



SCHOOL ENERGY CONSUMPTION ASSESSMENT

UNDERSTANDING OUR SCHOOL'S ENERGY USE

Adapted from EcoSpark's Wattwize: Teacher Guide, Handout #1, available at ecospark.ca.

The energy consumption assessment offers students an opportunity to get the whole picture on their school's energy use. Use the assessment to inform Energy Conservation goals and create strategies to reduce consumption.

Use the **School Energy Consumption Assessment Worksheet** in conjunction with the steps outlined below to gather your data.

The types of energy you will be gathering information on are:

- **Electric** energy for lighting, power, and air conditioning
- **Thermal** energy for heating

4 Steps to conducting a school energy consumption assessment

- STEP 1** collect electricity consumption data
- STEP 2** Collect data and information on other energy consumed by your school
- STEP 3** Analyze your data
- STEP 4** Identify target items and outline strategies

Encourage students to build relationships!



Methods of accessing your school's energy data will vary from school to school, and will likely involve building relationships with various people (i.e. principal, custodian, and Board Facilities Department). Whenever possible, engage students in relationship building and inquiry in this investigation. For younger students, prepare questions in advance.

1 STEP

Collect electricity consumption data

Electricity consumption data can come in various formats. The best format for the purpose of this investigation is monthly or real-time electricity consumption data.

Record your electricity consumption data in the School Energy Consumption Assessment Worksheet

Energy data collection strategies

- **Contact your Ontario EcoSchools Board Representative:** If your school board has an Ontario EcoSchools Board Representative, they may have access to your school's energy data or be able to determine the best strategy for accessing it.
- **Connect to your Board's Facilities Services:** This can be done through your caretaker/custodial staff, via your administrator or by checking your school board's website.
- **Log into your board website or intranet:** Some schools can access their energy consumption data by accessing a specific website. Ask your caretaker/custodial staff or administrator if this exists for your school.
- **Access the Ministry of Education, Utility Consumption Database:** Every school board in Ontario should have access to this database. Contact your Board's Facilities Services or your Ontario EcoSchools Board Representative to see if access to this useful resource can be granted to your school.
- **Read the meter!** Ask your school custodian or administrator to gain access to your school's electricity meter. Record the time and meter reading, then return at the same time the next week to record the meter reading again. From the data gathered you can determine the amount of electricity used in a week (and extrapolate to monthly consumption rates). For more accuracy, do a monthly reading for the entire school year. Compare months to see when energy consumption is highest/lowest.
- **Connect to your Local Distribution Company (LDC) or environmental organization:** Some schools can obtain real-time electricity consumption data through their LDC, or through organizations working within the school (i.e. Eco Champions or Wattwise).

2 STEP

Collect data and information on other energy consumed by your school

Electric energy is one form of energy consumed by schools, to complete the picture investigate what other forms of energy are used in your school and brainstorm how other factors (upgrades, retrofits, portables etc.) may impact energy consumption.

Record your electricity consumption data in the School Energy Consumption Assessment Worksheet

Energy data collection strategies

- **See Step 1** for data collection strategies.
- **Talk to your caretaker/custodial staff or administrators:** These members of the school community have intimate knowledge of the building and how it works; draw upon their expertise to get a better idea of the big picture.
- **Inquire about heating and cooling data** as well as any information on upgrades or retrofits (new windows, roofs) that would impact energy consumption in the school.

STEP 3

Analyze your data

With your EcoTeam, sit down and take a look at your data.

See below for some suggested discussion questions to consider with your EcoTeam.

- Are there any peak months/times or low consumption months/times?
- What are the potential reasons for peak energy draw (e.g., air conditioning in summer, heating in winter, school months vs. summer months)
 - If you have hourly data, see if there are any unusual spikes in energy consumption. See if you can investigate why these spikes occur.
- Calculate your energy consumption per student per month by dividing the total energy consumed in the month by the number of students you have in your school. Optional: calculate the total energy consumed per student for the year.
- What practices could help to reduce energy consumption?
- Set an energy conservation target (5-10% reduction is an achievable goal based on behavioural change). Statistics show that schools with energy conservation education programs can reduce their energy consumption on average by 10%.¹

STEP 4

Identify target items and outline strategies

Use the *Ontario EcoSchools Energy Conservation Action Plan* to help your EcoTeam translate the valuable information you have gathered into practical energy conservation strategies for your school.

