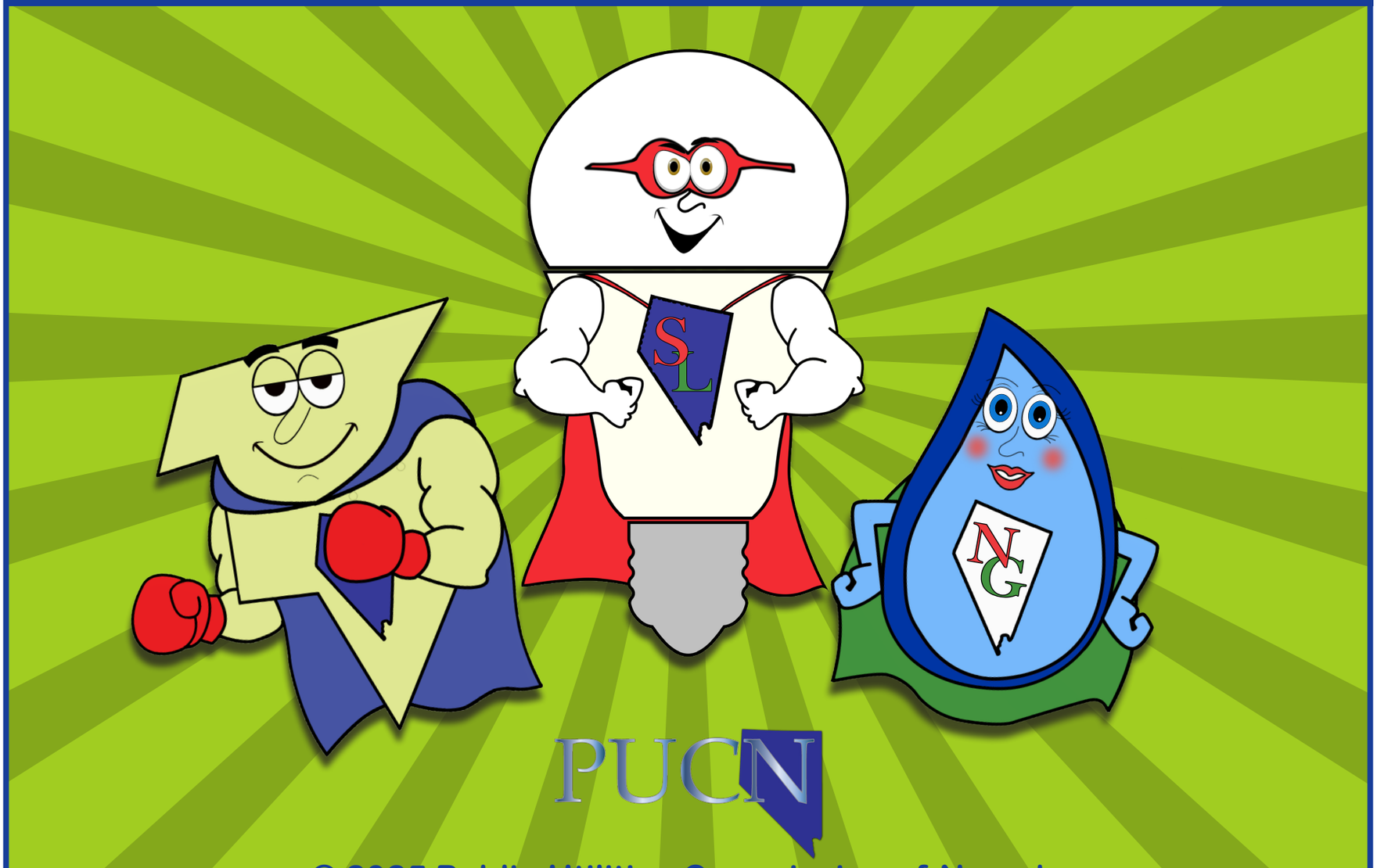
Energy Efficiency Team

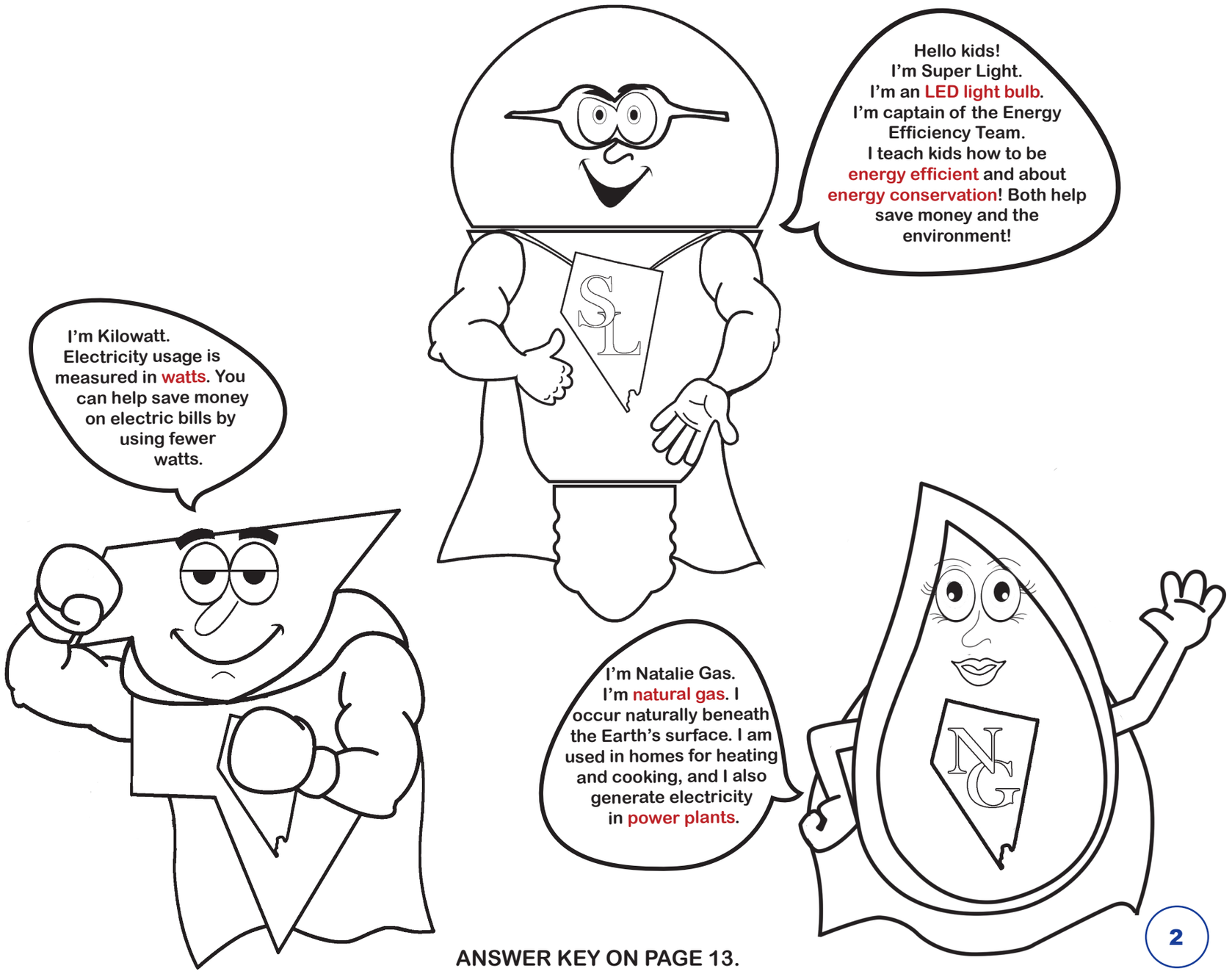
Activity Book



puc.nv.gov

ENERGY EFFICIENCY TEAM COLORING PAGE

The Energy Efficiency Team will teach you how to be energy efficient and conserve energy. If a word is highlighted in red, you will find a definition for the word in the glossary on page 14. When you complete all of the activities in this book, you will earn a certificate to be a member of the Energy Efficiency Team. Get started now by coloring the members of the Energy Efficiency Team below.



ANSWER KEY ON PAGE 13.

SUPER LIGHT SECRET MESSAGE

Families in Southern Nevada spend about $172 each month on electricity. In Northern Nevada, families spend about $114 each month on electricity. We use electricity for a lot of things, like heaters and air conditioners, hot water, lights, washing and drying clothes, refrigerators, TVs, game players, and computers.

Kids can help their parents save money on electric bills by turning off the lights, TVs, computers and game players when done using them.

Decode Super Light's secret message below to begin being energy smart!

A	B	C	D	E	F	G	H	I	J	K	L	M
												

N	O	P	Q	R	S	T	U	V	W	X	Y	Z
												

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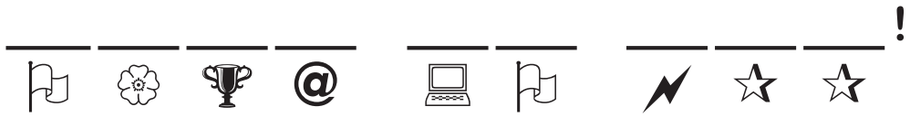
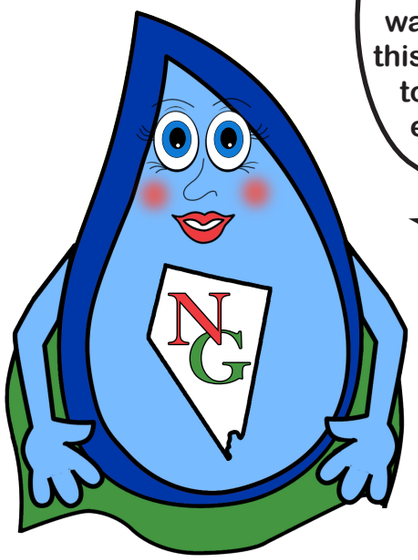
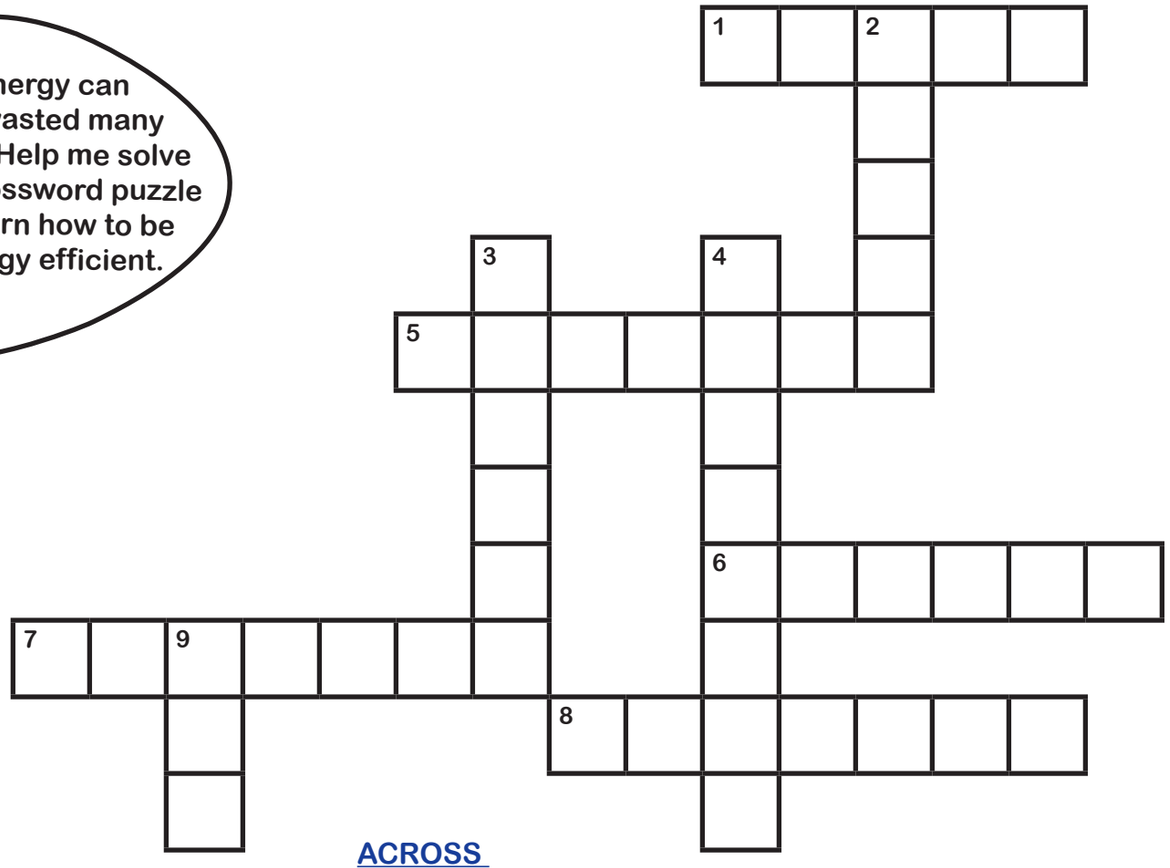


FUN FACT: A typical American home has about 50 light bulb sockets. How many are in your home?

