

# Introduction to Hydro Energy

Re-Energy  
Activity  
Grade Level 6-12



## Main Objectives

Learners will learn about hydro energy; how electricity can be generated from flowing water. Learners will explore the co-benefits and tradeoffs of large hydro power systems and compare it with micro hydro systems.

## Learning Outcomes

By the end of this activity, learners will:

- Describe how flowing water can be converted into electricity
- Describe the benefits of waterpower as a renewable energy source and compare it to non-renewable energy sources
- List the co-benefits and tradeoffs of micro hydro power vs. large hydro power systems

## 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

1 hour

## Materials List

Internet-enabled device

Introduction to Hydro Energy Backgrounder

## Procedure

### Step 1

Allow learners to read the "Introduction to Hydro 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:

- Explain how or why electricity derived from moving water can be considered renewable energy.
- What are some of the environmental problems associated with large-scale hydro dams?
- What type of location would be best suited for a micro-hydroelectric system?
- What are the advantages of waterpower over fossil fuel for making electricity?

### Step 2

Watch the video below on Micro Hydropower:

- [Micro Hydropower : Turbulent Turbines](#) (14:02 minutes)

Allow learners to answer the following questions individually or in groups after watching the above video:

- a. What are some of the co-benefits and trade-offs of micro hydro power compared to large hydro power systems?
- b. What role can micro hydro power play in providing stable electricity to remote communities in Canada?
- c. In the video, the narrator uses economic principles to compare the cost of micro hydro power vs. off the grid solar. Can you explain the aspects he considered when making the comparison?
- d. Like the Green School in Bali, how can schools in Canada make use of renewable energy to power its operations?
- e. What are some points to consider when planning a micro hydro project in an off-grid community?

### Extension Idea

1. Take a virtual tour of the [Brookfield Hydroelectric Powerplant!](#)