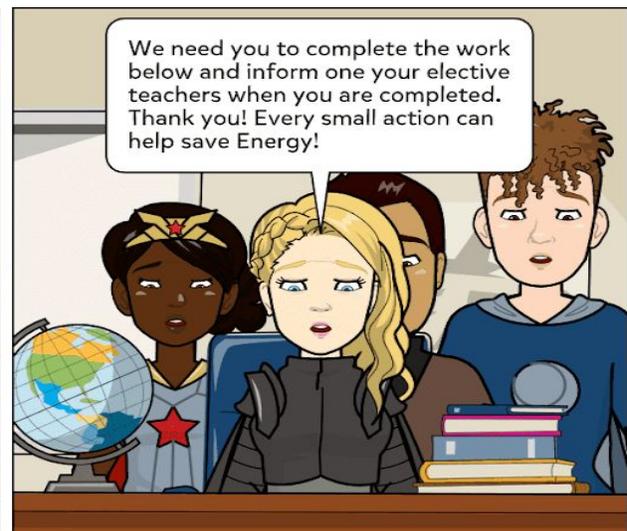


Saving Energy with the IMS HEROes

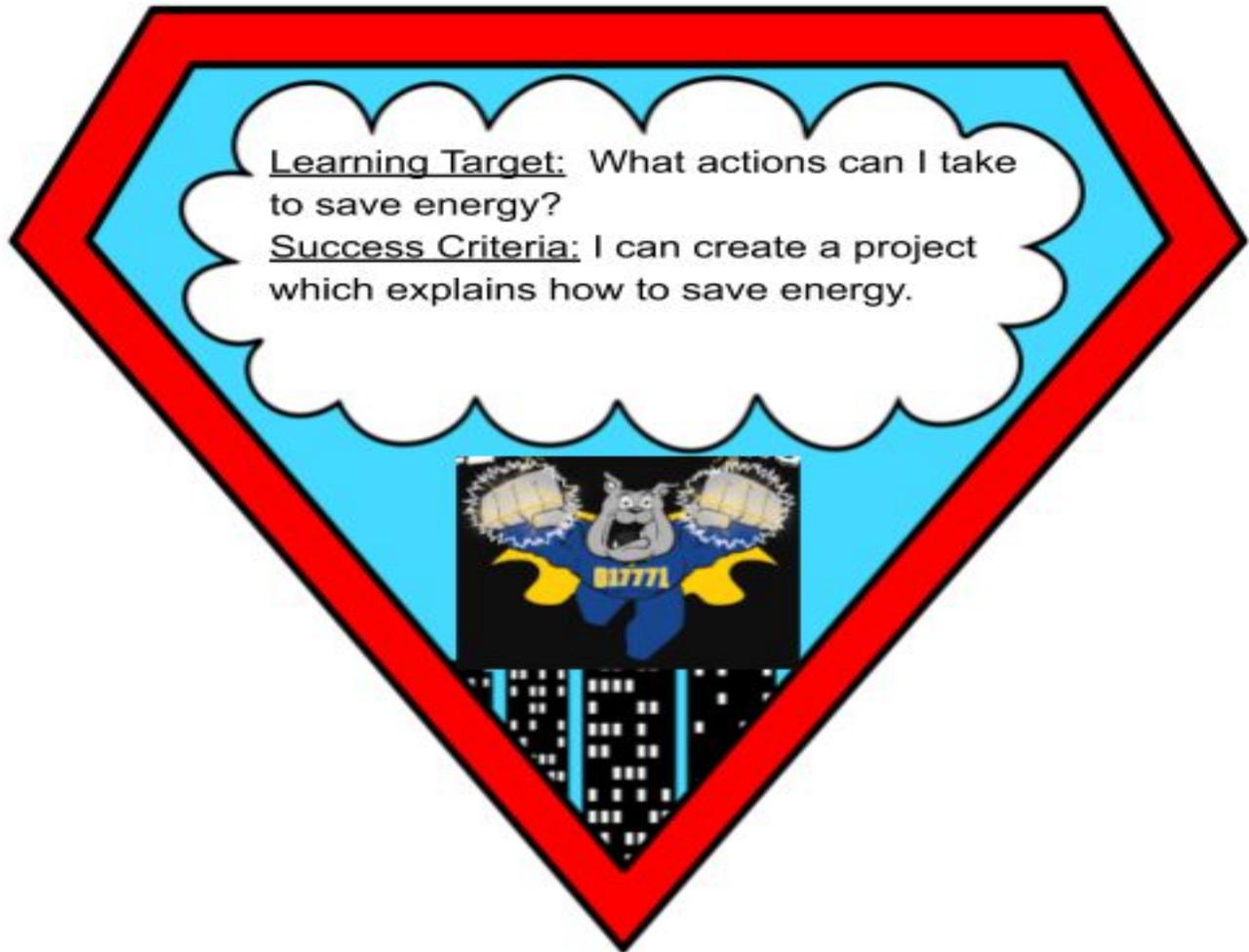


Saving Energy with the IMS HEROs Elective Project

Directions: Before you get started with the project read and review the Key Words to Know. And, preview the entire assignment by scanning or reading through it to get an idea of how to pace yourself for this one week project, that you have the next 3 weeks to complete (remember you also have projects for science and social studies). As you get started you will want to start thinking about what you would like to do as your final project (Assignment #6).

Key Words To Know:

<p>Emissions</p> <p>*The act of producing or sending out something (such as energy and gas) from a source.</p> 	<p>Kilowatt-hour (kWh)</p> <p>*Unit of work or energy equal to the amount produced by one kilowatt in one hour. Video</p> 	<p>Reduce</p> <p>*To make (something) smaller in size, amount, number, etc.; decrease *We are trying to <i>reduce</i> the amount of plastic products our family uses.</p> 
