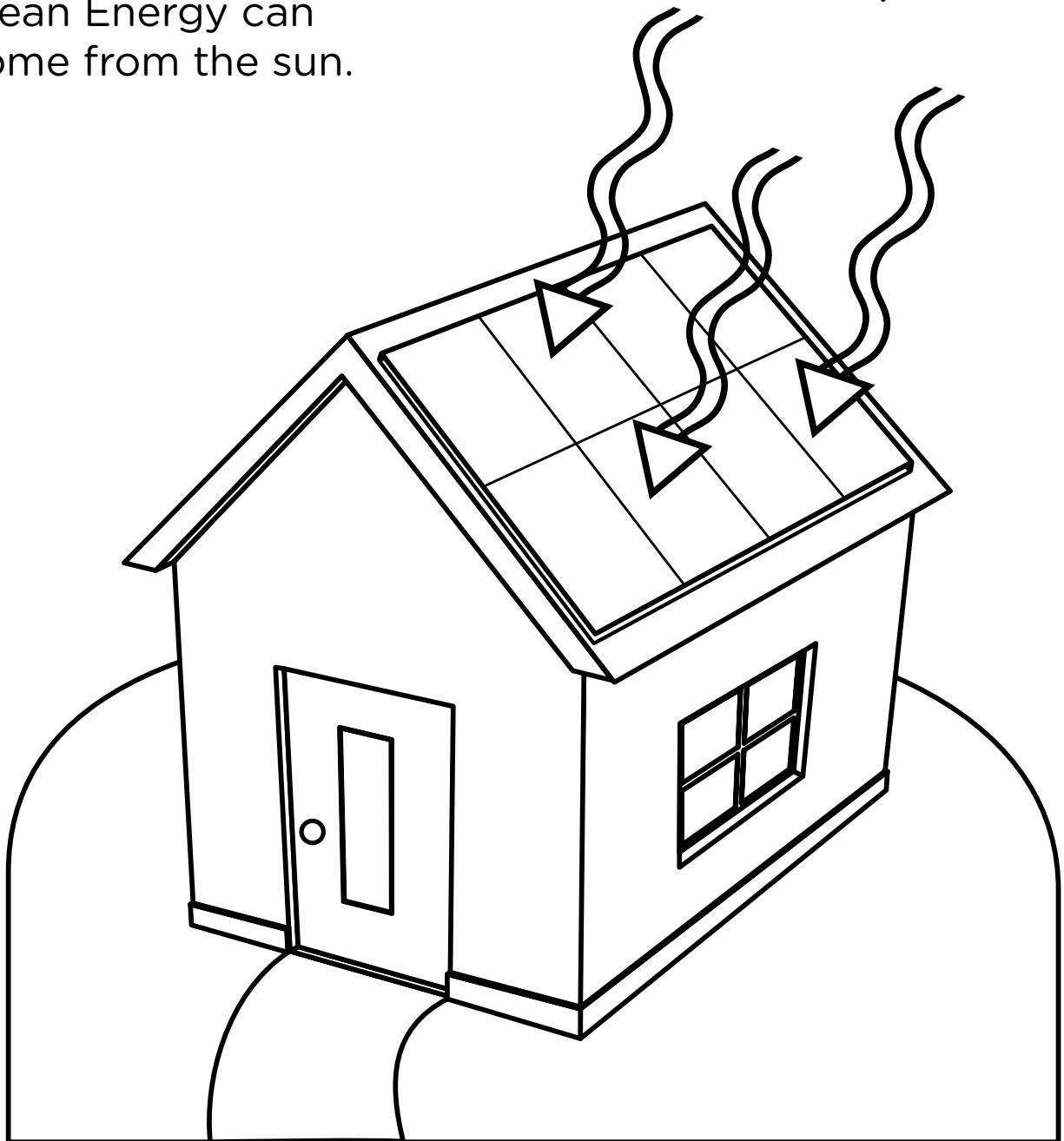
Laptop, phone, maybe even a car—batteries are everywhere! I'm a **materials scientist** finding new materials to store power from renewable energy.



