1. Electricity...What Is It?

Subject: Physical Science	**Topic or Unit of Study:** Energy, Electricity

Objectives:

- Define energy, and identify forms it comes in.
- Define electricity.
- Identify the key properties of electricity: conductivity, continuity and polarity (directionality).

Next Generation Science Standards:

4-PS3-2: Make observations to provide evidence that energy can be transferred from place to place by sound, light, heat, and electric currents.

PS3.B: Energy can be transferred from place to place by electric currents, which can then be used locally to produce motion, sound, heat or light.

4-PS3-4: Apply scientific ideas to design, test, and refine a device that converts energy from one form to another.

Synopsis:	**Materials:**
Students will explore the concepts of energy and electricity. They will design and build models of working electrical circuits.	● Teacher/instructor lesson plan ● Teacher/instructor Google Slides presentation ● Teacher computer with access to internet and teacher presentation ● Snap Circuits kits (one per student)

2. Forms of Energy

Subject: Physical Science	**Topic or Unit of Study:** Energy, Electricity

Objectives:

- Identify forms of energy (kinetic, electrical, chemical, thermal, and nuclear).
- Define kinetic energy.
- Identify ways we convert electrical energy to kinetic energy.
- Describe how motors work.
- Build a button motor circuit.
- Identify how electrical energy is measured.
- Identify how resistors affect the voltage and current of a circuit.

Next Generation Science Standards:

4-PS3-2: Make observations to provide evidence that energy can be transferred from place to place by sound, light, heat, and electric currents.

PS3.B: Energy can be transferred from place to place by electric currents, which can then be used locally to produce motion, sound, heat or light.

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3.) Resistance and Sound lesson overview

<table>
<tr><td>Subject: Physical Science</td><td>Topic or Unit of Study: Energy, Electricity</td></tr>
<tr><td colspan="2">Objectives:
Define the “path of least resistance” and identify it when given circuit examples.
Identify ways we can produce resistance in a circuit.
Discover ways circuits can produce sound.</td></tr>
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4-PS3-2: Make observations to provide evidence that energy can be transferred from place to place by sound, light, heat, and electric currents.

PS3.B: Energy can be transferred from place to place by electric currents, which can then be used locally to produce motion, sound, heat or light.

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Teacher/instructor Google Slides presentation
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</table>

4.) Electricity Challenges

Subject: Physical Science	**Topic or Unit of Study:** Energy, Electricity

Objectives:

- Identify ways to combine components in circuits.
- Apply information learned in previous sessions to solve circuit challenges.

Next Generation Science Standards:

4-PS3-2: Make observations to provide evidence that energy can be transferred from place to place by sound, light, heat, and electric currents.

PS3.B: Energy can be transferred from place to place by electric currents, which can then be used locally to produce motion, sound, heat or light.

4-PS3-4: Apply scientific ideas to design, test, and refine a device that converts energy from one form to another.

Synopsis:	**Materials:**
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