

Fields of Fuel Computer Game Standards

Next Generation Science Standards (2013)

Performance Expectations:

Middle School:

- **MS-LS2-1.** Analyze and interpret data to provide evidence for the effects of resource availability on organisms and populations of organisms in an ecosystem.
- **MS-LS2-4.** Construct an argument supported by empirical evidence that changes to physical or biological components of an ecosystem affect populations.
- **MS-LS2-5.** Evaluate competing design solutions for maintaining biodiversity and ecosystem services.
- **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.
- **MS-ETS1-2.** Evaluate competing design solutions using a systematic process to determine how well they meet the criteria and constraints of the problem.

High School:

- **HS-LS2-2.** Use mathematical representations to support and revise explanations based on evidence about factors affecting biodiversity and populations in ecosystems of different scales.
- **HS-LS2-7.** Design, evaluate, and refine a solution for reducing the impacts of human activities on the environment and biodiversity.
- **HS-LS4-6.** Create or revise a simulation to test a solution to mitigate adverse impacts of human activity on biodiversity.
- **HS-ESS3-2.** Evaluate competing design solutions for developing, managing, and utilizing energy and mineral resources based on cost-benefit ratios.
- **HS-ESS3-3.** Create a computational simulation to illustrate the relationships among management of natural resources, the sustainability of human populations, and biodiversity.
- **HS-ESS3-4.** Evaluate or refine a technological solution that reduces impacts of human activities on natural systems.
- **HS-ETS1-1.** Analyze a major global challenge to specify qualitative and quantitative criteria and constraints for solutions that account for societal needs and wants.
- **HS-ETS1-3.** 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.
- **HS-ETS1-4.** Use a computer simulation to model the impact of proposed solutions to a complex real-world problem with numerous criteria and constraints on interactions within and between systems relevant to the problem.

Scientific and Engineering Practices	Disciplinary Core Ideas	Crosscutting Concepts
<p>Asking questions & defining problems</p> <p>Developing and using models</p> <p>Analyzing and interpreting data</p> <p>Constructing explanations and designing solutions</p> <p>Engaging in argument from evidence</p>	<p>LS2: Ecosystems: Interactions, energy, and dynamics</p> <p>LS4: Biological Evolution: Unity and Diversity</p> <p>ESS3: Earth and Human Activity</p> <p>ETS1: Engineering Design</p>	<p>Patterns</p> <p>Cause and effect: Mechanism and explanation</p> <p>Scale, proportion and quantity</p> <p>Systems and systems models</p> <p>Energy and Matter: Flows, cycles and conservation</p> <p>Stability and change</p>