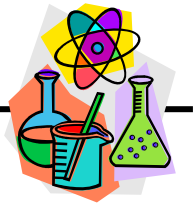
Grade 9 Unit D: Electrical Principles and Technologies

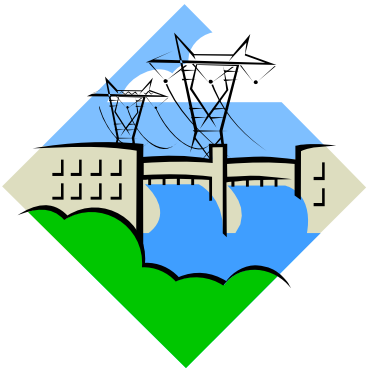


Impact of Electrical Energy

Did You Know? Much of the energy produced in Canada is made in hydro-electric power plants.

Electrical energy is made in generators.

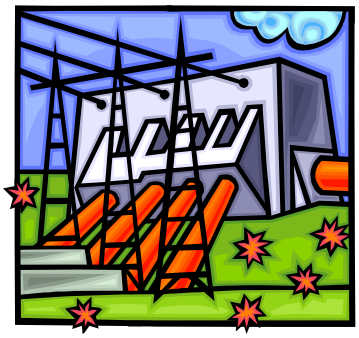
Generators have turbines that spin when water, steam or wind passes through them.



A dam creates hydro-electrical energy when the force of falling water turns the turbines in the dam.

Windmills are a type of turbine that uses the wind's energy to create electricity.

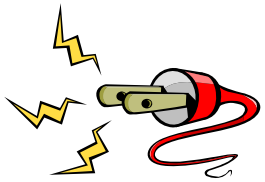
1. Before you begin, review Processing and Displaying Data. Illustrate and explain how electricity is generated in one of the following types of power plants found in Canada. Create a presentation or display for classmates.



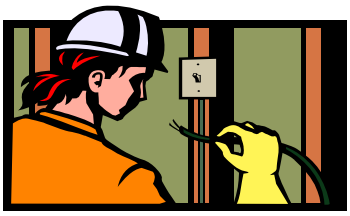
   - Hydro-electric
   - Thermo-electric
   - Thermonuclear
   - Other

Use Tools Thinking About Purpose for Presentations and Thinking About Form for Presentations.

2. Contact a power company representative in your area by telephone, letter or e-mail and ask for information on how the company produces energy. Share the information with classmates.



Use Tool Letter Planner.



3. Investigate employment opportunities in the electrical industry, e.g., radio/TV repair, electrical assistants. Share your findings with classmates. Go to the ALIS Web site at www.alis.gov.ab.ca and link to OCCinfo (Occupational Profiles). Then, search by industry – utilities industry. Be sure to explore the employment outlook section of each profile. You may wish to explore other industries that have an indirect link to the generation of electricity, such as mining.

Electrical Energy in the Community

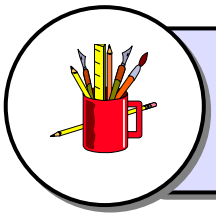
Electrical energy is used in many different ways. It is used to cook food, wash clothes, light buildings and streets, and do many other things in our daily lives.

Much of the energy we use comes from **non-renewable** energy sources, such as coal, oil and natural gas. Other energy sources come from **renewable** resources like wind and water.

4. List other examples of renewable and non-renewable energy sources.

Renewable Energy Sources	Non-renewable Energy Sources

5. Find out the energy source of your local power plant. Create a PMI chart to explore the positive and negative consequences of this source.



Use Tool PMI Chart.

Energy storage: Energy is held and contained for future use.

Energy transmission: Energy is moved from storage to be used by consumers.

6. Find out about the power plants that generate, store and deliver power to your community. Find the answers to the following questions and others that you would like answered.
   - Where are the power plants located?
   - How does electricity get from power plants to your home?
   - What are the by-products (waste materials) created when the plant creates energy?
   - How do these by-products affect the environment?
   - _____

     _____

     _____

     _____

Use Tools Question Organizer I or Question Organizer II.

7. With a group, brainstorm the benefits of electrical technologies and issues related to them. Discuss electrical technologies such as those used to create and operate:
   - personal computers
   - cell phones
   - video games
   - the Internet.

Use Tool Discussion Notes.

8. Investigate facilities in your community for disposing of electrical technology equipment (e.g., old computers, monitors, cell phones, cables, batteries). Summarize this information below.

Consider the amount of waste generated from electrical technologies, the disposable nature of new technology, the amount of packaging used and the chemicals used to make electrical technology equipment.

What impact do you think electrical technologies have on the environment?

9. Some interest groups have created guidelines to reduce energy use. For example, EnerGuide provides information on the energy efficiency of appliances. With a partner, investigate people's concerns about the conservation of energy resources and what can be done individually and as a community. Create a display that describes these concerns.