

School Energy Investigations - Plug Load

Complete the worksheet below for each room in your building you wish to audit. You will need: Watt meter.

Name _____
Date _____
Room _____

Introduction

A typical office space or classroom requires a lot of energy to keep it running. Calculating how much energy is used by electrical appliances and equipment in buildings makes occupants aware of which use large amounts of energy and which do not. Analyzing how even small energy costs add up to major expenses helps occupants appreciate the need to take personal steps to save energy.

Activity 1 - Appliance Inventory

Use the table below to inventory the devices that use electricity in the room.

Name of Electrical Device	Total Number in Room	Watts (W) ON (Plugged in, Turned on, and In use)	Watts (W) OFF (Plugged in and Turned off)	Phantom Load? (Yes, if device uses energy (W) when turned off)	
				Yes	No
				Yes	No
				Yes	No
				Yes	No
				Yes	No
				Yes	No
				Yes	No
				Yes	No
				Yes	No
				Yes	No

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Activity 2 - The Cost of Using Computers

- Complete the tables below to calculate the cost of electricity “wasted” through phantom load for operating one computer for one year. Use a watt meter to measure and record the watts of electricity used by a computer in the three different modes described.

Type of computer you are measuring: Desktop Laptop Tablet

A. Mode	B. Watts per Mode As measured by the watt meter	C. Average # of Hours on per day Estimated in quarter-hour (.25) increments	D. Watt-hours used per day per mode (B x C) =
1. Powered ON (Plugged in, Turned on, and In use)			
2. Hibernation/Sleep (Plugged in, Remains turned on but in a low-power state)			
3. Powered OFF (Shut down and turned off, Remains plugged in)			

- Does this device use energy in Hibernation/Sleep mode, when it’s Powered OFF, or both? Yes No
- If yes, this is called phantom load. Complete the table below to calculate the cost of energy “wasted” due to phantom load in one year.

E. Total watt-hours used per day (D2 + D3) =	
F. Watt-hours used per month (E x 22 days) =	
G. Total kilowatt-hours per month (F ÷ 1,000 watts) =	
H. Cost of phantom load for one month (G x \$0.13/kWh) =	
I. Cost of phantom load for one school year (H x 10 months) =	

Congratulations! You completed a simple energy audit of room plug load.

Based on your observations and results above, recommend ways to save energy used by electrical devices in this room.