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**LEGISLATIVE EDUCATION STUDY COMMITTEE**  
**BILL ANALYSIS**  
**53rd Legislature, 1st Session, 2017**

<b>Bill Number</b>	<u>HB211/aHF1</u>	<b>Sponsor</b>	<u>Romero, McCamley, &amp; Trujillo, CH.</u>
<b>Tracking Number</b>	<u>.205567.1</u>	<b>Committee Referrals</b>	<u>HEC/SEC/SPAC</u>
<b>Short Title</b>	<u>School Next Generation Science Standards</u>		
<b>Analyst</b>	<u>Macdonald</u>	<b>Original Date</b>	<u>2/6/17</u>
		<b>Last Updated</b>	<u>2/15/17</u>

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**BILL SUMMARY**

Synopsis of House Floor Amendment 1

The House floor amendment to House Bill 211 changes the school year in which school districts and charter schools are required to implement the next generation science standards (NGSS) to the 2019-2020 school year from the 2018-2019 school year.

Synopsis of Original Bill

House Bill 211 (HB211) requires the Public Education Department (PED) to adopt and implement the NGSS and requires the Mathematics and Science Advisory Council (MSAC) to make recommendations for PED's implementation of the standards.

**FISCAL IMPACT**

HB211 does not contain an appropriation.

HB211 does not appropriate funds to PED for implementation of the new standards; however, it is likely, that if enacted, appropriations would be sought to support statewide implementation, including professional development for teachers and potentially for development of new standards-based assessments in science. If assessments are not paper and pencil tests there could be an additional funding request to support required technology to administer assessments. If appropriations are not specifically made for implementation of the new standards in the future, school districts and charter schools would likely have to use operational dollars to implement the new NGSS. The discussion below outlines costs associated with adoption of the common core state standards (CCSS) in math and English in 2010 as a reference to potential costs of implementation of this bill.

*Common Core State Standards.* New Mexico adopted the CCSS in math and English in October 2010. PED, in collaboration with stakeholders statewide, developed a plan that called for transition to the CCSS by the 2014-2015 school year, including implementation of the new

Partnership for Assessment of Readiness for College and Careers (PARCC) assessment in grades 3 through 11.

PED received a \$1 million special appropriation for FY13 to support implementation of the new CCSS content standards in math and English. These funds have been primarily used to provide professional development to kindergarten through third grade teachers in FY13. In FY14, PED received a \$1.5 million special appropriation to support the implementation of the CCSS. These funds have been used primarily to provide professional development to fourth through 10th grade teachers in FY14.

School districts and charter schools would bear the costs for instructional materials related to the implementation of the new science standards.

## **SUBSTANTIVE ISSUES**

HB211 requires PED to adopt the NGSS, which are developed by the National Research Council of the National Academy of Sciences, the National Science Teachers Association, and the American Association for the Advancement of Science and Achieve, by August 31, 2017. By July 31, 2018, PED must develop a plan; adopt and promulgate rules; and report on the NGSS implementation plan to the Legislative Education Study Committee (LESC). Beginning in 2019-2019 school year, each school district and charter school is required to implement the NGSS. Lastly, the MSAC is required to make recommendations to and advise PED's Mathematics and Science Bureau on the best practices for the implementation of the standards.

Section 22-2C-3 NMSA 1978 grants PED the authority to adopt academic content and performance standards. Historically, this section has not mandated PED to adopt particular standards, but has left it to the department to meet statutory and regulatory requirements in adopting standards.

Currently, PED uses the New Mexico science content standards, benchmarks, and performance standards, which were approved in 2003 by the then-New Mexico State Department of Education and based on 1996 national science education standards. The New Mexico science content standards in grades 6 to 12 are supplemented by the common core standards for literacy in science, social studies, and technical subjects, which began in the 2013-2014 school year.

The NGSS were released for adoption in April 2013. The standards are based on a "Framework for K-12 Science Education," which establishes three dimensions for science learning: scientific and engineering practices; crosscutting concepts; and disciplinary core ideas. The framework's vision takes into account two major goals for public school science education: (1) educating all students in science and engineering; and (2) providing the foundational knowledge for those who will become scientists, engineers, technologists, and technicians in the future. The framework illustrates how knowledge and practice must be intertwined in designing learning experiences in science education. The NGSS focuses on deeper understanding of content and application of content, integrating science, engineering, and technology concepts, and preparing students for college and careers.

According to the 2016 Math and Science Annual Report, PED has made steady improvements in science, technology, engineering, and mathematics (STEM) education with the ongoing implementation of the common core state standards. However, there is extensive room for growth in the state's students' college and career readiness assessment scores. During the 2014-

2015 school year, 39.8 percent of students were rated proficient or above on the standards-based assessment for science. During the 2015-2016 school year, 42.5 percent of students were rated proficient or above on the standards-based assessment for science, which is an increase of 2.7 percentage points.

During the 2015-2016 school year, the MSAC recommended to adopt the next generation science standards as written and with significant support for materials, equipment, and professional development. (See **Attachment**).

