Solicitation Information
March 20, 2017

RFP# 7550882

TITLE: Multi-State Science Assessment (MSSA)

SUBMISSION DEADLINE: April 18, 2017 at 2:00 PM (ET)

PRE-BID/ PROPOSAL CONFERENCE: No

Questions concerning this solicitation must be received by the Division of Purchases at gail.walsh@purchasing.ri.gov no later than Friday, March 31, 2017 at 5:00 PM (ET). Questions should be submitted in a Microsoft Word attachment. Please reference the RFP# on all correspondence. Questions received, if any, will be posted on the Internet as an addendum to this solicitation. It is the responsibility of all interested parties to download this information.

SURETY REQUIRED: NO

BOND REQUIRED: NO

GAIL WALSH
CHIEF BUYER

Vendors must register on line at the State Purchasing Website at

www.purchasing.ri.gov

NOTE TO VENDORS:
Offers received without the entire completed three-page R.I.V.I.P. Generated Bidder Certification Form attached may result in disqualification.

THIS PAGE IS NOT A BIDDER CERTIFICATION FORM
Request for Proposals (RFP)
Multi-State Science Assessment (MSSA)
Grade 5, 8, and 11 Summative Science Tests

The Rhode Island Department of Administration, Division of Purchases, on behalf of the Rhode Island Department of Education (RIDE) is requesting Proposals from qualified vendors to provide assessment services, in accordance with the terms of this solicitation, and the State of Rhode Island’s General Conditions of Purchases, which may be obtained at the Rhode Island Division of Purchases website at www.purchasing.ri.gov.

This is a Request for Proposals, not an Invitation for Bid. Responses will be evaluated on the basis of the relative merits of the proposal, in addition to price; there will be no public opening and reading of responses received by the Division of Purchases pursuant to this Request, other than to name those offerors who have submitted proposals.

INSTRUCTIONS AND NOTIFICATIONS TO BIDDERS:

Potential offerors are advised to review all sections of this solicitation carefully and to follow instructions completely, as failure to make a complete submission as described elsewhere herein may result in rejection of the proposal.

Alternative approaches and/or methodologies to accomplish the desired or intended results of this procurement are solicited. However, proposals which depart from or materially alter the terms, requirements, or scope of work defined by this Request will be rejected as being non-responsive.

All costs associated with developing or submitting a proposal in response to this Request, or to provide oral or written clarification of its content, shall be borne by the offeror. The State assumes no responsibility for these costs.

Proposals are considered to be irrevocable for a period of not less than sixty (60) days following the opening date, and may not be withdrawn, except with the express written permission of the State Purchasing Agent.

All pricing submitted will be considered to be firm and fixed unless otherwise indicated herein.

Proposals misdirected to other State locations or which are otherwise not present in the Division of Purchases at the time of opening for any cause will be determined to be late and may not be considered. PROPOSALS EMAILED OR FAXED TO THE DIVISION OF PURCHASES WILL NOT BE CONSIDERED. The “Official” time clock is in the reception area of the Division of Purchases.
It is intended that an award pursuant to this Request for Proposals will be made to prime contractor(s) who will assume responsibility for all aspects of the work. Joint ventures shall be considered, so long as the contractor’s duties and responsibilities are clearly articulated in such form as acceptable to the State. Subcontractors are permitted, provided their use is clearly indicated in the offeror’s proposal and the subcontractor(s) to be used are identified in the proposal.

All proposals should include the vendor’s FEIN or Social Security number as evidenced by a W9, downloadable from the Division’s website at www.purchasing.ri.gov.

In accordance with Title 7, Chapter 1.2 of the General Laws of Rhode Island, no foreign corporation shall have the right to transact business in the state until it shall have procured a Certificate of Authority to do so from the Rhode Island Secretary of State (401-222-3040). This will be a requirement only of the successful bidder(s).

Offerors are advised that all materials submitted to the State of Rhode Island for consideration in response to this Request for Proposals will be considered to be public records, as defined in Title 38 Chapter 2 of the Rhode Island General Laws, without exception, and will be released for inspection immediately upon request, once an award has been made.

Also, Submitters should be aware of the State’s MBE requirements, which addresses the State's goal of ten per cent (10%) participation by MBE's in all State procurements. For further information, contact the State MBE Administrator at (401) 574-8670 or Dorinda.keene@doa.ri.gov. Visit the website http://www.mbe.ri.gov.

Interested parties are instructed to peruse the Division of Purchases web site on a regular basis, as additional information relating to this solicitation may be released in the form of an addendum to this RFP.

Equal Employment Opportunity (RIGL 28-5.1)
§ 28-5.1-1 Declaration of policy. – (a) Equal opportunity and affirmative action toward its achievement is the policy of all units of Rhode Island state government, including all public and quasi-public agencies, commissions, boards and authorities, and in the classified, unclassified, and non-classified services of state employment. This policy applies in all areas where the state dollar is spent, in employment, public service, grants and financial assistance, and in state licensing and regulation. For further information, contact the Rhode Island Equal Employment Opportunity Office, at 222-3090 or via email krystal.waters@doa.ri.gov.

RIGL 37-13-3.1 State public works contract apprenticeship requirements. * (a) Notwithstanding any laws to the contrary, all general contractors and subcontractors who perform work on any public works contract awarded by the state after passage of this act and valued at one million dollars ($1,000,000) or more shall employ apprentices required for the performance of the awarded contract. The number of apprentices shall comply with the apprentice to journeyman ratio for each trade approved by the apprenticeship council of the department of labor and training.
OVERVIEW AND BACKGROUND
Through this request for proposals (RFP), the states of Rhode Island and Vermont are seeking an assessment contractor to assist with the design, development, and administration of Science Tests to be administered annually to students at grades 5, 8, and 11. The content and process types of questions on the Science Tests must be aligned to the Next Generation Science Standards (NGSS). The Science Tests must also meet the assessment requirements set forth in the Every Student Succeeds Act (ESSA) and corresponding United States Department of Education (USED) regulations; in particular, the Science Tests must meet USED Peer Review guidelines.

The Science Tests developed and administered under contracts awarded through this RFP will be a key component of each state’s effort to support, monitor, and evaluate districts’ and schools’ implementation of the NGSS. Because of the challenges, however, associated with attempting to fully assess the NGSS through a single, on demand summative assessment, these Science Tests will not be the sole means used by the states to monitor the implementation of the NGSS.

Contract Overview
It is expected that the contract period for the Science Tests described in this RFP will begin no later than July 2017 and the contract period will continue through December 2021. The contract period will include the administration of a field test in spring 2018 and three annual administrations of operational tests in Spring 2019, 2020, and 2021. (The specific procedures for executing multi-year contracts may vary by state.)

Each of the states will award an individual contract based on their portion of the total contract costs across states. The states will determine how total contract costs are distributed across states. The continuation and annual renewal of all contracts are subject to continued availability of funds and federal assessment requirements. Refer to each state’s specific contract provisions for additional details.

Each of the states will issue this RFP separately. The RFP issued by each state will contain the common scope of work for the Common Science Tests, as well as any additional state-specific components or requirements. For the Common Science tests, contractors will submit a common scope of work and a single budget containing the total costs for the project to each state. For any state-specific options or requirements, contractors will submit a scope of work and budget to the particular state(s) making the request.

The states will identify and select a single contractor and each state will award a contract to that contractor. There will be a single contractor responsible for the completion of the scope of work described in this RFP. The contractor may propose to assign specific tasks to qualified subcontractors or vendors, but the contractor will maintain responsibility for the completion of all tasks.

Collective Purchase
Rhode Island and Vermont, the Multi State Science Assessment (MSSA) states, welcome participation of other states and territories in the assessment program. The Multi State Science Assessment (MSSA) states require other states and territories interested in using the contract to receive advance approval from the MSSA states in order to determine whether better pricing could be negotiated with the contractor and to determine the best approach to incorporate any terms and conditions that the other state would like to include in their contract with the contractor. Further, the MSSA states’ reserve the
right to develop a Participating Addendum with the contractor and other state(s) in order to allow other states’ contract terms to be included in their contract.

**High-level Description of the Test Design**

This section contains a brief, high-level overview of key features MSSA Science Tests. More detailed information is available in the preliminary Test Specifications included as an appendix to this RFP.

**Format**
The science assessment will be a computer-based test.

**Testing Time**
The assessment will be designed to require no more than two hours of testing time per student. The two hours of testing time represents the time that the vast majority of students will require to compute the assessment. The test will be loosely timed, and districts may schedule additional time to allow for all students to complete the assessment.

**Number of Test Sessions**
The assessment will be designed to be administered in two sessions.

Districts may choose to administer the grade 11 test in a single administration window with a short break between sessions.

**Common-Matrix Design**
The assessment will employ a combined common-matrix design to improve the coverage across standards at the school level within the limited testing time.

Each test form will consist of a set of items common to all students and a set of items matrix-sampled across students. Student scores will be based on all operational items.