SOLAR POWER

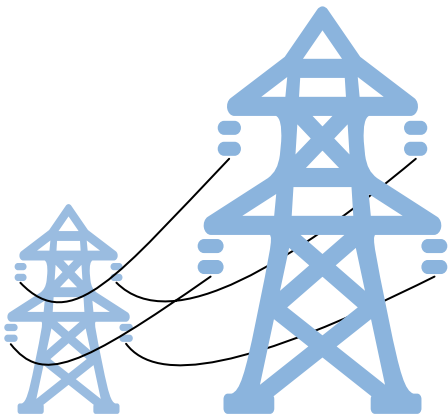
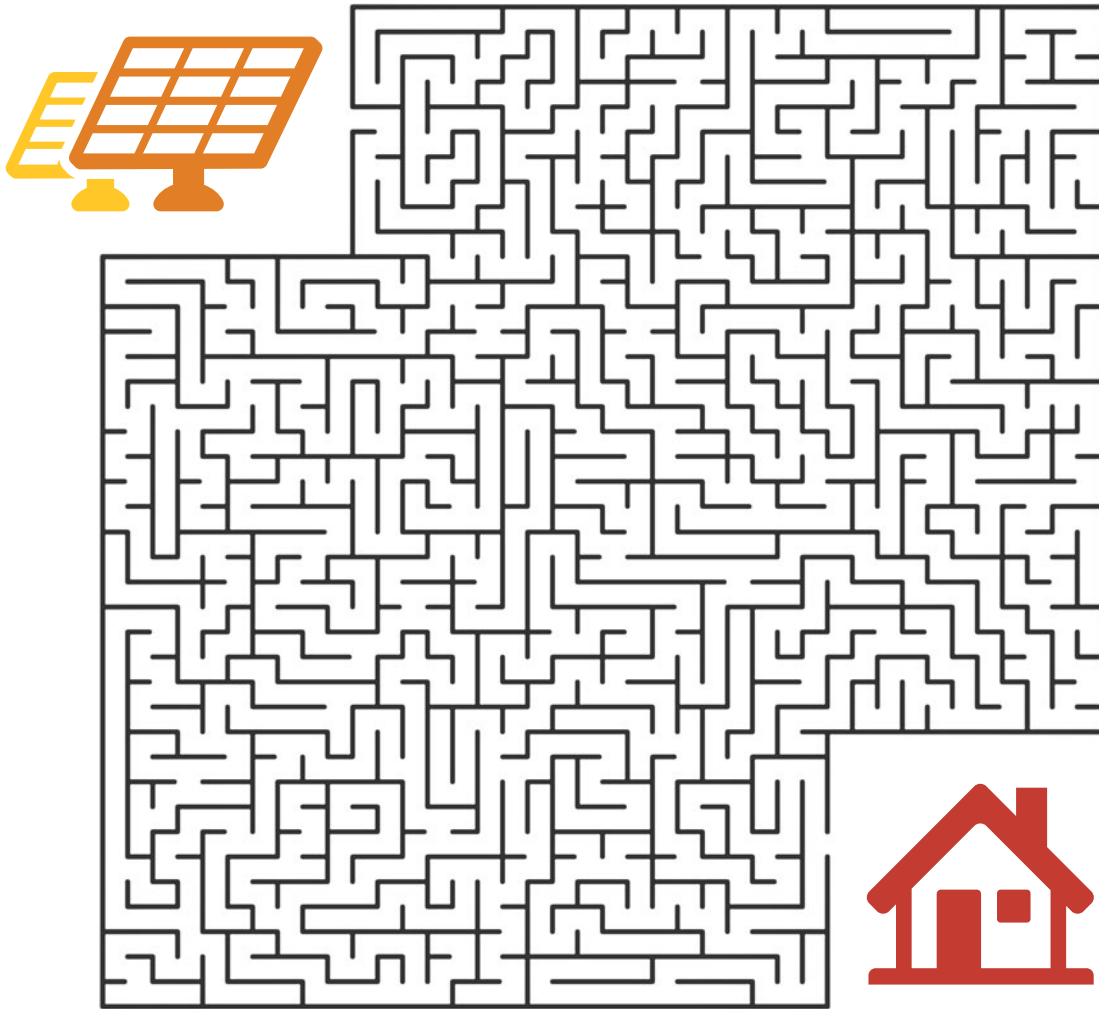


Clean Energy can
come from the sun.



Can you get the electricity from the solar panel to the house?

Start at the solar panel below and try to reach the house at the end of the maze.



The Grid

All homes and businesses and schools are connected by a large collection of wires. These wires form what is called our electric grid. Getting electricity from one place to another is kind of like solving a maze. There are places where you cannot put power lines; like mountains or lakes. Whenever new solar panels or wind turbines are built we need to make sure everything is connected and power is available.

