

## **Background and Goals for Revising the Massachusetts *Science and Technology/Engineering (STE) Standards***

Science education must provide students with a solid foundation to make personal and civic decisions in a world that is increasingly shaped by science and technology. The *Science and Technology/Engineering (STE) Standards* must reflect current skills and knowledge students will need to contribute as citizens and succeed in college and in their careers. A periodic review of state standards is required to ensure that standards reflect changes in science and technology and student needs well into the future.

State law directs the Board of Elementary and Secondary Education (BESE) to adopt and periodically review, update, and improve curriculum frameworks in the various academic disciplines (Mass. Gen. Laws Chapter 69, Section 1E). The Board originally adopted and published the *Science and Technology Framework* in 1996. The [current framework](#) reflects a full revision in 2001 and a "minor revision" of the high school standards in 2006. The fields of science, technology, and engineering have changed over the past 15 years since the last full update of the STE standards in 2001, in ways that have significant implications for individuals and communities.

The Department of Elementary and Secondary Education (ESE) undertook the revision of the STE standards to:

- Align the standards with increased emphasis on analytical thinking skills needed in college and in the workplace. Many personal and civic decisions reflect choices and decisions of a scientific or technical nature. College-level science courses put a greater emphasis on scientific practices. Most jobs and post-secondary opportunities in Massachusetts require scientific and technical proficiency. Repeated surveys of businesses highlight their increasing emphasis on critical thinking skills that our current STE standards do not include.
- Promote a focus on, and application of, scientific and engineering concepts and skills in a wide range of contexts. The ability to identify, analyze, and apply scientific and engineering concepts in relevant contexts is critical to post-secondary success.
- Ensure coherent progressions of STE core ideas and practices from pre-K to high school that support student learning over time. The progressions rely on the interconnections across disciplines as well, reflecting how the world works and is experienced, resulting in standards which include each discipline in grade-level standards pre-K to grade 8.
- Support the implementation of other state education initiatives. The revised STE standards reinforce mathematics and literacy standards, provide a strong alignment of practices (skills) across all three disciplines, and contribute to a college and career perspective.

The revised STE standards maintain much of the content of the current Massachusetts standards with updates to reflect changes identified by the field, changes to content of science and engineering over the past 15 years, and the addition of inquiry and design skills that students need to successfully engage in this discipline in K-12 classrooms, civic life, and post-secondary opportunities. The revised STE standards strengthen the often-lauded science standards on which Massachusetts has relied since 2001.