

# ENERGY WEBQUEST ACTIVITY



## Objective:

These activities will familiarize you with your school's Energy Dashboard and show you your school's electricity, fuel, and water use. You will use the internet or the dashboard to find the answers to your questions.

Students will be introduced to the Energy Dashboard and what type of information it provides using a WebQuest. This will be used as a starting point for students to begin thinking about what we can do as a school population to be kind to our environment and work towards a sustainable planet Earth. The follow up activity will be to plan and implement an Energy Efficiency Campaign based on the Energy Dashboard WebQuest findings.

## MATERIALS/EQUIPMENT

1. Access to Energy Dashboard and its URL
2. Computers
3. Paper
4. Markers/Coloured Pencils
5. Possible other materials based on students' campaign ideas

## INTRODUCTION

1. Ask students: Does anyone know where the Energy Dashboard is in our school? What does it do?
2. Have a quick discussion and then take students to see it in the lobby of the school.
3. Stay long enough for the Dashboard to scroll through the screens and briefly explain each one. (Return to the classroom)
4. Discuss why they think we would have the Energy Dashboard in the school? What purpose does it serve?
5. Exit Slip: Have students write down three things they learned from and/or about the Energy Dashboard.

# ACTIVITY 1

(\*Access to internet required for each student)

1. Provide each student with a copy of the WebQuest. (see attached)
2. Students should use the URL for the Energy Dashboard in order to answer the questions on their paper.

## ENERGY DASHBOARD WEBQUEST

Name: \_\_\_\_\_

### DIRECTIONS

Complete the following assignment using your school's Energy Dashboard URL.

#### A. Click on the sun icon and answer the following questions:

1. What is the current temperature?

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2. What day will be the coldest this week? What will the temperature be?

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3. How much rain are we expected to get over the next 5 days?

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4. What will be the windiest day this week? How fast will the wind blow?

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#### B. Click on the lightening bolt icon and look at the school's "Electrical Demand Profile" and answer the following question:

1. How many light bulbs could our school's "electrical draw" light right now? Explain what you think this means.

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\_\_\_\_\_  
\_\_\_\_\_

#### C. Click on the yellow arrow (▶) and move to the screen that says "Daily Total Electrical Consumption" and answer the following questions:

1. Are we using as much electricity today as we were yesterday? Why do you think this is?

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2. How many pizzas could we bake based on the amount of energy we have used today so far? Does that seem like a lot or a little?

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**D. Click on the yellow arrow (➔) and move to the screen that says “Weekly Electrical Consumption” and answer the following questions:**

1. Have we used more or less energy this week compared to last week? Why do you think this might be?

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2. What day have we used the most energy this week? Why do you think this is?

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3. What day have we used the least energy this week? Why do you think this is?

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

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**E. Click on the yellow arrow (➔) and move to the screen that says “Daily Oil Consumption” and answer the following questions:**

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

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2. What does our school use oil for?

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3. Why do you think the school's oil consumption changes throughout the day?

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**F. Click on the yellow arrow (▶) and move to the screen that says “Daily Total Water Consumption” and answer the following questions:**

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

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2. Name 4 ways that we use water in our school.

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3. Explain 2 things we can do at school to reduce the amount of water that we use.

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**G. Click on the yellow arrow (▶) and move to the screen that says “Weekly Water Consumption” and answer the following questions:**

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

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

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3. How many litres of water have we used in one week at the school?

**H. Click on the yellow arrow (j) and move to the screen that says "Energy Report Card" and answer the following questions:**

1. What school has the worst energy report card? What could be some reasons for this?

2. What school has the best energy report card? What could be some reasons for this?

3. Is your school closest to the best or worst? Explain why you think this is?

4. What can be done to decrease energy use in your school?

## *ACTIVITY 2*

1. Divide class into groups of 4-5 students.
2. Each group is responsible for their own Energy Efficiency Campaign (see attached)
3. Each group should work together and is responsible for their own Energy Efficiency Campaign.

## ENERGY EFFICIENCY CAMPAIGN

Group members' names:

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### DIRECTIONS

1. **Reflect** on your assignment with the Energy Dashboard. Think about all of the ways that our school uses the Earth's resources like energy, 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 operator, 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.

### ENERGY EFFICIENCY CAMPAIGN RUBRIC

Name: \_\_\_\_\_

Specific Curriculum Outcomes (SCOs) - SCO 3.22: Recognize the characteristics of supportive environments for environmental sustainability.

<input type="checkbox"/> Participation: Student participated fully in the group project by completing his/her assigned tasks. Was focused and not distractive. <input type="checkbox"/> Campaign name stated <input type="checkbox"/> Campaign goal recorded <input type="checkbox"/> Steps of plan are detailed and recorded <input type="checkbox"/> Every student was given a role in carrying out the plan				
<b>Overall:</b> Student is able to recognize the characteristics of supportive environments for environmental sustainability.	1	2	3	4
<b>Comments:</b>    				

Credit: Jillian Ross, Graham Creighton Junior High School

## **CURRICULUM**

### **Science 6**

#### *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)

#### *Physical Science: Electricity*

- Learners will evaluate renewable and non-renewable sources of energy; Indicator: Analyse impact of electrical energy consumption (CZ, COM, PCD, CT, TF)

### **Science 7**

**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.

### **Science 8**

**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

### **Science 9**

#### *Electricity, Energy, and the Environment*

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

- 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)

### **Social Studies Grade 1**

- Learners will implement age-appropriate actions for responsible behaviour in caring for the environment; Indicator: Investigate responsible behaviour and caring for the environment, inclusive of Netukulimk (COM, PCD, CT)

### **Social Studies 2**

- Learners will analyse ways for supporting sustainable development in local communities; Indicator: Investigate a sustainability issue in the community (CZ, COM, PCD, CI, CT, TF)

## **Electrotechnologies 11**

### *Module 2: Power Distribution and Conversion*

2.6 demonstrate an understanding of the environmental impact of a range of power generation systems

2.12 make connections among their learning, their own lives, and their communities

## **Energy, Power, and Transportation Technology 11**

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

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

## **CROSS-CURRICULAR**

### **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**

**6.2.2** Assess the relationship between culture and environment in a selected cultural region

– *Evaluate the impact that culture has on the environment*

- 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