

Introduction to Wind Energy

Re-Energy

Activity

Grade Level 6-12



Main Objective

In this activity, learners will understand how wind can be harnessed to generate electricity and learn about the benefits of wind energy as a renewable energy source.

Learning Outcomes

By the end of this activity, learners will:

- Understand how wind can be harnessed to generate electricity
- List causes of wind
- Describe the benefits of wind energy as a renewable energy source

Length of Activity: 1-1.5 hours

Step 1: Introduction to wind energy

Step 2: Watch a wind farm video

Step 3: Research about the Bull Creek Wind Farm

Materials List

- Internet-enabled device
- Introduction to Wind Energy Backgrounder

Curriculum Connections

Alberta

Science 7: Heat and Temperature

Science 9: Electrical Principles and Technologies

Science 10: Energy Flow in Technological Systems

Science 24: Understanding Common Energy Conversion Systems

Science 20-4: Understanding Common Energy Conversion Systems

Science 30: Energy and the Environment (D1.4, D1.5k, D1.3s, D2.3k, D2.1sts, D2.3s, D2.4s)

Ontario

Science & Technology 6: Electricity and Electrical Devices (1.1)

Science & Technology 7: Heat in the Environment (1.2)

Science 9: The Characteristics of Electricity (Academic) (E1.2)

- Electrical Applications (Applied) (1.1)

Environmental Science 11: Scientific Solutions to Contemporary Environmental Changes (U/C Preparation) (B1.2)

- Conservation of Energy (U/C Preparation) (F1.1)

- Energy Conservation (Workplace Preparation) (D1.2)

Physics 11: Electricity and Magnetism (F1.2)

Physics 12: Energy Transformation (E1.1, E1.2)

Chemistry 12: Energy Changes and Rates of Reaction (D1.1)

Activity

Step 1: Read the Backgrounder

Allow learners to read the "Introduction to Wind Energy Backgrounder" and go over it together as a class. After reading the backgrounder, allow learners to answer the questions given below either individually or in groups:

- What causes winds to blow on the surface of the Earth?
- What are some of the environmental benefits of using wind power?
- What is a "wind farm"?
- Describe some ways wind energy is used in the region where you live.

Step 2: Watch a Video

Watch the documentary below about the innovative wind farm project in Bull Creek Alberta:

 [500 Alberta schools powered by renewable wind energy](#) (7:06 minutes)

Step 3: Research Activity

After watching the video, divide the class into groups, and have learners research the Bull Creek wind farm project in Alberta using resources listed below:

- "Alberta Schools Wind Power Initiative":

 <https://bluearthrenewables.com/projects/bull-creek-wind-facility-2/>

- "Wind Power to Supply 500 Alberta Schools":

 <https://www.cbc.ca/news/canada/calgary/wind-power-alberta-schools-1.3511766>

- "Wind Farm Powers 500 Alberta Schools - Long-term contract for energy provides budget stability":

 <https://www.pembina.org/blog/wind-farm-powers-500-alberta-schools>

Allow the groups of learners to answer these questions during their research:

1. What are some ideal conditions required for a wind farm to be installed?
2. What are some of the benefits of transitioning to wind energy highlighted in this project?
3. Why does the long-term energy contract bring stability to the budget of the schools who signed onto the agreement?
4. What are some important takeaways from this project that can help with the development of future wind energy projects?

Extension Idea

1. Is there wind potential in your area? If yes, can your school benefit from wind energy depending on the location of your school?
2. What steps can you take to advocate for transitioning to a renewable energy resource for your school?