

Unit 03C: Energy (E&M) NJ NGSS

Content Area: **Science**
Course(s): **Generic Course**
Time Period: **Marking Period 2**
Length: **3 weeks**
Status: **Published**

Standards

<http://www.state.nj.us/education/modelcurriculum/sci/physicsu3.shtml>

SCI.9-12.HS-ETS1-2	Design a solution to a complex real-world problem by breaking it down into smaller, more manageable problems that can be solved through engineering.
SCI.9-12.HS-ETS1-3	Evaluate a solution to a complex real-world problem based on prioritized criteria and trade-offs that account for a range of constraints, including cost, safety, reliability, and aesthetics, as well as possible social, cultural, and environmental impacts.
SCI.9-12.HS-PS3-3	Design, build, and refine a device that works within given constraints to convert one form of energy into another form of energy.
SCI.9-12.HS-PS2-6	Communicate scientific and technical information about why the molecular-level structure is important in the functioning of designed materials.
SCI.9-12.HS-PS3-5	Develop and use a model of two objects interacting through electric or magnetic fields to illustrate the forces between objects and the changes in energy of the objects due to the interaction.
SCI.9-12.HS-PS2-5	Plan and conduct an investigation to provide evidence that an electric current can produce a magnetic field and that a changing magnetic field can produce an electric current.

Essential Questions

- How can you make a speaker? (IE: magnet, wire, and index card)
- How does a power plant produce electrical energy?

Content / Skills

- Relate electric power to the rate at which electrical energy is converted to other forms of energy. (Accelerated)
- Calculate electrical power and the cost of running electrical appliances. (Accelerated & CP)
- Compare and contrast a motor and a generator. (Accelerated & CP)
- Compare, contrast, and apply the concepts of electrical potential energy and electrical potential. (Accelerated)
- Solve electrical potential energy and electrical potential problems. (Accelerated)
- Define and apply the concept of capacitance. (Accelerated)