<p>Inefficient</p> <p>*Not capable of producing desired results without wasting materials, time, or energy: not efficient.</p> 	<p>Energy Star Certified</p> <p>*ENERGY STAR is the trusted, government-backed symbol for energy efficiency helping us all save money and protect the environment through energy-efficient products and practices.</p> 	<p>Standby Power</p> <p>*Is electrical power that a device consumes when not in present use, but plugged in to a source of power and ready to be used. Standby power consumption is the amount of such power that is used even though the power drainage is not apparent.</p> 
<p>Greenhouse gas</p> <p>*Is any gaseous compound in the atmosphere that is capable of absorbing infrared radiation, thereby trapping and holding heat in the atmosphere.</p> 	<p>Incandescent Light Bulbs</p> <p>*The incandescent light bulb or lamp is a source of electric light that works by incandescence, which is the emission of light caused by heating the filament.</p> 	<p>If you have more questions on other words in the project, try using dictionary.com for help!</p>



List of Tasks to Complete to Save Energy:

All of the tasks and questions are listed on the following pages. You may edit this document.

Part 1: How Much Energy Do I Use?

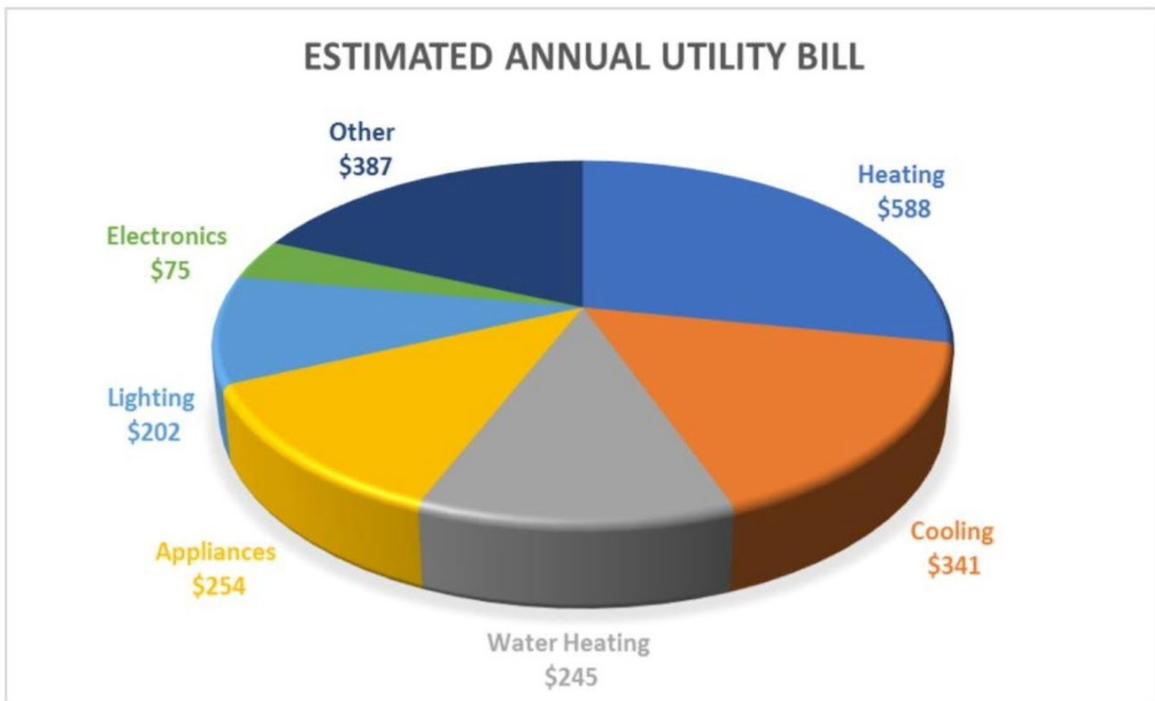
Part 2: What Actions Could I Take to Help Save Energy?

