WATER POWER

THE ADVENTURE:
Scouts will have the opportunity to learn about the basic principles of electric power generation from waterwheels and build their own waterwheel to drive a DC motor/generator.

PLAN:
- Do you want to do this adventure indoors, outdoors or at camp? Keep in mind you will need access to running water, and that this adventure may take more than one meeting.
- Do you know someone who knows about hydropower who can come to your meeting to help with this adventure?
- How can water generate electricity? What are the benefits of hydroelectricity?
- What equipment will you need to build a water turbine? Do you know how to use it safely?
- What materials will you use to build your water turbine? How will you convert water power to electricity?
- How will you make your groups?

DO:
- Collect all of the materials and equipment you will need to build your water turbine.
- Use wood and/or metal to build a waterwheel. Hold the waterwheel in a stream of water.
- How much water is moving through your waterwheel? If you are using a hose, measure the flow of water to get an idea of how much energy moving water can produce.
- How much power is your water turbine generating?
- Connect a light bulb to your system. Does the wheel generate enough electricity to turn it on?

REVIEW:
- What do you know now that you did not know before?
- Were you able to produce electrical energy?
- How did the generated power shift with changes in the design of the wheel? How did you make your system more efficient?
- How can you produce more electricity?
- What elements of STEM were in this activity? Science? Technology? Engineering? Mathematics?
- What did you like about this adventure? What did you not like? How would you do it differently?

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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MATERIALS:
• Source of running water such as a stream, hose or a re-circulating system using a sump pump or bilge pump.
• Timer and bucket with a known volume to calculate the water flow.
• Wood, plastic and sheet metal pieces
• Appropriate saws to cut wood, plastic and sheet metal
• Safety equipment such as goggles and gloves
• Crazy glue, epoxy or other strong glue
• Nails or screws
• Tools (screwdriver, hammer, pliers, drill, etc.)
• Voltmeter
• Generator
• Gears and chains to connect the motor

ONLINE RESOURCES:
• Waterwheel to produce electricity: youtube.com/watch?v=1TlLuAu7jbw
• Hydroelectric Power – How it Works: canadahydro.ca/facts/how-it-works/
• Want to convert Kinetic Energy into Electrical Energy: www.ulsafetysmart.com/content/show/198/parents
• Comment ça marche: canadahydro.ca/fr/realites/comment-ca-marche/

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It starts with Scouts.

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