

Name: _____

Class: _____

Date: _____



Energy Vampire Hunt

Student Worksheet

INTRODUCTION

It takes energy to power computers, televisions, and other electronics. Can you think of any other devices in your home that use energy?

Some devices use energy even when they are turned off. These devices are sometimes called “energy vampires.” We may be able to save energy if we unplug these electronics when we are not using them. A quick way to do this is to plug appliances into a power strip that we can turn off, which is like unplugging them.

INSTRUCTIONS

Look around the room and list all the electronic devices you can find. Then decide if it an energy vampire and explain why.

Remember: It’s an energy vampire if it has “active”, “sleep/standby”, or “off” modes. If it can only be turned on or off (like a lamp), then it is a regular electronic device.

Finally, if it is an energy vampire, find out whether the device is left on in “active” mode overnight, put to “sleep,” or turned completely “off” at the end of the day. If devices are plugged into a power strip, find out if the power strips are turned off at the end of the day. Look at the table below and ask your teacher about these modes if you need more help.

Energy Vampire Hunt, continued...

COMMON OPERATING MODES FOR ENERGY VAMPIRES

MODE	
“Active”	Device is on and being used. (Example: a DVD player playing a movie.)
“Sleep/Standby”	Device is in low-power mode. (Example: DVD player is on but not playing a movie.)
“Off”	Device is turned off but still plugged in and ready for action. (Example: DVD player is turned off but could be turned on by remote control.)
“Power strip/ Unplugged”	Device is plugged into a power strip, which is turned off at the end of the day. (Example: DVD player is receiving NO power.)

Electronic Device	Energy Vampire?	Why?	End of Day Operating Mode (Energy Vampires only)
Example: TV	Yes No	It has “on,” “off,” and “sleep” modes	Sleep

Assessment/Discussion Questions

1. List three energy vampires in the room.
2. What mode does an energy vampire need to be in so it's not sucking energy?
3. What is the connection between coal energy and electricity?
4. What is the connection between electricity and CO₂ emissions?
5. What ways can we reduce electrical use from the electronic devices in the classroom?

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Energy Vampire Savings Student Worksheet

Pick one of the energy vampires you found during the “Energy Vampire Hunt” activity and complete the worksheet below. This will allow you to out how much extra money is spent and how much extra CO₂ is emitted into the atmosphere by not unplugging or plugging the energy vampire into a power strip that is turned off at the end of the day.

Energy Vampire: _____ End of Day Operating Mode: _____

a) How many watts does the electronic device use in its power mode when it is not in use? (Use either a “kill-a-watt” device or refer to the table on the backside of this sheet).

kW

b) How much electricity does the electronic device use per night? (Note: Assume it's not in use for 16 hours per night).

_____ kW (from a) X 16 hours =

kWh

c) How much additional CO₂ will the device generate each day because it is still drawing power when not in use? (Note: Based on the national average, each kWh of electricity emits 1.39 pounds (lbs) of CO₂)

_____ kWh (from b) X 1.39 lbs CO₂ per kWh

lbs CO₂

d) How much extra does it cost for the power each day (Note: Based on the national average, each kWh costs \$0.11)

_____ kWh (from b) X _____ \$0.11

\$

c) How much additional CO₂ will the device generate during the school year?

_____ lbs CO₂ (from c) X 180 days

lbs CO₂

d) How much extra \$\$ does it cost for the school year? (Note: for the average school in America?)

\$ _____ (from d) X 180 days

\$

Energy Vampire Hunt, continued...

Device	End of Day Operating Mode			
	Active	Sleep or standby	Off	Power strip or unplugged
	kW	kW	kW	kW
Desktop Computer	0.068	0.017	0.004	0
Laptop Computer	0.022	0.003	0.001	0
Conventional (CRT) Monitor	0.07	0.003	0.002	0
Flat screen (LCD) Monitor	0.027	0.002	0.001	0
Multi-Function Printer, Scanner, Copier	0.015	0.009	0.006	0
LCD Projector	0.230	0.006	0.003	0
TV, less than 40"	0.072	n/a	0.0015	0
DVD/VCR Player	0.011	0.005	0.001	0
DVR/TiVo	0.037	0.037	0.037	0
Other?				

Energy Vampire Hunt, continued...

Assessment/Discussion Questions

1. What are the potential savings if all the energy vampires were left unplugged or have the power turned off?

Energy Vampire	Electricity Savings (kWh)	\$\$\$ Savings	CO ₂ Savings
TOTAL			

2. How can we work as a class to achieve these savings?

3. Why is it good to be doing saving electricity?