**Item Types**
The assessment will include a variety of machine-scorable item types. All items must be machine-scorable.

The requirement for machine-scorable items must not preclude the use of test items that reflect the depth and complexity of the NGSS. It is expected that the MSSA Science Tests at all grade levels will make the best use of available technology to include items that assess higher order thinking skills, address the multiple dimensions of the NGSS, and require students to produce responses as well as select from an available set of responses.

**Scope of Work**

**Project Management**
The contractor will be responsible for the effective and efficient management of the project. The bidder’s response must include a description of the procedures and processes that will be used to ensure the effective and efficient management of the project. The bidder’s response should address areas such as scheduling, communication (internal, with the states, with districts and schools), and coordination across tasks and parties.
PM-1 Management Team

The contractor will appoint a single project director who oversees the management of the project for the contractor and serves as the primary point of contact with the states. The contractor will also appoint additional staff determined necessary to support the project director and ensure the successful operation of the project.

The bidder’s response must fully describe the role of the project director and any additional positions that will be included as part of the project management team. The bidder’s response should address the percentage of time that the project director and other members of the project management team will be assigned to this project.

The bidder’s response will identify and provide relevant information on the qualifications of the person proposed to serve as project director, as well as all other key staff on the project. Throughout the course of the contract, the assignment of a person to the project director position will be subject to the approval of the states. (Note that the states must be notified of changes to personnel performing other key roles in the project, but state approval is not required for those personnel changes.)

PM – 2 Project Plan and Schedule

At the beginning of the project and by the beginning of each fiscal year, the contractor will develop a detailed project plan and schedule for the coming fiscal year.

The development of the project plan and schedule will follow a review of the current project status and contract specifications by the contractor and states. Any foreseeable changes to contract requirements and/or costs will be discussed and agreed upon during this process and reflected in the Project Plan and Schedule.

PM – 3 Management Meetings

The contractor will be responsible for organizing and supporting regular management meetings with the states’ project management team. For purposes of preparing a budget in response to this RFP, assume that the contractor will be responsible for costs associated with management meetings.

An initial two-day, in-person management meeting will be held shortly after the contract is awarded.

The bidder’s response should propose an annual schedule for management meetings necessary to support the operation of the project. The bidder’s response should address the frequency and length of meetings. The bidder’s response should address the number and type of meetings that should be held in-person and the number and type of meetings that may be conducted remotely. The bidder’s response should reflect the need to minimize travel while recognizing that some in-person meetings will be required.

For all management meetings, the contractor will be responsible for preparing an agenda (with input and subject to approval of the states), producing meeting minutes, and producing a summary of action items resulting from the meeting.
**PM – 4 Project Communications**
Effective and efficient communication is critical to the successful operation of the project. The bidder’s will propose a communication plan to ensure effective communication among key project stakeholders. The bidder’s response should address any technology that will be proposed to support effective communication, any regular written communication or reports that are proposed, and processes and procedures that will be taken to monitor and evaluate the effectiveness of project communication.

**Item and Test Development**
The contractor will be responsible for the development or procurement of all items included on the MSSA Science Tests.

The bidder’s response must reflect familiarity with and understanding of the Next Generation Science Standards (NGSS), challenges associated with assessing those standards, and innovative approaches to assessing those standards.

The bidder’s response must reflect familiarity with and understanding of the MSSA preliminary Test Specifications included as an appendix to this RFP.

Accessibility for all students is a core principle of the MSSA states. The bidder’s response must discuss the procedures that will be used to support inclusiveness and to ensure that the MSSA Science Tests are designed to be accessible to virtually all students. The bidder’s response should address the use of Universal Design (UD), Universal Design for Learning (UDL), and the use of development protocols such as the Accessible Portable Item Profile (APIP).

**States' Content Team**
Content specialists from each state Department of Education will form the states’ Content Team. The states’ content team will serve as the primary contact with the contractor’s item development team, will have input into the design and format of test items, and will be responsible for the review and evaluation of all test items developed. The states’ content team will review all items prior to their presentation at Item Review Committee meetings.

**Item Development**
This section of the RFP addresses tasks related to the development, evaluation, and selection of the items that will be included in the MSSA. Each of the science tests may include a combination of items developed specifically for this assessment program and items procured from other sources. Throughout this section of the RFP, the term item development will be used to refer to both items that are custom-developed for the MSSA and items procured by the bidder from other sources. Whether custom-developed for the MSSA or obtained from other sources, all items included on these science tests will be subject to the review processes described in the RFP.

The bidder’s response should describe the contractor’s general procedures for item development including the use of outsourced or free-lance item writers, the use of items previously developed by the contractor, and/or the procurement of developed items from other sources. The bidder’s response
should include a description of how all item writers are trained on the content of states’ science standards, in general, and on any specific content criteria related to this assessment.

In addition to addressing the specific tasks described in the RFP, the bidder’s response must also meet the following requirements:

- The bidder’s response must reflect familiarity with the states’ science standards as well as current best practices and recommendations regarding the assessment of student achievement in science.
- The bidder’s response must reflect familiarity with computer-based testing and the use of a variety of item types, including technology enhanced items (TEI) to assess students’ higher order cognitive skills as well as their knowledge of core ideas and concepts.
- The bidder’s response must discuss the procedures that will be used to ensure that the science tests are accessible to virtually all students. The bidder’s response should address the use of Universal Design (UD), Universal Design for Learning (UDL), and the use of development protocols such as the Accessible Portable Item Profile (APIP). The bidder’s response should also address how technology will be used to enhance accessibility.
- The bidder’s response must indicate how the security of items will be maintained throughout the development and item review process, including procedures that will be taken to ensure the secure transfer of items and item information to/from states during the development process.
- If bidders believe that tasks not specified in this RFP are critical to the development of quality items and a successful testing program, they should identify and describe the significance of those tasks in their response.

**ID-1 Item Development Team**

The contractor will appoint an item development team responsible for the development of items for the science tests at grades 5, 8, and 11. The bidder’s response will identify key personnel and describe the proposed composition of the item development team, including describing the responsibilities and time commitments of the proposed members. The bidder’s response will include a description of how the specific needs of students with disabilities and English language learners will be accounted for within the proposed item development team. If the bidder proposes that a single person will fulfill multiple roles within the team (e.g., lead developer and grade level developer; developer at multiple grade levels) that must be clearly described in the bidder’s response. The bidder’s response must include a rationale to support the proposed composition of the item development team.

The bidder’s response must include a description of the procedures, including the use of technology that will be used to facilitate interactions among the contractor’s item development team and the states’ content team.
The bidder’s response must describe the type, number, and duration of in-person and virtual meetings between the item development team and states’ content team that will be needed throughout the development cycle to produce quality items for the tests. All costs for proposed in-person development meetings (including travel costs and lodging) should be included in the proposal.

ID-2 Item Development and Review

ID-2.1 Interactions between the states’ Content Team and the contractor’s Item Development Team

The bidder shall propose and describe the process that will be used to interact with the state’s Content Team throughout the item development and review process. The bidder’s response should reflect an understanding of the responsibilities of state department of education staff and propose a process that avoids unnecessary travel, makes the most efficient use of their time, and allows sufficient turnaround time for review and approval of all items and related materials.

The bidder will describe the type and number of in-person and virtual meetings that will be held during an annual development cycle.

The bidder’s response should include a proposal for an initial in-person meeting between the states’ Content Team and the contractor’s Item Development Team at the beginning of the project.

ID-2.2 Item Review Committees

The states believe that the use of item review committees consisting of educators from each of the participating states is a critical part of the item development process. The item review committees not only provide a unique and important perspective during item review, but also enhance the transparency of the assessment program and increase understanding and buy-in for the program.

The primary purpose of the Item Review Committees is to provide feedback on the content of items proposed to be included for field testing on the next administration of the assessment, including the alignment of content to the states’ standards, accuracy of content, and appropriateness of content for the grade levels being tested. The committee may also be asked to provide feedback on the use and appropriateness of specific item types and to provide suggestions for future item development.

The contractor will support grade-level item review committees (5, 8, and 11) for each of the science tests. The committees will consist primarily of grade-appropriate teachers recruited and selected by each of the states. Additional committee members may include local curriculum coordinators, content specialists, and ESL or special education specialists. The states will determine the composition of committees.

Meetings of the Item Review Committees will be jointly facilitated by the states’ Content Team and the contractor’s Item Development Team.

The committee will meet annually beginning in the summer of 2017. A three-day meeting will be held in early August in one of the MSSA states.
The states are proposing an annual summer meeting due to the availability of educators and the timing of the meeting within the development cycle. If the bidder thinks that additional meetings of the Item Review Committee would be necessary and/or that the timing of the meetings should be changed, the bidder’s response should include a proposal for an alternative meeting schedule. In particular, the bidder should indicate if they think that additional meetings will be needed during the initial year of the contract in preparation for the spring 2018 field test.

The bidder’s response should indicate the steps that will be taken to maximize efficiency throughout the item review process and, in particular, should describe how the bidder will make the most efficient use of the limited time available with the members of the Item Review Committees. This could include proposing a structure for the meeting that would provide for the most effective and efficient use of people and resources (e.g., organized by grade level, organized by content).

