

ENERGY DASHBOARD ACTIVITY



Objective:

These activities will familiarize you with your school's Energy Dashboard and show you your school's electricity, fuel, and water use.

WHAT IS THE DASHBOARD AND WHY DO WE HAVE IT?

Energy dashboards help your school keep track of, and waste less, energy and resources every day. Currently, there are projects happening with the HRSB and SSRSB to implement this initiative. Someday, we hope to see an energy dashboard in every school in Nova Scotia!

Here are some facts about this project that was first launched in HRSB:

- Energy dashboards are part of the multi-year **Lights Off Energy On** retrofit campaign in 90 HRSB schools
- These retrofits include natural gas boilers, improved lighting systems, building automation systems, water-saving plumbing fixtures and new meter systems to monitor energy use
- When implemented, these upgrades will save \$2.3 million each year in energy and maintenance costs for HRSB
- They will also have big impacts on the environment, such as reducing HRSB's greenhouse gas emissions by 20%
- This is equivalent to taking 1,500 cars off the road or saving 36,000 trees!

Some features of some of your school's new components automatically save energy and help the environment. But there is still a lot of waste, and a lot of ways you can help make your school better!

The dashboard is a great tool to help you understand your school's electricity, water, and fuel (oil/gas) use, and it even shows weather information.

If you are an HRSB school, it also compares your school with the other HRSB schools equipped with an energy dashboard in terms of total energy consumption by the equivalent kilowatt-hour (ekWh) by the square meter (M2) or, as you'll see on the dashboards, ekWh/M2. Using total energy by ekWh/m2 to rank allows for a level playing field to compare each school regardless of its size.

Let's use your dashboard to see where your school is at currently and how we can make things better!

Activity 1 will help you understand the **Energy Dashboard's** information. You can follow this information up with Activity 2.

Activity 2 is to design and implement an **Energy Efficiency Campaign** for your school. You will be able to collect data from the Energy Dashboard over a period of time, display the data visually with graphs, and make inferences and conclusions based on your findings. This information will help you monitor the campaign progress and help you adjust it accordingly.

ACTIVITY 1 – DASHBOARD DISCOVERY

MATERIALS/EQUIPMENT

1. Dashboard
2. Activity sheet (1 per group)
3. Pen/pencil
4. Something to write on

DIRECTIONS

Using your school’s dashboard, complete the following activity. The dashboard displays information about:

- the weather
- electricity demand (use at that moment) and consumption (total cumulative use),
- heating fuel use (oil or gas),
- water use, and
- your school’s rank compared to other schools

A. WEATHER – Sun

1. What is the current temperature?

2. What day in the coming week will be the warmest?

3. What day in the coming week will have the most precipitation?

B. ELECTRICAL DEMAND PROFILE – Lightning bolt

1. How many light bulbs could our school's "electrical draw" light right now?

2. What time does electrical demand increase in the morning? Why do you think this is?

C. DAILY TOTAL ELECTRICAL CONSUMPTION – Lightning bolt

1. How many pizzas could we have baked based on the amount of energy we have used for far today? Does this seem like a lot or a little?

2. So far is the school consuming more or less electricity than yesterday? Checkbox:

More than yesterday

Less than yesterday

D. WEEKLY ELECTRICAL CONSUMPTION – Lightning bolt

1. Have we used more or less electricity today when compared to this day last week?

More electricity than last week

Less electricity than last week

2. What day did we use the **most energy** this week (blue line)? Why might this be?

3. What day did we use the least energy this week (blue line)? Why do you think this might be?

4. What are the 2 things that everyone in our school could do to reduce the amount of electricity that we use every day?

E. DAILY GAS/OIL CONSUMPTION – Flame

1. How many kilometres could we have driven with the amount of fuel we have used so far today?

2. What does our school use oil or gas?

4. How does our school's oil/gas consumption today compare to yesterday's? Why might this be?

More fuel than yesterday

Less fuel than yesterday

F. DAILY TOTAL WATER CONSUMPTION – Water drop

1. How many bathtubs could we fill with the amount of water we have used at school so far today?

G. WEEKLY WATER CONSUMPTION – Water drop

1. Why would the school use water on the weekends when students and staff are not usually here?

2. Have we used more or less water this week than on this day last week? Why do you think this is?

More water than this day last week

Less water than this day last week

H. ENERGY REPORT CARD – Graph with up arrow

1. Where is your school's rank today?

2. How many schools are being ranked on their energy use today?

3. How can we improve the school's ranking?

ACTIVITY 2 – ENERGY EFFICIENCY CAMPAIGN

GUIDE:

1. Students divide into groups of 4-5 students.
2. Each group should work together and develop their own Energy Efficiency Campaign.

