Unit: Technological Design Process	Concept: Design Process Components

Standard

- 3.5.9-12.Y (ETS) Design a solution to a complex real-world problem by breaking it down into smaller, more manageable problems that can be solved through engineering.

Key Learning

- (LTTG) Students will be able to analyze a problem in its entirety while recognizing the subcomponents interacting with human-made and natural environments.

Unit Essential Question

- How can I analyze a problem in its entirety while recognizing the subcomponents interacting with human-made and natural environments?

Essential Question

- Why is there no single correct solution in design?

Key Vocabulary

- Engineering, Systematically, and Priority

Learning Experience

- Students who demonstrate understanding can design a solution to a complex real-world problem by breaking it down into smaller, more manageable problems that can be solved through engineering.
- Clarifying Statement: Criteria may need to be broken down into simpler ones that can be approached systematically, and decisions about the priority of certain criteria over others (trade-offs) may be needed.

(Big Idea) Technology & Engineering Curriculum Framework Big Ideas

- There is no single, best solution as designs can always be improved and refined.

(SEP) Science and Engineering Practices

- Constructing Explanations and Designing Solutions - Design, evaluate, and/or refine a solution to a complex real-world problem, based on scientific knowledge, student-generated sources of evidence, prioritized criteria, and trade-off considerations.

(DCI) Disciplinary Core Ideas

- ETS1.C: Optimizing the Design Solution - Criteria may need to be broken down into simpler ones that can be approached systematically, and decisions about the priority of certain criteria over others (trade-offs) may be needed.

(TEP) Technology and Engineering Practices

- Systems Thinking - Designs and troubleshoots technological systems in ways that consider the multiple components of the system.
- Making & Doing - Demonstrates the ability to regulate and improve making and doing skills.

Terms

- (ETS) Engineering, Technology, and Applications of Science – Standards applicable across the Science, Environmental Literacy & Sustainability, and Technology & Engineering content areas.
- (LTTG) PDE Technology & Engineering Long Term Transfer Goals
- (Learning Experience) A learning experience refers to any interaction, activity, or other experience in which students acquire new understanding, knowledge, behaviors, or skills.
- (Big Idea #) PDE Technology & Engineering Curriculum Framework Big Ideas
- (SEP) PDE Science and Engineering Practices
- (DCI) PDE Disciplinary Core Ideas
- (TEP) PDE Technology and Engineering Practices