

MS-PS3-2 Energy

California Alternate Assessment for Science—Item Content Specifications

# MS-PS3-2 Energy

| California Science Connector | Focal Knowledge, Skills, and Abilities | Essential Understanding |
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| Describe how a change in distance changes the amount of potential energy stored in the system (e.g., carts at varying positions on a hill) by using models. | 1. Ability to describe how changing distance changes the amount of potential energy stored in the system (e.g., carts at varying positions on a hill) by using models.
 | Identify that the potential energy of an object changes when a force is changed (e.g., bringing an object up or down a hill). |

## **CA NGSS Performance Expectation**

Students who demonstrate understanding can:

**Develop a model to describe that when the arrangement of objects interacting at a distance changes, different amounts of potential energy are stored in the system.** [Clarification Statement: Emphasis is on relative amounts of potential energy, not on calculations of potential energy. Examples of objects within systems interacting at varying distances could include: the Earth and either a roller coaster cart at varying positions on a hill or objects at varying heights on shelves, changing the direction/orientation of a magnet, and a balloon with static electrical charge being brought closer to a classmate’s hair. Examples of models could include representations, diagrams, pictures, and written descriptions of systems.] *[Assessment Boundary*: *Assessment is limited to two objects and electric, magnetic, and gravitational interactions.]*

## Mastery Statements

Students will be able to:

* Identify which of two objects has more energy based on their position relative to the ground
* Identify whether the energy of an object increases or decreases when its position relative to the ground changes
* Identify the reason that the energy of an object changes when the position of the object changes relative to the ground

## Possible Phenomena or Contexts

*Note that the list in this section is not exhaustive or prescriptive.*

**Possible contexts include the following:**

* Objects placed at different heights near Earth’s surface
* An object moving along a track at varying heights near Earth’s surface

## Additional Assessment Boundaries

* None listed at this time

## Additional References

California Science Test Item Specification for MS-PS3-2

<https://www.cde.ca.gov/ta/tg/ca/documents/itemspecs-ms-ps3-2.docx>

Environmental Principles and Concepts <http://californiaeei.org/abouteei/epc/>

The *2016 Science Framework for California Public Schools Kindergarten through Grade Twelve* <https://www.cde.ca.gov/ci/sc/cf/cascienceframework2016.asp>

Appendix 1: Progression of the Science and Engineering Practices, Disciplinary Core Ideas, and Crosscutting Concepts in Kindergarten through Grade Twelve

<https://www.cde.ca.gov/ci/sc/cf/documents/scifwappendix1.pdf>

Appendix 2: Connections to Environmental Principles and Concepts

<https://www.cde.ca.gov/ci/sc/cf/documents/scifwappendix2.pdf>

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