Part 3: Take ENERGY STAR Actions

Part 1: How Much Energy Do I Use? Why Should I Save Energy?

It is very important to save energy. When we use electricity in our homes, chances are a power plant somewhere is burning fossil fuels like coal, oil, or natural gas to produce that power. This creates greenhouse gas emissions (carbon dioxide, methane, nitrous oxide) that make our atmosphere thicker and contributes to hotter air temperatures, a real and urgent challenge affecting people, and the environment, worldwide. Did you know that the average house is responsible for more than 18,000 pounds of greenhouse gas emissions per year? That's nearly twice as much as the average car!

Also, when we use electricity, it costs money. A typical household spends about \$2,000 a year on energy bills (see the chart below).



By using less energy in our homes, we can reduce the amount of money we spend on electricity. We can also reduce the amount of fossil fuels being burned, which means fewer greenhouse gas emissions released into the atmosphere that contribute to increase in air temperatures.

How Much Energy Do I Use?

Assignment #1 What Feeds the Energy Monster?

According to [What Uses the Most Energy in My Home](#) the typical home's top energy usage is:

1. Air conditioning and heating: 46 percent
2. Water heating: 14 percent
3. Appliances: 13 percent
4. Lighting: 9 percent
5. TV and Media Equipment: 4 percent

Your first assignment is to record your habits during the day. Fill in the chart below and record how many times and how long you perform the following activities.

Air Conditioning and Heating:	Water Heating:	Appliances:
Lighting:	TV and Media Equipment:	Other:

How do you think you could save energy in each of these areas?

Air Conditioning and Heating:	Water Heating:	Appliances:
Lighting:	TV and Media Equipment:	Other:

Part 2: What Actions Could I Take to Help Save Energy?

Action #1: Use Energy Star Products:

When a product earns the little blue ENERGY STAR label, it means that it is independently certified to use less energy. With ENERGY STAR certified products you can save 30% or about \$575 on these bills every year while avoiding more than 5,500 pounds of greenhouse gas emissions. That means that simply replacing old, energy inefficient products in your home with ENERGY STAR certified products-- including appliances, electronics, lighting, and more--you and your family can make a big difference by saving energy. And the more energy you save, the more money you save and the fewer greenhouse gas emissions. Last year, ENERGY STAR certified products helped consumers save 170 billion kilowatt-hours of electricity, save \$18 billion in energy costs, and prevent 130 million metric tons of greenhouse gas emissions. Now that's a lot less air pollution!

Lightbulbs are one product that can easily and more cheaply be replaced with ENERGY STAR certified products. We all need light to get stuff done at night, such as homework, eating dinner, reading your favorite book, pretty much everything we do after it gets dark. By switching to light bulbs that use less electricity, we can collectively save a lot of energy. ENERGY STAR certified LED bulbs use up to 90% less energy than incandescent bulbs, and last 15 times longer. In fact, a single light bulb that has earned the ENERGY STAR saves nearly \$55 in electricity costs and prevents 795 pounds of greenhouse gas emissions over its lifetime. If every American home replaced just one light bulb with one that has earned the ENERGY STAR, we would save enough energy to light 3.5 million homes for a year and save more than \$570 million in annual energy costs.

Suggestion: Use [EPA ENERGY STAR's Choose a Light tool](#) to help your family and friends find the best replacement bulbs and then report how many bulbs you were able to switch. Add up the savings using the individual dollar and pounds savings above and report the information below.

Do a Home ENERGY STAR Check-Up

One of the easiest ways for you and your family to start saving money and energy is at home. By replacing old, energy-inefficient products in your home with ENERGY STAR certified products, your family can start saving energy and money while helping to protect the climate.