MATERIALS/EQUIPMENT

1. Markers/coloured pencils
2. Possible other materials based on students' campaign ideas

ENERGY EFFICIENCY CAMPAIGN

Group members' names:

DIRECTIONS

1. **Reflect** on your assignment with the Energy Dashboard. Think about all of the ways that our school uses the Earth's resources, such as energy, gas, oil, water.
2. **Brainstorm** with your group members and write as many strategies that you can think of that we could put into action as a school community (students, teachers/EPAs, administrators, cafeteria operators, custodians) to make our school more energy-efficient and environmentally friendly.
3. **Decide** as a group which strategy you would like to put into action.
4. **Name your Campaign.** (i.e. Energy Hunters, Efficiency Experts, Conservation Crusade, etc.)
5. **Set a Goal.** State what you would like to accomplish. (For example: reduce energy usage by 20%)
6. **Create a Plan.** Decide what you are going to do in order to get our whole school community to participate in order to reach your goal. Record the steps of your plan.
7. **Assign Jobs.** Decide who is going to be responsible for all of the actions included in carrying out your plan.
8. **Action.** Now it's time to put your plan into action.

CURRICULUM LINKS

Grade 6 Science

Consumption and Conservation: Describe how our actions could lead to reducing electrical energy consumption in your environment (108-5, 108-8, 303-30, 106-3)

Grade 6 Social Studies

6.2.2 Assess the relationship between culture and environment in a selected cultural region
– *Evaluate the impact that culture has on the environment*

Grade 7 Science

GCO 1. Students will develop an understanding of the nature of science and technology, of the relationships between science and technology, and of the social and environmental contexts of science and technology.

SCO 3.22: Recognize the characteristics of supportive environments for environmental sustainability.

Grade 8 Science

113-10 Provide examples of problems that arise at home, in an industrial setting, or in the environment that cannot be solved using scientific and technical knowledge

211-2 Communicate questions, ideas, intentions, plans, and results, using lists, note in point form, sentences, data tables, graphs, drawing, oral language, and other means

211-4 Evaluate individual and group processes used in planning, problem-solving, decision making, and completing a task

CROSS-CURRICULAR LINKS

Social Studies Primary

- Learners will investigate how cooperation is an important part of being a group member;
Indicator: Investigate strategies for effective cooperation

Social Studies 1

- Learners will analyse the difference between needs and wants; Indicator: Investigate the difference between needs and wants (CO, PCD, CT)

Social Studies 4

- Learners will investigate the relationships between humans and the physical environment;
Indicator: Question the impact that humans have on the environment (CZ, COM, CT, TF)

Social Studies 6

- Learners will compare sustainability practices between Canada and a selected country; Indicator: Investigate factors that influence sustainability practices. (CZ, COM, CI, CT, TF)
- Learners will implement age appropriate actions that demonstrate responsibility as global citizens; Indicator: Analyse various perspectives on a position in relation to a local/national/international issue. (CZ, COM, CT, PCD, TF)

Social Studies 8

Unit Four: Citizenship

8.4.1 take age-appropriate actions that demonstrate the rights and responsibilities of citizenship (local, national, and global)

Social Studies 9

Theme Three: Economics

9.3.5 analyze local, regional, and global economic patterns and related issues that are challenging Atlantic Canadians

Theme five: Interdependence

9.5.2 examine and analyze how Atlantic Canadians are members of the global community through different interconnected systems

9.5.4 demonstrate an understanding that the future well-being of Atlantic Canada involves cooperation with the national and global communities

Science 1

Earth and Space Science: Daily and Seasonal Changes

- Learners will analyse daily and seasonal change in the environment; Indicator: Investigate the interconnectedness of living things and seasonal cycles (CZ, COM, CT)

Science 2

Learners will analyse the interconnectedness of air and water in the environment, inclusive of a Mi'kmaw perspective; Indicator: Analyse how personal actions can contribute to healthy air and water (CZ, COM, PCD, CI, CT)

Science 5

- Learners will investigate how weather impacts daily life; Indicator: Investigate how weather affects living and nonliving things in a local environment (CZ, COM, CT)

Energy, Power, and Transportation Technology 11

Unit 4: Nature and Sources of Energy

4.1 say where fossil fuel resources are located in Nova Scotia and identify different types of characteristics

4.4 identify the six major forms of energy, and state the meaning of the laws of energy conservation

Unit 5: Power Generation, Transfer, Control, and Conservation

5.1 describe how Nova Scotians produce power from the three basic energy source groups

Unit 6: Environmental Impact of Energy, power, and Transportation

6.1 explain the coal mining process and appreciate the possible negative and positive impacts on society and the environment

6.2 express the major principles of how to conserve energy in any system, including heat loss, gain, and other thermal properties

6.3 provide examples of methods used to save energy in the commercial and residential sectors of society, and identify the use of several energy-saving appliances

6.5 observe how the use of power contributes to pollution, and list the major sources of pollution