Power Standards for Science 9-12

A1. Systems. Students apply an understanding of systems to explain and analyze man-made and natural phenomena.

- This area also includes the concept of *Constancy and Change* (A3) where students identify and analyze examples of constancy and change that result from varying types and rates of change in physical, biological, and technological systems with and without counterbalances.
- This area also includes the concept of *Scale* (A4) where students apply understanding of scale to explain phenomena in physical, biological, and technological systems.

A2. Models. Students evaluate the effectiveness of a model by comparing its predictions to actual observations from the physical setting, the living environment, and the technological world.

- This area also includes the concept of *Scale* (A4) where students apply understanding of scale to explain phenomena in physical, biological, and technological systems.

B1. Skills & Traits of Scientific Inquiry. Students methodically plan, conduct, analyze data from, and communicate results of in-depth scientific investigations, including experiments guided by a testable hypothesis.

- This area includes the concept of *Understanding Inquiry* (C1) where students describe the key aspects of scientific investigations: that they are guided by scientific principles and knowledge, that they are performed to test ideas, and that they are communicated and defended publicly.

B2. Skills & Traits of Technological Design. Students use a systematic process, tools and techniques and a variety of materials to design and produce a solution or product that meets new needs or improves existing designs.

- This area includes the concept of *Understanding Science and Technology* (C2) where students explain how the relationship between scientific inquiry and technological design influences the advancement of ideas, products, and systems.

C3. Science, Technology & Society. Students describe the role of science and technology in creating and solving contemporary issues and challenges.

- This area includes the concept of the *History and Nature of Science* where students describe the human dimensions and traditions of science, the nature of scientific knowledge, and historical episodes in science that impacted science and society.

D3. Matter & Energy. Students describe the structure, behavior, and interactions of matter at the atomic level and the relationship between matter and energy.