Thank you for reviewing and providing feedback on the revised NSTA Standards for Science Teacher Preparation (NSSTP). This vetting process is an important one as we continue to evolve the NSSTP. There is a link on the website: www.nsta.org/preservice for comments and feedback. As you consider the five standards, please keep in mind that our work was guided by the following:

- The revised Standards are for beginning science teachers are meant to represent minimal competencies.
- The revised Standards are designed so as to not replicate those competencies addressed and assessed under the NCATE Unit Standards.
- The revised Standards are designed to allow individual emphases within programs while maintaining a basic level of competency.
- The revised Standards adopts the Continuous Improvement model approach adopted by NCATE and assumes programs currently holding accreditation to be meeting the standards.

Members of the NSTA Preservice Subcommittee

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DRAFT Standards

NSTA Standard 1

- Effective teachers of science understand and articulate the knowledge and practices of contemporary science. They interrelate and interpret important concepts, ideas, and applications in their fields of licensure.

Below are the elements of the standard.

Candidates will:

1a) Understand the major concepts, principles, theories, laws, and interrelationships of their fields of licensure and supporting fields as recommended by the National Science Teachers Association.

   o Assessment: These elements are usually met using Assessment 1 and 2.
NSTA Standard 2

- Effective teachers of science develop an instructional unit plan that is consistent with the goals and recommendations of State and/or National Science Education Standards. They have knowledge about how students learn and develop. They demonstrate planning in the specific science discipline, nature of science, and safety.

Below are the elements of the standard.

Candidates will

2a) Develop an internally consistent unit of study that addresses the diverse goals of State and/or National Science Education Standards consisting of more than a single lesson plan and for a period of time of more than one lesson.

2b) Develop a unit of study that demonstrates their knowledge of how to teach particular content for understanding and their ability to meet the learning needs and abilities of all students.

2c) Develop a unit of study reflecting the nature of science including the critical analysis of false or doubtful assertions made in the name of science without devaluing other ways of knowing.

2d) Develop a unit of study which addresses and is familiar with safety issues relevant to the Unit Plan. This must include all aspects of Standard 4a, b and c.

NSTA Standard 3

- Effective teachers of science plan for the various methods of scientific inquiry and construct assessment strategies to achieve the goals of the instructional plan by the construction and use of fair, unbiased, and effective assessment strategies that are designed to measure student learning.

Below are the elements of the standard.

Candidates will

3a) Plan multiple lessons using a variety of inquiry approaches that demonstrate candidates’ knowledge and understanding of how students learn science and the appropriate inquiry skills. Investigations should include active inquiry lessons where students collect and interpret data in order to develop concepts, understand scientific processes, relationships and natural patterns from empirical experiences.

3b) Design assessment strategies to achieve the appropriate learning goals. Assessment strategies are designed to continuously evaluate preconceptions and ideas that students hold and the understandings that students have formulated.

- Assessment: Standards 2 and 3 are usually met using Assessment 3—Unit Plan
NSTA Standard 4

- Effective teachers of all science licensures are able to create a learning environment and learning experiences for all students that demonstrate chemical safety, safety procedures, and the ethical treatment of living organisms. Effective teachers of science can, in a K-12 classroom setting, demonstrate and maintain chemical safety, safety procedures, and the ethical treatment of living organisms needed in the K-12 science classroom.

Below are the elements of the standard.

Candidates will:

4a) Understand safe and proper techniques for the preparation, storage, dispensing, supervision, and disposal of all materials used within their subject area science instruction.

4b) Understand emergency procedures, how to maintain safety equipment, and ensure the candidate has the knowledge of how to design safety procedures for the activities and abilities of students in the classroom, on the school grounds, and in the planning of field experiences.

4c) Understand the proper treatment of all living organisms used in the classroom or found in the field in a safe, humane, and ethical manner and comply with legal restrictions on their collection, keeping, and use.

4d) Practice in a K-12 classroom the safe and proper techniques for the preparation, storage, dispensing, supervision, and disposal of all materials used within their subject area science instruction.

4e) Demonstrate in a K-12 classroom an ability to implement emergency procedures and maintenance of safety equipment, policies and procedures that comply with established state and/or national guidelines. Candidates ensure safe science activities appropriate for the abilities of all students.

4f) Establish and practice in a K-12 classroom ethical decision-making with respect to the treatment of all living organisms in and out of the classroom. They emphasize safe, humane, and ethical treatment of animals and comply with the legal restrictions on the collection, keeping, and use of living organisms.

- **Assessment**: Elements 4a, 4b and, 4c are usually met using Assessment 4 – Student Teaching Observation for the Teaching of Science. Elements 4d, 4e, and 4f are usually met using Assessment 6, Safety Module
NSTA Standard 5

- Effective teachers of science demonstrate the ability to positively impact K-12 students’ understanding of science content including the Nature of Science (NOS) and the processes of inquiry.

Below are the elements of the standard.

Candidates will

5a) Provide data to show that K-12 students’ understanding of major science concepts, principles, theories, and laws have positively changed as a result of instruction by the candidate and that student knowledge is at a level of understanding beyond memorization.

5b) Provide data to show that K-12 students are able to distinguish science from nonscience, understand the evolution and practice of science as a human endeavor, and critically analyze assertions made in the name of science.

5c) Engage students in developmentally appropriate inquiries that require them to develop concepts and relationships from their observations, data, and inferences in a scientific manner.

5d) Collect, organize, and analyze formative and summative data in a reliable and valid manner to demonstrate their impact on student learning.
   - **Assessment:** These elements are usually met using Assessment 5 – Evidence of K-12 student learning