Science Standards

The Background:

In October 2014, Governor Haslam announced the creation of a standards review website that would be open to the public to review and offer feedback on what Tennessee students should know and be able to do by the end of each K-12 school year in both mathematics and English language arts (ELA). At the time of that announcement, Governor Haslam also laid out a comprehensive standards review process. This process was further expounded upon by the General Assembly in Public Chapter 423, which charged the State Board of Education with overseeing not only the review of math and ELA standards but also science and social studies standards.

A draft of new science standards was in development prior to the passage of Public Chapter 423. In December 2013, the State Board of Education convened a Science Steering Committee to determine which format and key concepts the new science standards should focus. That committee then charged the Department of Education with assembling a team of educators to write new science standards, whose work took place throughout 2014 and early 2015.

With the passage of Public Chapter 423, the draft of standards developed by the initial educator committee was made available on the state's standards review website from September 2015 through December 2015. The draft standards received thousands of responses resulting in 29,474 reviews and 6,386 comments. After the data was compiled, it was reviewed by a second committee of science educators. The educators who comprised this team reviewed every individual standard and revised the standards again using the public feedback as well as their expertise.

The revised set of standards was posted for another period of public feedback throughout the spring of 2016. The Science Standards Recommendation Committee (SRC), appointed by the Governor, Lt. Governor, and Speaker of the House of Representatives, reviewed the revised standards and heard feedback from across the state through regional meetings and roundtables with educators, parents, the higher education community, and other stakeholders. The SRC used the feedback collected via a website and roundtables to guide their final recommendations for additional standards revisions. The standards underwent another round of revision based on the specific recommendations of the SRC. The SRC approved the new standards at their July 7, 2016 meeting.

The proposed science standards signify several large shifts for students and teachers, focusing on application and exploration of scientific concepts rather than memorization of facts. This innovative approach is intended to encourage creativity while also increasing the students' exposure to postsecondary and workforce application skills through engineering, technology, and science practice standards.

The structure of the proposed standards is developed from the *Framework for K-12 Science Education* published by the National Research Council which describes a progression of key concepts, or disciplinary

core ideas (DCIs), and gives grade level end points. Focusing on a limited number of ideas, the proposed standards will deepen content knowledge and build on learning. The progressions are designed to build on student understanding of science with developmental appropriateness. Standards are included for grades K-8, the required high school courses of Biology I and Chemistry I and/or Physics, as well as several permanent elective offerings.

Since first reading several updates have been made to improve clarity and correct minor issues (page numbers refer to the tracked changes version of the standards):

- Page 7: Removes references to current standards to avoid confusion.
- Page 7: Removes references to double coding of Engineering Technology and Science Practice (ETS) Standards. These standards are included as an individual disciplinary core idea.
- Page 12: Added clarity to the chart illustrating disciplinary core ideas across grade levels and course.

Additional grammatical changes have been made throughout the document.

The Recommendation:

The Standards Recommendation Committee recommends adoption of this item on final reading. The SBE staff concurs with this recommendation.