

# High School

## Engineering Design HS-ETS1

### A Defining and Delimiting Engineering Problems HS-ETS1-A

- 1 Criteria and constraints also include satisfying any requirements set by society, such as taking issues of risk mitigation into account, and they should be quantified to the extent possible and stated in such a way that one can tell if a given design meets them. (HS-ETS1-1),(secondary to HS-PS2-3),(secondary to HS-PS3-3) HS-ETS1-A-1
- 2 Humanity faces major global challenges today, such as the need for supplies of clean water and food or for energy sources that minimize pollution, which can be addressed through engineering. These global challenges also may have manifestations in local communities. (HS-ETS1-1) HS-ETS1-A-2

### B Developing Possible Solutions HS-ETS1-B

- 1 When evaluating solutions, it is important to take into a range of constraints, including cost, safety, reliability, and aesthetics, and to consider social, cultural, and environmental impacts. (HS-ETS1-3),(secondary to HS-LS2-7),(secondary to HS-LS4-6) HS-ETS1-B-1
- 2 Both physical models and computers can be used in various ways to aid in the engineering design process. Computers are useful for a variety of purposes, such as running simulations to test different ways of solving a problem or to see which one is most efficient or economical; and in making a persuasive presentation to a client about how a given design will meet his or her needs. (HS-ETS1-4),(secondary to HS-LS4-6) HS-ETS1-B-2

### C Optimizing the Design HS-ETS1-C

- 1 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. (HS-ETS1-2),(secondary to HS-PS1-6),(secondary to HS-PS2-3) HS-ETS1-C-1