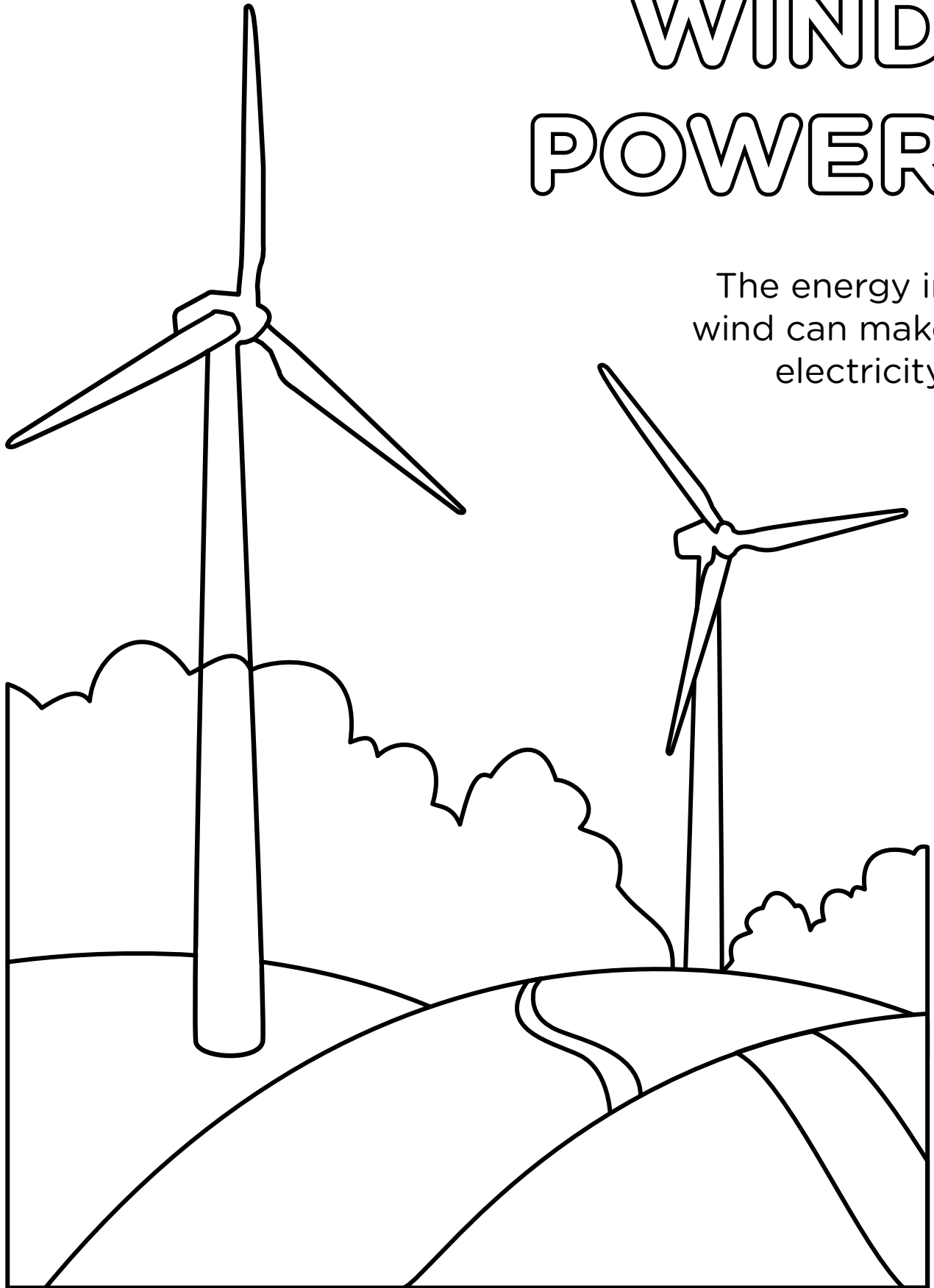
MECHANICAL ENGINEER



Think about all the different buildings you visit or live in like your house, school, and movie theater. All of those places must be heated and cooled. As a **mechanical engineer**, I'm trying to make that heating and cooling as energy efficient as possible.

WIND POWER

The energy in
wind can make
electricity.