Find the Action Plan at www.ontarioecoschools.org

- Based on your energy data analysis and observations of daily practices identify the most common ways energy is wasted in your school.
- Identify practices in your school that can be targeted to reduce energy use and brainstorm strategies to accomplish this goal.
- Record your strategies as part of an *Energy Conservation Action Plan*.
- Communicate the results of your *School Energy Consumption Assessment* and the strategies from your *Energy Conservation Action Plan* with your school community. Post your monitoring in a place where everyone can see it and can track progress on your target practices.

Want to investigate further? Check out the ***School Appliance Audit*** and ***Classroom Lighting Assessment*** to continue your investigations into the use of energy in your school.



SCHOOL ENERGY CONSUMPTION ASSESSMENT WORKSHEET



Adapted from *EcoSpark's Wattwise: Teacher Guide Handout #1*, available at ecospark.ca

Develop a more complete picture of your school's overall energy use to inform best practices and support your energy conservation goals. Consider enhancing classroom learning by using the information collected on this worksheet as part of an energy unit.

School Name: _____ Date: _____

Year School Built: _____ Size (sq ft): _____ Current Student Population: _____

Electricity Consumption Information and Calculations

Monthly electricity use: _____ (kWh) Month: _____

Last year's electricity use for the same month (if available): _____ (kWh)

Annual electricity use (if available): _____ Year: _____

Where did you find this information?

If annual electricity consumption data is not available, calculate your school's annual electricity consumption below.*

_____ kWh/month **X** 10 months/school year = _____ kWh/ school year

* The annual electricity consumption calculation does not account for seasonal variances, renovations, building modifications, etc. The annual electricity consumption calculation is for illustrative purposes only and does not represent precise data regarding your school's electricity use.

Calculate your electricity consumption in CO₂ equivalents

The production of electricity results in greenhouse gas (GHG) emissions, and a unit called a CO₂ equivalent (CO₂e) allows for those emissions to be compared. The CO₂e represents all GHGs (CO₂, methane, etc.) emitted from an action and is determined based on the potential impact on the environment (global climate change potential). According to Environment Canada, producing 1 kWh of electricity in Ontario is equal to emitting 0.180 kg CO₂e.

Calculate the electricity used in your school for lighting for one month and one year:

_____ kWh/school year **X** 0.180 kg CO₂e/kWh = _____ kg CO₂e/school year

_____ kg CO₂e/school year **÷** _____ students = _____ kg CO₂e/student/year

According to the UNEP, an average tree absorbs 12 kg of CO₂ per year.

Take the total GHG emissions produced by your school for the year (bottom row answer in above white box) and divide by 12 to find out how many trees would be needed to balance the emissions created through the production of electricity required to run your school for a year.

TREES





SCHOOL ENERGY CONSUMPTION ASSESSMENT WORKSHEET

Other Energy Usage in the School

School don't just run on electricity, other forms of energy are used to heat and cool the building and ensure that hot water is available. Use this side of the worksheet to learn more about your school building and explore other ways you can help reduce energy use.

Heating

Schools are heated in the same way as homes and apartments. There are a variety of heating methods available, all of which use resources and create emissions. Resources used for heating are wasted unnecessarily when indoor temperatures are kept higher than required.

How is your school heated?

Natural Gas Electricity Steam Boilers Oil Other: _____

What has your school done to raise awareness around the impact of energy use for heating?

Cooling

Air conditioning systems are big users of electricity and though these systems are only used during certain times of the year, they can still make up a large proportion of the electricity bill. Remember that drawing blinds during a sunny day can also keep a room cool.

Does your school have AC? Y / N

What has your school done to raise awareness around the impact of energy use for cooling?

Hot Water Heating

Hot water that comes from the tap is heated and that heating requires energy—often from the burning of natural gas. Encourage students to not leave taps running and report leaking taps to the appropriate people. A leaking tap can waste water as well as the natural gas used to heat the water. One constant drip can waste up to 75 litres of water per week (saveONenergy.ca).

Other Information

Upgrades (e.g., window or boiler retrofits) that would impact energy consumption compared to last year: _____

Portables (have lower thermal efficiency) that can impact energy consumption in the winter.

How many do you have? _____ How are they heated? _____

Specialized upgrades: solar or wind projects that would impact energy consumption compared to last year:
