

KENTUCKY DEPARTMENT OF EDUCATION

STAFF NOTE

Review Item:

704 KAR 3:303, Kentucky Core Academic Standards (First Reading)

Applicable Statute or Regulation:

KRS 156.070, 156.160

History/Background:

Existing Policy. The development of the Next Generation Science Standards (NGSS) began in 2010 when the National Research Council, the National Science Teachers Association, the American Association for the Advancement of Science and Achieve, Inc. initiated a two-stage process to develop a world-class set of K-12 science education standards. The National Research Council (NRC), the staff arm of the National Academy of Sciences, began by developing the *Framework for K–12 Science Education*. The *Framework* reflects the most current research on science and science learning and identifies the science content that all K–12 students should know. The NRC convened a committee of 18 individuals who are nationally and internationally known in their respective fields. The committee was composed of practicing scientists, including two Nobel laureates, cognitive scientists, science education researchers, and science education standards and policy experts. In addition, the NRC used four design teams (physical science, life science, earth/space science, and engineering) to develop the framework for their respective disciplinary areas. A public draft was released in July of 2010. The NRC reviewed comments and considered all feedback prior to releasing the final *Framework* on July 19, 2011.

The second stage of NGSS development began when a group of identified leading states were charged with the development of K–12 science standards based on the *Framework*. These standards are rich in content and practice and are arranged in a coherent manner across disciplines and grades in order to provide all students an internationally-benchmarked science education. The development of the NGSS has been based on a collaborative state-led effort which included stakeholders in science, science education, higher education and industry. Kentucky’s official involvement with the NGSS began in July 15, 2011 when KDE submitted an application signed by Commissioner Holliday and KBE Chair David Karem to be considered by Achieve as a “lead state” in NGSS development. Kentucky was announced as a lead state on September 20, 2011. Review and guidance has been provided by advisory committees composed of nationally recognized leaders in science and science education, as well as business and industry. As

part of the development process, the standards have undergone multiple reviews including two public drafts.

The first public draft was released in May of 2012 and the second in January 2013. In both cases the general public was given the opportunity to review and comment on the draft standards via the NGSS website. Public feedback from each draft release was used by Achieve to guide significant revisions to the standards. According to Achieve, Kentucky residents responded to the first draft at the highest percentage rate of any state, and were in the top 15% of states in responding to the second public release.

A science standards review committee had already been established in response to Senate Bill 1 (2009) in anticipation of revising our science standards. The composition of this existing committee very closely matched Achieve's suggested membership criteria, consisting of practicing elementary, middle and high school teachers, representatives of major educational advocacy groups, science curriculum specialists, faculty members of all major universities, informal educators, engineers and exceptional child educators. The diverse composition of this team allowed it to be easily repurposed into the NGSS Lead State Review Team.

This team has responded to five separate draft versions of the NGSS over the last 15 months, beginning in November of 2011. Three of those drafts (November 2011, January 2012 and October 2012) were confidential versions that were only available to the lead states. The team also provided feedback on both public drafts.

According to Dr. Stephen Pruitt of Achieve, 95% of the standards were revised between the first and second public drafts. A significant reduction in the total number of Performance Expectations occurred between the second public draft and the final release as a result of feedback from the lead states and national organizations.

The Next Generation Science Standards have met all of the criteria set forth in SB 1 (2009) guiding the revision to the content standards, which include the following:

- A focus on critical knowledge and skill;
- Fewer, but more in-depth standards to facilitate mastery learning;
- Communication of expectations more clearly and concisely with the basis being evidence-based research;
- Consideration of international benchmarks;
- Alignment of the standards from elementary to postsecondary so that students can be successful at each education level;
- Participation of practicing elementary and secondary teachers, postsecondary education content faculty, and others;
- Consideration of national standards where available; and
- Wide dissemination of the proposed standards for feedback.

The final version of the NGSS (**Attachment A**) was released to the public in March. **Attachment B** shows a comparison of the current science standards to the NGSS. **Attachment C** provides a guide for how to read the NGSS.

Impact on Getting to Proficiency:

Adoption of the Next Generation Science Standards (NGSS) adheres to the expectations outlined in SB 1(2009) which established the state's college and career readiness agenda for students in Kentucky schools. The standards compliment the Common Core Standards in English/language arts and mathematics and infuse principles of science, technology, mathematics and engineering (STEM) that result in more rigorous learning expectations for students K-12.

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