In preparing a response, the bidder should plan on supporting the item review committee meeting with the following specifications:

- Each grade level committee will consist of twelve (12) members.
- Committee members will be paid a stipend of $150 per day for participation in the 3-day summer meeting. (If the bidder proposes meetings during the school year, the stipend will be replaced by a corresponding payment to the committee members’ school district for substitute reimbursement.)
- The meeting will also be attended by representatives from the states, including the states’ Content Team (up to a maximum of eight (8) people total).
- The contractor will support and arrange for lodging for committee members and states’ representatives (a total of 20 people). The bidder’s response should presume that all participants will require 3 nights lodging for the meeting (beginning one night prior to the meeting.)
- The contractor will also be responsible for travel expenses (e.g., mileage, airfare) for all participants to attend the meeting.
- The contractor will provide breakfast and lunch each day of the meeting and be responsible for dinner expenses ($25 per day) on days which require an overnight stay.

Meetings will be held at a hotel, conference center, or similar suitable location in one of the states. The meeting location may vary rotate among the states or may be held in a central location to minimize travel requirements and expenses for committee members.

The contractor will work with states to develop a timeline to ensure that the states’ Content Team has sufficient time to review and provide feedback on all materials and items prepared for the Item Review Committee meetings.
The contractor will schedule an additional meeting day following the conclusion of the 3-day Item Review Committee meeting for a meeting of the contractor’s Item Development Team and the states’ Content Team to reconcile item feedback.

The contractor will produce a written report documenting the meeting and recommendations within two weeks of each committee meeting.

**ID-3 Bias/Sensitivity Review Committee**

Contractor will support a Bias/Sensitivity Review Committee consisting of external educators and experts recruited and selected by each of the states to review the content of passages, other stimuli, and test items for potential bias and sensitivity. The states will determine the composition of the committee.

There will be a single committee responsible for reviewing materials across grades 5, 8, and 11 (i.e., there will not be separate bias/sensitivity committee for each of the three science tests).

The committee will contain fifteen (15) members.

The meetings will be facilitated by the contractor in coordination with a representatives from the states.

The committee will meet annually beginning in the summer of 2017. A two-day meeting will be held in one of the MSSA states. The bidder may propose an additional meeting, if necessary during the initial year of the project.

In preparing a response, the bidder should plan on supporting the bias/sensitivity review committee meeting with the following specifications:

- The committee will consist of fifteen (15) members.
- Committee members will be paid a stipend of $150 per day plus travel expenses for participation in the summer meeting. (If additional meetings are proposed during the year, the $150 stipend will be replaced by a corresponding payment to districts for substitute reimbursement for any committee members who are employed by local education agencies.)
- The meeting will also be attended by a representative of the states (1 person).
- The contractor will support and arrange for lodging for committee members and the states’ representative attending the meeting.
- The contractor will provide breakfast and lunch each day of the meeting and be responsible for dinner expenses ($25 per day) on days which require an overnight stay.

The Bias/Sensitivity Review Committee will focus on review of stimuli proposed for the development of new field test items, review of newly developed items recommended for field test, and beginning in 2018 after the initial field test, review of items recommended for inclusion in the operational item bank that have been flagged for DIF.
If feasible, the Bias/Sensitivity Review Committee meetings may be scheduled concurrently with the Item Review Committee. The bidder’s response should propose a process that will help avoid the costs and lack of efficiency of having assessment items go through development and be flagged for bias/sensitivity (content review, not empirical DIF analyses) only after substantial investment in development effort.

The contractor will produce a written report documenting the committee meeting and recommendations within two weeks of each meeting.

**ID-4 Content Review**
The contractor must ensure that the content of all items recommended for field-testing is accurate and reflects the current state of knowledge in the appropriate field. The contractor’s response must describe their methods and procedures for meeting this requirement within the item development process.

**ID-5 Item Types**
As described previously, all items on the MSSA Science Tests must be machine-scorable. The requirement for machine-scorable items, however, must not limit the use of item types to traditional multiple-choice or selected-response items. The bidder’s response must describe the variety of item types that could be included on the science tests, including item types that require students to generate or produce a response as well as select a response. The bidder’s response must include a description of the bidder’s experience with each of the item types proposed and provide access to sample items to allow the states to review proposed item formats.

**ID-6 Number of Items**
The bidder’s response must include a proposed plan for the number of items of various types that will need to be developed for the Spring 2018 Field Test and subsequent operational test administrations. The bidder’s response should address the number of items that will be administered to an individual student as well as the total number of items that will be administered across matrix-sampled forms on each MSSA Science Test. The bidder’s response should reflect an understanding of the state’s intended use of the results from the MSSA Science tests, the type of scores that will be reported, the plan to release items, as well as an understanding of the states’ science standards. The bidder’s response should also reflect an awareness of the testing time and cost constraints discussed throughout this RFP.

Because of the open-ended nature of the current test design, bidders may propose and provide cost estimates for the number of items needed to support two assessment models:

1. An assessment that meets the states’ basic needs for an assessment that addresses the depth and breadth of the NGSS and is able to support the reporting of an overall science score for individual students, and more in-depth coverage and reporting at the district and school levels.
2. An assessment that meets the needs described above and also allows for the linking of particular subscales across years and/or more in-depth reporting of results at the district and school levels.

The bidder’s response should address key differences between the two models.
It is important that the Spring 2018 Field Test yields a sufficient number of items to allow some flexibility in selecting items for the Spring 2019 operation test form. The bidder’s response must provide an estimate of the expected yield of items from field testing and provide evidence, as appropriate, to support that estimate. The bidder’s response should indicate whether the expected yield for items varies significantly by item type, content, or grade level.

**ID-6.1 Item Release**

The bidder will propose a plan for the annual release of a representative sample of test items. The purpose of releasing items is to provide local educators with information about the type and level of knowledge and skills assessed on the science tests, the variety of item types used on the assessment, and the rigor of the items on the science test.

The annual release of items will consist of up to 25% of the items (points) on a single student test form. The bidder’s response should address how common items in the common-matrix design may be used to support the release of items.

Release of items will begin with the first operational administration of the MSSA Science Tests in Spring 2019.

All item types should be represented in the release of items. The balance of items types should be proportional to their use of the assessment.

Items will be released in a digital format that enables local educators to interact with the items in the same manner that the items would be encountered on the test.

Released items will be accompanied by supporting materials including relevant item statistics, information about the knowledge and skills assessed by the item, information on how the item was scored, and information regarding correct and common incorrect responses to the item.

**ID-6.2 Rotation of common items**

The bidder will propose a plan for the rotation of common items across years. The plan should address issues related to security, item exposure, maintaining content balance, and stability of test forms across years. At a minimum, the proposed plan should address:

- The number (or percentage) of items that should remain in place for consecutive years.
- The number (or percentage) of items that should be replaced after each test administration (including released items).
- The number of years before the common items on an assessment are totally refreshed.
- The maximum number of years, if any, that an item should be included in the operational test bank.

**ID-7 Item Bank**

The contractor will develop and maintain an item bank of all items developed for and included on the MSSA science tests. The item bank will include a database that provides electronic access to each item (text and graphics) as well as pertinent information for each item, including item information, item
history (placement, item statistics for all administrations of the item, editing, and context), and current item status.

The states’ Content Team and Management Team should have appropriate access to generate reports and/or view items and item information, as needed.

The bidder’s response will include a description of its existing software to meet this requirement or describe plans to develop or procure the software necessary to meet this requirement.

The bidder’s response will describe steps that will be taken to ensure the security of the items.

The bidder’s response will describe how items and item information developed for the MSSA through contracts awarded by the states will be accessible by the states at the conclusion or termination of those contracts.

**ID-8: Ownership of items**

All items developed and related materials developed through the contracts awarded through this RFP will be the property of the MSSA states. Those items may not be used other assessments or for any other purposes without the written consent of the MSSA states. The contractor may not license, sell, or otherwise share the items developed under these contracts without permission from the states.

**Use of items from other sources**

The bidder will describe how the interests of the MSSA states will be assured and protected if items from other sources are included on the MSSA science tests. In particular, the bidder’s response will describe:

- How items eligible for use on the MSSA science tests will remain secure, including any procedures in place to ensure that items are not released by other assessment programs or used for any other non-secure purposes.
- How license agreements will be structured to ensure that items may be used on the MSSA science tests for multiple administrations.
- The bidder’s experience in handling any restrictions that may be placed on the use of items from other sources that would negatively impact the MSSA states.

**Test Construction**

The bidder will propose a plan for the construction of test forms for the Spring 2018 Field Test and subsequent operational administrations of the MSSA Science Tests.

The bidder’s response must include a description of the processes and procedures that will be used to select items to be included on each test form and ensure that each test form and the test as a whole meets the requirements described in the Test Specifications. The bidder’s response should address the manner in which the States’ Content Team will be involved in the process of test construction.
The bidder’s response must include a description of the quality assurance, quality control, and any other review processes and procedures that will be used to ensure the accuracy and technical quality of each of the test forms and the test as a whole.