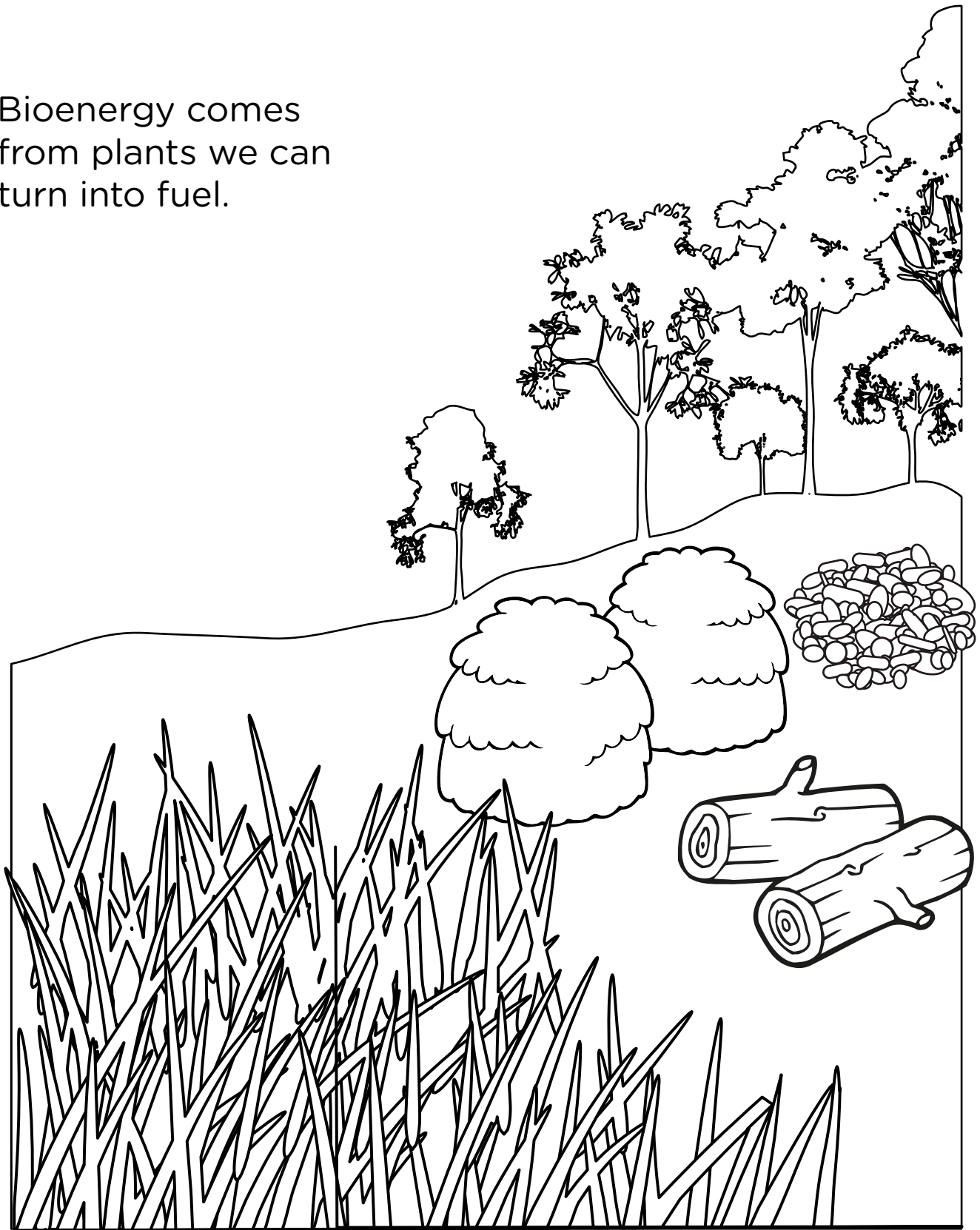
ATMOSPHERIC SCIENTIST

I'm an **atmospheric scientist**. That means I study wind and weather patterns and make predictions. This helps us figure out the best place for wind turbines.



BIOENERGY

Bioenergy comes from plants we can turn into fuel.



BIOCHEMIST



Hi, I'm a **biochemist**.
That means I study what happens inside living things. Here at NREL that could mean looking at really small things like algae and bacteria.

What is energy efficiency?

Energy efficiency means getting the same service using less energy. For example, going the same number of miles in a car using less gasoline. Gasoline is the energy source and the service is travelling in your car.

Why is energy efficiency important?

