SCOUTS

STEM

Water Power

THE ADVENTURE

Scouts will have the opportunity to learn about the basic principles of electric power generation from water wheels and build their own water wheel to drive a DC motor/generator.

PLAN

- This adventure requires access to running water, whether a stream or a hose.
- Do you know someone who knows about hydropower who can come to your meeting to help with this adventure?
- What equipment do Scouts need? Do they and you have the necessary skills to use the equipment safely?

DO

- Vanes on the water wheel should be pointed in such a way that they will collect water and be pushed forward when the water is flowing.
- Connect the generator to your waterwheel. Scouts should figure out how to transmit power from the waterwheel to the generator using belts, gears and axels. Water turbines should be affixed to a stand or supported in such a way as to be free-standing.
- The generator can be connected to a voltmeter to measure the amount of power being generated.
- Measuring the flow of water in Litres per second will give a better understanding of how much energy moving water can produce. To calculate the water flow, Scouts can measure how long it takes to fill up a bucket with a known volume.

REVIEW

- Energy cannot be created or destroyed.
- Objects in motion have kinetic energy.
- The kinetic energy of the water turns the wheel, which is converted into electrical energy through the generator. The generator then powers the light bulb.
- Faster moving water has more kinetic energy, which is converted into electrical energy.
- A generator is a motor that is spun to produce electricity.
- The turbine shaft is connected to a generator. As the shaft spins, a large electromagnet attached to the shaft spins inside a collection of conductors, forcing electric charges in the wire to move through the circuit.

SAFETY NOTE:

This adventure involves cutting and working with wood and metal, and could result in cuts or eye injuries. Wear safety gloves and glasses when cutting wood or metal.

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It starts with Scouts.

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