ENERGY SAVING CROSSWORD PUZZLE



Energy can be wasted many ways. Help me solve this crossword puzzle to learn how to be energy efficient.



DOWN

2. Keep _____ that open to the outside closed when the heat or air conditioning is on.
3. Always turn off the _____ when you leave a room.
4. Turn off your _____ when you're done using it.
9. Turn _____ the TV when you're done watching it.

ACROSS

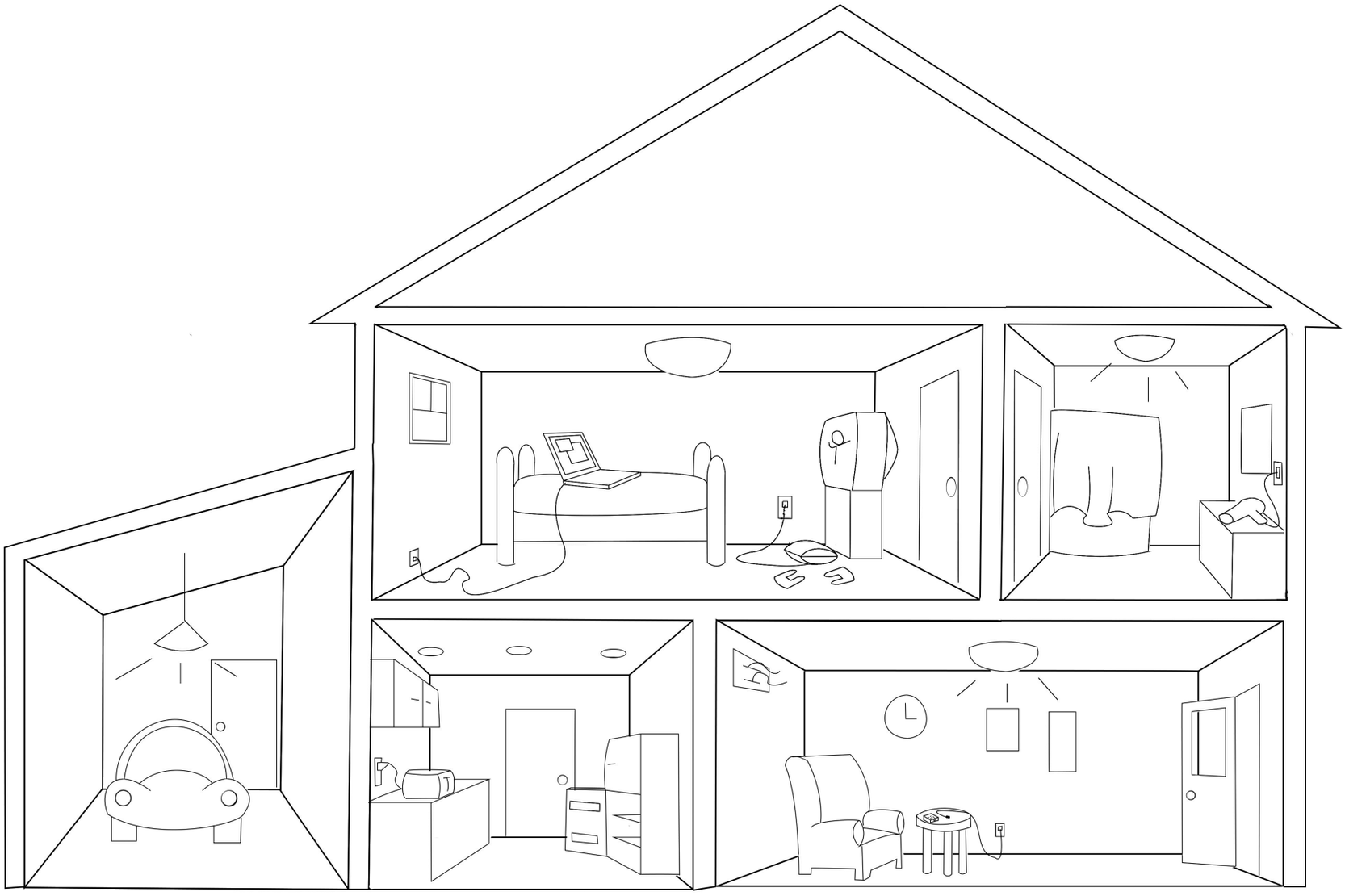
1. Turn off your _____ games when you're done playing.
5. Keep _____ closed when the heat or air conditioning is on.
6. _____ your cell phone charger when you're not using it.
7. Take short _____ instead of baths.
8. Know what you want to eat before _____ the refrigerator door and letting cold air escape.

FUN FACT: Nevada is 2nd only to California in the generation of electricity from geothermal energy, but most of the electricity we use in Nevada is generated from burning natural gas in a power plant.

ENERGY WASTE COLORING PAGE

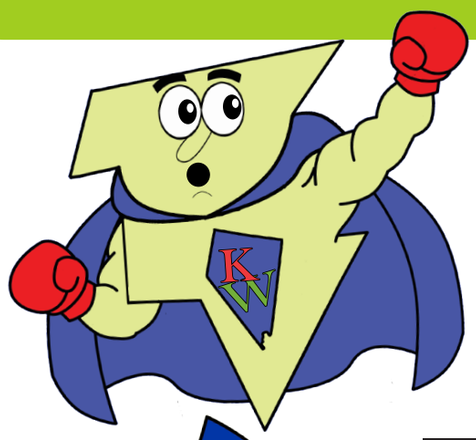
Circle examples of energy being wasted in this house.

