



## Unit 4 Energy

### High School Physical Science

#### Unit Length and Description:

#### 4 Instructional Weeks

Students will continue to use models to illustrate that energy can be accounted for as a combination of energy associated with the motions and relative position of particles, and connect this knowledge to design/refine a device that works within given restraints to convert one form of energy to another. Students will also conduct an investigation to provide evidence that the transfer of thermal energy occurs when two components of different temperature are combined within a closed system resulting in a more uniform energy distribution.

#### Science Standards:

- HS-PS3-2** Develop and use models to illustrate that energy at the macroscopic scale can be accounted for as a combination of energy associated with the motions of particles and/or objects and energy associated with the relative positions of particles and/or objects.
- 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.
- HS-PS3-4** Plan and conduct an investigation to provide evidence that the transfer of thermal energy when two components of different temperature are combined within a closed system results in a more uniform energy distribution among the components in the system (second law of thermodynamics).

#### Enduring Understandings- Unit Anchor Phenomenon:

The Hubble Space Telescope was launched into orbit in 1990 and remains in service today. The James Webb Space Telescope, which launches in 2021, will use a similar power source as the Hubble Space Telescope.

#### Essential Questions- Reflective Summaries:

- Create a model to illustrate that energy at the macroscopic scale can be accounted for as a combination of energy associated with the motions of particles and/or objects and energy associated with the relative positions of particles and/or objects
- Design and/or build a device that works within given constraints to convert one form of energy into another form of energy. Does your device support or refute the law of conservation of energy?
- Plan and conduct an experiment to demonstrate the second law of thermodynamics.