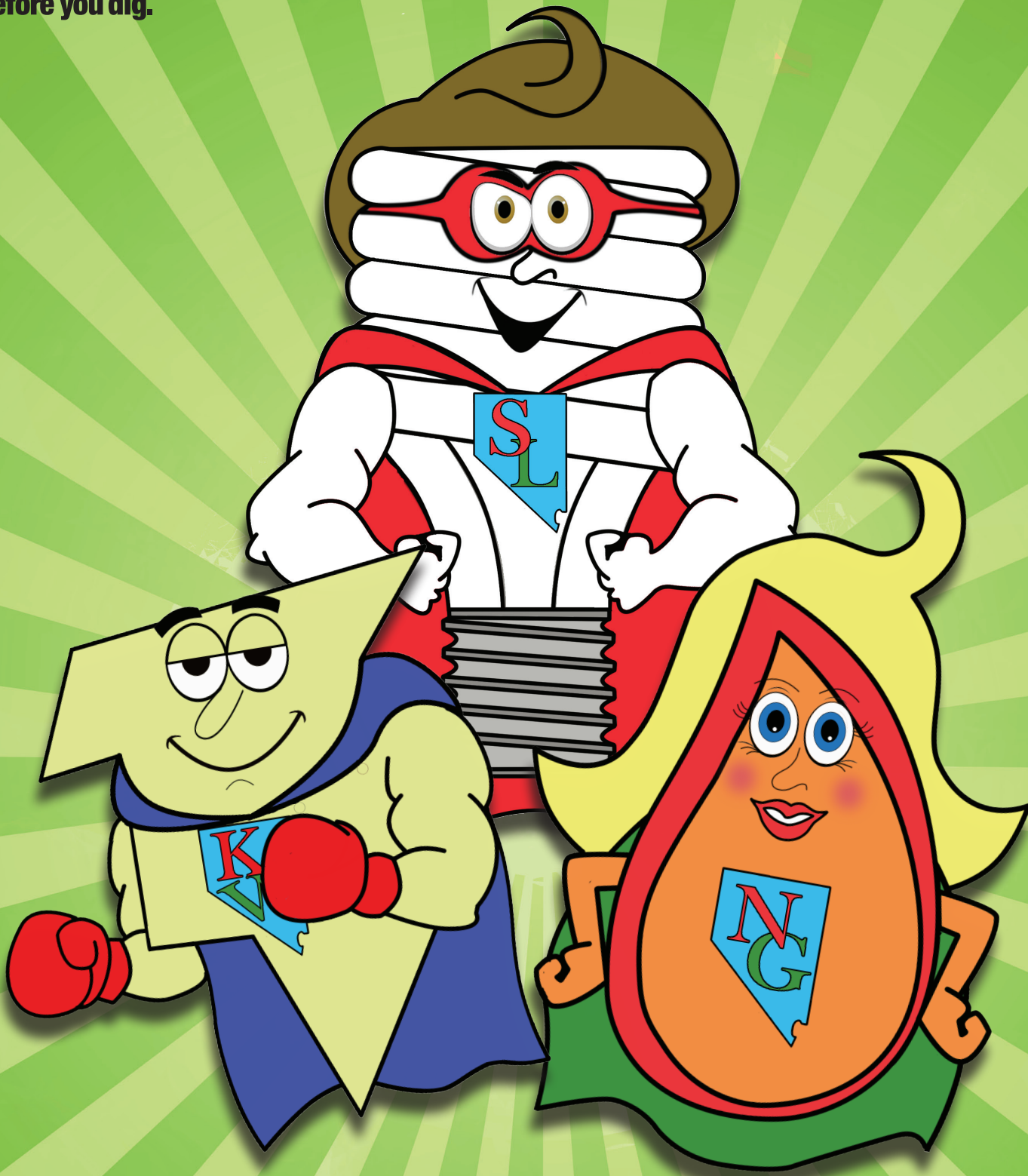


# Energy Efficiency Team



## Activity Book

Know what's below.  
Call before you dig.



PUCN

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[www.puc.nv.gov](http://www.puc.nv.gov)

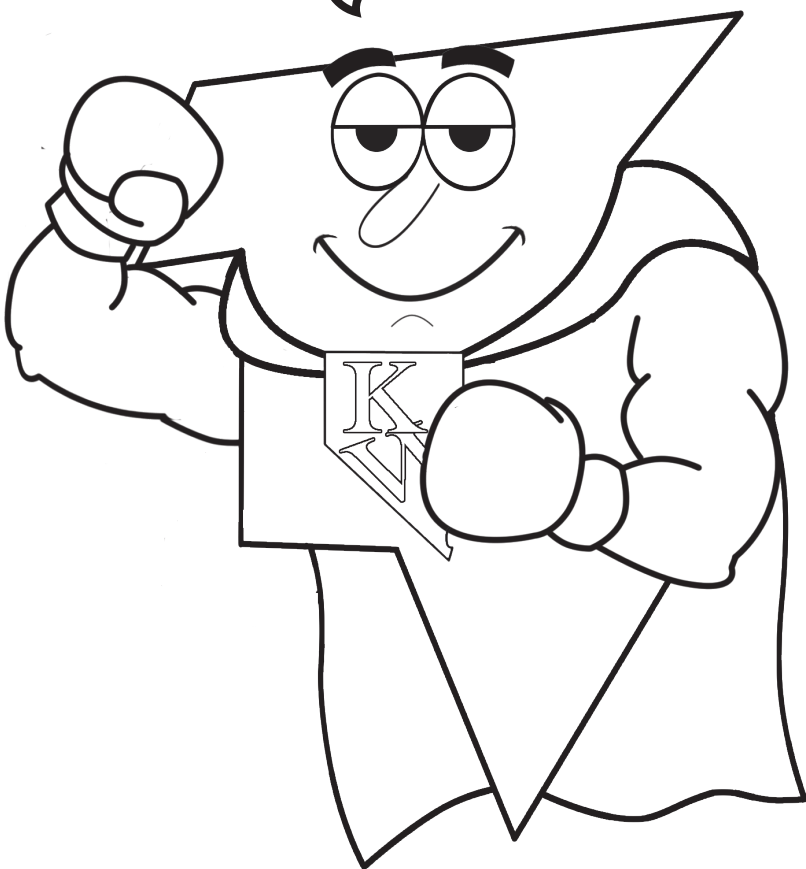
# ENERGY EFFICIENCY TEAM COLORING PAGE

In this activity book, the Energy Efficiency Team will teach you how to be energy efficient and conserve energy. If a word is highlighted in **red**, you can find a definition for the word in the glossary on page 13. 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.

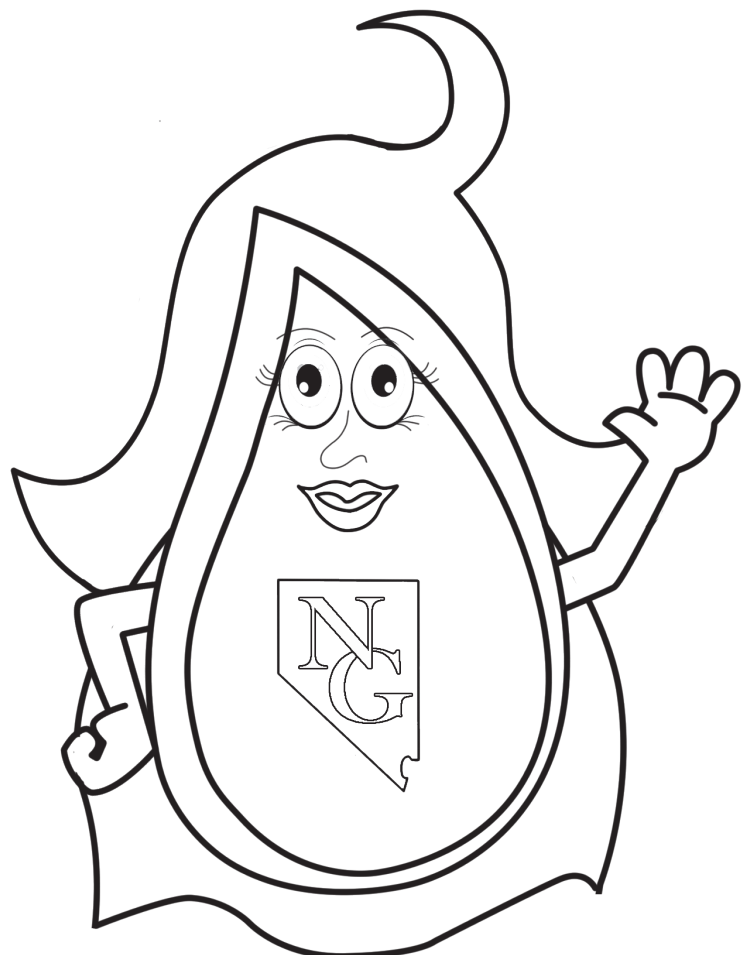


Hello kids!  
I'm Super Light. I'm a **compact fluorescent light bulb**. Some people call me a CFL for short. I'm also captain of the Energy Efficiency Team. I love teaching kids how to be **energy efficient** and about **energy conservation** because both help save money and the environment!