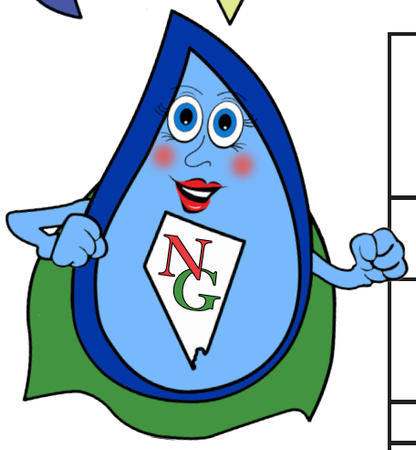
You should have 8 circles when you're finished.

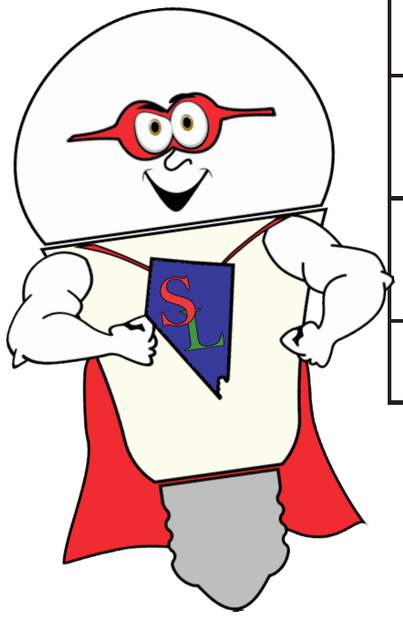


FUN FACT: Power plants must produce enough electricity to supply customers every second of every day at the moment electricity is needed.

SHUT THE DOOR MAZE







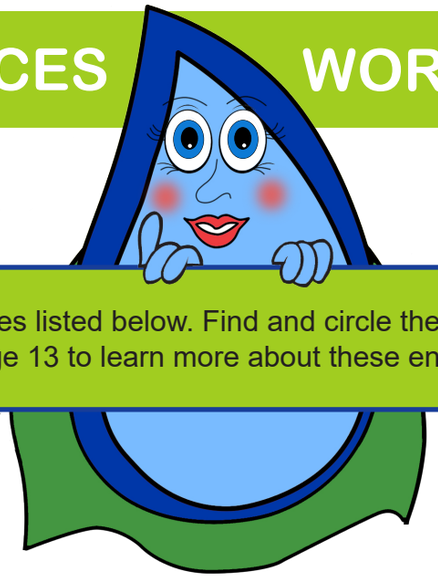
Oh no! The front door is open and air conditioning is escaping! Electricity is being wasted! Follow the maze to help the Energy Efficiency find and close the door!

START

END

FUN FACT: Most of the energy used in American homes is for heating and air conditioning (52%), followed by water heating, lighting and refrigeration (25%). TVs, cooking appliances, clothes washers/dryers, and electronics (computers, tablets, phones, video games, and internet streaming devices) use the rest (23%).

ELECTRICITY SOURCES WORD SEARCH



Electricity is made from the sources listed below. Find and circle these words in the puzzle.
Use the glossary on page 13 to learn more about these energy sources.

biomass
coal
geothermal
hydroelectric
natural gas
petroleum
solar
wind
nuclear

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

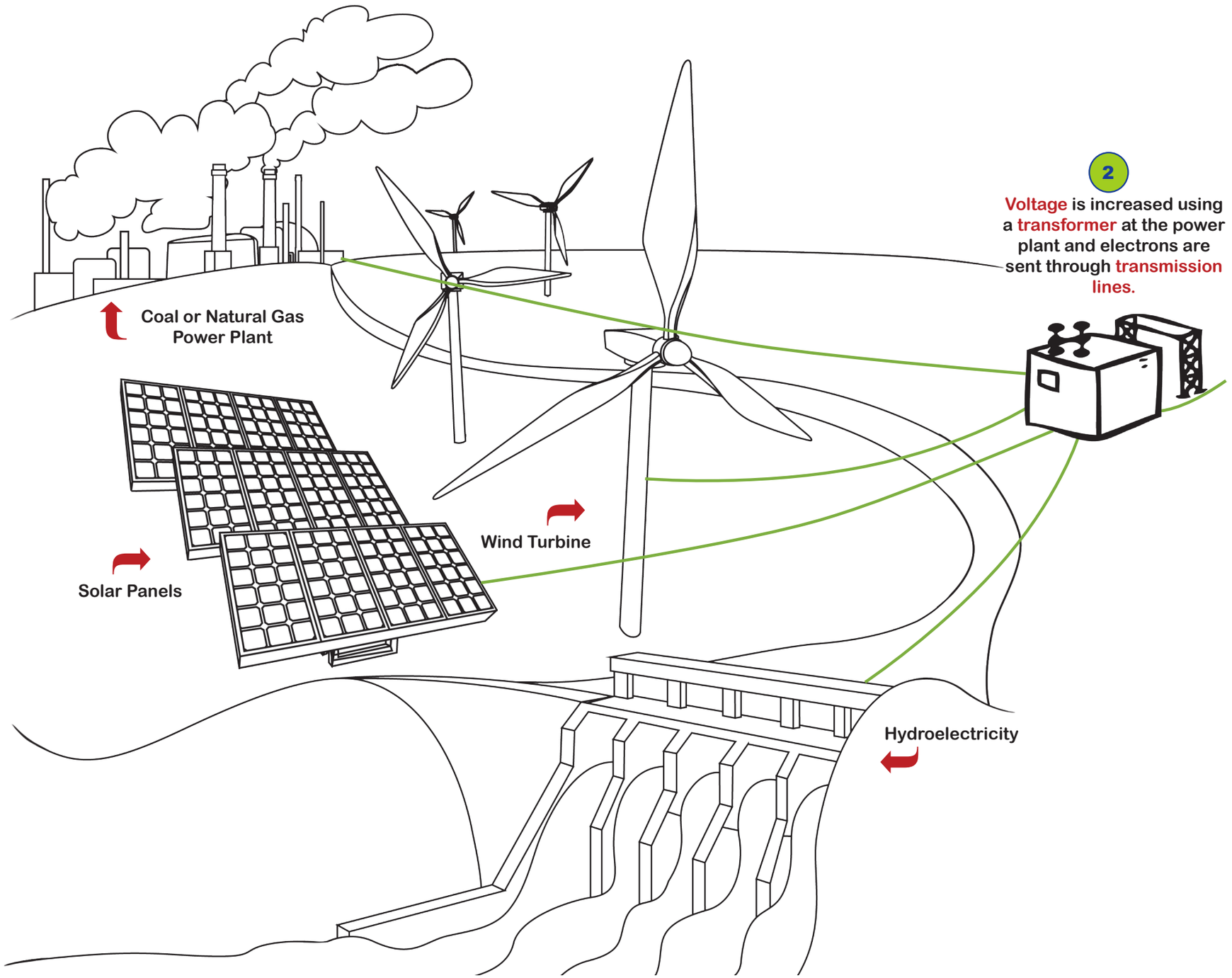
FUN FACT: By the year 2030, the Nevada Legislature has said 50% of our electricity must be made from renewable energy.

