

HOME ENERGY EXPERIMENT



- Search your home to find items that use electricity. Select a few that list their power consumption. Most appliances have their maximum energy use written on them. Look for a number followed by **W** (for **watts**) and list it in the **Energy use** column below. Look close to the electrical cord, on the bottom or back of the device, or on the battery.
- Calculate the **power** these items use in kilowatt-hours (kWh). Do this by multiplying the energy use by one hour and dividing by 1000 watts per kilowatt hour.
- Estimate how many hours the item is running each month on average.
- Calculate **monthly power use**. Do this by multiplying the power use (kWh) by the estimated hours this item is on each month.
- Calculate the cost of energy used by the item per month. Do this by multiplying the monthly power use (kWh) by the Nova Scotia residential electricity rate of \$0.15/kWh.
- Discussion questions follow to draw conclusions from the experiment.

Appliance/Electronic device	Energy use (W)	Power use (kWh)	Estimated monthly hours used (30 days)	Monthly power use	Monthly cost (electricity rate: \$0.15/kWh)
<i>Example: MacBook Pro Charger</i>	85 W	$85\text{ W} \times 1\text{ h} / 1000$ $\text{W/kWh} = \mathbf{0.085}$ kWh	$10\text{ h per day} \times 30$ $\text{days} = \mathbf{300\text{ h per}}$ month	$0.085\text{ kWh} \times 300$ $\text{h} = \mathbf{25.5\text{ kWh}}$	$25.5\text{ kWh} \times$ $\$0.15/\text{kWh} = \mathbf{\$3.82}$

DISCUSSION & CONCLUSION:



1. What item did you use in the experiment that has the highest energy use? What item has the highest monthly energy cost?

2. What item did you use in the experiment that is used for the most amount of time per month? How could you reduce the energy consumption of this device?

3. When you plug a device into an electrical socket, where does the electricity come from before that? What are the most likely sources of electrical energy in your region?

4. What are some of the direct and indirect impacts of energy consumption on the environment?

5. What habit can you change so that you will waste less energy and save money?

CURRICULUM LINKS

Grade 9 Science from Learning Outcomes Framework 2015

Relate electrical energy to domestic power consumption costs (308-18)

Describe the transfer and conversion of energy from a generating station to the home (308-20)

Make informed decisions and propose a course of action on science, technology, and social issues, including human and environmental needs for electricity and energy (113-9, 113-13)

From 2004 Grade 9 Science: Use of Electrical Energy

Relate electrical energy to domestic power consumption costs: Watt as a unit of power ($1W = 1J/s$) (308-18)

Social Studies 9 from General Curriculum Outcomes 2015: PEOPLE, PLACE, AND ENVIRONMENT

C. demonstrate the ability to make responsible economic decisions as individuals and as members of society