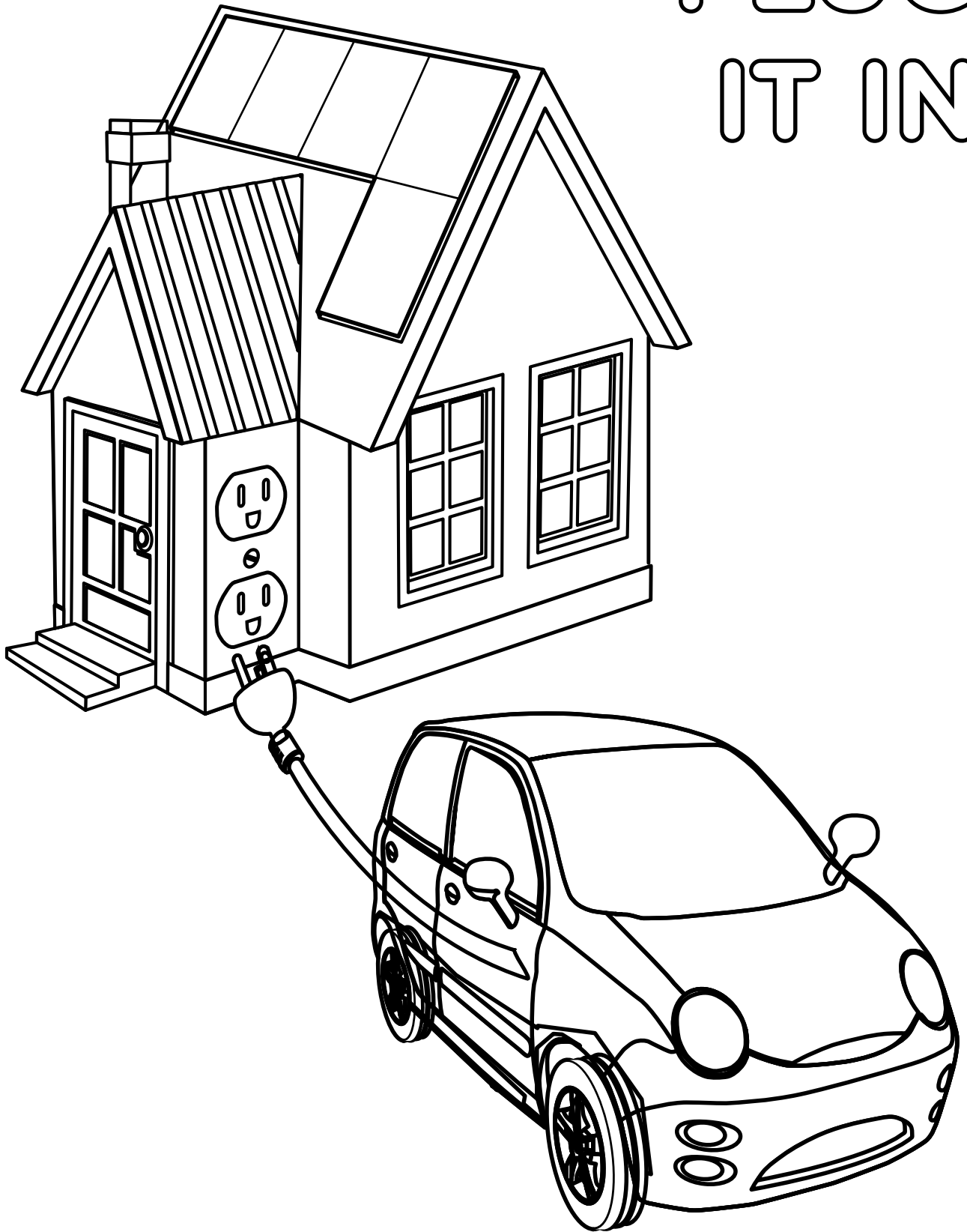
What is easier? Building a wind turbine or turning off a light? Turning off lights, of course! It is always easier to use less energy than to produce more energy.

What are some ways you can save energy? Turn off lights? Walk or bike instead of drive? What else could you do to save energy?

There are many ways to save energy and be more efficient. You can turn down your thermostat and turn off lights when you leave the room. Your parents can replace old appliances, like refrigerators, with a new ones that uses less energy. You can take a shorter shower, this helps by burning less natural gas for hot water. So flip the switch and help NREL by being more energy efficient!