I'm Kilowatt.  
Electricity usage is measured in **watts**. You can help save money on electric bills by using fewer watts.



I'm Natalie Gas.  
I'm **natural gas** and I occur naturally beneath the Earth's surface. I am used in homes for heating and cooking, and I also generate electricity in **power plants**.

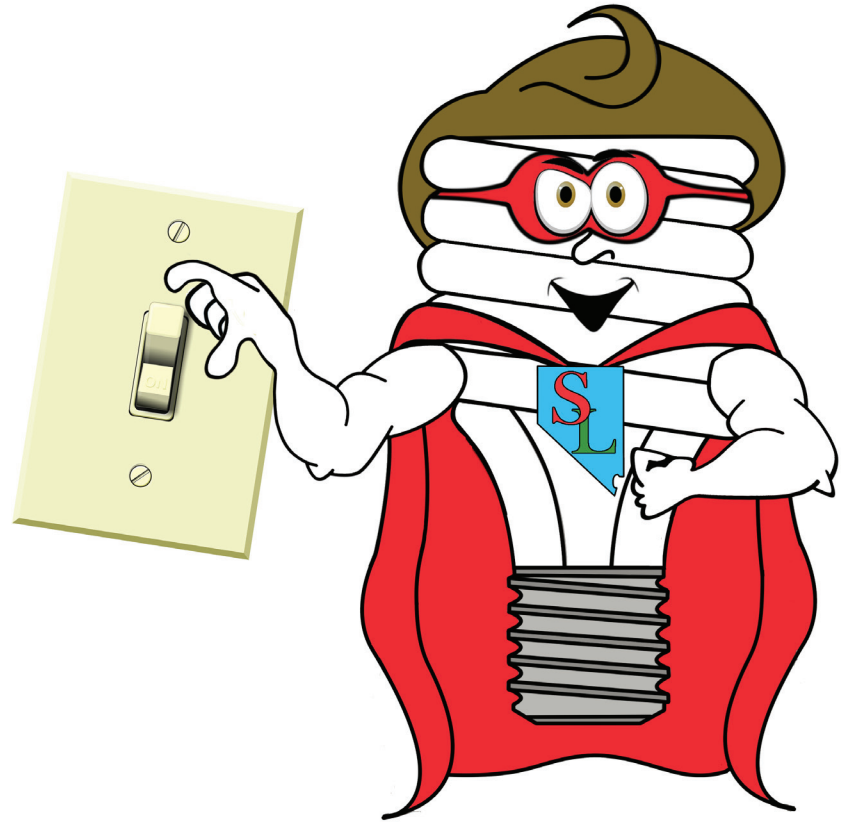


# SUPER LIGHT SECRET MESSAGE

Families in Southern Nevada spend about \$153 each month on electricity. In Northern Nevada, families spend about \$93 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, DVD players, game players, and computers.

Kids can help their parents save money on electric bills by doing simple things like turning off the lights, TV, computer and game players when they're done using them.

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



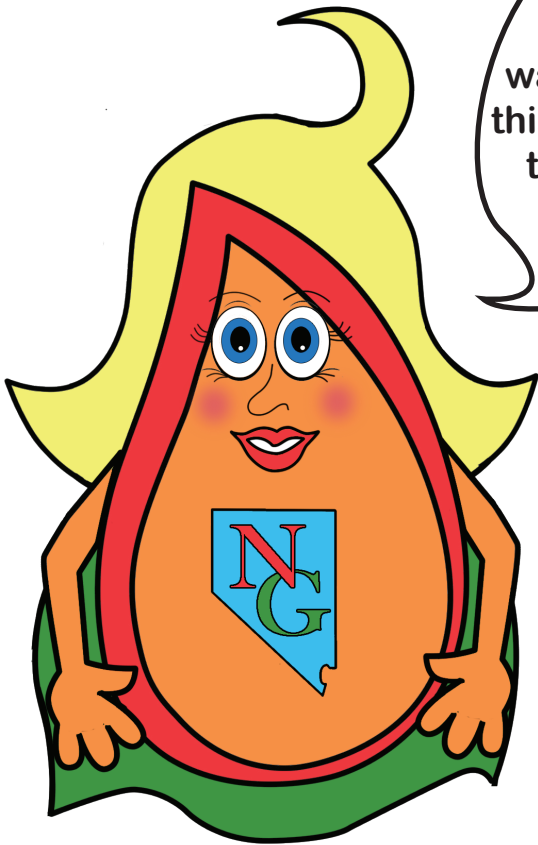
A	B	C	D	E	F	G	H	I	J	K	L	M
N	O	P	Q	R	S	T	U	V	W	X	Y	Z
@												

\_\_\_\_\_ ,  
 \_\_\_\_\_  
 \_\_\_\_\_ ,  
 \_\_\_\_\_ !

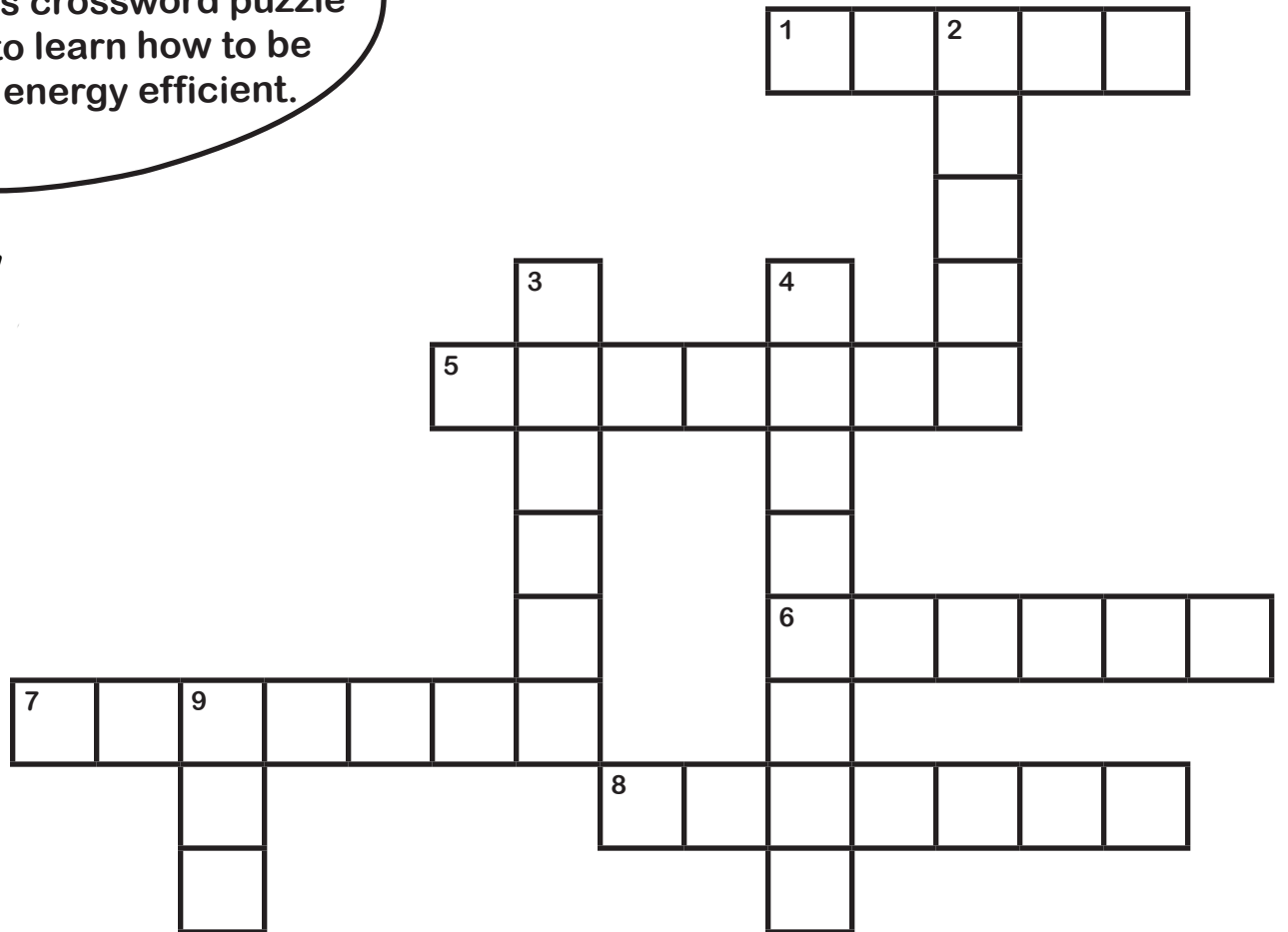


NATALIE GAS FUN FACT: A typical American home has between 50 and 100 light bulb sockets. How many are in your home?