### **ADMINISTRATIVE IMPLICATIONS**

PED will need to develop a plan, adopt, and promulgate rules for the next generation science standards by July 31, 2018.

### **TECHNICAL ISSUES**

On page 2, lines 9-11, PED is required to “begin to develop a plan, adopt, and promulgate rules” on the next generation science standards by July 31, 2018; however, on page 2, lines 14-16, each school district and charter school is required to “begin to implement the next generation science standards.” If the department is beginning to develop a plan to adopt and promulgate rules by July 31, 2018, it will be highly unlikely, if not impossible, that school districts and charter schools could begin to implement the science standards beginning in the 2018-2019 school year.

PED’s administrative rulemaking process would take a minimum of two months. After PED releases the draft regulation, there is a 30-day public comment period followed by a public hearing. Final adoption of the rule occurs after review of the comments from the public comment period and public hearing. Based on the dates in the bill, the final rule for adoption of the new science standards would be at the end of September 2018.

The sponsor may wish to delay the date by one year by which school districts and charter schools are required to begin implementation of the new science standards.

### **OTHER SIGNIFICANT ISSUES**

Around the country, states have used the national science education standards from the National Research Council and benchmarks for science literacy from the American Association for the Advancement of Science to guide the development of their state science standards. While these two documents have proven to be both high-quality and durable, they are around 20 years old. In that timeframe, advances have taken place in science and in the understanding of how students learn science effectively. Thus, the foundation to develop the next generation science standards was appropriate.

The development of the NGSS was a state-led effort. In addition to states, the National Research Council, the National Science Teachers Association, the American Association for the Advancement of Science, and other critical partners were active in the development and review of the standards and provide continual support to states as the states adopt and implement the standards. NGSS writing and review teams consisted of teachers, state science, and policy staff, higher education faculty, scientists, engineers, cognitive scientists, and business leaders. Achieve, which is an independent, nonpartisan, nonprofit education reform organization, managed the development process on behalf of the 26 lead states.

The Mathematics and Science Bureau at PED works to ensure the Mathematics and Science Education Act is implemented in New Mexico public schools by: (1) promoting partnerships among public schools, postsecondary institutions, government, business, educational, and community organizations to improve the mathematics and science education in the state; (2) working with the Mathematics and Science Advisory Council to develop a statewide strategic plan for mathematics and science education in schools and to coordinate education activities with other state agencies, the federal government, business consortia, and public or private organizations; (3) developing and evaluating curricula, instructional programs, and professional development programs in mathematics and science aligned with state academic content and performance standards; and (4) addressing the outcomes for efforts to improve mathematics and science education using existing data.

**RELATED BILLS**

Relates to SB134, Computer Science for School Graduation  
Relates to SB241a, School Visual Arts & Physical Ed Standards  
Relates to HJR5, No New School Activity Without Funding, CA

**SOURCES OF INFORMATION**

- LESC Files
- LFC Files

**HLM/rab**

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August 26, 2015

Hanna Skandera  
New Mexico Public Education Department  
300 Don Gaspar  
Santa Fe, NM 87501

Dear Secretary Skandera,

The Math and Science Advisory Council (MSAC) recommends the adoption of the Next Generation Science Standards (NGSS) by the New Mexico Public Education Department. Adopting NGSS is an essential step to ensure that all New Mexico students have access to high-quality science curricula and instruction and will become STEM literate citizens that are college and career ready.

On November 12, 2013, MSAC unanimously passed a motion to support PED adoption of NGSS. This recommendation was reflected in MSAC 2014 annual report, and it still stands, nearly two years later. We recommend that the standards be adopted *as written* without any modifications. Additionally, MSAC recommends implementation with significant resources and support for teacher and administrator professional development, curriculum, and equipment and materials. We recommend a one-year planning period with extensive teacher and stakeholder input and a phased-in rollout over several years. The National Science Teachers' Association (NSTA) and states that have already adopted NGSS support this plan of action.

Adopting NGSS will require that teachers deliver instruction in dramatically different ways; a big shift must be made from how we currently teach science as guided by the NM State Science Standards. Under NGSS, students will be assessed on performance expectations that weave together science content with science and engineering practices and cross-cutting concepts. This shift will require students to learn science and engineering in a deeper and more conceptual way, and require them to engage in the doing of science – learning only science facts will not be sufficient. This is a significant change from past practices, and therefore, it is imperative that adequate funding for materials and equipment, and strong professional development support for teachers and administrators accompany the adoption of NGSS.

The recommendation to adopt NGSS comes as New Mexico is still in the beginning stages of implementing the Common Core State Standards (CCSS) in English Language Arts and Mathematics. The NGSS are aligned with the CCSS and the overlap is meaningful, as science content becomes the subject for analysis in math lessons and the subject for reading and writing exercises. With NGSS adoption, teachers can integrate the core content and students will benefit from reinforcement of concepts in every discipline.

MSAC is pleased to support the PED as it considers adopting NGSS. Coupled with the necessary support, it is the right thing to do to ensure that New Mexico students are prepared for the future.

Sincerely,

  
Selena Connealy  
MSAC Co-Chair

  
Zachary Leonard  
MSAC Co-Chair