

Build a Hydroelectric Generator



**Re-Energy
Activity
Grade Level 6-12**

Main Objectives

In this construction activity, learners will use plastic spoons to build a model of a simple micro-hydro system. Learners will also evaluate their micro-hydro system design and answer questions about clean energy.

Learning Outcomes

By the end of this activity, learners will:

- Identify the purpose of and specific requirements for making a hydroelectric generator
- List the steps needed to construct a hydroelectric generator

Curriculum Connections

Alberta

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, D2.4k, D2.1sts, D2.3s, D2.4s)

Ontario

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

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

- Electrical Applications (Applied) (E1.1)

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

Length of Activity

2 hours (Two class periods)

Materials List

Internet-enabled device
Hydroelectric Generator Construction Plan
Materials and tools to build the hydroelectric generator as outlined in the Construction Plan
Micro-hydro Templates

Procedure

Step 1:

Set up stations of complete materials to build a hydroelectric generator in different areas of the room. Set up enough stations to accommodate all learners.

Step 2: Build It!

- Review the Hydroelectric Generator Construction Plan as a class.
- Then, build it! Please ensure you follow all safety precautions outlined in the Construction Plan and that you pay close attention to the steps on pages 4-11.

Discussion Questions

Refer to the Hydroelectric Generator Construction Plan

1. What variables in a micro-hydro system could you change to get more electricity from it?
2. In what locations in Canada or other parts of the world would micro hydro be a good choice for

clean energy?

3. What practical problems would you encounter in setting up and running a micro-hydro system in a rural area?
4. Why are micro-hydro systems seen as better for the environment compared with large-scale dams?
5. Use the Internet to locate distributors and manufacturers of micro-hydroelectric components. Use the search terms "micro-hydro", "pelton wheel", and "run of stream."