Assignment #2 to Save Energy: Energy Star Check

Help your family get started by doing a [Home ENERGY STAR Check-up](#). Simply follow the instructions and you'll be on your way to making a big difference in preventing climate change. If you don't have access to a computer, Complete the assignment on the next page.

Offline Alternative Assignment #2 to Save Energy: Energy Star Check

1. How many ENERGY STAR incandescent light bulbs are In your home?

ENERGY STAR Certified Product Inventory # of Total Light Bulbs in Your Home: _____

of Incandescent Light Bulbs (traditional light bulbs, not LED or CFL): _____

Don't forget to count light bulbs you may not think about, like those found in hallways, basement or attics, and outdoor areas!



2. Circle any of the following items found in your home if they are ENERGY STAR certified products.

Furnace/Heating Stove Television Dishwasher Lighting Computer

Gaming Systems Hot Water Heater Electronics Clothes Washer and Dryer

Dehumidifier Air Conditioner Other:

3. Do you feel air leaks or see gaps around any of the following?

Windows Doors Electrical Outlets Outdoor Faucets Under Sinks

Recessed Lighting Dryer Vents Other:

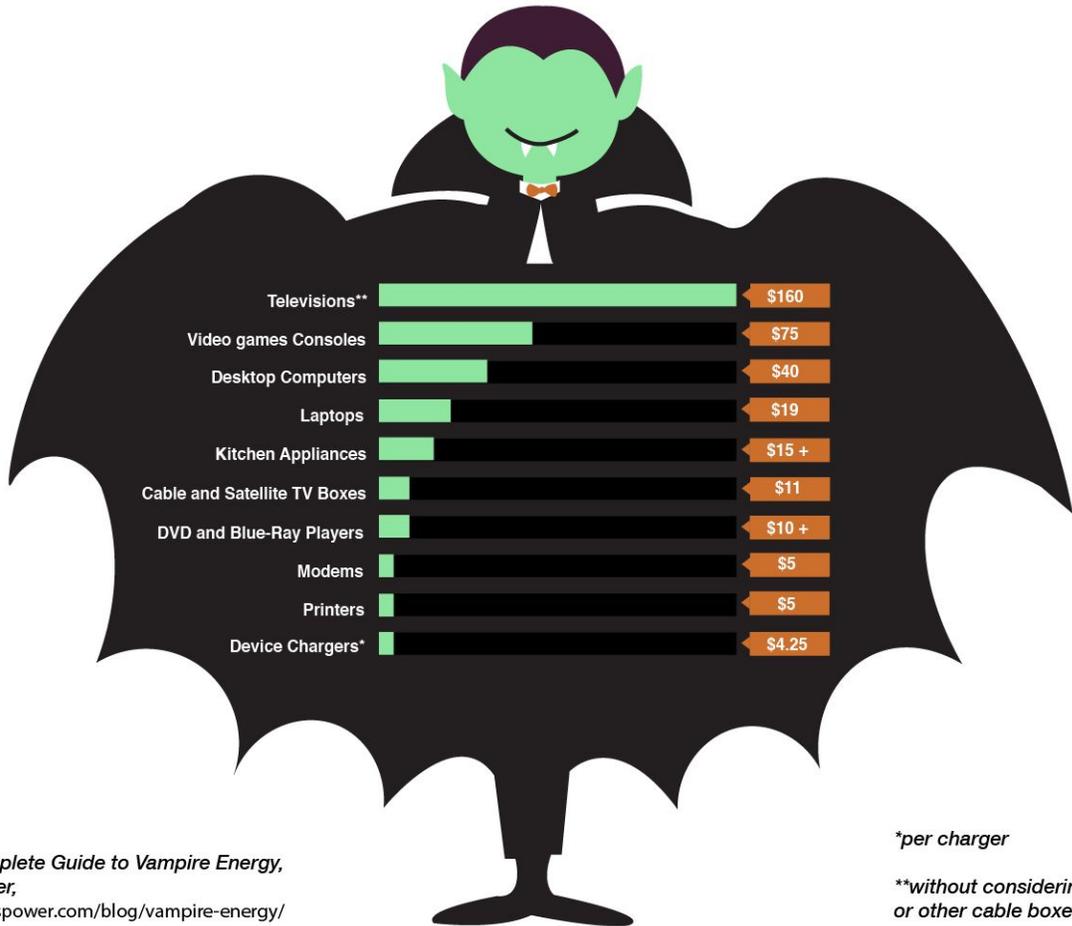
4. Check your computer and electronics. Do you shut them off or put them in hibernate when not in use?

