Skills and Strategies

- Processing and Analyzing
- Evaluating
- Communicating

What You Need

- access to information resources (for example: online, in-print, interviews)

Energy Source Scenarios

Deciding on the best source of energy to generate electrical energy in a particular setting depends on many variables. Costs, environmental impacts, availability, reliability, and convenience are just a few of the many factors to consider.

Question

Which energy source is the best choice in a given situation?

Procedure

1. As a group, decide on a scenario in which you will compare two energy sources that can be used to generate electrical energy. Some scenarios you may choose from are below. You may also conduct research to create your own scenario.
   - **Scenario 1:** A ski hill on the south side of a mountain in southeastern B.C. is choosing between generating electrical energy with photovoltaic cells or buying electrical energy generated by a large commercial hydroelectric dam.
   - **Scenario 2:** A family wants to generate electrical energy for their isolated cabin in northwestern B.C. Their cabin is in a position to take advantage of a nearby geothermal energy source (hot springs) on a small scale. They are choosing between this option and a diesel-powered electric generator.
   - **Scenario 3:** A 20-home housing development is being constructed on the west coast of Vancouver Island. The owner would like the development to generate its own electrical energy. It is an area with strong steady winds, so building wind turbines on land is an option. The owner is also considering placing turbines in the ocean that will transform the kinetic energy of ocean waves into electrical energy.
   - **Scenario 4:** A mining operation in northeastern B.C. needs a source of electrical energy to run its processing facilities. The company could purchase electrical energy generated by a natural gas generating station or build a small run-of-river station on a river on its property.

2. Decide on factors you will consider and how you will rank and judge their importance. In a group, brainstorm answers to the following questions.
   - What key factors should be considered when choosing an energy source for a particular situation?
   - How can one factor be weighed against another?
3. Prepare a plan for comparing the two sources of energy in your group's scenario. Explain how you will assess the reliability of the sources you are using in your research. Have your teacher approve your plan before proceeding.
4. Make a list of the major advantages and disadvantages of each energy source.
5. Identify factors that might be particularly important in the scenario you chose.
6. Decide on which factors you think should be given the greatest weight, and rank them from most important to least important. Explain your reasoning.

Process and Analyze

1. Compare each energy source based on the factors you chose. Assign each energy source a score for each factor. For example, an energy source might receive a +2 for environmental impacts but a −1 for cost.
2. Some advantages and disadvantages are immediate (such as the initial cost of construction) while others are realized over a much longer period of time (such as gradual pollution of an ecosystem). Summarize how you weighed short-term versus long-term factors.

Evaluate and Communicate

3. Tally your results and reach a conclusion.
4. Prepare a recommendation that could be used to inform people involved in the situation you chose. Use a format of your choice, keeping your audience in mind.