**Test Design**

The bidder must propose a plan for the design of the Spring 2018 Field Test and the subsequent operational MSSA Science tests that best meets the purposes and intended uses of the results of the MSSA Science Tests. The bidder’s response must reflect an awareness of the breadth, depth, and complexity of the Next Generation Science standards; the federal requirements for assessment as expressed in ESSA and pending USED Regulations; the high level Test Design framework and preliminary Test Specifications provided by the states; the states’ constraints related to testing time, test format, and the use of machine-scorable items described throughout this RFP, and the states’ desire for a cost effective and efficient assessment program. The proposed Field Test and Operational test designs must demonstrate the bidder’s ability to balance those factors to produce an assessment program that meets the following high-level priorities:

- The MSSA Science Tests are being designed intentionally as relatively short (i.e., 2 hours of testing and easy to score (i.e., machine-scorable).
- The MSSA Science Tests will address the Disciplinary Core Idea contained in the NGSS as well as the Science and Engineering Practices and Crosscutting Concepts. To the extent possible, the goal will be to develop items that reflect the dimensionality of the standards.
- Items on each of the MSSA Science Tests will address the major Disciplinary Core Ideas from the corresponding grade spans of the NGSS (i.e., Grades 3-5; 6-8; and 9-11).
- The MSSA Science Tests will use a common-matrix design to support a) the reporting of student-level overall science performance in terms of performance levels and scaled scores and b) the reporting of school- and district-level scores in a manner that reflects the depth and breadth of the NGSS.

**Test Administration**

The MSSA states are not interested in developing a custom computer-based test development and delivery system for the MSSA Science Tests. The bidder’s response must propose a system to be used for the MSSA tests, describe its capabilities, and provide evidence that it can be used successfully for a program such as the MSSA.

**Technology Requirements**

The contractor will provide the test delivery platform, hosting site, test administration application, server, and application management services for the MSSA Science Tests.

The contractor will be responsible for the maintenance of the full system, including code updates and/or patches, technical support, hosting, management, coordination, and support for customer-facing administration activities.

The bidder’s response must provide a full description of its proposed computer-based test administration solution. The bidder’s response should address each of the following:
1. Requirements for the use of any software (and supporting devices) should be clearly documented and explained.
2. The minimum and preferred technology infrastructure needed to support online testing should be documented and explained.
3. The technical support documents should include information about suggested computer lab configurations.
4. Information on computer-based assistive technologies should be provided to the client so that the client can determine which they may allow; data on use of these technologies should be collected.
5. A practice and training test should be provided to allow students to become familiar with keyboarding and navigation techniques and tools that will be used during the live assessment.
6. Procedures for uploading student demographic data in the online assessment system, including any necessary accessibility tools and supports, should be provided, as well as instructions and procedures for modification of enrollment data, where permitted by the client.
7. Procedures for maintaining the security of the online testing environment should be documented.
8. Descriptions of training protocols to be provided at the local level on the test administration procedures should be provided.
9. In the first two years of the program, the contractor will be responsible for providing up to 4 one-half day regional trainings per state on system use and test administration procedures, to be supplemented by an on-line webinar and other online training materials (e.g., slide deck from webinar, FAQ document). In subsequent years, in-person training sessions may be replaced by a series of webinars.
10. Technical support should be available via telephone and electronically with tools such as help desk and/or email. (see additional details in the Support Center section below)
11. Metrics for monitoring and documenting systems performance should be identified and described.
12. Documentation should be provided regarding the capacity of the system to support the current and potential future range of item types.
13. Provide documentation regarding the application’s capacity to import and export as applicable: items, student item response data, student registration, demographics, and data regarding eligible and utilized accommodations.

Assessment Delivery Platform
The contractor will ensure that the assessment delivery platform provides the technical infrastructure necessary to manage and administer assessments across the MSSA states. The bidder’s response will address each of the following subcomponents and functionalities:
   a. Administrative Portal
   b. Test Registration and Scheduling
   c. Test administration (administrator interface)
   d. Test delivery (student interface)
   e. Test client
   f. Key-based and Rule-based machine scoring
   g. Assessment delivery data storage
   h. Student toolset (e.g., virtual calculators, protractor, ruler, notepad, highlighter)

The bidder’s response will also address each of the following functionalities:
a) Authentication/User Identity Management: internal user management, user authentication, role-based authorization.

b) Logging and Audit: A centralized capability for logging, log analysis and audit support, capturing and recording all system and testing activities at sufficient detail to detect conformance and compliance issues, and track errors. Logging is also used to capture data for analytics and secondary analyses.

c) System Monitoring and Alerting: A centralized system for monitoring all processes and systems (network, hardware, software) in the MSSA assessment system and sending alert notifications whenever behavior fall outside of nominal ranges. Also, a system for monitoring and alerting support system data and test security.

d) Common ID system: A centralized system for assigning and managing persistent, unique identifiers to all users (educators and students) of the MSSA assessment system. The purpose of this service is to assure the integrity of student data, including to avoid multiple states creating the same ID number, and to prevent the mismatching of students to assessment results.

Data Privacy and Security
All hardware and software components and all services and processes must ensure the highest levels of auditable security for the MSSA Science Tests, data, and data access at all times and at all levels of state, district, and school use. The Contractor will be expected to comply with Federal laws data privacy and security that include how data are accessed, stored, and exchanged; and how the Contractor’s employees are managed and trained regarding data security protocols

The bidder’s response must detail their privacy and security plans. The bidder’s response should address how the proposed solution and associated activities will employ security protocols and design features to meet the states’ rigorous security needs for data encryption, identity management, data access, and redundant layers of data protection.

Accessibility and Fairness
Accessibility is a core principle of the MSSA states. The states are committed to ensuring that all students are able to have equitable and fair access to the MSSA Science Tests, including access to assessment items, training materials and supports. Information about students’ required accessibility features and accommodations must be gathered and maintained in accordance with Federal laws.

Bidders are asked to review the accessibility features and accommodations policies for the states’ current state assessments in English Language Arts, Mathematics, and Science as well as best practices for ensuring accessibility with computer-based tests. The bidder’s response must detail their plans for meeting accessibility requirements. The bidder’s response should address how their proposed assessment system compares to the states’ current systems and explain how it will address accessibility, accommodations, and fairness; while maintaining data privacy and security.

Technical Compatibility with School Technology Infrastructure
The states are committed to an assessment system that utilizes solutions that recognize the heterogeneity of technology capacities in states, districts and schools, while supporting the leading-edge assessment methodologies and technologies. Solutions need to provide optimal performance in high-technology capability settings that have current generation computers and large bandwidth networks, but that still function without sacrificing performance in low-technology capability settings. This core principle includes a “device agnostic” approach to assessment content and assessment technology development. All assessment components must be designed to function comparably across a range of
devices using commonly deployed web browsers, including desktops, laptops, netbooks, and tablets (9.5” or larger) running Windows, Mac, Linux, Apple iOS, Android, and Chrome operating systems.

The bidder’s response must describe how it will ensure and verify that its system functions comparably across a range of devices. The bidder’s response should address how it will ensure that the system is not impacted by upgrades or other changes to devices or operating systems.

**Interoperability**

Interoperability is a core design principle for MSSA technology development and operations. The states are committed to the application of open technology interoperability standards in order to make assessments, assessment items, and assessment data formats portable across organizations, systems, and states. The reliable and flexible interchange of data between components inside and outside of the assessment system, and across diverse networks are key requirements of the MSSA assessment system. The bidder’s response must detail their plans for ensuring interoperability. The bidder’s response should address its compliance with industry-recognized, open-licensed interoperability standards and the processes and procedures used to verify and validate interoperability.

**Student Registration**

The Contractor shall be responsible for managing the student/organization registration process. After the window for registration is complete, each individual state shall approve the registration counts.

The bidder must propose a plan for allowing states (if desired by the state) the opportunity to review and amend registration information.

The bidder’s response should include a recommended timeline for the registration process (relative to the test administration window) to ensure that accurate information is captured, appropriate quality checks occur, and to allow states a sufficient window of time to review and amend the registration information.

The bidder’s response should include a plan for allowing the registration of students enrolling in schools after the end of the test registration window and for students moving between schools during the testing window.

**Security**

The bidder must propose a plan and describe procedures for maintaining and monitoring security of test items, other secure materials, and student data both within and external to the computer-based test administration system before, during, and after test administration, including ensuring security throughout the test design and development process. The bidder’s response should address the following areas in general Test Security and Data Forensics.

