

## Section 4


### Understanding Earth and Space Systems

#### EXPLORATION 2

## The Power of Hydropower

Investigate how moving water powers things.

Have you ever visited Niagara Falls in Ontario? If you have, you would probably agree that moving water is a powerful force to behold. However, this force of moving water is not only impressive to watch but it can also be transformed into different forms of energy to power our homes. Water is a renewable resource, so hydroelectric energy is a renewable source of electricity. Since there are many rivers across Canada, we have lots of hydropower to generate electricity for us to use.



*During high flow season, as much as 144 000 cubic metres of water flow over the falls every minute.*

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Try this experiment to learn how power can be obtained from moving water.

### Materials:

- a plastic bottle
- scissors
- tape
- 10 coins
- 2 straws
- a skewer
- a glue gun
- string

### Steps:

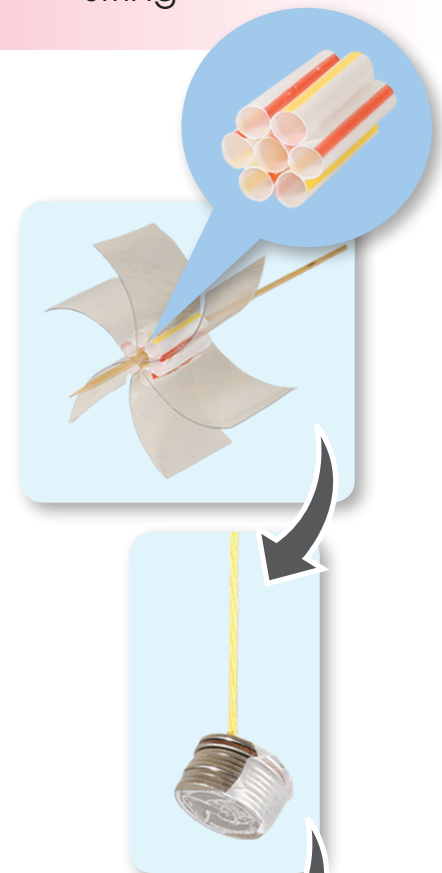
#### Make a waterwheel.

1. Cut the straws into seven 4-cm-long pieces.
2. Glue the pieces of straws to form a bundle.
3. Slide the skewer through the centre of the bundle and glue it in place.
4. Cut out six 5-cm-by-5-cm squares from the plastic bottle.
5. Glue each square between every two straws to make a waterwheel.

#### Make a weight.

6. Stack the coins and tape them together.
7. Tape the weight to the end of a piece of string.
8. Tape the other end of the string to the end of the skewer.

Turn on the faucet to create a flow of water. Rest the middle of the skewer on your hands. Let the wheel move with the water flow. Observe.



Action!



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Were you surprised to see the coins being lifted? This was made possible by the energy of the moving water. In the experiment, the waterwheel that you built turned the energy of moving water into motion to lift the coins. In the past, people built waterwheels of similar designs to harness the energy of moving water. Nowadays, we make use of hydroelectric dams to convert the energy of moving water into electricity.

One of the main functions of a watermill in the past was to move large stones for grinding grains into flour.