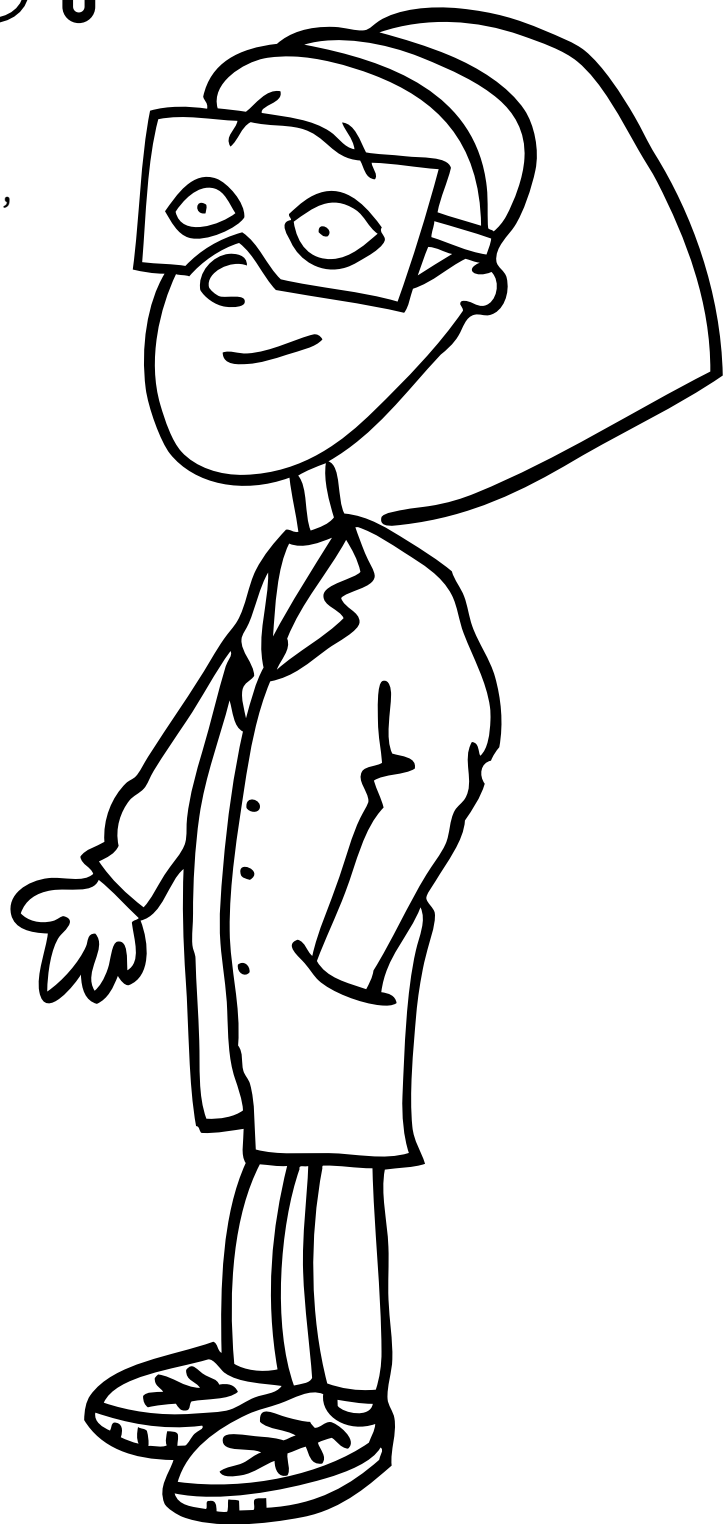
Draw your ideas to save energy!

