

# Environmental Science: Grades 9, 10, 11, 12

Adopted 2018

## Systems

**EVS-ESS2-2.** Analyze geoscience data to make the claim that one change to Earth's surface can create feedbacks that cause changes to other Earth systems. [EVS-ESS2-2](#)

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**EVS-ESS2-3.** Develop a model based on evidence of Earth's interior to describe the cycling of matter by thermal convection. [EVS-ESS2-3](#)

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**EVS-ESS2-5.** Plan and conduct an investigation of the properties of water and its effects on Earth materials and surface processes. [EVS-ESS2-5](#)

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**EVS-ESS2-6.** Develop a quantitative model to describe the cycling of carbon among the hydrosphere, atmosphere, geosphere, and biosphere. [EVS-ESS2-6](#)

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**EVS-ESS3-5.** Analyze geoscience data and the results from global climate models to make an evidence-based forecast of the current rate of global or regional climate change and associated future impacts to Earth systems. [EVS-ESS3-5](#)

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**EVS1-ETS1-1.** Analyze a major global challenge to specify qualitative and quantitative criteria and constraints for solutions that account for societal needs and wants. [EVS1-ETS1-1](#)

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## Energy

**EVS-PS3-1.** Create a computational model to calculate the change in the energy of one component in a system when the change in energy of the other component(s) and energy flows in and out of the system are known. [EVS-PS3-1](#)

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**EVS-PS3-2.** Develop and use models to illustrate that energy at the macroscopic scale can be accounted for as a combination of energy associated with the motions of particles (objects) and energy associated with the relative positions of particles (objects). [EVS-PS3-2](#)

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**EVS-PS3-3.** Design, build, and refine a device that works within given constraints to convert one form of energy into another form of energy. [EVS-PS3-3](#)

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**EVS-PS3-4.** Plan and conduct an investigation to provide evidence that the transfer of thermal energy when two components of different temperature are combined within a closed system results in a more uniform energy distribution among the components in the system (second law of thermodynamics). [EVS-PS3-4](#)

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**EVS-ESS2-4.** Use a model to describe how variations in the flow of energy into and out of Earth's systems result in changes in climate. [EVS-ESS2-4](#)

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**EVS2-ETS1-2.** Design a solution to a complex real-world problem by breaking it down into smaller, more manageable problems that can be solved through engineering. [EVS2-ETS1-2](#)

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## Populations

**EVS-LS2-1.** Use mathematical and/or computational representations to support explanations of factors that affect carrying capacity of ecosystems at different scales. [EVS-LS2-1](#)

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**EVS-LS2-2.** Use mathematical representations to support and revise explanations based on evidence about factors affecting biodiversity and populations in ecosystems of different scales. [EVS-LS2-2](#)

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**EVS-LS2-6.** Evaluate claims, evidence, and reasoning that the complex interactions in ecosystems maintain relatively consistent numbers and types of organisms in stable conditions, but changing conditions may result in a new ecosystem. [EVS-LS2-6](#)

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**EVS-LS2-8.** Evaluate evidence for the role of group behavior on individual and species' chances to survive and reproduce. [EVS-LS2-8](#)

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**EVS3-ETS1-3.** Evaluate a solution to a complex real-world problem based on prioritized criteria and tradeoffs that account for a range of constraints, including cost, safety, reliability, and aesthetics as well as possible social, cultural, and environmental impacts. [EVS3-ETS1-3](#)

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## Sustainability

**EVS-ESS3-1.** Construct an explanation based on evidence for how the availability of natural resources, occurrences of natural hazards, and changes in climate have influenced human activity. [EVS-ESS3-1](#)

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**EVS-ESS3-2.** Evaluate competing design solutions for developing, managing, and utilizing energy and mineral resources based on cost-benefit ratios. [EVS-ESS3-2](#)

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**EVS-ESS3-3.** Create a computational simulation to illustrate the relationships among the management of natural resources, the sustainability of human populations, and biodiversity. [EVS-ESS3-3](#)

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**EVS-ESS3-4.** Evaluate or refine a technological solution that reduces impacts of human activities on natural systems. [EVS-ESS3-4](#)

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**EVS-ESS3-6.** Use a computational representation to illustrate the relationships among Earth systems and how those relationships are being modified due to human activity. [EVS-ESS3-6](#)

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**EVS-LS2-7.** Design, evaluate, and refine a solution for reducing the impacts of human activities on the environment and biodiversity. [EVS-LS2-7](#)

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**EVS-ESS3-7.** Create or revise a simulation to test a solution to mitigate adverse impacts of human activity on biodiversity. [EVS-ESS3-7](#)

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**EVS4-ETS1-3.** Evaluate a solution to a complex real-world problem based on prioritized criteria and tradeoffs that account for a range of constraints, including cost, safety, reliability, and aesthetics, as well as possible social, cultural, and environmental impacts. [EVS4-ETS1-3](#)