



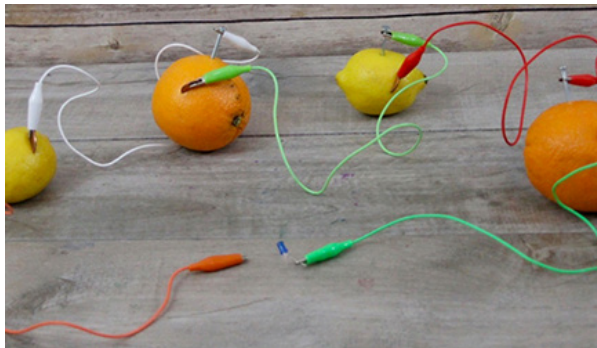
Illinois 4-H | Spark Ideas. Ignite Possibilities.

Electricity is a big part of our everyday lives. Electricity is power that supplies computers, household appliances, medical equipment, airplanes, and (very soon) automobiles. Electricity travels at the speed of light, about 300,000 kilometers per second. There are two terms to be mindful of: A/C and D/C. A/C is alternating current and D/C is direct current. Have you ever wondered about the difference between batteries and electricity from wall outlets, or how to make a circuit? A circuit is a path that electricity flows along. It starts at a power source, like a battery, and flows through a wire to a light bulb or other object and back to other side of the power source.



Exploring 4-H Electricity

Spark Activity: Fruit Battery



Build a battery out of fruit and explore how electric circuits work and whether or not chemical reactions create electricity (they do).

Materials:

Citrus fruit (lemons, limes, oranges)
Galvanized (zinc coated) nails
Copper pennies
Alligator clips
LED light

- Give your citrus fruit a quick roll to make sure the insides are extra juicy.
- Carefully use a knife or scissors to cut two slots/holes in opposite ends of the fruit.
- Insert the copper penny and the zinc nail into the pre-made holes.
- Connect the nail and the coin (your electrodes) with the alligator clips. Make sure that one end is attached to the nail and the other to the coin.
- Once you've joined up the citrus fruit battery you should be left with two free clips at either end – one coming from the nail and the other coming from the coin.
- To complete the circuit, attach the clips to the LED.

Tip: If you hook up the LED and it doesn't glow, switch the alligator clips attached to its legs

Source: "4-H At Home" - National 4-H

4-H Project Levels and Goals

Beginner

- Identify tools and parts used in working with electricity
- Learn about safety and equipment used in working with electricity
- Wire a simple circuit
- Test materials for electric conductivity

Intermediate

- Work with electrical equipment and tools
- Identify conductors and insulators
- Build and test circuits; measure voltage; read circuit diagrams
- Develop a basic electrical toolkit
- Understand local electrical code
- Make simple electrical repairs

Advanced

- Identify electrical and electronic parts and devices
- Choose the correct part for a circuit
- Research the influence of electricity on society
- Learn how to solder and prepare parts for assembly

Put Your Project Into Action

Show Your Skills

- Compare fields of study and careers in electricity
- Research the history of energy consumption in the US
- Build an electronic game board
- Display of basic electrical tools and parts
- Display of light bulbs - comparisons and purpose

Service and Leadership

- Exhibit at your school's science fair
- Start or join a 4-H Robotics club
- Arrange a club tour of a power plant
- Conduct an electricity quiz bowl with your club
- Check homes of family/friends for electricity hazards
- Organize a safety workshop

Entrepreneurship

- Build electronic game boards for local schools or community groups
- Create simple activity kits to teach kids about electricity - market the kits to summer camps, afterschool programs, or parents

Technology Connection

- Smart Home technology
- Use of biomass, solar, or wind to produce electricity
- Wearable electronics

Connecting with a Mentor

- Local electrician
- Electrical engineer
- Local power supply company
- Community college / trade school instructors

Events

- 4-H workshops
- 4-H county and state fair
- Illini Summer Academies - Illinois 4-H
- Community college youth programs
- Youth programs via Electrical Cooperatives



Careers for People Interested in Electricity

Electrician

Power Plant Operator

Lineworker

Electrical Engineer

Electrical Technician

Renewable Energy Tech

Start a Conversation

What are all of the ways that you depend on electricity every day?

How many different things can you list?

What are the most innovative uses of electricity that you can think of?

How can you learn more about electrical careers?

Want to learn more?

go.illinois.edu/4Helectricity

Explore more at Illinois 4-H!

4-h.extension.illinois.edu



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