Electricity Basics

WHAT IS ELECTRICITY?
Who and What is New York Power Authority?
Think of 3 things that you could not live without that use electricity?
What is electricity?

Electricity is the flow of tiny particles called electrons moving through a circuit.
What is a circuit?
Lady Liberty’s torch turned off.

Let’s build a circuit to turn it back on.
Safety

Do not put electrical components in your mouth

Always have a load in the circuit

Never run the path directly from the battery, back to the battery

If anything get hots, call over the teacher.
Activity 1 Lady Liberty Materials
Maker Tape
PATH

Battery
POWER SOURCE

LED light
LOAD

Binder Clip
SWITCH
How to peel Maker Tape
Build Time

Project Steps:

LED:
1. Take note of which of the legs is positive.
   a. Notice the longer leg is positive (+), the shorter leg is negative (-).
2. Hold the craft stick so it is standing tall.
3. Place the LED on top of the stick with one leg on each side.

Maker Tape:
4. Peel off the white back of one piece of Maker Tape.
5. Use the Maker tape to cover the leg of one LED then run the Maker tape all the way down the craft stick. Repeat on the other side.

Battery:
The coin cell battery has a positive (+) and negative side (-).
5. Place the battery at the bottom of the craft stick on the same side as the positive (+) leg of the LED.
   a. Positive side of the battery should be touching the Maker Tape.

Binder Clip:
6. Squeeze the arms of the binder clip to open the clip.
   a. Watch your fingers!
7. Clip the battery to the craft stick.
8. The binder clip acts like a switch for your circuit!
9. It makes a closed circuit and the LED is on.

Lady Liberty:
10. Place the circuit behind the Lady Liberty card.
11. Use a glue dot to stick the craft stick to the back of Lady Liberty.

Her torch lights up New York Harbor!
WONDER
TIME
What parts are required to make an electrical circuit function?
How does an electric circuit work?
How do you think you could MEASURE ELECTRICITY?
Measuring Electricity

Electricity is measured by the amount of pressure moving through a circuit and the amount of electrons in the circuit.

The pressure is called volts. The voltage pushes electrons.

The amount of electrons are called amps.

When you combine volts and amps you get watts.
Electricity and Our Community

WHERE DOES IT COME FROM?
NIAGARA HYDROPOWER PLANT
in Lewiston

WIND TURBINES
in South Fork
Let’s model electricity generation and transmission
Safety

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- Always have a load in the circuit
- Never run the path directly from the battery, back to the battery
- If anything get hots, call over the teacher.
Build Activity 2
Community Electric
WONDER TIME
Non-Renewable vs. Renewable Energy Sources
How is electrical power created?
How is electrical power created?

FORCE
Such as
- moving water
- pressurised steam
- forceful wind

SPINS TURBINE

SPINS SHAFT

SPINS GENERATOR
magnet spinning past copper wire coils to generate electricity

ELECTRICAL OUTPUT
travels through the network system to...

YOUR HOMES
Schools and local business in your community
How do you get electrical power?
How is it transmitted?
What careers do you think you could have with NYPA in the future?

What problems do you want to solve?