# ENERGY SAVING CROSSWORD PUZZLE



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



## 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.

## DOWN

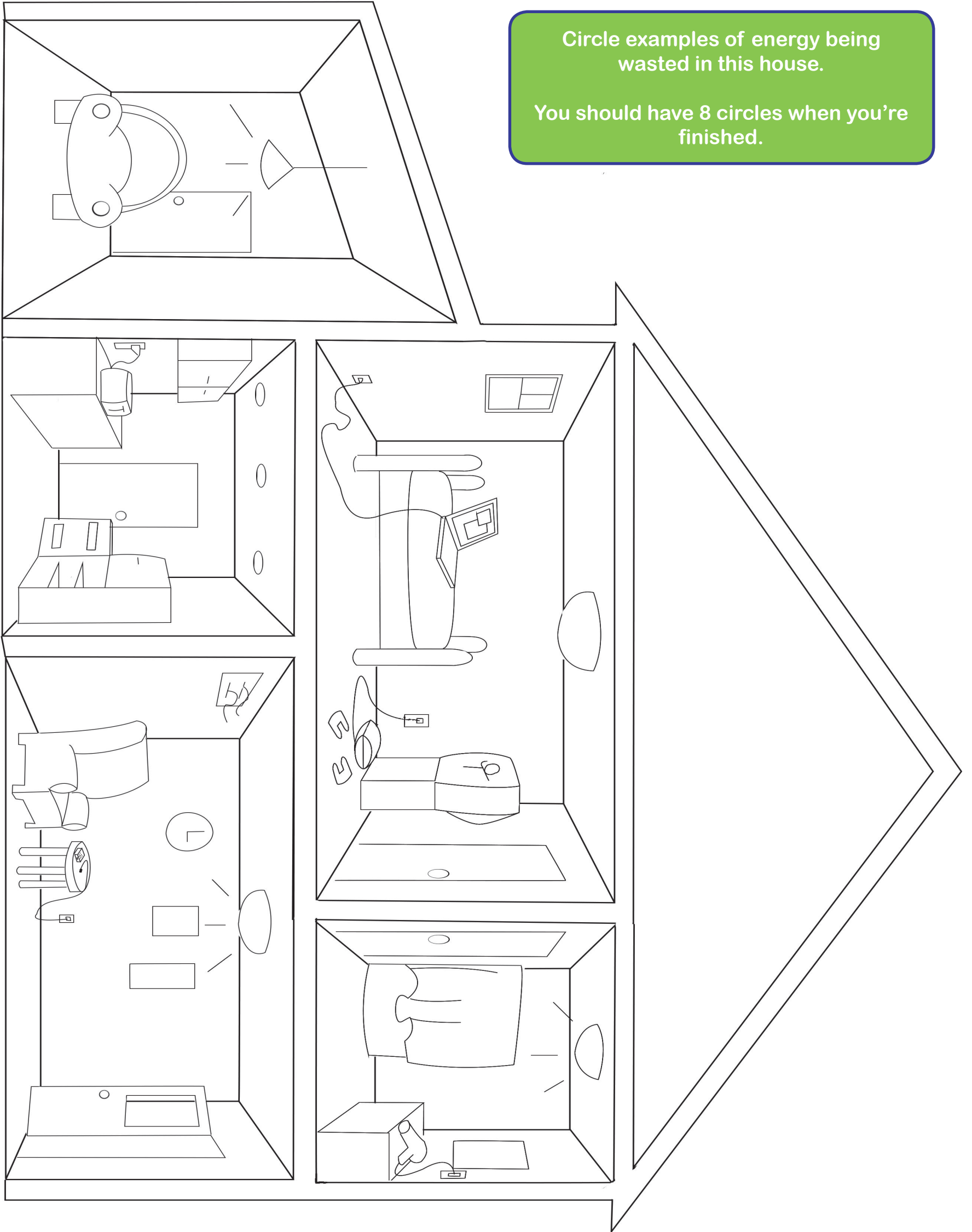
2. Keep \_\_\_\_\_ that open to the outside closed when the heat or air conditioning is on.
3. Always turn off the \_\_\_\_\_ when you leave a room.
4. Turn off your \_\_\_\_\_ when you're done using it.
9. Turn \_\_\_\_\_ the TV when you're done watching it.



# ENERGY WASTE COLORING PAGE

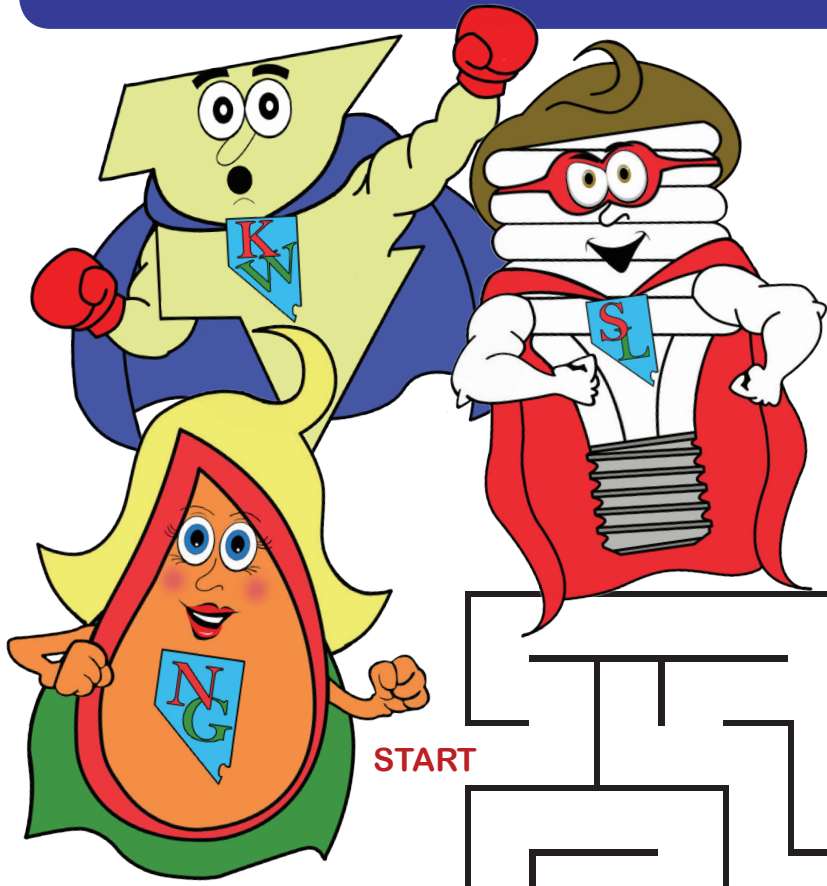
Circle examples of energy being wasted in this house.

You should have 8 circles when you're finished.