**Test Security**

a) Develop and implement a comprehensive plan to ensure the security of test items, materials, and student data throughout the assessment cycle.

b) Develop and implement training procedures and materials regarding test security, and confidentiality of student data and personally identifiable information

c) Develop protocols for the secure collection, storage and destruction of secure and confidential teacher and student information.
d) Develop and implement uniform policies and procedures for identifying and dealing with possible security breaches and testing irregularities.

e) Develop and implement procedures to account for and protect secure materials at all stages of distribution, receipt, storage, and return. Note: This requirement has general implications, but applies specifically to paper-based test forms.

f) Chain of Custody for materials shipped or transported: Develop and implement policies, guidelines and sign-off procedures for State, District, and School officials to establish and document a chain of custody for hand-offs to ensure that documents are received, accounted for, and distributed and returned.

g) Provide a secure architecture to protect the development and administration environment from network-based attacks.

Data Forensics
The contractor will apply procedures to monitor, detect, and evaluate the assessments for potential cheating, and provide documentation to the states. The bidder’s response should describe plans and procedures to provide continuous updates that capture a variety of data including but not limited to:

a. time of testing,

b. all student answer choices including the final choice used for scoring;

c. response latency;

d. tracking the movement of the examinee through the test;

e. student response times;

f. accessibility options used by the student; and analysis of student gains over time

g. differential performance on common and matrix-sampled items, if applicable.

Manuals, Training, and Support to Schools
The contractor will be responsible for providing the training and support required to ensure the successful administration of the MSSA Science Tests, including maintaining a support center to provide quality customer service and support to districts and schools throughout the testing cycle.

Manuals
The contractor will develop Test Coordinator and Test Administrator manuals to ensure the successful administration of the MSSA Science Tests.

The manuals will be provided in formats that will permit them to be accessed via the internet. Posted documents must be available for viewing and downloading and must be provided in ADA compliant format.

Test Coordinator Manual
The Test Coordinator Manual will focus on the tasks that must be completed at the district and school level, including scheduling, meeting technology requirements, student registration, accessibility, maintaining security, and the training of Test Administrators on test administration policies and procedures as well as security policies and protocols.

To the extent practical, a single Test Coordinator Manual may be developed for use across the three MSSA Science Tests.

Test Administration Manual
The Test Administration Manual will provide all directions needed by the test administrator to prepare for and administer the assessment, including security procedures.
The Test Administration Manual will include scripts necessary to administer the assessment. The Test Administration Manual will include procedures and scripts necessary for accommodated testing outside of the assessment delivery system.

The contractor should plan on developing a separate Test Administration Manual for each of the three MSSA Science Tests. To the extent possible, the contractor may use a modular approach to minimize replicating information across multiple manuals.

**Training and Training Materials**

The contractor will provide training and training materials to support the efficient and secure handling of materials as well as standardized administration activities. All proposed training materials and activities will be subject to state approval.

The contractor must provide training and training materials for district/school assessment coordinators, test administrators and district/school technology coordinators. As appropriate, the training must include information about student registration procedures; administration protocols; security policies, protocols, and procedures; the assessment delivery system; and accessibility and accommodations policies and protocols. The contractor should design training modules to enhance efficiency across types of users.

All training materials will be provided in formats that will permit them to be accessed via the internet. Posted documents must be available for viewing and downloading and must be provided in ADA compliant format.

Training materials should for test administrators should include the opportunity to practice all steps necessary to administer the assessment, including experiencing the assessment from the student’s perspective.

In the first two years of the program, the contractor will be responsible for providing up to 4 one-half day regional trainings per state on system use and test administration procedures, to be supplemented by an on-line webinar and other online training materials (e.g., slide deck from webinar, FAQ document). In subsequent years, in-person training sessions may be replaced by a series of webinars.

In addition to the regional training described above, the bidder’s response must describe the type and amount of training that the bidder feels is necessary to ensure the successful administration of the MSSA Science Tests. The bidder’s response should address the type of training materials that will be used including narrated PowerPoint web presentations, WebEx or other similar webinar tool, or videos, in addition to hard copy documents.

The bidder’s response should address the feasibility of state’s being able to customize aspects of training materials to meet state-specific needs.

The bidder’s response must propose recommended methods and procedures for ensuring that test coordinators, test administrators, and technology coordinators have accessed the relevant training materials, have participated in and completed the required training, and/or are certified to fulfill their responsibilities in administering the assessment.
Practice Tests and Training Supports for Students
The Contractor shall develop and provide a practice test for each of the three MSSA Science Tests. As states shift from paper-and-pencil tests to computer-based testing, sufficient opportunity for students to become familiar with and comfortable in the online testing environment prior to testing is critical to ensuring validity and allowing students to demonstrate what they know and are able to do.

A key purpose of the practice tests is to allow students to experience and become familiar with the computer-based test experience prior to testing.

- The practice tests will include all item types and/or response formats that a student may encounter during testing.
- The practice tests will include all support and accessibility features and functionalities that a student will have access to during testing.
- The items on the practice tests will include a range of content, depth of knowledge, and rigor.
- The practice test should require approximately 30 minutes, but no more than 45 minutes, for students to complete.
- Student scores on each item should be provided to students at the conclusion of the practice test.
- The practice tests will be updated, as needed, to incorporate new item types, response formats, or other assessment features and functionalities.

In addition to the practice tests, the bidder’s response should describe written materials, online tutorials, or other supports that may be developed to ensure that students are prepared to function within the online testing environment.

Support Center
The bidder’s response must describe processes and procedures used to ensure timely and accurate assistance; measures used to monitor and document the efficiency and accuracy of the service provided; expected standards for performance and customer service (e.g., wait time, quality of service); and procedures to measure customer satisfaction with the services provided.

The bidder’s response should address the processes, procedures, or systems that will be used to ensure that all interactions with districts and schools are documented and maintained in a system that allows for efficient access and review.

The bidder’s plan for maintaining a support center must meet the requirements described below.

The contractor will provide provide customer support to districts and schools throughout the testing cycle, with an emphasis on service provided at key periods such as registration of students and test administration.

1. The contractor will guarantee that help desk staffing will increase and/or decrease based on call volume and wait time/caller. When staffing increases/decreases will be determined in consultation with and with approval from the states’ management team.
2. The contractor will provide help desk and technical support via toll-free phone, e-mail, and/or other online methods Monday through Friday from 7:00 a.m. EST/EDT through 4:00 p.m. EST/EDT.

3. The contractor will provide tiered levels of customer support to district and school administrators and educators. The contractor and states will agree upon the type of questions and issues that will be addressed by the contractor, what actions the support center and other contractor staff will take to resolve and/or answer those questions and issues, and the type of questions and issues that will be forwarded to state leadership for resolution.
   a. Support Center staff must have the ability to reopen accidentally closed tests.

4. The contractor will ensure that all Support Center staff and other contractor staff are qualified and have been trained to provide the level of support required by their position.

5. The contractor must develop a Service Level Agreement (SLA) to ensure that the system specifications, performance, and support are appropriate and acceptable. The SLA should have Level 1 (basic level), Level 2 (intermediate level), and Level 3 (technical level) services. The SLA and support processes, shall include at a minimum the following:
   ● availability,
   ● reliability,
   ● latency,
   ● disaster recovery plan,
   ● server backup plan,
   ● recovery point objective,
   ● issue resolution times,
   ● maintenance windows,
   ● service reporting,
   ● support hours,
   ● support contact information,
   ● escalation
   ● Errata notice template suitable for electronic posting and distribution (subject to state approval)
   ● change management.

The contractor must include a plan for timely electronic notification to district and school administrators and test administrators through email, posting a notice on the online system, and/or direct calling, of any issues affecting test administration.

The contractor must develop an errata notice template that includes a description of the issue, the timeline for resolution, and any required actions that need to be taken by district or school administrators and/or test administrators.

**Scoring**

The contractor is responsible for the accurate and efficient scoring of all items on the Multi-State Science Tests. The bidder’s response must include a description of the methods used to ensure and verify that each student’s response has been captured and scored accurately.
All items on the science tests will be machine-scorable. However, it is anticipated that a variety of item types may be included on the science tests that require complex scoring algorithms or forms of automated scoring.

**S - 1 Machine-Scorable Items**

The bidder’s response must include a description of their experience scoring all items types proposed for use on the science tests as well as a detailed description of the methods that will be used to ensure and verify the accuracy of scores from each type of item.

The bidder’s response must include a description of type of information that will be collected and available to states related to scored student responses, particularly for items that require students to generate a response, make multiple selections, or have complex scoring algorithms.

**S - 2 Automated Scoring of Student-Generated Responses**

The bidder’s response should address the current and near-term feasibility of using automated scoring to score student-generated text responses of varying lengths (e.g., single word, 1-2 sentences, paragraph, extended essay). In addition to issues related to technical quality and accuracy of scoring, the bidder’s response should address, if applicable, issues such as cost, development time required, testing time required, and impact on the breadth and depth of content coverage on the assessment.

**Analysis and Psychometric Support**

The contractor is responsible for designing and conducting all analyses necessary to report student, school, district, and state results from the MSSA Science Tests and for ensuring that the Science Tests meet standards of technical quality for high-quality state assessments. In particular, the contractor is responsible for designing and conducting all analyses necessary to provide evidence that the assessment program meets relevant U.S. Department of Education Peer Review requirements.

