

### 3-ESS3-1 Earth and Human Activity

Students who demonstrate understanding can:

- 3-ESS3-1. Make a claim about the merit of a design solution that reduces the impacts of a weather-related hazard.\*** [Clarification Statement: Examples of design solutions to weather-related hazards could include barriers to prevent flooding, wind resistant roofs, and lightning rods.]

The performance expectation above was developed using the following elements from the NRC document *A Framework for K-12 Science Education*:

#### Science and Engineering Practices

##### Engaging in Argument from Evidence

Engaging in argument from evidence in 3–5 builds on K–2 experiences and progresses to critiquing the scientific explanations or solutions proposed by peers by citing relevant evidence about the natural and designed world(s).

- Make a claim about the merit of a solution to a problem by citing relevant evidence about how it meets the criteria and constraints of the problem.

#### Disciplinary Core Ideas

##### ESS3.B: Natural Hazards

- A variety of natural hazards result from natural processes. Humans cannot eliminate natural hazards but can take steps to reduce their impacts. (Note: This Disciplinary Core Idea is also addressed by 4-ESS3-2.)

#### Crosscutting Concepts

##### Cause and Effect

- Cause and effect relationships are routinely identified, tested, and used to explain change.

##### Connections to Engineering, Technology, and Applications of Science

##### Influence of Engineering, Technology, and Science on Society and the Natural World

- Engineers improve existing technologies or develop new ones to increase their benefits (e.g., better artificial limbs), decrease known risks (e.g., seatbelts in cars), and meet societal demands (e.g., cell phones).

##### Connections to Nature of Science

##### Science is a Human Endeavor

- Science affects everyday life.

#### Observable features of the student performance by the end of the grade:

1	Supported claims
a	Students make a claim about the merit of a given design solution that reduces the impact of a weather-related hazard.
2	Identifying scientific evidence
a	Students describe* the given evidence about the design solution, including evidence about: <ol style="list-style-type: none"> <li>The given weather-related hazard (e.g., heavy rain or snow, strong winds, lightning, flooding along river banks).</li> <li>Problems caused by the weather related hazard (e.g., heavy rains cause flooding, lightning causes fires).</li> <li>How the proposed solution addresses the problem (e.g., dams and levees are designed to control flooding, lightning rods reduce the chance of fires) [note: mechanisms are limited to simple observable relationships that rely on logical reasoning].</li> </ol>
3	Evaluating and critiquing evidence
a	Students evaluate the evidence using given criteria and constraints to determine: <ol style="list-style-type: none"> <li>How the proposed solution addresses the problem, including the impact of the weather-related hazard after the design solution has been implemented.</li> <li>The merits of a given solution in reducing the impact of a weather-related hazard (i.e., whether the design solution meets the given criteria and constraints).</li> <li>The benefits and risks a given solution poses when responding to the societal demand to reduce the impact of a hazard.</li> </ol>