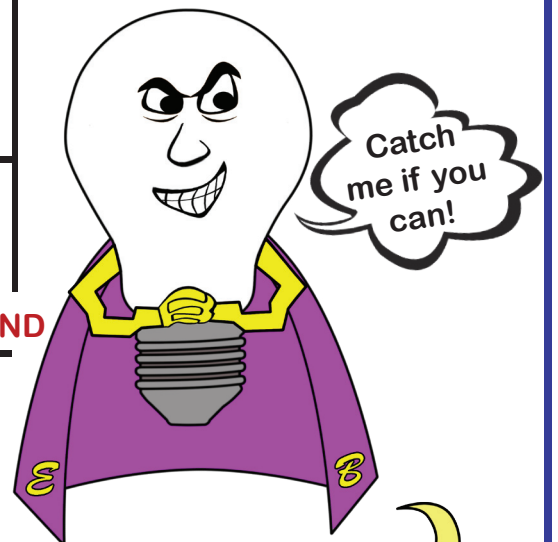
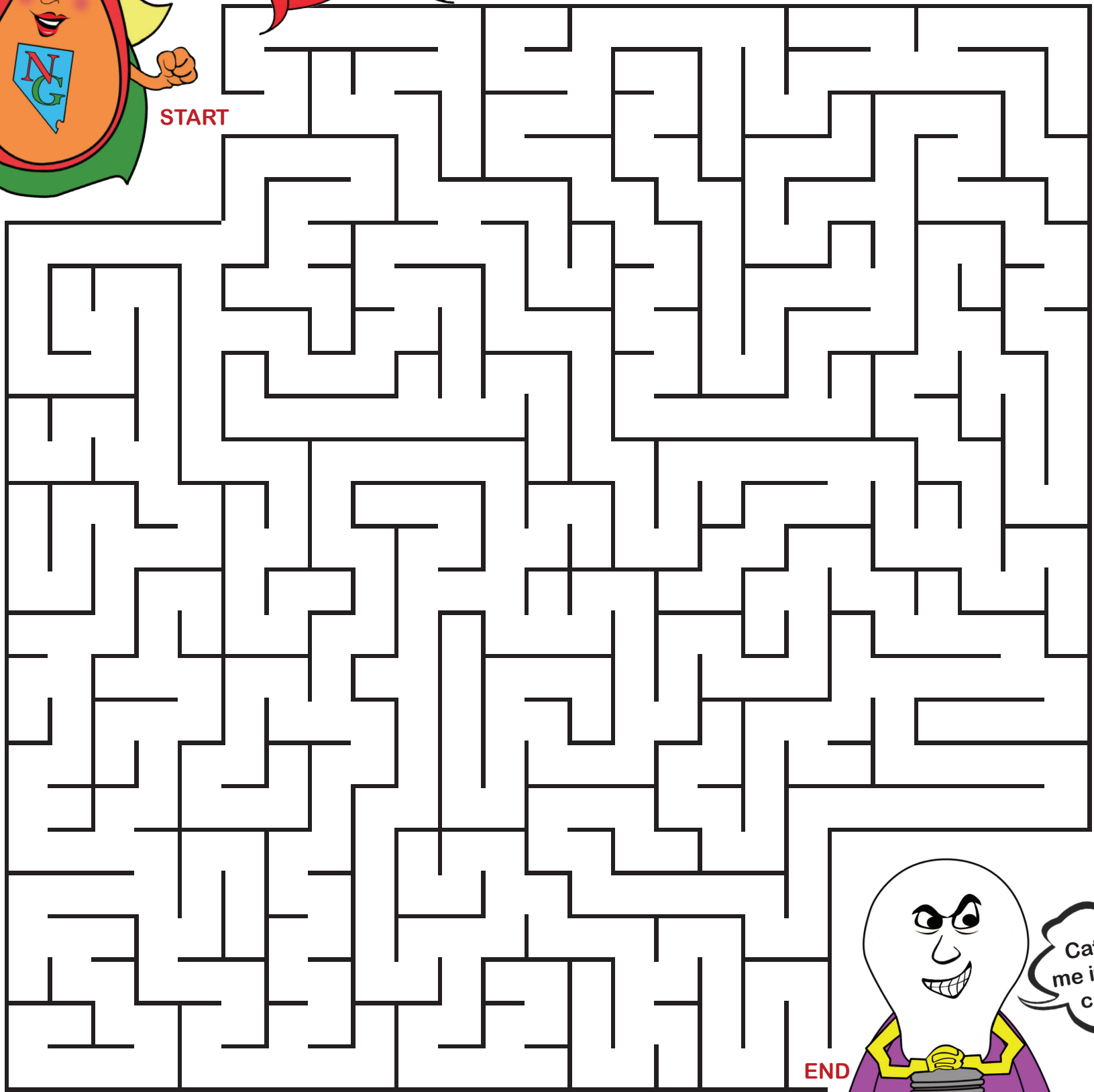
**NATALIE GAS FUN FACT:** Power plants have to produce enough electricity to supply customers every second of every day at the moment electricity is needed. Electric power plants cannot store electricity for future use.

# CATCH ENERGY BURNER MAZE

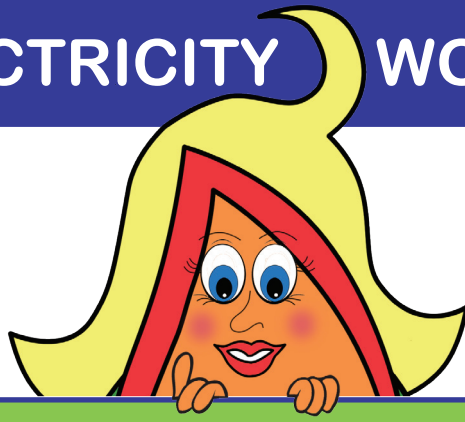


Help the Energy Efficiency Team catch Energy Burner to stop him from trying to convince kids to waste energy! Energy Burner is an old fashioned incandescent light bulb and uses more electricity than an energy efficient light bulb like Super Light.

Let's go!



# SOURCES OF ELECTRICITY 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
- hydroelectric
- solar
- coal
- natural gas
- wind
- geothermal
- petroleum
- 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



**NATALIE GAS FUN FACT:** By the year 2025, the Nevada Legislature has said 25% of our electricity must be made from renewable energy.

# HOW ELECTRICITY GETS TO

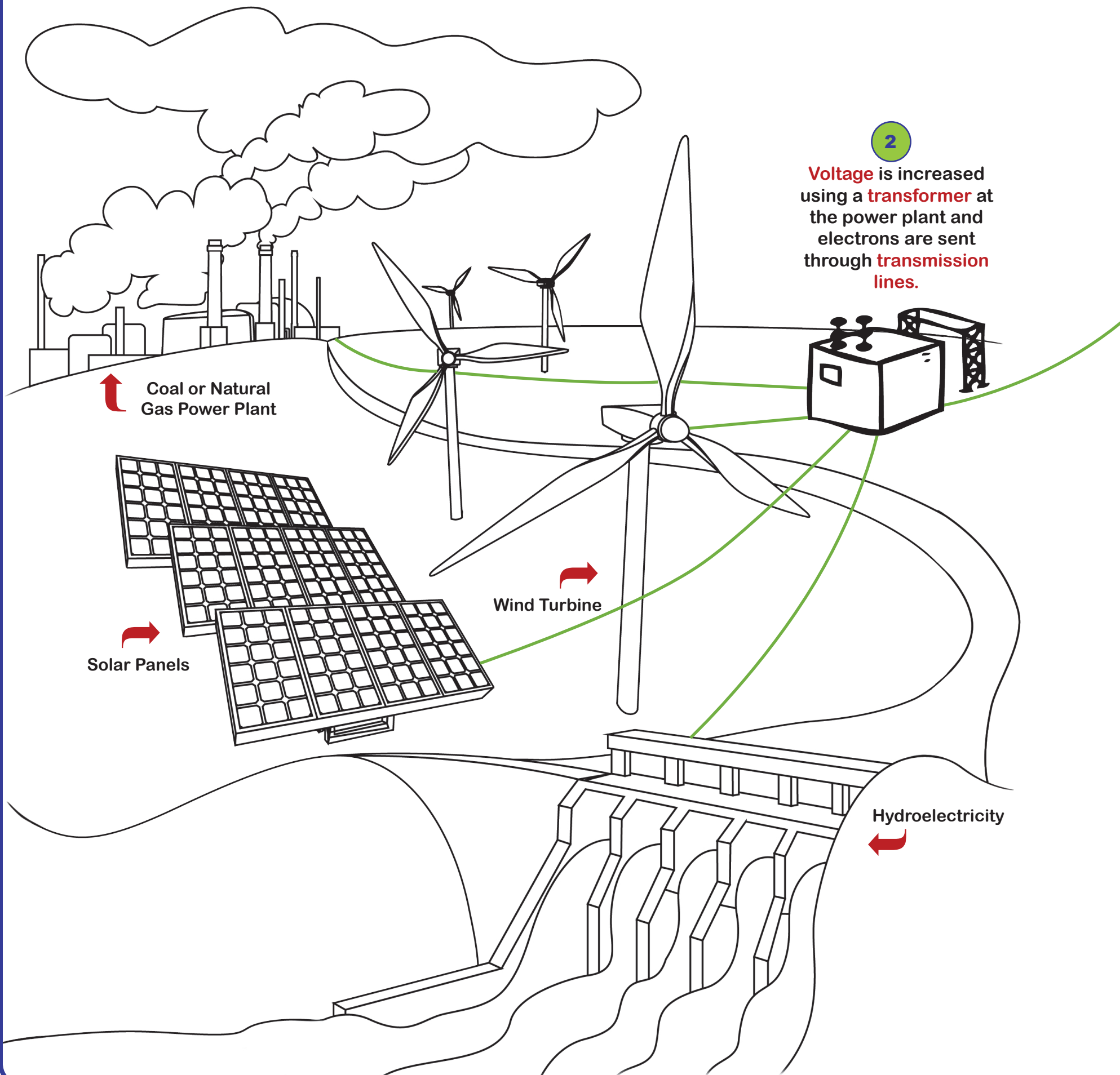
After you read all the steps below describing the process for delivering electricity to homes, have fun coloring in the images!

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. Power plants are often miles and miles away from cities and towns.