**AP – 1 Calibration and Scaling**

The contractor will calibrate test items and develop a scale(s) for each of the MSSA Science Tests using appropriate item response theory model(s).

The bidder’s response must propose a recommended model(s) for item calibration and scaling and provide a rationale for the recommendation that includes:

- a discussion of the benefits/advantages and limitations of the proposed model(s),
- its appropriateness for the type of items that will be included on the science tests,
- its appropriateness based on anticipated initial student performance on items aligned to Next Generation Science Standards, and
- its appropriateness for the type of scores that will be reported from the science tests.
The bidder’s response must identify the software that will be used to perform item calibration and scaling and include a description of the bidder’s familiarity and experience with the software. If the bidder is proposing the use of proprietary or open-source software, the bidder’s response must include a description of the steps that will be taken to ensure and verify the accuracy and reliability of the software.

1. **AP-1.1 Calibration Plan**
   The bidder’s response must include a description of how items from the Spring 2018 Field Test will be calibrated and placed on a common scale. The bidder’s response should address how the matrix-sampling test design will impact and be accounted for in the calibration process for the Spring 2018 Field Test and future operational test administrations.

   The bidder’s response must include a description of how embedded field-test items on operational administrations of the MSSA Science Tests will be calibrated and placed on the MSSA scales.

   The bidder’s response must demonstrate an understanding of the states’ desire to take advantage of the matrix-sampling design to produce school-level results. The bidder’s response should address the feasibility of producing independent subscales for particular domains or dimensions within each of the science tests.

**AP-2 Equating**

The contractor will design and conduct all analyses required to equate the MSSA Science Tests from year to year.

**AP-2.1 Equating Plan**

The bidder’s response must include a description of how it proposes to equate the science tests from year to year. The bidder’s response should address how the common-matrix sample test design will factor into the equating design and also indicate the equating model that will be used.

**AP-2.2 Equating Verification**

The bidder’s response will include a description of the steps that will be taken to ensure the accuracy of equating results.

The contractor will support an independent real-time review of the equating process, analyses, and results by independent contractors, identified by the states. The contractors will support his effort by providing the consultants with the necessary data files and other materials in a timely manner during the equating process.

**AP-2.3 Equating Report**

The contractor will produce an annual report documenting the equating process and results. The report will be available for use by the states in evaluating and approving the results of the equating process prior to reporting.

**AP-3 Item Evaluation**

The contractor will design and conduct all analyses required to evaluate the quality and performance of all items developed for and/or included on the MSSA Science Tests. The bidder’s response must include
a description of item statistics that will be generated and other analyses that will conducted. The bidder’s response should address how the appropriateness of items for all students will be examined and how the use of matrix-sampling may impact item evaluation.

**AP-3.1 Field-test items**
The bidder’s response must include a description of the processes that will be used to generate appropriate information to support the evaluation of field test items.

**AP – 3.2 Operational test items**
The bidder’s response must include a description of the processes that will be used to generate appropriate information to support the evaluation of items that will be used to generate student and school scores and items that will be used to equate tests from year to year.

**AP-4 Test Construction**
The contractor will conduct analyses and provide psychometric support necessary to support the construction of technically sound test forms that meet all of the purposes and intended uses of results from the MSSA Science Tests.

The bidder’s response should address how it proposes to use item statistics and information from psychometric analyses to support test construction.

**AP-5 Reporting**
The contractor will design and conduct all analyses necessary to produce accurate results student, school, district, and state reports.

**AP – 6 Additional Analyses**
The contractor will conduct ad hoc analyses at the request of the states related to the reliability and validity of the assessments for their intended uses.

Bidders should budget $50,000 per year for this task.

**AP – 7 Ongoing Technical Documentation**
The contractor will produce and maintain adequate documentation of all technical processes, procedures, and analyses conducted on an ongoing basis throughout the testing cycle. One purpose of the documentation will be to enhance quality assurance and quality control. The technical documentation will be produced in a format that is accessible to the states and conveys useful information to the states about the technical quality of the assessment program.

**AP – 8 Technical Report**
The contractor will design, develop, and produce an annual Technical Report that documents and provides the necessary evidence to demonstrate the quality of the technical processes and procedures related to the design, development, administration, and reporting of results from the MSSA Science Tests. Ass appropriate, the annual Technical Report must also provide evidence that the planned processes and procedures were implanted successfully for the given year.
The Technical Report is one piece of evidence produced to demonstrate that each of the MSSA Science Tests and the assessment program as a whole serve their intended purposes and meet accepted professional standards for educational testing.

The states will approve the table of contents, design, and format for the Technical Report.

The annual Technical Report will not replace or fulfill the general requirement of ongoing technical documentation of the MSSA assessment program or for task-specific technical documentation specified in this RFP.

A final draft of the annual Technical Report will be delivered to the states no later than three months following the release of assessment results from operational assessments or three months following the completion of the administration of the Spring 2018 Field Test.

The annual Technical Report will be delivered to the states in a digital format suitable for posting and distribution through the states’ websites.

The bidder’s response must include a Technical Report that it has prepared for a large-scale state assessment program. If applicable, a link to a publicly available Technical Report can be provided in the bidder’s response to fulfill this requirement.

**AP – 9 Technical Advisory Committee**

The contractor will support two meetings per year of the MSSA Technical Advisory Committee.

The contractor will be represented at the meetings by the project director, lead psychometrician assigned to the project, and additional staff as needed based on the agenda for the meeting.

The states will select members of the Technical Advisory Committee and will be responsible for facilitating all meetings of the Technical Advisory Committee.

The contractor will be responsible for all activities related to planning for the meeting and for all costs associated with the meeting and activities, including reimbursements and payments made to TAC members.

The bidder should budget $70,000 per year for meetings of the MSSA Technical Advisory Committee ($35,000 per meeting).

**Reporting**

The contractor is responsible for the accurate and timely reporting of results of the Multi-State Science tests.

No student-, school-, or district-level results will be reported from the Spring 2018 Field Test.

Results from the spring 2019 operational administration will be reported following Standard Setting (see Standard Setting section)
Complete results from subsequent operational administrations of the science tests will be reported within 20 days of the completion of testing.

The bidder’s response must include a detailed description of the processes that will be used to ensure the production of accurate color reports at the student, school, district, and state levels, including information on quality assurance and quality control procedures that will be used to ensure and verify the accuracy of reported results.

The bidder’s response must also include a plan for the design, review, approval, and production of color reports. The plan should describe how the contractor will interact with the states throughout the design process.

**R-1 Student Scores**

The primary student scores reported on each of the science tests will be an overall science achievement scaled score and performance level. A student’s scaled score will be based on her/his performance on all operational items (common and matrix) included on the test form. A student’s achievement level will be determined on the basis of their scaled scores.

In addition to an indication of overall science, the states are interested in providing feedback to students on their performance on critical aspects of the science standards such as DCI domains (Life, Earth/Space, Physical * Engineering/Nature of Science), Science and Engineering Practices, or Cross Cutting Concepts. The states are aware, however, that the type of scores that can be supported may limited due to constraints imposed by the design of the assessment.

The bidder’s response should propose and describe options for the type of additional student scores that could be supported by the proposed design of the assessment.

**R-2 Aggregate School, District, and State Scores**

A primary focus of the Multi-State Science tests is to provide detailed information about science achievement at the school and district level. An intended benefit of the use of matrix sampling is the ability to provide more detailed information about performance at the school, district, and state levels than can be provided at the student level.

In addition to aggregate student scores such as mean scaled score and the percentage of students performing at each achievement level, school and district reports should contain detailed information about performance on critical aspects of the states’ science standards such as performance on the DCI domains, Science and Engineering Practices, and Cross-Cutting Concepts.

The bidder’s response should describe how matrix sampling will be used to produce reliable subscores that provide useful information and support valid inferences about school and district performance at one or more levels below overall science achievement.

The bidder’s response should also indicate whether such school and district cores will be reported on their own subscales which can be linked across years to allow comparisons in performance from one year to the next.
R-3 Design of Reports
The bidder shall propose a process for the design of reports that includes participation of the states’ management team and the States’ Content Team. The bidder’s response shall describe the process and procedures that will be used to generate initial design specifications and concepts, to facilitate review and revision, and for the approval of report designs.

The bidder’s response should address the feasibility of obtaining external feedback on proposed report designs.

R-4 Types of Reports
The contractor will be responsible for producing a variety of reports intended for use by a variety of audiences.

R-4.1 Student Reports
The contractor will produce hard copy Student Reports (one per student) that will be shipped directly to schools.

The contractor will also produce a printable, digital version of the Student Report that may be printed by the district or school.

R - 4.2 School, District, and State Reports
The contractor will produce school-, district-, and state-level reports in printable, digital format.

The bidder’s response will propose a system for providing schools and districts with efficient and secure access to confidential and non-confidential reports.

