

HS-ETS1-3 Engineering Design

California Alternate Assessment for Science—Item Content Specifications

# HS-ETS1-3 Engineering Design

| California Science Connector | Focal Knowledge, Skills, and Abilities | Essential Understanding |
| --- | --- | --- |
| Describe the strengths and weaknesses of a solution to a real-world problem with respect to specific criteria and trade-offs, as well as possible social and cultural acceptability and environmental impacts. | 1. Ability to describe the strengths and weaknesses of a solution to a real-world problem with respect to specific criteria and trade-offs.
2. Ability to describe the strengths and weaknesses of a solution to a real-world problem with respect to possible social and cultural acceptability and environmental impacts.
 | With guidance, identify a possible barrier to the solution of a real-world problem. |

## **CA NGSS Performance Expectation**

Students who demonstrate understanding can:

**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.**

## Mastery Statements

Students will be able to:

* Identify one factor that would have to be overcome for a solution to a real-world problem to work
* Identify a strength or weakness of a solution to a real-world problem
* Identify how a solution to a real-world problem does or does not meet a specific criterion
* Identify a strength or weakness of a solution to a real-world problem based on its effect on society or the environment
* Identify two ways a solution to a real-world problem does or does not meet specified criteria
* Identify a strength and a weakness of a solution to a real-world problem based on its effect on society or the environment

## Environmental Principles and Concepts

Principle 5—Decisions affecting resources and natural systems are based on a wide range of considerations and decision-making processes.

## Possible Phenomena or Contexts

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

**Possible contexts include the following:**

* Ways to reduce garbage production
* Air pollution from smog or wildfires that affects people’s ability to spend time outside
* Ways to improve the habitat for birds and common city wildlife
* Enhancing mobility for people with disabilities
* Ways to reduce energy use or use cleaner energy sources

## Additional Assessment Boundaries

* None listed at this time

## Additional References

California Science Test Item Specification for HS-ETS1-3

<https://www.cde.ca.gov/ta/tg/ca/documents/itemspecs-hs-ets1-3.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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