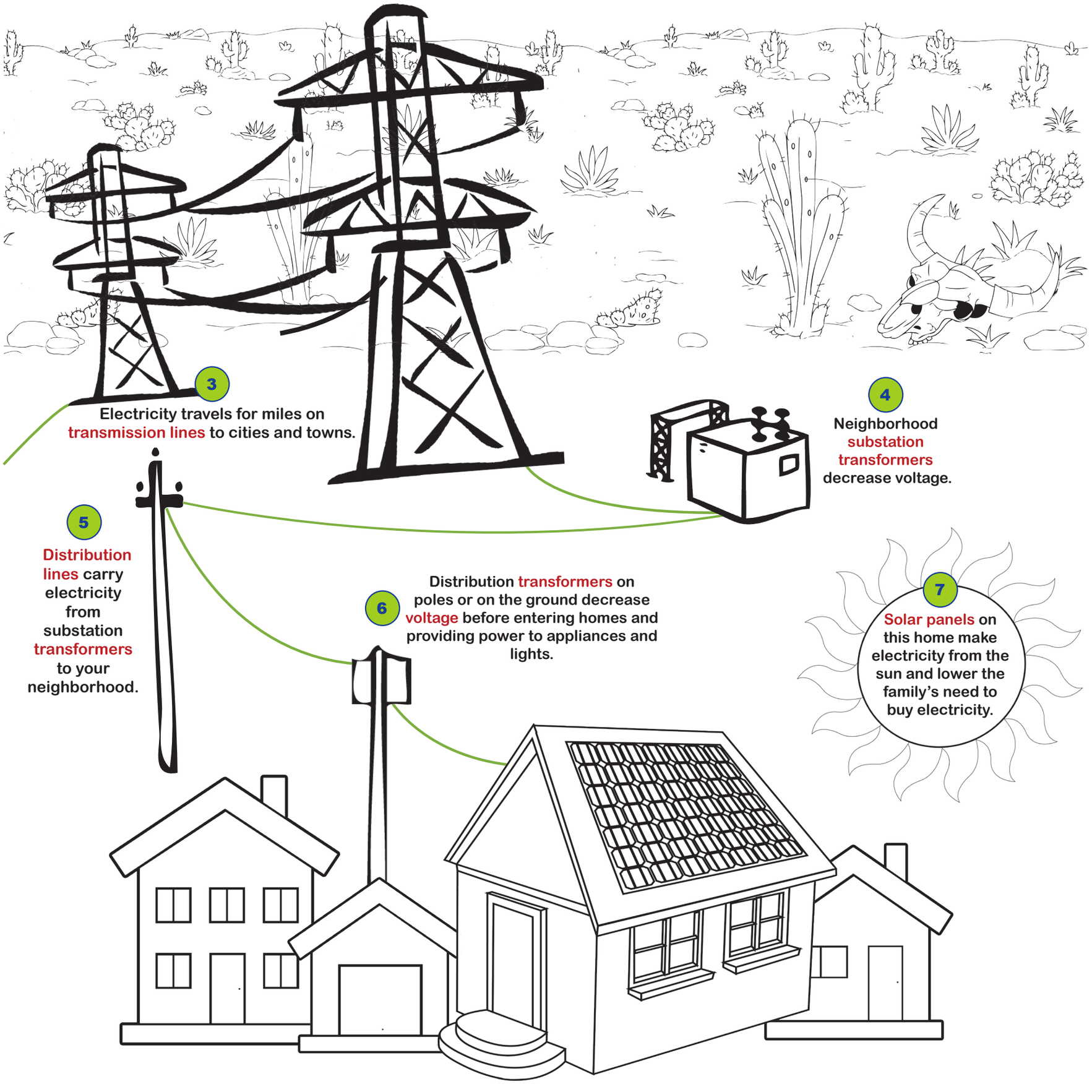
HOW ELECTRICITY GETS TO YOUR HOME COLORING PAGE

1 In power plants, an energy source (hydroelectricity, solar, natural gas, geothermal, coal, biomass, wind, or nuclear) is used to turn turbines. The turbines turn electromagnets that are surrounded by heavy coils of copper wire. The moving magnets cause the electrons in the copper wire to move from atom to atom, generating electricity.

Most of the electricity we use in Nevada comes from natural gas power plants. But a lot of our electricity also comes from renewable energy. A plant that uses solar, wind or water to generate electricity looks different, but the process to get electricity to your home is the same.

It's a big process to get electricity from a power plant to your home! Power plants are often miles and miles away from cities and towns.




3
Electricity travels for miles on transmission lines to cities and towns.
4
Neighborhood substation transformers decrease voltage.
5
Distribution lines carry electricity from substation transformers to your neighborhood.
6
Distribution transformers on poles or on the ground decrease voltage before entering homes and providing power to appliances and lights.
7
Solar panels on this home make electricity from the sun and lower the family's need to buy electricity.

