Grades 6–8

3.3.6-8.N Earth and Space Science: Human Impacts

Students who demonstrate understanding can *construct an argument supported by evidence for how increases in human population and per capita consumption of natural resources impact Earth's systems.*

Clarifying Statement: Examples of evidence include grade-appropriate databases on human populations and the rates of consumption of food and natural resources (such as freshwater, mineral, and energy). Examples of impacts can include changes to the appearance, composition, and structure of Earth's systems as well as the rates at which they change. The consequences of increases in human populations and consumption of natural resources are described by science, but science does not make the decisions for the actions society takes.

Assessment Boundary: N/A

Science and Engineering Practices (SEP)	Disciplinary Core Ideas (DCI)	Crosscutting Concepts (CCC)
Engaging in Argument From Evidence Engaging in argument from evidence in 6–8 builds on K–5 experiences and progresses to constructing a convincing argument that supports or refutes claims for either explanations or solutions about the natural and designed world(s). • Construct an oral and written argument supported by empirical evidence and scientific reasoning to support or refute an explanation or a model for a phenomenon or a solution to a problem.	**ESS3.C: Human Impacts on Earth Systems** • Typically as human populations and per-capita consumption of natural resources increase, so do the negative impacts on Earth unless the activities and technologies involved are engineered otherwise.	**Cause and Effect** • Cause and effect relationships may be used to predict phenomena in natural or designed systems. **Energy and Matter** • The transfer of energy can be tracked as energy flows through a designed or natural system. --- *Connections to Nature of Science* **Science Addresses Questions About the Natural and Material World** • Scientific knowledge can describe the consequences of actions but does not necessarily prescribe the decisions that society takes. --- *Connections to Engineering, Technology, and Applications of Science* **Influence of Science, Engineering, and Technology on Society and the Natural World** • All human activity draws on natural resources and has both short- and long-term consequences, positive as well as negative, for the health of people and the natural environment.

Pennsylvania Context: Examples of Pennsylvania context include but are not limited to consumption and use of Pennsylvania's food and natural resources such as wood, water, and fossil fuels.

PA Career Ready Skills: Analyze various perspectives on a situation.

Connections to Other Standards Content and Practices

Standard Source	Possible Connections to Other Standard(s) or Practice(s)
Agriculture (AFNR)	CS.04.01.02.b: Analyze and assess sustainability practices that can be applied in AFNR systems (e.g., energy efficiency, recycle/re-use/repurpose, green resources, etc.).
Science, Environmental Literacy and Sustainability (NAAEE)	5-8 Strand 2.3.A. Human-environment interactions: Learners describe human-caused changes that affect the immediate environment as well as other places, other people, and future times. 5-8 Strand 2.3.B. Resource distribution and consumption: Learners explain that uneven geographic distribution of natural resources influences their use and perceived value.
PA Core Standards: ELA	CC.3.5.6-8.A: Cite specific textual evidence to support analysis of science and technical texts. CC.3.6.6-8.A: Write arguments focused on discipline-specific content. CC.3.6.6-8.H: Draw evidence from informational texts to support analysis reflection, and research.
PA Core Standards and Practices: Math	CC.2.1.6.D.1: Understand ratio concepts and use ratio reasoning to solve problems. CC.2.1.7.D.1: Analyze proportional relationships and use them to model and solve real-world and mathematical problems.
PA Standards: Social Studies	6.1.6.B: Compare ways that people meet their needs with how they meet their wants. Describe how resources are combined to produce different goods and services.
Educational Technology (ISTE)	1.3. Knowledge Constructor: Students critically curate a variety of resources using digital tools to construct knowledge, produce creative artifacts and make meaningful learning experiences for themselves and others.
Technology and Engineering (ITEEA)	STEL-4L: Analyze how the creation and use of technologies consumes renewable and nonrenewable resources and creates waste.