

## **FAMILY ACTIVITY**

# Energy Audit

In this activity, the family will select one room in the house that has at least 5 devices or appliances that use electricity and will record the time each of the devices is on for each day for one week. They will calculate the energy used and the cost of energy used. At the end of the week, they will identify the top 3 devices that consume the most electrical energy and develop a plan to reduce the amount of energy used in the house.

## **BACKGROUND**

Have you ever thought about how much your home costs to light, heat, cook, or even watch television? Every lightbulb and appliance in your home uses energy and that energy costs money. Families do not use each room in their homes equally. For instance, your family may spend a great deal of time in the living room or kitchen, but not as much time in the dining room or basement. Recognizing how much energy is used and how much money is spent to use that energy can help a family determine ways to reduce their energy footprint and save money. It is also important to consider that energy use is directly linked to water. All forms of energy require some input of water, including the creation of electricity, oil, and natural gas. Likewise, energy is tied to water usage, as it is needed to extract, purify, deliver, heat or cool, treat and dispose of water and wastewater.

## **PLAN**

In this activity, families will identify one room in their house that has at least five devices or appliances that use electricity. Examples may include light fixtures, plug in appliances, alarm clocks, televisions, computers, etc. Using the worksheet provided, members of the family will record how often each energy consuming appliance was used over the course of a week. At the end of the week, the family will use the common household appliance energy use data sheet to determine how much energy was used in the room for the week. Finally, the family will calculate the total energy cost for the room for the week and make a connection to their monthly water bill.

## **INVESTIGATE**

1. Begin this activity by having the youngest family member select a room in the house. Good choices would be the kitchen or family room. Family members should each walk around the room and identify all energy consuming devices or appliances that are either plugged in or hard wired into the home's energy system (such as light fixtures or ceiling fans.) Record each of the items on the *Energy Audit Worksheet* which is provided.
2. At the end of each day determine how long each energy consuming appliance was used. You may want to round the numbers to the nearest half or full hour. For example, if the family determined that the television was on for approximately 2 hours, record that in the Energy Audit Worksheet under appliance 1. Is there a cable/satellite box and/or sound system connected to the television? Those need to be recorded as appliance 2, 3, etc. There might also be an internet connection device or laptop.

Phones might be charged in the living room and there is probably a light or two. All of these should be considered as energy consuming appliances and recorded on the provided *Energy Audit Worksheet*.

3. Continue to record the amount of time each appliance was used each day for an entire week.
4. At the end of the week, use the following website to record the estimated *Kilowatt Hour* energy used for each of the appliances in the room. If possible, consult the user guide for each appliance to be more accurate.

<http://www.siliconvalleypower.com/for-residents/save-energy/appliance-energy-use-chart>

5. Using a calculator, multiply the estimated kilowatt hours that each appliance uses by the total hours that it was used in the room over the week. Record this number on the *Energy Audit Worksheet* in the kWh used column. This number represents the total energy that each appliance used over the week.
6. Finally, calculate the cost of the energy that each appliance consumed over the week. In 2019, the average cost of energy in the United State is \$0.12 per kWh. Multiply the number in the kWh used column by \$0.12 and record the cost for each appliance for the week. If the family would like to use the average cost in their state, they can use the following website.

<https://www.chooseenergy.com/>

Then, make a connection to your monthly water bill. Understanding how much water you use is the first step in changing the way you might use water in the future!

## NEXT STEPS

To extend this activity, the family could outline a plan to reduce their overall energy consumption. Each family member pledge to reduce the amount of time spent using a device or appliance. Examples include, watching television for only one hour, wash dishes by hand instead of using the dishwasher, or open the windows at night instead of using the air conditioner. The family could also determine how much money they would save in a year by implementing their reduction plan. They could create a family energy reduction challenge for a time and decide on a reward using the money they saved.

The family could also research the cost savings benefit of purchasing an energy saving appliance such as LED lightbulbs or LED television.

## RESOURCES

<http://www.siliconvalleypower.com/for-residents/save-energy/appliance-energy-use-chart>

[Energy Costs by State](#)

<https://www.chooseenergy.com/>

Appliance	Hours Used Per Day							Total Hours	Estimated Energy Usage (from table)	Kwh used (Hours x Est. Energy Used)	Cost (Kwh x \$0.15)
	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7				
1											
2											
3											
4											
5											
6											
7											
8											
9											
10											
<b>Totals:</b>											

**Energy-Water Nexus Connection**

Examine your monthly water bill. Your water bill is calculated in CCF units. This represents cubic feet of water, which equals 748 gallons. The average amount of water used by an *individual* per day is approximately 55 gallons. This amount may vary for your household. Calculate how many gallons of water was used during this energy audit week. How does your family's consumption compare to the average?