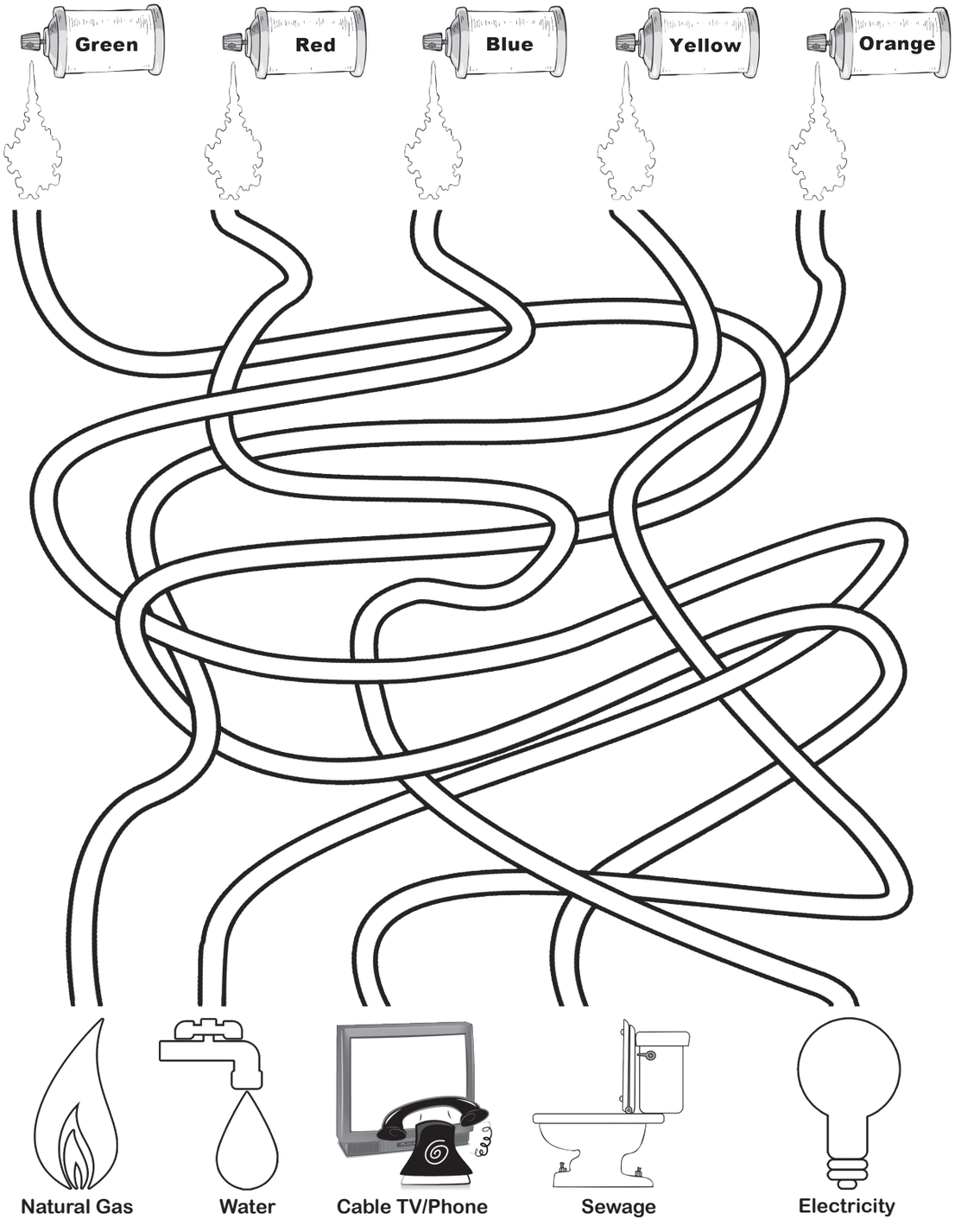
CALL 811 BEFORE YOU DIG!

Electricity, natural gas, water, sewage, phone and cable utilities get to your house through underground pipes and wires. To make sure you don't dig into underground utilities, call 811 before beginning any digging project. A line locator will come to your house and mark where the underground lines are with colored flags or paint.

Each type of utility is marked with a different color - green, red, blue, yellow, or orange.

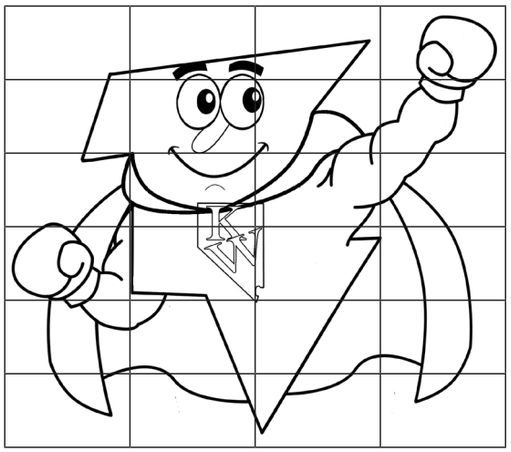
In the picture at right, color each spray can with the color written on it. Then use your crayon to follow the utility line over and under the other lines to discover which type of utility is marked by that color.

811 is a free service! You can also request 811 services on the Internet.



FUN FACT: Electricity travels at the speed of light more than 186,000 miles per second.

CATCH ENERGY BURNER MAZE



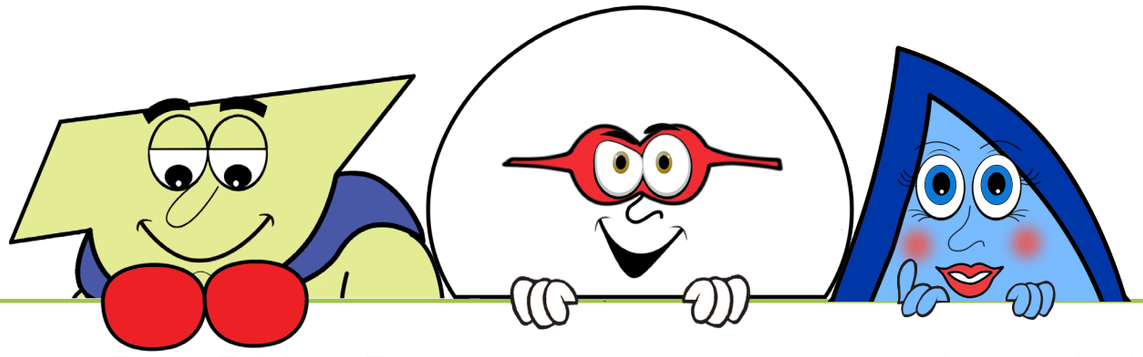
A meter on your house measures how much energy your family uses. Energy use is calculated in kilowatt-hours, which is the number of kilowatts of power used, times the number of hours of use, in a one-month billing period.

