



LID Design Challenge



Performance Expectations	Connections Between EP&Cs, CCCs, and SEPS	Clarifications for DCIs	Relevant EEI Units
<p>K-ESS3-3 Human Impacts on Earth Systems Communicate solutions that will reduce the impact of humans on the land, water, air, and/or other living things in the local environment.</p> <p>2-ESS2-1 Earth Materials and Systems Compare multiple solutions designed to slow or prevent wind or water from changing the shape of the land.</p> <p>2-ESS2-2 Plate Tectonics and Large-Scale System Interactions Develop a model to represent the shapes and kinds of land and bodies of water in an area.</p> <p>3-ESS3-1 Natural Hazards Make a claim about the merit of a design solution that reduces the impacts of a weather-related hazard.</p> <p>3-LS4-4 Biodiversity and Humans Make a claim about the merit of a solution to a problem caused when the environment changes and the types of plants and animals that live there may change.</p> <p>4-ESS2-1 Earth Materials and Systems Make observations and/or measurements to provide evidence</p>	<p style="text-align: center;">Targeted Environmental Principles & Concept(s)</p> <p>Principle IV: There are no Permanent or Impermeable Boundaries that Prevent Matter from Flowing Between Systems The exchange of matter between natural systems and human societies affects the long-term functioning of both.</p> <p>Concept A. The effects of human activities on natural systems are directly related to the quantities of resources consumed and to the quantity and characteristics of the resulting byproducts.</p> <p>Concept B. The byproducts of human activity are not readily prevented from entering natural systems and may be beneficial, neutral, or detrimental in their effect.</p> <p>Concept C. The capacity of natural systems to adjust to human-caused alterations depends on the nature of the system as well as the scope,</p>	<p style="text-align: center;">Targeted Disciplinary Core Idea(s)</p> <p>K-ESS3-3 Human Impacts on Earth Systems; Developing Possible Solutions Things that people do to live comfortably can affect the world around them. But they can make choices that reduce their impacts on the land, water, air, and other living things.; Designs can be conveyed through sketches, drawings, or physical models. These representations are useful in communicating ideas for a problem’s solutions to other people.</p> <p>2-ESS2 Earth Materials and Systems; Plate Tectonics and Large-Scale System Interactions Wind and water can change the shape of the land; Maps show where things are located. One can map the shapes and kinds of land and water in any area.</p> <p>3-ESS3 Natural Hazards A variety of natural hazards result from natural processes. Humans cannot eliminate natural hazards but can take steps to reduce their impacts.</p> <p>3-LS4 Biodiversity and Humans Populations live in a variety of habitats, and change in those habitats affects the organisms living there.</p> <p>4-ESS2 Earth Materials and Systems Rainfall helps to shape the land and affects the types of living things found in a region. Water, ice, wind, living organisms, and gravity break rocks, soils, and sediments into smaller particles and move them around.</p>	<p>K: A Day in My Life; The World Around Me</p> <p>3: Living Things in Changing Environments; The Geography of Where We Live</p> <p>5: Earth’s Water; Changing States: Water, Natural Systems, and Human Communities; Precipitation, People, and the Natural World; Our Water: Sources and Uses</p> <p>6: The Dynamic Nature of Rivers</p> <p>8: Struggles with Water</p>

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<p>of the effects of weathering or the rate of erosion by water, ice, wind, or vegetation.</p> <p>4-ESS3-2 Natural Hazards Generate and compare multiple solutions to reduce the impacts of natural Earth processes on humans.</p> <p>5-ESS2-2 The Roles of Water in Earth's Surface Processes Describe and graph the amounts and percentages of water and fresh water in various reservoirs to provide evidence about the distribution of water on Earth.</p> <p>5-ESS3-1 Natural Hazards Obtain and combine information about ways individual communities use science ideas to protect the Earth's resources and environment.</p> <p>MS-ESS2-2 Earth Materials and Systems Construct an explanation based on evidence for how geoscience processes have changed Earth's surface at varying time and spatial scales.</p> <p>MS-ESS2-4 The Roles of Water in Earth's Surface Processes Develop a model to describe the cycling of water through Earth's systems driven by energy from the sun and the force of gravity.</p>	<p>scale, and duration of the activity and the nature of its byproducts.</p> <p>Targeted Crosscutting Concept(s)</p> <p>Systems Cause & Effect Structure and Function Stability & Change Patterns</p> <p>Targeted Science and Engineering Practice(s)</p> <p>Asking Questions Defining Problems Developing and Using Models Construct Explanations and Designing Solutions Engage in Argument from Evidence Obtaining, Evaluating and Communicating Information</p>	<p>4-ESS3 Natural Hazards A variety of natural hazards result from natural processes. Humans cannot eliminate natural hazards but can take steps to reduce their impacts.</p> <p>5-ESS2 The Roles of Water in Earth's Surface Processes Nearly all of Earth's available water is in the ocean. Most fresh water is in glaciers or underground; only a tiny fraction is in streams, lakes, wetlands, and the atmosphere.</p> <p>5-ESS3 Human Impacts on Earth Systems Human activities in agriculture, industry, and everyday life have had major effects on the land, vegetation, streams, ocean, air, and even outer space. But individuals and communities are doing things to help protect Earth's resources and environments.</p> <p>MS-ESS2 Earth Materials and Systems; The Roles of Water in Earth's Surface Processes The planet's systems interact over scales that range from microscopic to global in size, and they operate over fractions of a second to billions of years. These interactions have shaped Earth's history and will determine its future.; Water continually cycles among land, ocean, and atmosphere via transpiration, evaporation, condensation and crystallization, and precipitation, as well as downhill flows on land.</p> <p>MS-ESS3 Human Impacts on Earth Systems Human activities have significantly altered the biosphere, sometimes damaging or destroying natural habitats and causing the extinction of other species. But changes to Earth's environments can</p>	
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<p>MS-ESS3-3 Human Impacts on Earth Systems Apply scientific principles to design a method for monitoring and minimizing a human impact on the environment.</p> <p>MS-ETS1-1 Define the criteria and constraints of a design problem with sufficient precision to ensure a successful solution, taking into account relevant scientific principles and potential impacts on people and the natural environment that may limit possible solutions.</p> <p>MS-ETS1-2 Evaluate competing design solutions using a systematic process to determine how well they meet the criteria and constraints of the problem.</p>		<p>have different impacts (negative and positive) for different living things.</p> <p>MS-ETS1 Defining and Delimiting Engineering Problems The more precisely a design task's criteria and constraints can be defined, the more likely it is that the designed solution will be successful. Specification of constraints includes consideration of scientific principles and other relevant knowledge that is likely to limit possible solutions.; Although one design may not perform the best across all tests, identifying the characteristics of the design that performed the best in each test can provide useful information for the redesign process - that is, some of the characteristics may be incorporated into the new design.</p>	
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