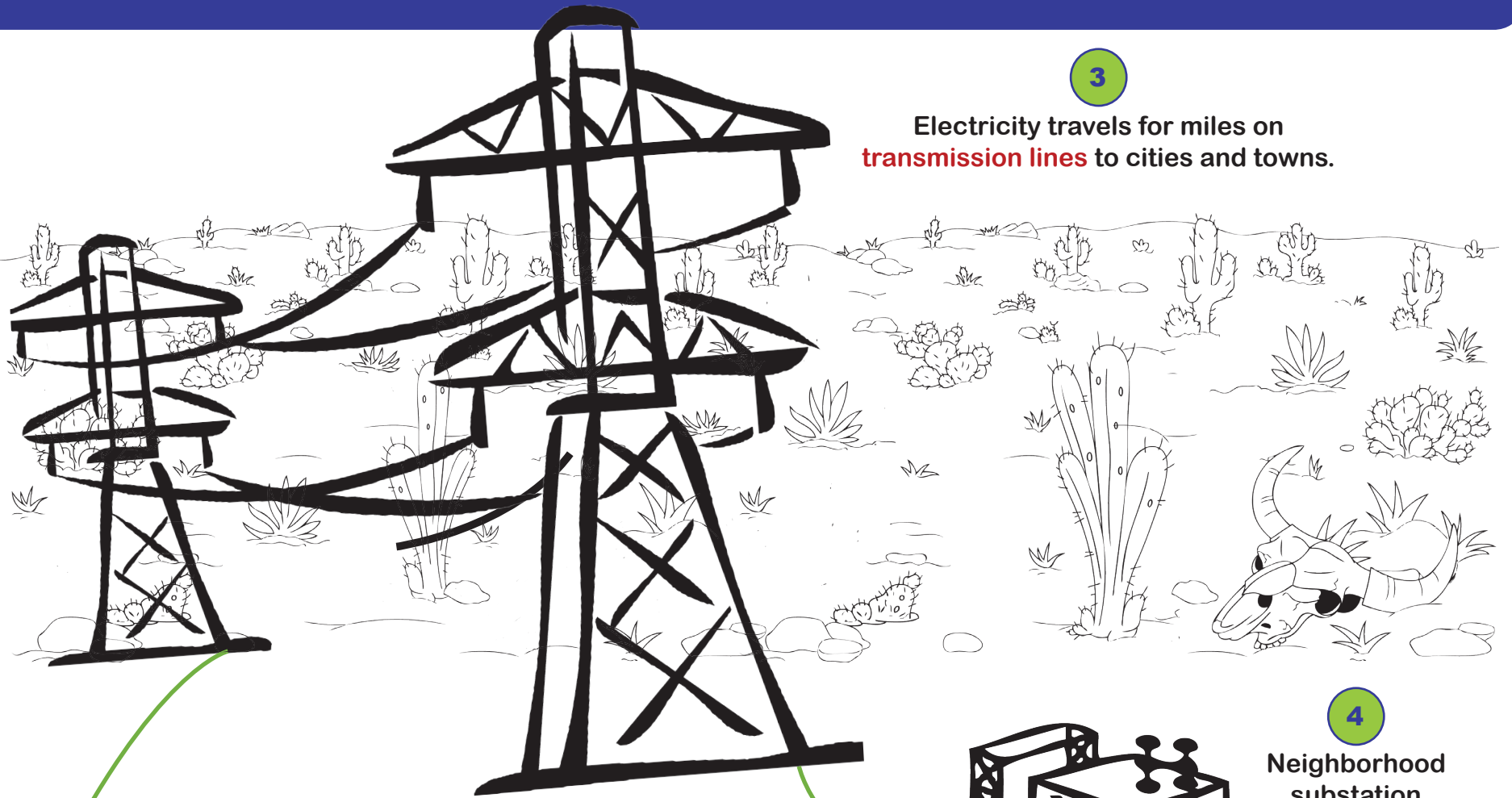




# YOUR HOME COLORING PAGE

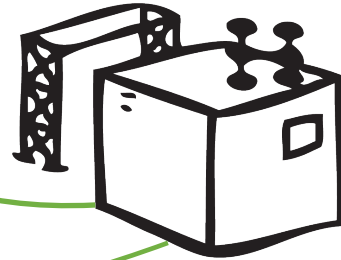
3

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.



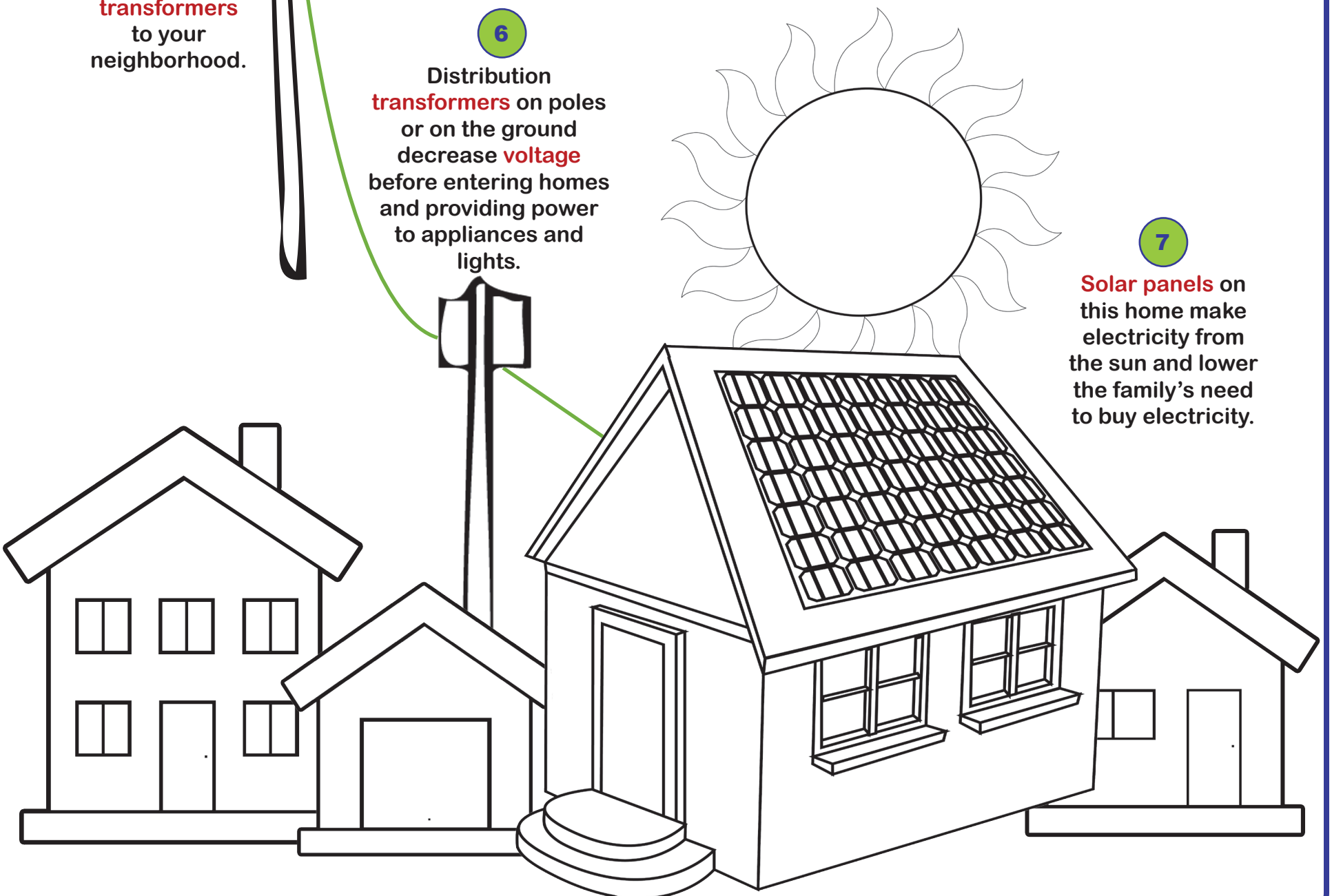
6

**Distribution transformers** on poles or on the ground decrease **voltage** before entering homes and providing power to appliances and lights.

