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STEWARDSHIP

**ENERGY
EDUCATION**
TOOL KIT

BY INSIDE EDUCATION

STEWARDSHIP: SCHOOL ENERGY AUDIT

GUIDING QUESTIONS

- What is energy stewardship?
- What does energy use look like at your school?
- How can you practice good energy stewardship at school?

STEWARDSHIP

Stewardship is the wise and careful use of something that matters to us — in this case, Alberta's natural resources. Stewardship involves understanding the effects of our choices on these natural resources and the environment, and taking action.

ENERGY STEWARDSHIP

Energy stewardship refers specifically to how we use energy in our day-to-day lives and how we can conserve energy resources.

One way to take action is to evaluate energy use at your school by conducting an **Energy Audit.** An energy audit is an investigation that tells us where, when, why and how energy is being used. Energy audits can be done in your homes, schools, or any building that uses energy.

By completing the following Energy Audit for your school, you will gain a clearer sense of opportunities for reducing energy consumption, using energy more efficiently, saving money, and reducing your school's carbon footprint.

TAKE ACTION!

HEAT LOSS	ELECTRICITY USE	WATER USE
• Draft-proof windows and doors by making sure they're properly sealed • Insulate windows with curtains and blinds • Make sure nothing is covering radiators or vents • Let the sunshine in and turn down the thermostat	• Unplug electronics when they are not in use • Don't turn on the lights unless you need to *(sometimes natural light is enough!)* • Check that the lights in your school are efficient *(LEDs, not incandescents!)* • Use power bars in areas where multiple appliances are used and need to be plugged in *(this makes it easy for you to turn them off all at once at the end of the day!)*	• Turn the faucet off while you're scrubbing your hands with soap in the bathroom • Only flush the toilet once!

HEAT LOSS

Heating and cooling buildings requires energy! Poor design, lack of insulation and drafts can all cause buildings to become too cool or too warm, often resulting in higher energy use. Thankfully, there are ways to minimize heat loss in buildings and improve energy efficiency! How does your school measure up?

This photo shows areas where air enters and escapes homes

This is a thermogram, a photo taken using thermal infrared technology. Thermograms help identify areas of heat loss. Blue represents areas of low heat loss, and red and orange represent areas of high heat loss.

ELECTRICITY USE

Many of the appliances and devices we use in our day to day lives require electricity. For convenience, we often leave them plugged in, even when we're not using them. However, these devices are still using electricity when they're plugged in, even if they're not turned on! This is often referred to as "vampire power" and it also contributes to higher energy consumption. How much "vampire power" exists in your school?

Video game consoles, microwaves, and TVs are common vampire power draining appliances. Can you think of any others?

WATER USE

While it may seem like there is an endless supply of water at school, it takes energy to transport, treat, heat and store water. Every time a toilet is flushed, a sink is turned on, or the drinking fountain is used, water enters a municipal water treatment system and undergoes processes that require energy. Water consumption makes up a component of our environmental footprint. How much water do you think gets used at your school every day?

The Glenmore Water Treatment plant treats drinking water for people living in the south part of Calgary. Where does drinking water come from in your community, and where and how is it treated?

MATERIALS FROM KIT

- **Infrared Thermometer**
- **Energy Meter**
- **1000 mL Graduated Beaker**

MATERIALS FROM CLASSROOM

- **Stopwatch or Timer**

Energy Stewardship In-School Audit

Welcome to the Energy Stewardship In-School Audit! Complete this survey by recording your findings from Sections 1-4 of the Energy Stewardship Activities. All of your results will be added to an interactive web-page where you will be able to see how your school compares with other schools in Alberta! By completing this survey, you are contributing valuable information and being a citizen scientist!

Pre-Survey: School Information

What school board or district is your school in?*
Hint: If you're not sure, ask your teacher!

-Please Select-

Quick! Find and label your school on this map*
Hint: Enter the address of your school and select the "point" drawing tool to label.

Find address or place

TRY THESE ACTIVITIES

Be a citizen scientist!

1. Complete this survey to share how energy stewardship looks at your school:
   > *https://arcg.is/1u4qii*

2. Complete these energy audit activities to look more closely at heat loss, electricity use and water use at your school!

Your results will be added to an interactive map where you can view results from schools across Alberta! To view the map, go to: *https://arcg.is/1ayfz1*

HEAT LOSS

Use the **infrared thermometer** to compare the temperature of different areas in your school *(ie. doorways, near windows, classrooms, exterior walls, interior walls, etc)*. Compare these temperatures with the temperature reading of a thermostat in your school *(if the thermostat is set at 20C and your infrared thermometer reads 15C, heat is escaping!)* Can you figure out where heat is escaping from your school?

ELECTRICITY USE

Use the **energy meter** to measure the amount of electricity used when the device or appliance is turned on, as well as when it is turned off *(but still plugged in)*. How much electricity are these devices using even when they are turned off?

WATER USE

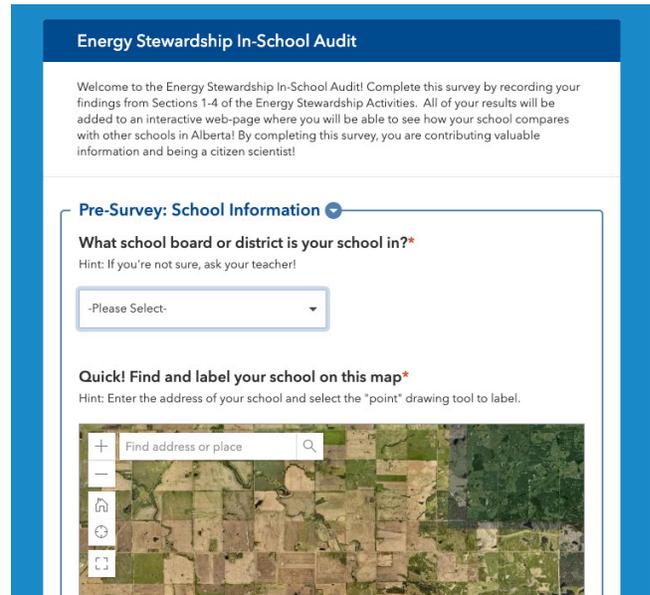Measure the **flow rate** of water from a sink in your school:

- Place the beaker under the faucet
- Start your timer and turn the faucet on at full pressure for 10 seconds.
  Note: if your faucets are automatic, time how long the faucet stays on.
- Measure the volume of water in the container *(in L)*:

Calculate the flow rate per minute:

$$\frac{\text{Volume of water (L)}}{\text{\# of seconds}} \times 60 \text{ seconds}$$

On average, we wash our hands for 20 seconds. So if teachers and students might wash their hands three times each, that's a total of 1 minute per person:

Flow rate per minute × 1 Minute × number of students/staff = *Total litres of water used for hand washing each day at school*