Yes No Only Some of Them

5. What recommendations would you make to someone to reduce the greenhouse gases?

Action #2: Unplug your electronics at night

Vampire Power, also known as standby power, is a term for the electricity that devices consume when they are plugged in to a socket while powered off. This means that even when you aren't charging your phone, the phone charger still sucks electricity! Almost all types of electronics have some vampire power when left plugged in. The graphic below shows just how much electricity each appliance uses over a year while powered off.



Source: Complete Guide to Vampire Energy,
Payless Power,
<https://paylesspower.com/blog/vampire-energy/>

*per charger

**without considering DVRs
or other cable boxes

As you can tell, unplugging your electronics when you aren't using them can save a lot of energy and money!

Assignment #3 to Save Energy: Scavenger Hunt for Devices that Use Vampire Power

1. Which household device in the picture uses the 3rd most Vampire Power?
2. Go around your home and find three examples of Vampire Power.

Part 3: Take ENERGY STAR Actions

Action #3: Take ENERGY STAR Actions

There are a lot of simple things that you can do to save energy and help protect the climate - both in your home and your community. Review these tips and tools to find out how you can start saving today! **Check or highlight the actions you already take**

- Turn off the TV, lights, fans, and other electronics when you aren't using them.
- Use a smart power strip to make sure all electronics are turned off when not in use.
- Put your computer to sleep. Use the power management settings for your computer and monitor.
- Set the big screen to saving. Most TVs have settings that can save energy. Use the Automatic Brightness Control (ABC) which controls the brightness of your TV relative to the room or look for the preset picture settings with the ENERGY STAR label.
- Stream smart with ENERGY STAR. Streaming with electronic equipment that has earned the ENERGY STAR (laptops, TVs, DMPs, set-top boxes, computers) will use 25% less energy than standard equipment. Plus, do not use your game console for streaming. They are great for games but can use 15 times more energy than a digital media player and four times more energy than a traditional cable/satellite set-top box.
- Walk, ride a bike, or skateboard instead of using a car. Cars burn fossil fuels, which contribute to climate change. The less we use, the better!
- Keep doors and windows closed when the air conditioning or heat is on. Hot and cold air escapes quickly. Don't let it get away!
- Don't leave the refrigerator door hanging open when you're figuring out what to eat.
- Help your family weather-strip windows and doors where there are drafts.
- Ask an adult to replace HVAC filters at least once every 3 months.
- Set your thermostat to save the most energy when you're at home, asleep, and away. Learn how at www.energystar.gov/pts.
- Save on hot water use by not leaving the faucet running and taking shorter showers – preferably under 5 minutes.
- When your family is shopping for a new TV, lightbulb, appliance, or other product that uses energy, recommend that they look for the ENERGY STAR. Visit www.energystar.gov/products for a complete list.
- Visit the ENERGY STAR Kids' page - www.energystar.gov/kids - for more fun games and activities.

Assignment #5 to Save Energy: What steps do you already take and what could you do differently?

Assignment #6 Final Project

Create something to teach others how to save energy and bring awareness.

- Newspaper Article or Flyer
 - Write about a family that saved money on their energy bills. Tell what they did.
 - Write about a SUPERHERO coming to town and battling an ENERGY MONSTER!

- Comic Strip
 - In a humorous way encourage people to save energy.
 - Write about a SUPERHERO coming to town and battling an ENERGY MONSTER!
 - This can be done with paper and pencil/pens/markers OR with an online comic strip maker.

- Google Slides/Google Sites
 - Use Google to create a Google Slides or Google Site documenting how your family saved energy! Take pictures and give descriptions. Encourage others to do the same. Show just how easy and FUN it can be to save energy!

- Poster
 - Grab your art supplies and some poster board. Create a poster to show how to save energy. Let your CREATIVITY shine as you encourage others to save energy.

- Cook something without using energy from the stove, fire, or microwave. Design a solar cooker or another cooker that captures energy from the environment. Research what others have done. Use your own thoughts. Experiment! Consider how this cooker helps save energy.

- Write a song encouraging people to save energy.

- Determine how far or long you would have to run to use the same amount of energy people do on average in a month (909 kWh per month of energy). Plan a race that would burn this much energy.
 - How many people would need to participate in the race? How far would they run?