The average household in Southern Nevada uses 1,100 kilowatt-hours each month. The average Northern Nevada household uses 765 kilowatt-hours.

Kilowatt is on a mission to save watts! Use the grid to the right to finish drawing Kilowatt. Use color to bring Kilowatt to life!

FUN FACT: An LED lightbulb is like a superhero light—it can keep glowing for many, many years before it needs to be replaced. That means fewer trips to the store to buy new bulbs!

WHAT DID YOU LEARN?



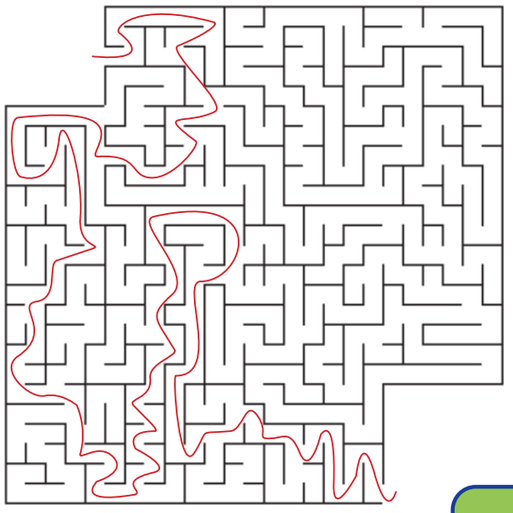
Show the Energy Efficiency Team that you know how to be energy efficient. Write five things that you can do to save money and conserve energy on the lines below. One answer has been provided for you already.

1. Turn off the lights when you leave a room.
2. _____
3. _____
4. _____
5. _____

FUN FACT: Before we began generating electricity over 100 years ago, fireplaces and pot-belly stoves kept homes warm, kerosene lamps and candles lit homes, and food was kept cool in iceboxes or underground storage cellars.

CATCH ENERGY BURNER MAZE

PAGE 5



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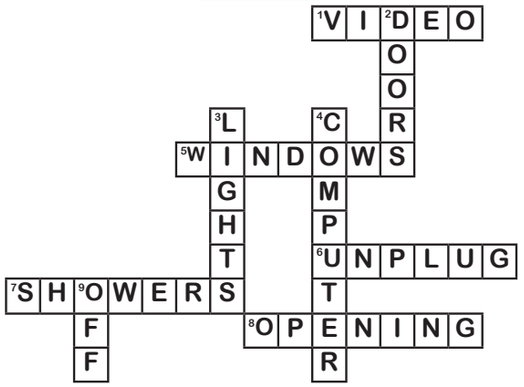

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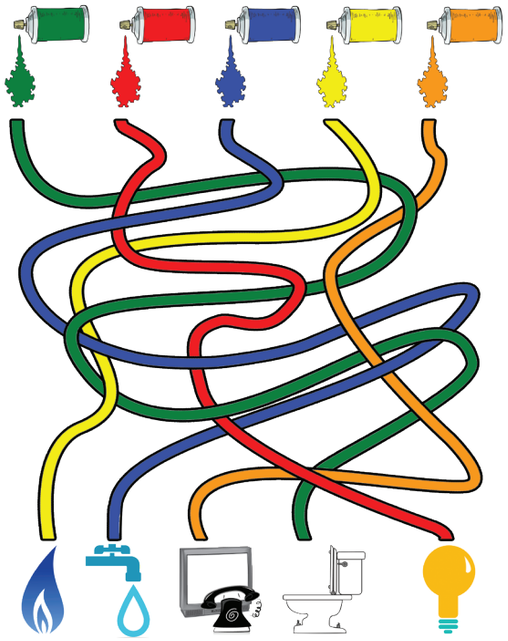

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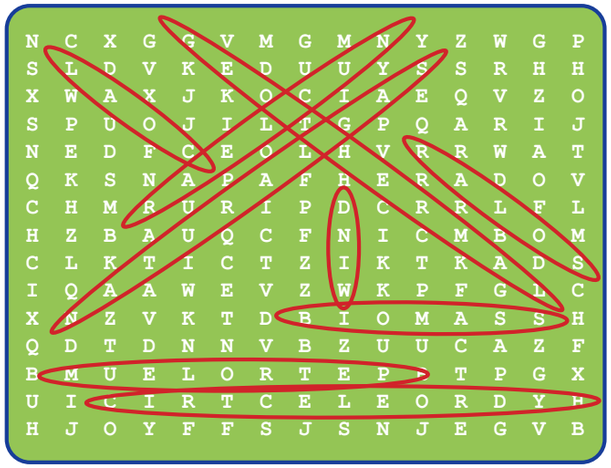

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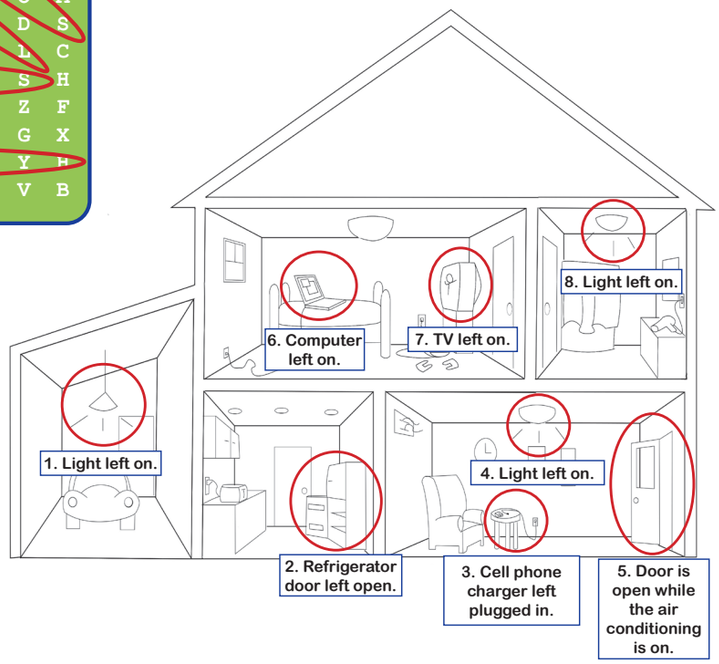


PAGE 2

FUN FACT: The U.S. Department of Environmental Protection says that the average building wastes 30% of the energy it uses.