PLUG
IT IN

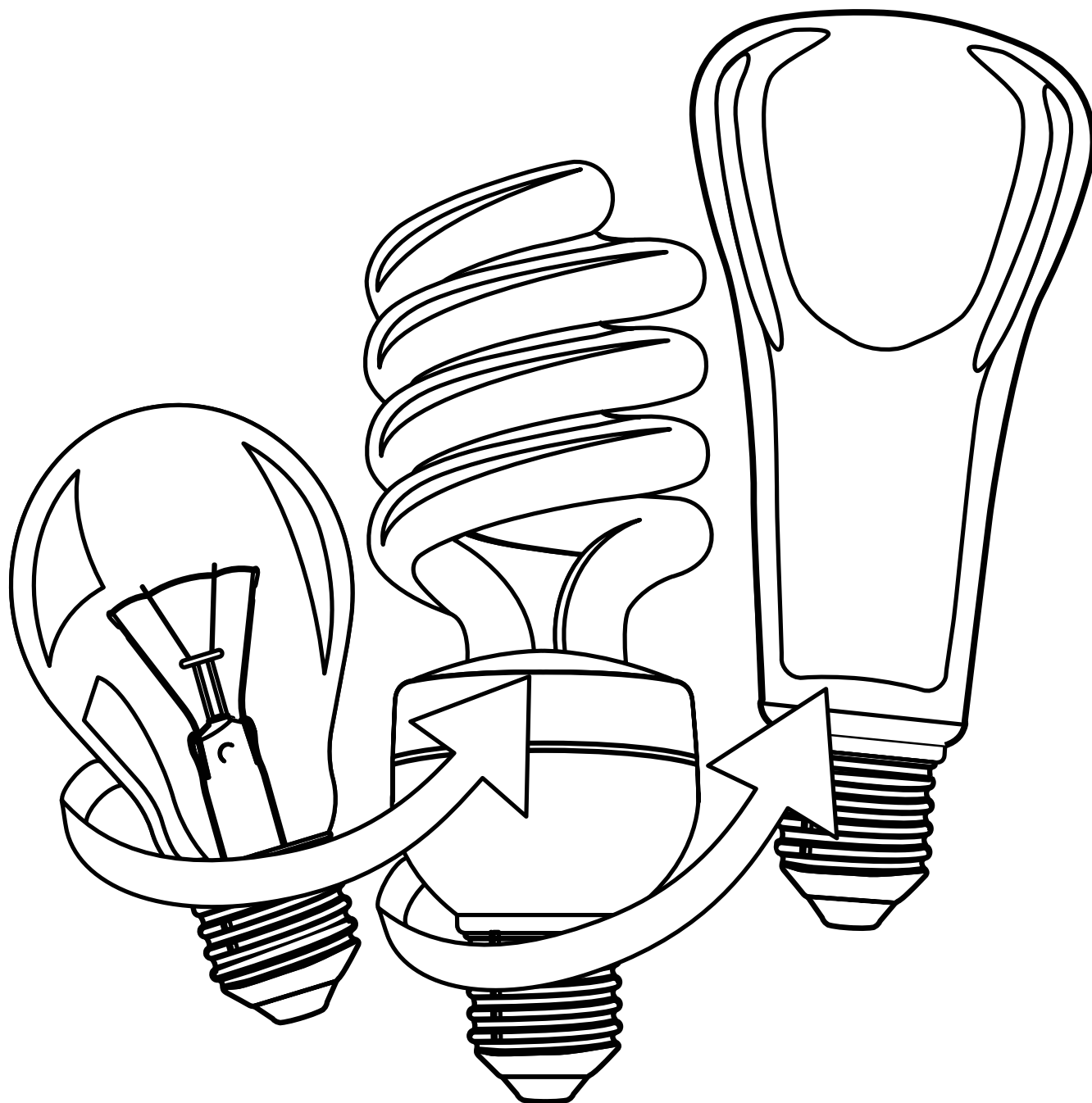


RESEARCH ANALYST

It takes a lot of planning, preparation and having policies in place to support renewable energy projects. As a **research analyst**, my research helps people make important decisions about how to plan and where to put renewable energy projects.



MAKE THE SWITCH



ELECTRICAL ENGINEER

See all those items that need electricity? I'm an **electrical engineer** discovering different ways we can use less electricity in our homes.



Circle all the ways you can save energy



Turn off the lights.



Be kind to your teacher.



Turn off your television.



Close the door when you come in the house.



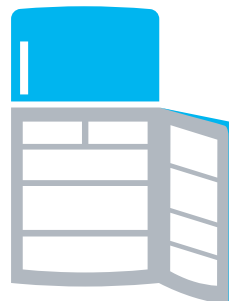
Walk instead of drive.



Turn off your game system.

