KILL A WATT™ P4400 Operating Instructions

Congratulations! You are now the proud renter of a Kill A Watt™ watt meter. Obtaining your watt meter is the first step towards becoming more aware of the energy you consume on a daily basis.

Why should you care about your personal energy use?

- ✓ Penn State University campuses consume a combined **300 million kilowatt hours** (kWh) of electricity annually. This is the equivalent of the amount of electricity used by over **23,000 homes** per year.
- ✓ University Park energy consumption accounts for about 80% of the total energy consumption from all campuses.
- ✓ Although there have been reductions in energy usage, electricity costs for the University nearly doubled from the 2008 to 2009 rate due to the phase out of rate caps. Penn State's electricity bill totals **$2 million each month.**

As a part of the Penn State community, we are all affected by these costs, as well as the environmental costs of the intensive fossil fuel consumption.

What exactly is a watt meter?

A watt meter is a device that enables consumers to read directly how much power appliances are consuming. Watt meters provide information on electricity usage of appliances, which can be used to calculate energy costs. Follow these steps to understand what your watt meter is telling you.

Step One:
Plug your watt meter into an electric outlet. Then plug the appliance you wish to monitor into the face of the watt meter.

Step Two:
Read and understand the output of the watt meter. On the front of the watt meter you will see six buttons with the labels Volt, Amp, Watt/ VA, Hz/ PF, and KWh/ Hour. In the photograph, the buttons have been numbered to correspond to the following five descriptions. When you press these buttons, the number that appears on the screen is expressed in the unit corresponding to that button.

1. **Volt**—the volt is a unit of electrical potential. The voltage of most household electric outlets in the United States is 120 V, so when you plug your watt meter into an electric outlet, the volt reading will be a number very close to 120.

2. **Amp**—the amp is a unit that measures electric current, telling us the number of electrons in motion through the outlet at any given second.

3. **Watt/ VA**—Press this button once to see how many **watts**, or useful power is being transferred to the appliance per second. Incandescent light bulbs are typically 60 watts, so that means at any given second, 60 watts of power are required to illuminate the bulb.

   Press this button a second time to see the **VA** reading. The VA reading is equal to the product of the Volt and Amp readings; This number expresses the *total power transferred by the electric conversion per*

second and will always be greater than the Watt reading (the amount of useful power)

4. **Hz/ PF**—Press this key once to display **Hz**, or **Hertz**, and twice to show the Power Factor of the appliance. Hertz is a unit of frequency defined as cycles per second. Most electric power is generated at 50 or 60 Hz. **PF** or **Power Factor** is an expression of efficiency calculated by dividing the Watt reading by the VA reading (useful power divided by total power being drawn)

5. **KWh/ Hour**—Press the pink **KWh**/ **Hour** button once to show the total energy consumed since the watt meter was plugged in. A kilowatt is equal to 1,000 watts. If a 60 watt light bulb is left on for 17 hours, it will consume roughly 1 kWh of electricity (60watts/1,000 = .06 kW x 17hrs = 1.02 KWh).

   Press this button twice to show the amount of time that has passed since the unit was turned on, displayed as Hours:Minutes.

Step Three:
Visit
http://green.psu.edu/resources/tools.asp *to find the Office Electricity Calculator. The calculator allows you to enter the KWh and Hour information collected from your watt meter and uses it to calculate electricity costs over the entire year, and for nights and weekends.*

Or, using using the units provided by the watt meter, you can calculate your total energy use and how much it costs. Energy is billed per kilowatt-hour, so:
Cost of electricity = Kilowatt-Hour Meter Reading (the value obtained by pressing the KWH/ Hour button once) x the price you pay for electricity

Yearly Cost = Watt Reading / 1,000 x number of hours you use the appliance per week x 52 weeks in a year x the price you pay for electricity
Penn State pays $.085/ KWh for electricity

To calculate how much you will save by unplugging an appliance over a weekend and/or in off hours:

Plug the appliance into the face of the watt meter, and plug to watt meter into the wall. Leave it plugged in for the amount of time you wish to monitor.
Savings = KWh reading x the price you pay for electricity

Cost of electricity used in a week:

Leave the appliance plugged into the watt meter for an entire week of typical usage, at the end of the week multiply:
Yearly Cost = Weekly electricity usage in KWH x 52 x the price you pay for electricity

Penn State's portal to energy & environmental sustainbility
green.psu.edu
PENN STATE IS BLUE, WHITE AND GREEN

Kill A Watt™ Meter Operating Instructions

Brought to you by:

PENNSTATE UNIVERSITY | LIBRARIES

Campus Sustainability OFFICE

****All data will be lost when the P4400 meter is unplugged. Make sure that you do not unplug the appliance before reading the meter.**