GLOSSARY

Atom: An atom is a super tiny building block that makes up everything around us—like your toys, your desk, and even you! It's so small you can't see it with your eyes.

Biomass: Organic materials, such as wood and garbage, that can be burned to produce energy.

Coal: A solid fossil fuel found in the earth. Coal is burned to make electricity.

Current: The movement or flow of electricity.

Distribution Lines: Overhead or on the ground power lines that carry electricity to homes and businesses.

Electromagnets: In a power plant, electromagnets help make the electricity that powers your home. A big coil of wire—like a slinky made of metal—wraps around a piece of iron. Electricity is sent through the wire. When the electricity flows, it turns the iron into a magnet that can pull or push things. This helps spin big machines called generators, and those generators make the electricity that comes to your house.

Electrons: An electron is a super tiny, invisible speck that's so small you can't see it, even with a microscope. Electrons carry a little bit of energy. They help make things work, like the lights in your room or the TV.

Energy Conservation: Using less energy. For example, you conserve energy when you turn the lights off when you leave a room.

Energy Efficiency/Efficient: Using less energy to do the same activity. For example, taking a shorter shower is an example of using less energy (for water heating) to do the same thing.

Geothermal Energy: Energy that is generated by converting hot water or steam from deep beneath the earth's surface into electricity.

Hydroelectricity: Electricity that is generated when falling water makes a turbine spin.

Kilowatt: A kilowatt is a way to measure how much energy something uses or makes. Imagine you have a toy that needs batteries to work. The kilowatt is like counting how much power that toy needs to run for an hour. A kilowatt is a big amount of power—about the same as 1,000 little watts. If you have a light bulb that uses 100 watts, it would take 10 of those bulbs to make 1 kilowatt!

Kilowatt-Hour (kWh): One kilowatt of electricity being used over a period of one hour.

LED Light Bulb: LED means light-emitting diode. An LED light bulb emits light when an electric current passes through it. LEDs do not get hot and are known for lasting a long time and being energy efficient.

Meter: A device that measures the amount of electric energy consumed by a residence or business.

Natural Gas: A fossil fuel found deep in the earth. Natural gas is often found with oil.

Nuclear Energy: Energy that is released from the splitting of the atoms of radioactive materials (such as uranium) and then harnessed to generate electricity.

Petroleum: An oily, thick, flammable, dark-colored liquid that occurs naturally below the Earth's surface. Petroleum is burned to produce electricity.

Power Plant: A place where electricity is generated.

Power Line: An overhead or underground wire used to carry electricity.

Renewable Energy Resources: Fuels that can be easily made or renewed, such as solar power, wind power, and hydropower.

Solar Energy: A renewable energy source that produces electricity from the sun.

Solar Panels: A device that collects energy from the sun and converts it to electricity.

Substation: A facility where transformers lower electricity's voltage.

Transformer: A device used to increase or decrease electricity's voltage and current.

Transmission Lines: Power lines that carry electricity long distances.

Turbines: A turbine is like a giant pinwheel. It's a machine with blades that spin around when something—like water, steam, or wind—pushes them. When the turbine spins, it creates the power we use to turn on lights, TVs, and all kinds of cool stuff!

Utility: A company or organization that provides electricity, natural gas, or water.

Voltage: A measure of the pressure under which electricity flows.

Watt: A measure of the amount of work done by a certain amount of amerpage of electric current at a certain pressure or voltage.

Wind Energy: A renewable energy source that uses the force of the wind to spin turbines and generate electricity.

ENERGY EFFICIENCY TEAM MEMBERSHIP

PUCN
Public Utilities Commission of Nevada

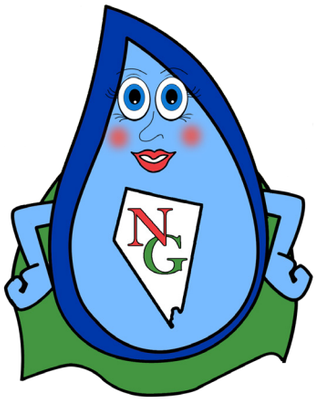
This certificate is presented to:

_____

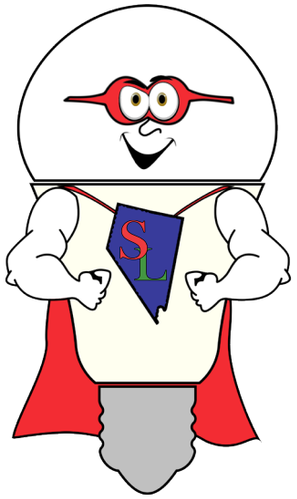
For successfully completing training to become a member of the Energy Efficiency Team

on this _____ (Date) day of _____ (Month), 20____ (Year).

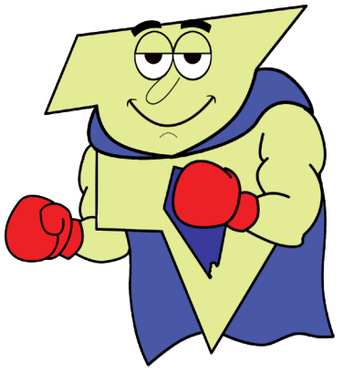
WELCOME TO THE TEAM!



Natalie Gas
Natalie Gas, Team Member



Super Light
Super Light, Captain



Kilowatt
Kilowatt, Team Member

811

Know what's **below.**
Call before you dig.

The PUCN serves to protect the public interest, ensure fair and reasonable utility rates, and regulate the delivery of utility services to benefit the economy, the environment, and all Nevadans.

NORTHERN NEVADA
1150 E. William Street
Carson City, NV 89701
Phone: (775) 684-6101
Fax: (775) 684-6110
Consumer Complaints: (775) 684-6100

PUCN

SOUTHERN NEVADA
9075 W. Diablo Dr., Ste. 250
Las Vegas, NV 89148
Phone: (702) 486-7210
Fax: (702) 486-7206
Consumer Complaints: (702) 486-2600

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