Examples of the school-, district-, and state-level reports to be produced include
- Roster providing individual student-level results at the school or classroom level (dependent upon data available) Roster may also include item-level results for released items.
- Summary aggregating results from the Roster at the school or classroom level. May include school, district, and state comparisons
- School Report Package containing information on school participation and performance including performance level results, use of accommodations, subgroup results as required by the USED and subscore results. The report may also include selected results from the released items, district and state comparisons, and comparisons with previous years.
- District Report Package containing the same information as the school report aggregated at the district level.
- State Report Package containing the same information as the school report aggregated at the state level.
- School Summary Report providing summary participation and performance information across grade levels tested within the school.
- District Summary Report providing the same information as the school summary report aggregated at the district level.
- State Summary Report providing the same information as the School Summary Report aggregated at the state level.
**R-5 Data files**

In addition to printable, digital reports, the contractor will provide the information contained in all reports in a data file in an agreed upon format that can be imported into states’ and/or schools’ reporting systems.

**R-6 Interpretive Material**

To the extent possible, all reports should contain embedded information to support and promote the proper interpretation and use of the results provided on the report.

The bidder will also propose the development of supplemental materials to assist in the interpretation and use of MSSA reports by the parents and students, local educators, and the public.

Interpretive materials will be developed in digital form for web-based delivery. Bidders may propose options for printable text materials as well as materials in other media such as videos or interactive graphics.

As a cost option, the bidder will also support two in-person reporting workshops per state following the first two operational administrations of the MSSA Science Tests.

**Standard Setting**

Student results from the MSSA Science Tests will be reported according to performance levels. Details on the number and names of performance levels will be determined during 2017-2018. Cut scores indicating the level of student performance required to attain each performance level classification will be determined in the summer of 2019, following the first operational administration of the MSSA Science Tests.

The contractor will support the states in all activities related to establishing performance standards for the MSSA Science Tests. Major activities that are the responsibility of the contractor are described in the tasks that follow.

**SS-1 Performance Level Names and Descriptions**

The contractor will be responsible for proposing, organizing, and supporting a process for determining the number and names of performance levels appropriate for the MSSA Science Tests. The contractor will be responsible for proposing, organizing, and supporting a process for developing appropriate performance level descriptions for the MSSA Science Tests. The bidder’s response will include a description of the processes that are proposed to determining the number and names of performance levels and then to develop appropriate performance level descriptions. The bidder’s response should include a timeline of major activities and/or milestones in the process.

The contractor will be responsible for all costs associated with proposed meetings, including expenses, stipends and/or reimbursement costs for external panelists. Bidder’s should use $150 per day per panelist for stipends/substitute reimbursement when budgeting for these meetings.
SS-2 Setting cut scores
The contractor will be responsible for proposing, organizing, and supporting a process for determining performance level cut scores (i.e., thresholds) on each of the MSSA Science Tests. The bidder’s response will propose a standard setting method that is appropriate for use with the MSSA Science Tests. The bidder’s response will include a rationale for the use of the proposed method and will address how the method will be applied with the matrix-sampled design of the science tests. The bidder’s response will include a description of the processes and procedures necessary to implement the proposed standard setting method. The contractor will be responsible for all costs associated with standard setting meetings, including expenses, stipends and/or reimbursement costs for standard setting panelists. Bidder’s should use $150 per day per panelist for stipends/substitute reimbursement when budgeting for standard setting meetings. The bidder’s response should describe the role of the states in setting performance level cut scores before, during, and after any proposed standard setting panel meetings.

SS-3 Standard Setting Report
The contractor will prepare a report describing and documenting the entire Standard Setting Process. The report will be delivered in digital format no later than one month following the completion of the standard setting process.

SS-4 Standard Setting Validation
The bidder’s response should include a plan for conducting analyses to validate the performance standards following the second operational administration of the MSSA Science Tests.

Additional Contractor Requirements/Qualifications

- Bidders must submit a letter of transmittal signed by an owner, officer, or other authorized agent.

- Bidders must submit relevant organizational information, a list of similar projects undertaken and/or clients served, agency expertise relative to the services requested, and a statement of existing workload as it impacts the performance of the project.

- Bidders must provide an overview of key personnel assigned to the project including education and prior experience.

- Bidders must disclose any work to be sub-contracted including the specific work to be performed and staffing, organizational structure, and business background of the sub-contractor.

Terms of the Contract

The contract will begin upon issuance of a state purchase order (projected July 2017) and end December 31, 2021. We reserve the right to align the contract with the state fiscal year end of June 30th. The scope of the work may be modified by RIDE prior to beginning work on a given task. RIDE retains the option of granting a time extension of up to twelve months with additional funding if available and if the level of work is expanded by mutual written consent. If necessary, deficiencies in performance of services and/or failure to supply deliverables in a
complete and timely manner will be documented in writing by RIDE. Should a pattern of substantial dissatisfaction become apparent, RIDE reserves the right to terminate the contract.

Cost Proposal/Terms of Payment

The contractor must prepare a cost proposal reflecting the hourly rate or other fee structure proposed for this scope of services using the Cost Proposal Forms contained in Appendix A. The total cost of the contract is not to exceed [insert amount]. Please ensure the budget is presented by state fiscal year, which runs from July 1st through June 30th.

Please note that reimbursement for travel within the continental United States will be limited to the per diem rates established by the General Services Administration (GSA). Per diem rates are posted at www.gsa.gov/perdiem.

Proposal Submission

Questions concerning this solicitation may be e-mailed to the Division of Purchases at the address on the cover sheet of this solicitation and no later than the date & time listed. Send your questions in Microsoft Word format. Please reference the RFP# on all correspondence. Questions received, if any, will be posted and answered on the Internet as an addendum to this solicitation. It is the responsibility of all interested parties to download this information. For computer technical assistance, call the help desk at (401) 222-3766 or Lynda.moore@doit.ri.gov.

Proposals (an original plus 4 copies) should include the following:

1. A completed and signed three-page RIVIP Bidder Certification Cover Form, available at www.purchasing.ri.gov.

2. A separate sealed Cost Proposal as described above.

3. A separate Technical Proposal (see below) describing the qualifications and background of the applicant and experience with similar programs, as well as the work plan or approach proposed for this requirement.

4. A completed and signed W-9 (taxpayer identification number and certification). Form is downloadable at www.purchasing.ri.gov.

Deliver to: Department of Administration
Office of Purchases
One Capitol Hill
Providence, Rhode Island 02908
Contractor assumes all responsibilities for proposals submitted by mail or commercial delivery service. Proposals misdirected to other state locations or which are otherwise not present in the Office of Purchases at the time of opening, for any cause, will be determined to be late and will not be considered. Faxed responses will not be considered.

5. In addition to the multiple hard copies of proposals required, Respondents are requested to provide their proposal in electronic format (CD-Rom, disc, or flash drive). Microsoft Word / Excel or PDF format is preferable. Only 1 electronic copy is requested and it should be placed in the proposal marked “original.”

Technical Proposal/Required Elements

1. Quality of Response to Project Priorities (20 points)
2. Corporate Capacity and Staffing (20 points)
3. Expertise and Experience in Priority Areas (30 points)
4. Cost Proposal (30 points)

The technical proposal should be 10-20 pages in length, respond to each area of the required elements listed above, and contain a cost proposal using the forms in Appendix A. Supplemental information may be appended to the technical proposal.

A Selection Committee will evaluate submitted proposals on the basis of the above criteria items. Consultant Teams may be invited to appear before the Committee for in-person presentations. The Committee will then make a qualifications based recommendation for final selection to the Rhode Island State Purchasing Agent, or her designee, who will make the final award decision.

Proposals scoring 40 technical points or higher will be evaluated for cost and assigned up to a maximum of 30 points in the cost category, bringing the potential maximum score to 100 points.

Notwithstanding the above, the State reserves the right not to award this contract or to award on the basis of cost alone, to accept or reject any or all responses, and to award in its best interest.

Responses found to be technically or substantially non-responsive at any point in the evaluation process will be rejected and not considered further. The State reserves the right to reject any or all responses submitted and to waive any informalities in any vendor’s submission.

A notice of bid protest pursuant to R.I. General Law 37-2-52 must be filed with the chief purchasing officer by the protestor in accordance with the guidelines provided in Section 1.6 of the State of Rhode Island Procurement Regulations, which can be accessed at the following link:

The contract agreement resulting from this award will include all provisions outlined in Title 2 of the Code of Federal Regulations, Chapter 2, Appendix II to Part 200. These provisions can be accessed at the following link: www.ecfr.gov
APPENDIX A

BUDGET MULTI-YEAR PROJECTS

The Contractor estimates that its budget for work to be performed under this Agreement is as follows:

<table>
<thead>
<tr>
<th>Expense Category</th>
<th>Year 1</th>
<th>Year 2</th>
<th>Year 3</th>
<th>Year 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Employee Salary and Benefits</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>2. Purchased Services</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>3. Supplies and Materials</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>4. Travel</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>5. Printing</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>6. Office Expense</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>7. Other: (describe)</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>8.</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td><strong>Subtotal</strong></td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td><strong>Indirect Cost</strong></td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

It is understood and agreed that the amounts indicated above for the several line items are estimates of expenditures to be incurred by the Contractor on behalf of this Agreement and to be claimed by the Contractor for reimbursement under this Agreement. It is further understood and agreed that actual expenditures may vary from the estimates set forth above and that such variations shall not in themselves be cause for disallowance of reimbursement by RIDE; provided, however, that the Contractor shall notify the contract officer of the variance and obtain pre-approval, in writing; and provided further that unless permission of the contract officer shall have been obtained in advance, no expenditure shall be claimed by the Contractor for reimbursement by RIDE under this Agreement if such expenditure shall have been incurred in a line item category not listed above. Transfer of funds between categories requires prior written approval by RIDE. In no event shall the total amount of reimbursement claimed by the vendor under this agreement exceed the total approved contract amount.

