

MS-ETS1-4 Engineering Design

California Alternate Assessment for Science—Item Content Specifications

# MS-ETS1-4 Engineering Design

| California Science Connector | Focal Knowledge, Skills, and Abilities | Essential Understanding |
| --- | --- | --- |
| Evaluate the data from various testing methods to modify a proposed object, tool, or process to optimize the design solution.  | 1. Ability to evaluate the data from various testing methods to modify a proposed object, tool, or process to optimize the design solution.
 | Identify a strength or weakness of a particular design solution using data.  |

## CA NGSS Performance Expectation

Students who demonstrate understanding can:

**Develop a model to generate data for iterative testing and modification of a proposed object, tool, or process such that an optimal design can be achieved.**

## Mastery Statements

Students will be able to:

* Use simple data to identify a strength of a design solution
* Use simple data to identify a weakness of a design solution
* Use data to identify a modification of an object, tool, or process that will make it function better as part of a design solution
* Use data to identify a modification of an object, tool, or process that will make it function better as part of a design solution and identify why the modification will improve the function (increased production, less pollution, fewer resources needed, etc.)

## Possible Phenomena or Contexts

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

**Possible contexts include the following:**

* Forms of pollution
* Loss of wildlife habitat
* Enhancing mobility for people with disabilities
* Enhancing access to clean water
* Solar and wind energy

## Additional Assessment Boundaries

* None listed at this time

## Additional References

California Science Test Item Specification for MS-ETS1-4

<https://www.cde.ca.gov/ta/tg/ca/documents/itemspecs-ms-ets1-4.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>

*Posted by the California Department of Education, August 2020*