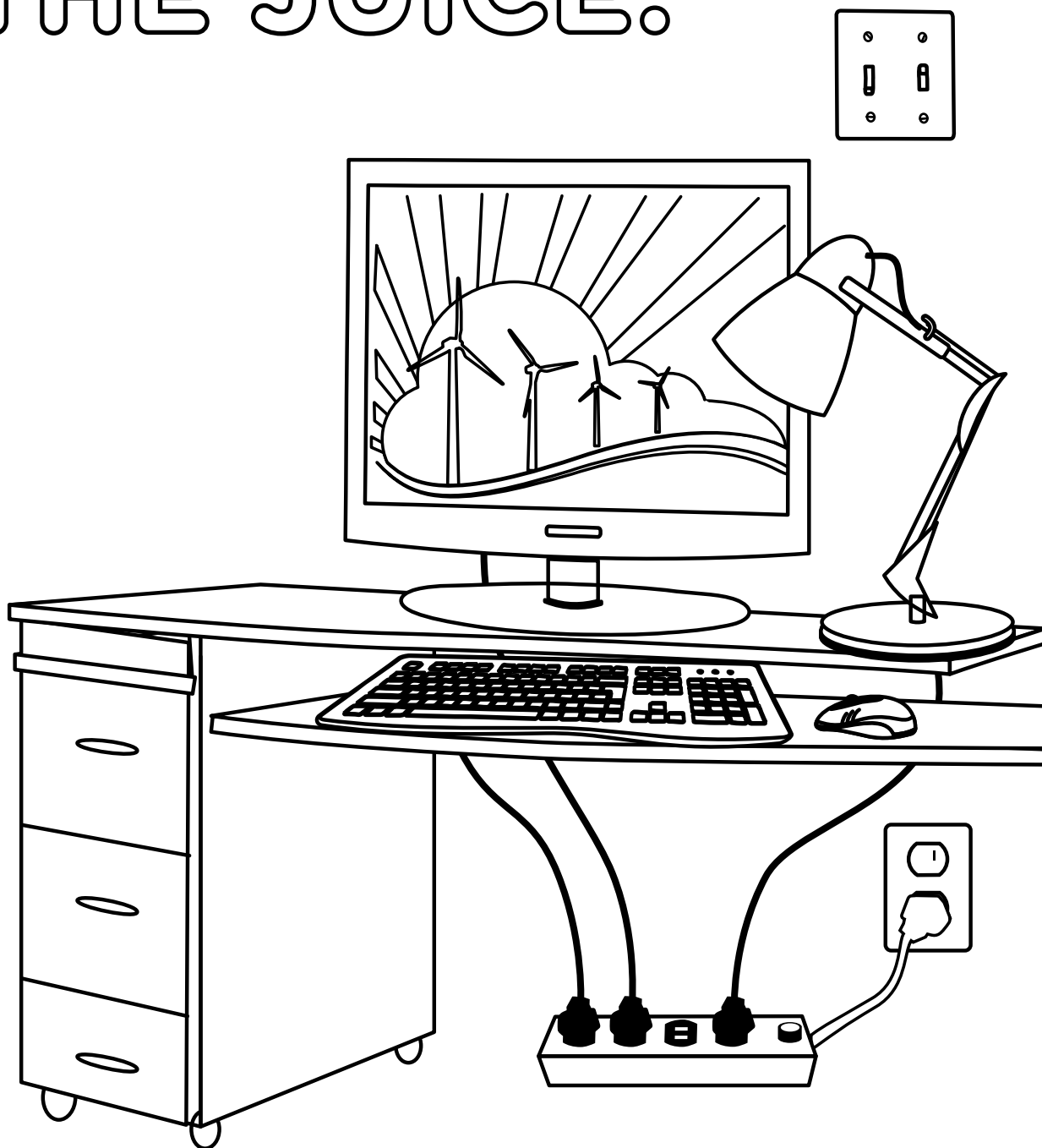


Eat more vegetables.



Close the refrigerator door

NOT IN USE?
TURN OFF
THE JUICE.



Renewable Energy and Energy Efficiency Word Search

Find all of the listed words in the puzzle below. All the words are related to renewable energy and energy efficiency research.

E N A C K R I H C L S G X R V S W C S V
 X L U U L L J Y A P G A S D R D N E J K
 T E B C T E M B U R N I O T O H I E Z Z
 Y R M A E H O T G A I Q U U Z R M N Y Q
 H D A J W R T Z B L D S C I E N T I S T
 W S D N A E V V E O L B L T L V H P I B
 N G B T S Z N N I S I H T Q E K S I J D
 B A O Y X P G E S C U A Q O C T F H Q O
 C R T H G I O J R P B H A W T P F Y V R
 Y O G I N R F R O D E X H V R W R D Q Z
 X D W E O T E M T X E H T Y I Q G R D J
 D R E A C N W N A A W F S F C I E O H J
 G R I D O P A V E D T M E B I R M G A H
 S S A M O I B L N S J I N O T H Z E X E
 H L D Q L M V I P X L G O H Y Z A N D D
 M W Z R S R W I U I K T W N Z V N S M J
 Z G D Y Y S G J L A B W M N S S S T R K
 G O F V Y S J W W H W Z Z S O L D U Z N
 L A M R E H T O E G F E E W O C T N V A
 F S S Z O H K W C C W E O V N U I B J C

BATTERIES
 BIOMASS
 BUILDINGS
 ELECTRICITY
 ENERGY
 ENGINEER
 GEOTHERMAL
 GRID
 HYDROGEN
 LABORATORY
 NATIONAL
 RENEWABLE
 SCIENTIST
 SOLAR
 TRANSPORTATION
 WIND

Scientists, mathematicians, engineers and other people that work in science are found all over the world! They can be short or tall, big or small. Here are two different scientists.

Can you draw yourself as a scientist?



**Check out these cool websites
to learn more about clean energy!**

**U.S. Department of Energy
Office of Energy Efficiency and Renewable Energy
www.energy.gov/kids/**

**Energy Information Administration
www.eia.gov/kids/**

**Energy Star Kids
www.energystar.gov/kids**

**Energy Education Activities
www.eere.energy.gov/education/lessonplans/**

ENERGY

Office of **ENERGY EFFICIENCY
& RENEWABLE ENERGY**



NREL is a national laboratory of the U.S. Department of Energy, Office of Energy Efficiency and Renewable Energy, operated by the Alliance for Sustainable Energy, LLC.

National Renewable Energy Laboratory
15013 Denver West Parkway
Golden, CO 80401
303-275-3000 • www.nrel.gov