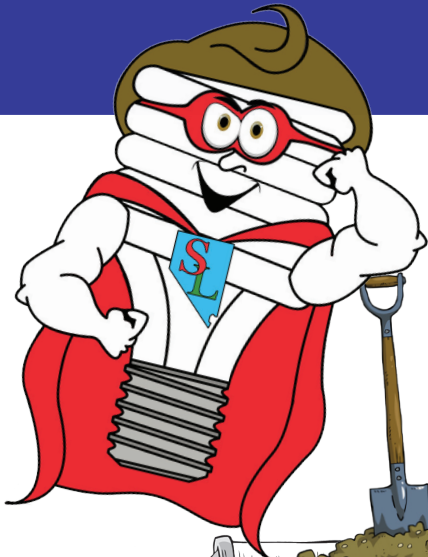


7

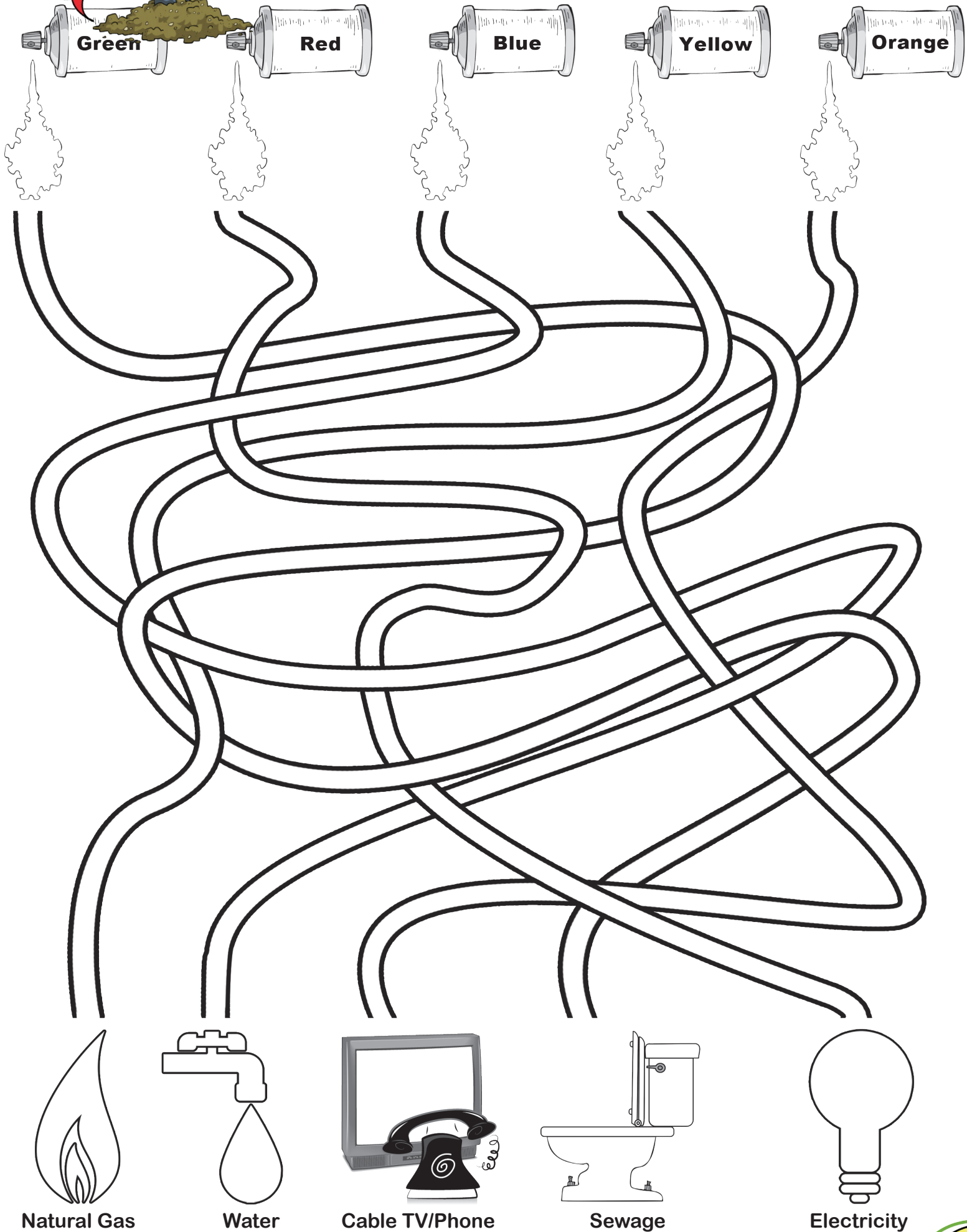
**Solar panels** on this home make electricity from the sun and lower the family's need to buy electricity.



# Call 811 Before You Dig!



Electricity, natural gas, water, sewage, phone and cable get to your house through underground pipes and wires. When you call 811 (it's free!) before beginning a digging project, a line locator will come to your house and mark where the underground lines are with colored flags or paint so you don't damage them when you dig. Each type of utility is marked with a different color. Color in each spray can and its paint below. Then use your marker or crayon to follow the utility line over and under the other lines to reach the type of utility that is marked by that color.



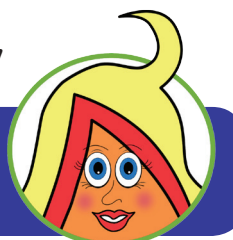
Natural Gas

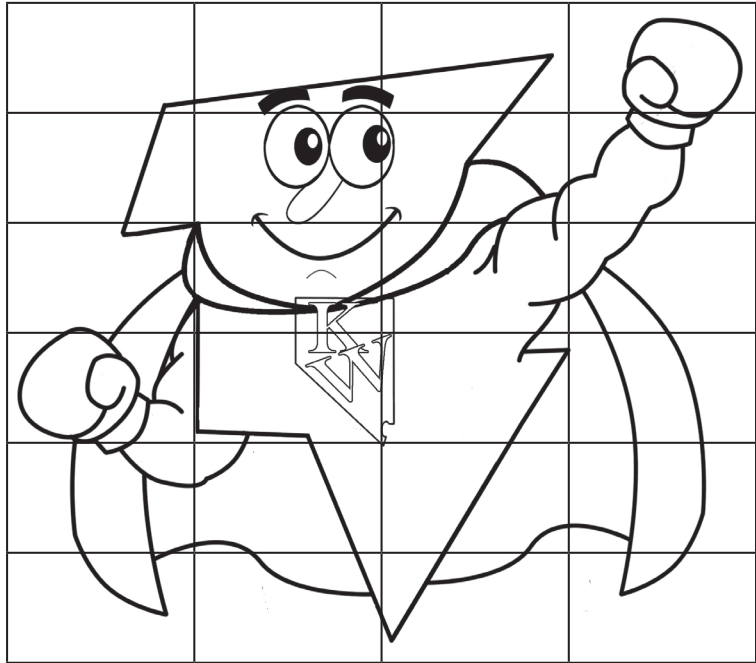
Water

Cable TV/Phone

Sewage

Electricity

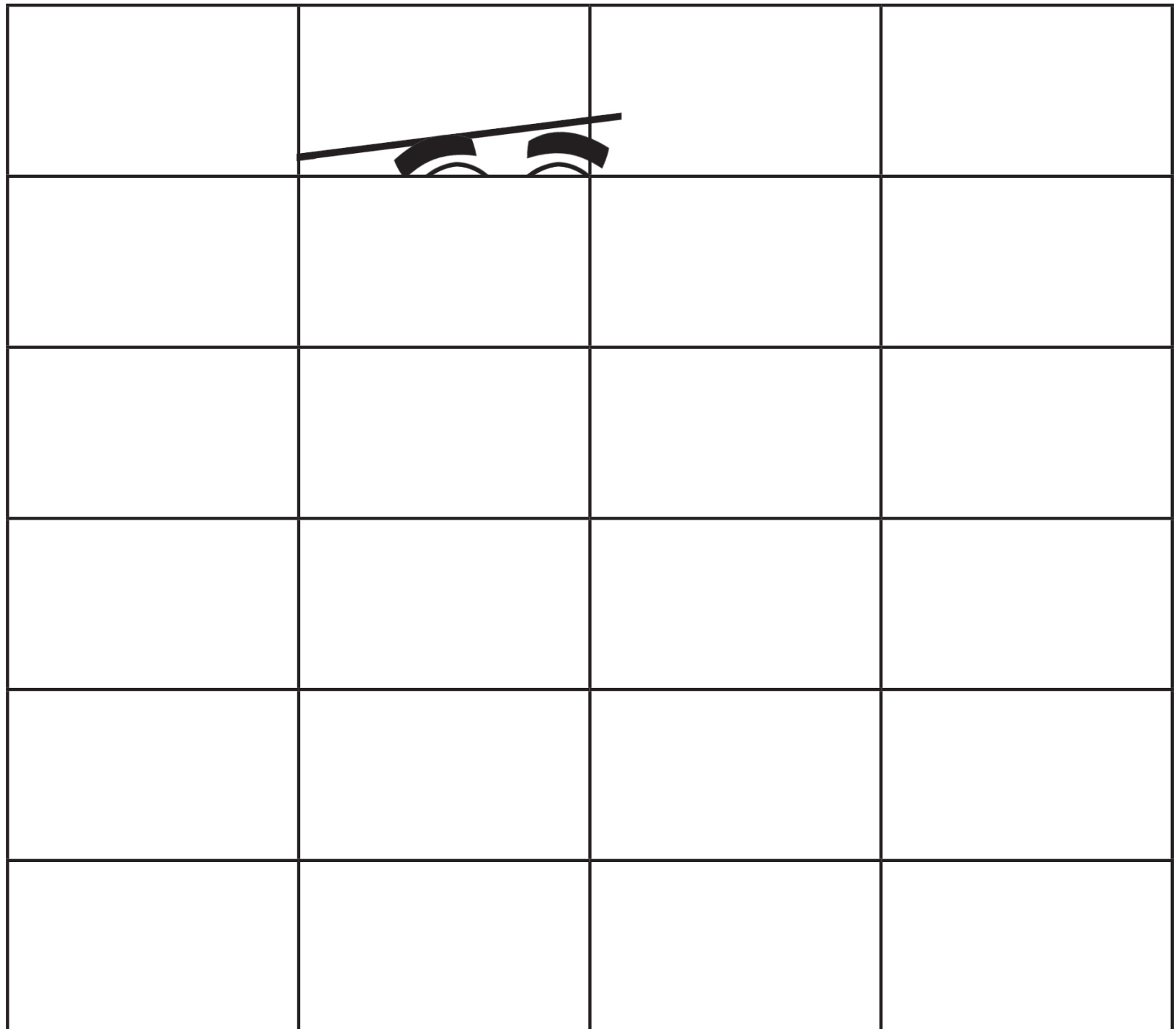




A **meter** on your house measures how much energy your family uses. Energy use is calculated in kilowatt-hours or the number of kilowatts of power used times the number of hours of use in a one-month billing period.

The average household in Southern Nevada uses 1,145 kilowatt-hours each month. The average Northern Nevada household uses 758 kilowatt-hours.

Kilowatt is on a mission to save Watts!  
Use the grid below to finish drawing Kilowatt. Use color to give Kilowatt life!



**NATALIE GAS FUN FACT:** The average American family spends \$184 every year on lighting and \$245 on water heating.

# WHAT DID YOU LEARN?



Show Energy Burner 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.

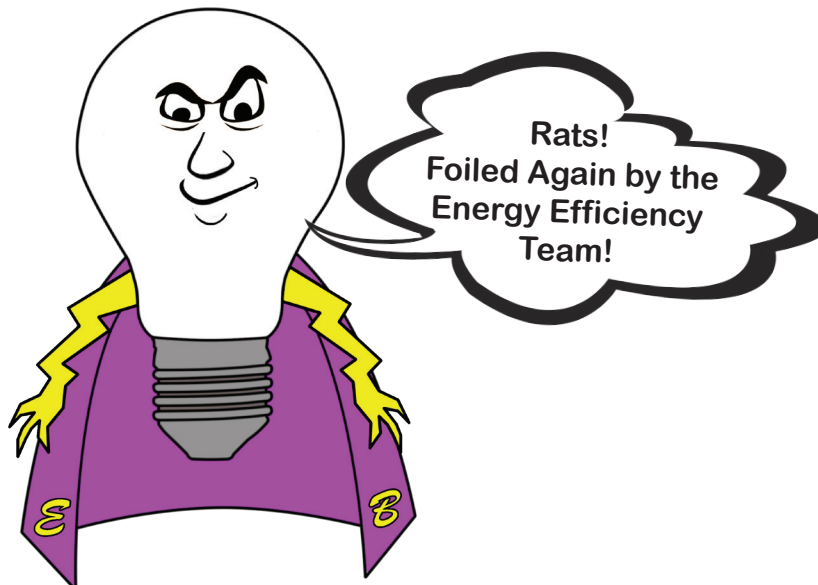
1. *Turn off the lights when you leave a room.*

2.

3.

4.

5.

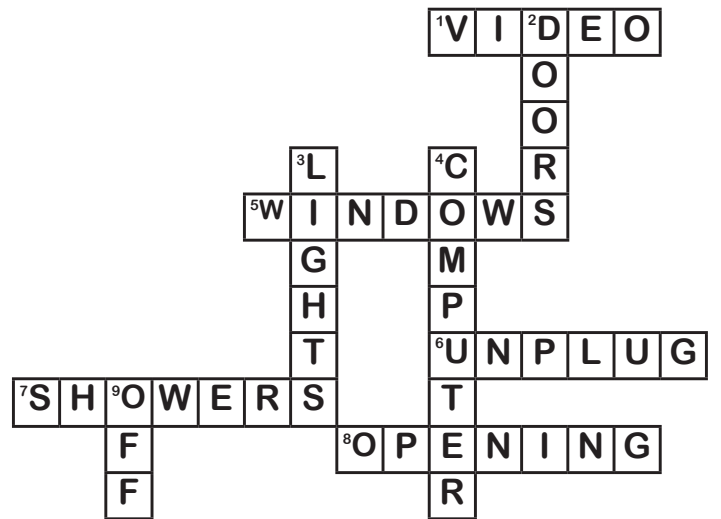


# ANSWER KEY

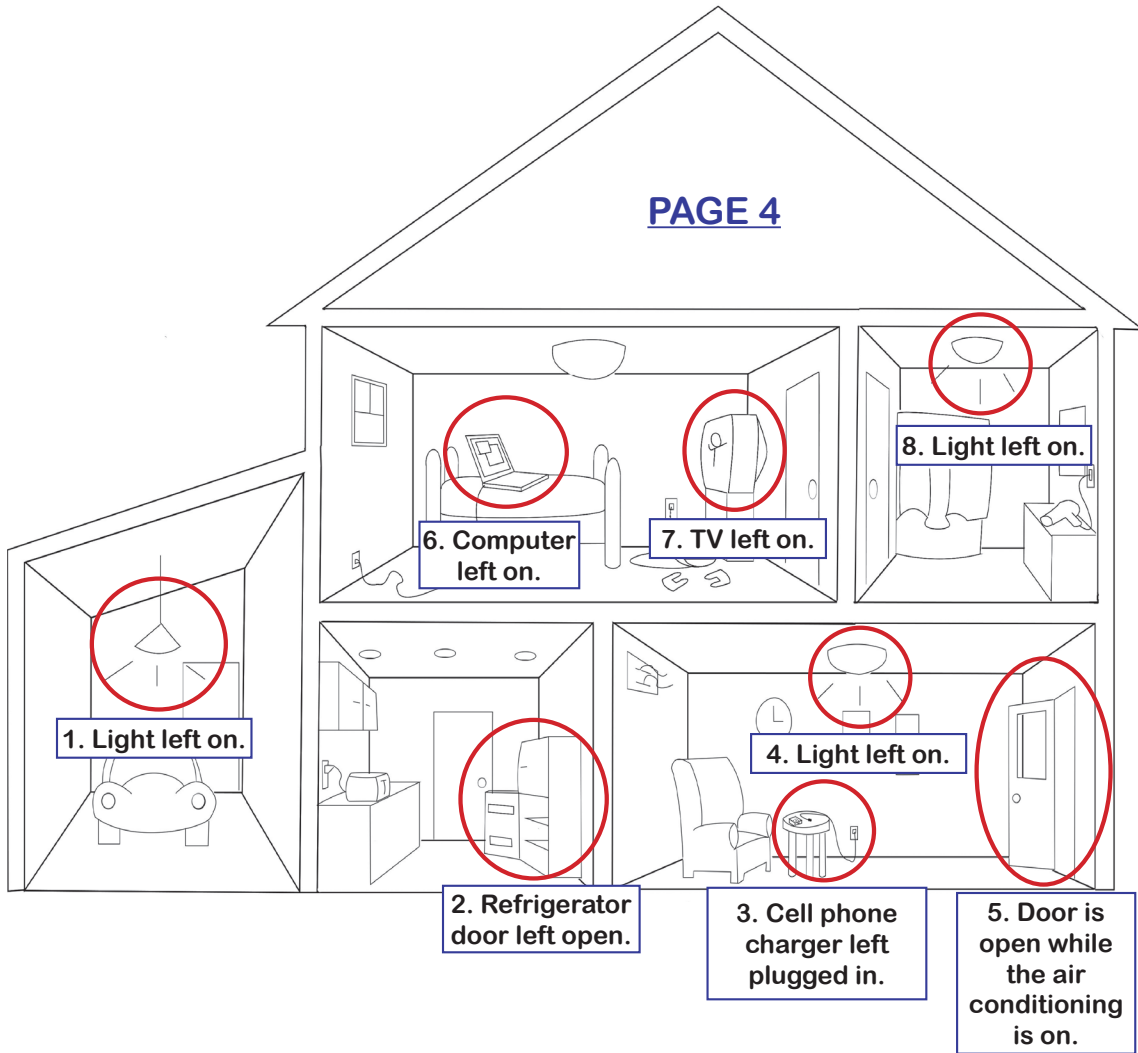
## PAGE 2

I F Y O U ' R E N O T  
 U S I N G I T ,  
 T U R N I T O F F !

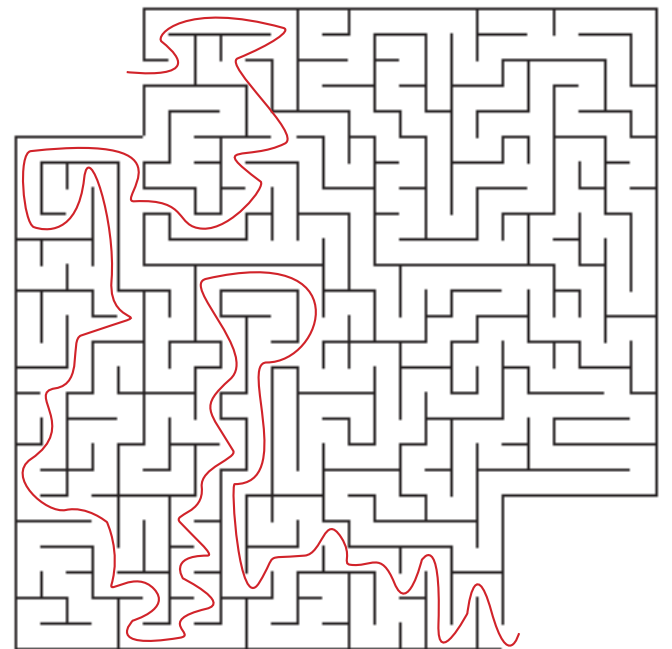
## PAGE 3



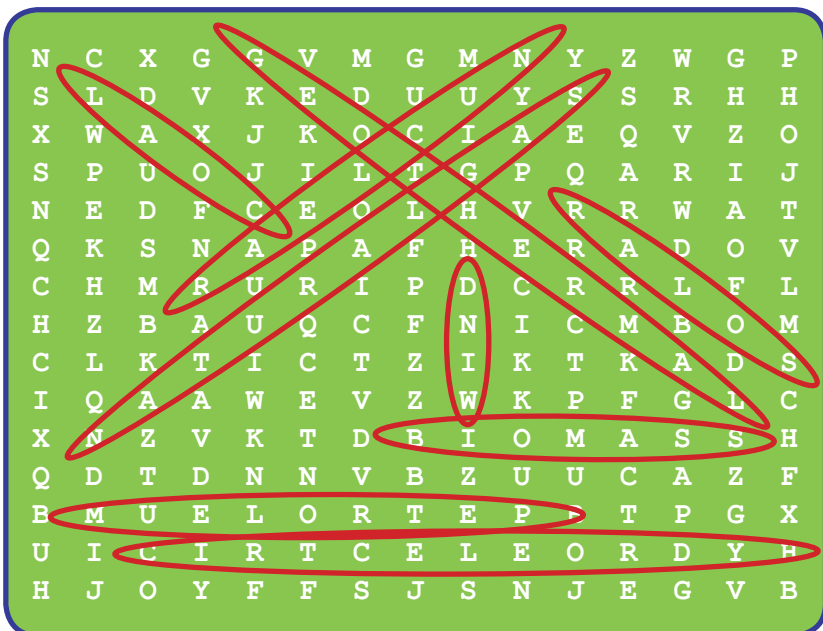
## PAGE 4



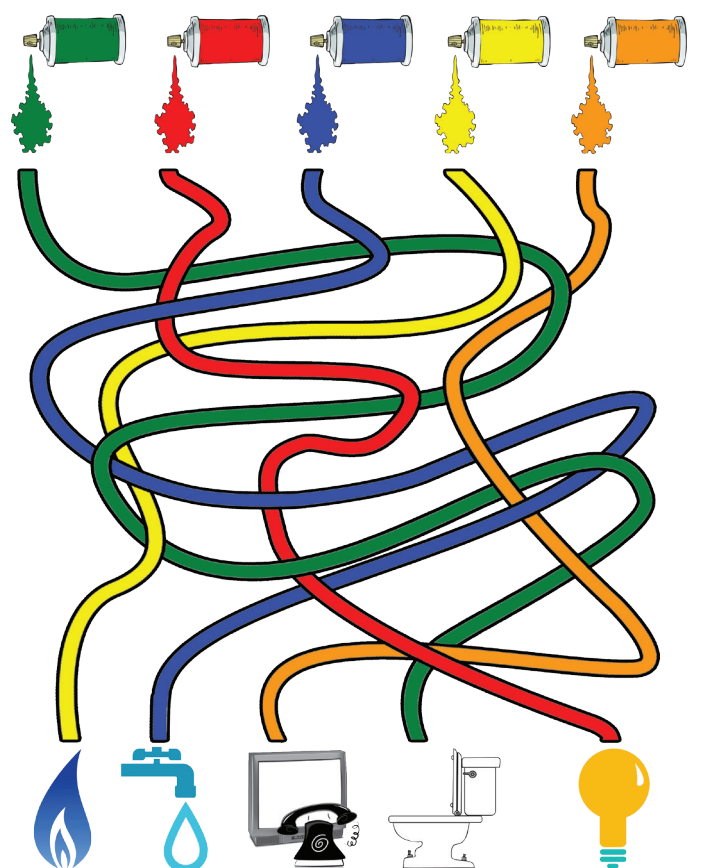
## PAGE 5



## PAGE 6



## PAGE 9



NATALIE GAS FUN FACT: 30% of energy used in buildings is used inefficiently or unnecessarily.

# GLOSSARY

**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.

**Compact Fluorescent Light Bulb/CFL:** A lightbulb that emits light because the gas inside it glows when it is charged by electricity.

**Current:** The movement or flow of electricity.

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

**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.

**Incandescent bulb:** A lightbulb that emits light due to the glowing of a heated filament inside it.

**Kilowatt:** 1,000 watts of electricity.

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

**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.

**Thermostat:** A device that controls the temperature of a heating or cooling system.

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

**Transmission Lines:** Power lines that carry electricity long distances.

**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 amperage 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.

## Sources of Information for this activity book:

- Public Utilities Commission of Nevada, Regulatory Operations Staff
- eHow.com, Light bulb Facts for Kids
- Energystar.gov, Fast Facts on Energy Use
- e-SMART Kids, Energy Glossary
- KidsKonnnect.com, Electricity
  - U.S. Energy Information Administration, Energy Kids
- U.S. Department of Energy, Kids Saving Energy

# ENERGY EFFICIENCY TEAM MEMBERSHIP



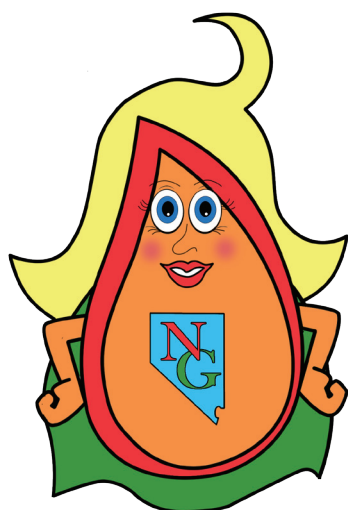
**This certificate is presented to:**

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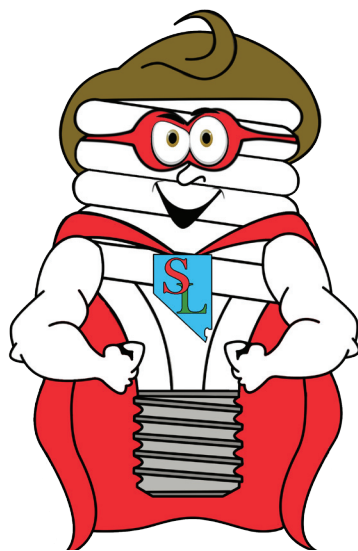
For successfully completing training to become a member of the  
Energy Efficiency Team

on this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_.  
(Date) (Month) (Year)

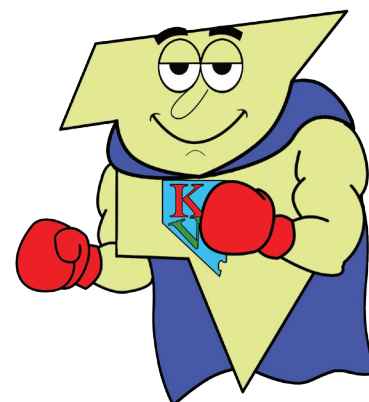
**WELCOME TO THE TEAM!**



*Natalie Gas*  
Natalie Gas, Team Member



*Super Light*  
Super Light, Captain



*Kilowatt*  
Kilowatt, Team Member



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

The mission of the Public Utilities Commission of Nevada ("PUCN") is to supervise and regulate the operation and maintenance of utility services in Nevada.



**NORTHERN NEVADA**

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

**Consumer Complaints: (775) 684-6100**



**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**