*Attach a copy of the approved indirect cost documentation*
BUDGET DETAIL SHEET *
FISCAL YEAR ____________

EMPLOYEE SALARY AND BENEFIT DETAIL (TOTAL COMPENSATION) **

<table>
<thead>
<tr>
<th>NAME</th>
<th>POSITION TITLE</th>
<th>NUMBER OF HOURS</th>
<th>HOURLY RATE (including benefits)</th>
<th>SALARY and BENEFIT TOTAL $</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TOTAL REQUEST</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

PURCHASED SERVICES DETAIL

<table>
<thead>
<tr>
<th>NAME</th>
<th>POSITION TITLE</th>
<th>HOURS</th>
<th>HOURLY RATE $</th>
<th>TOTAL $</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TOTAL REQUEST</td>
<td></td>
<td></td>
<td></td>
<td>$</td>
</tr>
</tbody>
</table>

OTHER EXPENDITURES DETAIL

<table>
<thead>
<tr>
<th>EXPENSE CATEGORY</th>
<th>DESCRIPTION</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Supplies and Materials</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Travel ***</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Printing</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Office Expense</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other: (describe)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Indirect Cost</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* Please include a detail budget sheet for each state fiscal year (July 1st – June 30th)

** Please round hourly rates to the nearest whole dollar and ensure there are no rounding differences with the extended totals.

*** Reimbursement for travel within the continental United States is limited to the per diem rates established by the General Services Administration (GSA). Per diem rates are posted at www.gsa.gov/perdiem.
Preliminary Test Specifications

This document contains preliminary Test Specifications for the Multi-State Science Assessment. A primary purpose of the document is to provide sufficient information about the intended content of the assessment to support prospective contractors in preparing a proposal in response to the MSSA Request for Proposals. As suggested by the title, these Test Specifications are not complete. As the design of the testing program takes shape over the next year, it is expected that the full set of Test Specifications will be jointly developed by the contractor and the state’s Content Team. After a contractor is selected and a contract is awarded, the preliminary Test Specifications will serve as a starting point for conversations between the states’ Content Team and the contractor’s Item Development Team as they begin to develop items and build the Spring 2018 Field Test.

Next Generation Science Standards

Each of the MSSA states have either adopted the Next Generation Science Standards (NGSS) or adopted a set of state science standards that are tightly aligned with the NGSS. The states believe in the three-dimensional view of science learning expressed and demonstrated in the NGSS:

Within the Next Generation Science Standards (NGSS), there are three distinct and equally important dimensions to learning science. These dimensions are combined to form each standard – or performance expectations – and each dimension works with the other two to help students build a cohesive understanding of science over time.

NGSS Three Dimensions of Science Learning

Crosscutting Concepts
Crosscutting Concepts help students explore connections across the four domains of science, including Physical Science, Life Science, Earth and Space Science, and Engineering Design. When these concepts, such as “cause and effect”, are made explicit for students, they can help students develop a coherent and scientifically-based view of the world around them.

Science and Engineering Practices
Science and Engineering Practices describe what scientists do to investigate the natural world and what engineers do to design and build systems. The practices better explain and extend what is meant by “inquiry” in science and the range of cognitive, social, and physical practices that it requires. Students engage in practices to build, deepen, and apply their knowledge of core ideas and crosscutting concepts.

Disciplinary Core Ideas
Disciplinary Core Ideas (DCIs) are the key ideas in science that have broad importance within or across multiple science or engineering disciplines. These core ideas build on each other as students progress through grade levels and are grouped into the following four domains: Physical Science, Life Science, Earth and Space Science, and Engineering.

**Assessment of the Next Generation Science Standards**

The states also endorse a vision of assessment of the Next Generation Science Standards that is consistent with the main messages contained in the report Developing Assessments for the Next Generation Science Standards issued by the NRC and the Committee on the Assessment of K-12 Science Proficiency. ([http://sites.nationalacademies.org/DBASSE/BOTA/Developing_Assessments_for_NGSS/index.htm](http://sites.nationalacademies.org/DBASSE/BOTA/Developing_Assessments_for_NGSS/index.htm))

Several key conclusions and recommendations of the committee have become shaped the states’ vision for the role of an on-demand state assessment in assessing the NGSS. Those key conclusions and recommendations are presented as Guiding Principles for the development of the MSSA Science Tests.

**Guiding Principles**

- The NGSS emphasize the importance of connections among scientific concepts.
- It will not be feasible to assess all of the performance expectations for a given grade level during a single assessment occasion.
- Students will need multiple – and varied – assessment opportunities to demonstrate their competences on the performance expectations for a given grade level.
- To adequately cover the three dimensions, assessment tasks will need to contain multiple components (e.g., a set of interrelated questions).
- Specific components may focus on individual practices, core ideas, or crosscutting concepts, but together, the components need to support inferences about students’ three-dimensional science learning.
- Assessment of the NGSS can be accomplished through a range of assessments that are designed to answer different kinds of questions – with appropriate degrees of specificity – and provide results that complement one another.
- A system of assessments needs to include three components:
  - Assessments designed to support classroom instruction;
  - Assessments designed to monitor science learning;
  - A series of indicators to monitor that students are provided with adequate opportunity to learn science in the ways laid out in the framework and NGSS.
- The on-demand state assessments are primarily assessments for monitoring.
  - It is not feasible to cover the full breadth and depth of the NGSS performance expectations for a given grade level with a single external (large-scale) assessment.
- States will therefore need to rely on a combination of two types of assessment strategies for monitoring purposes:
  - On-Demand Assessments that are developed by the state and administered at a time mandated by the state
  - Classroom-Embedded Assessments that are administered at a time determined by the district/school that fits the instructional sequence in the classroom.
- On demand assessments may include mixed item formats and may use matrix sampling to report scores for groups.
- In designing and implementing their assessment systems, states will need to focus on professional development.
• States will need to include adequate time and resources for professional development so that teachers can be properly prepared and guided and so that curriculum and assessment developers can adapt their work to the vision of the framework and the NGSS.

Informed by these Guiding Principles, the states’ goal is to develop a set of on demand MSSA Science Tests to support the monitoring purpose, but will be sufficiently cost effective to allow states to allocate resources to other key aspects assessing the NGSS such as supporting classroom-embedded assessment, developing indicators to monitor students opportunity to learn science, and supporting professional development for local educators.

Test Specifications
The following are preliminary test specifications based on the guiding principles presented above. The states will continue to refine these specifications based on feedback from stakeholders, emerging best practices with regard to assessment and implementation of the NGSS, results from the Spring 2018 field test, and input from their assessment contractor. The states, in partnership with their assessment contractor, will develop a final set of test specifications for the operational MSSA Science Tests.

Test Design
The MSSA Science tests will be computer-based non-adaptive tests built on a common-matrix design. That is, each student will be administered a set of items common to all students as well as a set of items that are matrix-sampled across test forms. The states will make use of matrix sampling to produce district- and school-level scores based on greater breadth and depth of content than would be possible with the use of a common-item fixed form assessment.

Matrix-sampling and Student Test Forms
Although the tests will make use of matrix sampling, it is expected that student test forms will be balanced in terms of key factors such as content coverage, depth of knowledge, and difficulty.

Matrix-sampling and School Size
In planning for the number of matrix-sampled test forms that can be administered and how school-level scores will be calculated and reported, the impact of the small size of many schools within some of the MSSA states should be considered.

Test Length (time):
The test will be designed to take approximately two hours of testing time for the vast majority of students. The test will be loosely timed, and states may direct schools to build additional testing time into the schedule.

Test Length (points):
The test must contain a sufficient number of items and points to produce a reliable overall science score at the student level. Individual student scores may be based on a combination of common and matrix-sampled items. Ideally, it will also be possible to provide some type of feedback about student performance at a level below the overall science score. The states are open to suggestions of what types of subscores are appropriate to report when assessing the NGSS as well as what types of subscores could be supported by the MSSA Science Tests.
Number of Sessions
The tests will be divided into two sessions. High schools, and perhaps middle schools, may choose to administer both test sessions in a single day.

Scoring
All items on the MSSA Science Tests will be machine-scorable. The requirement that all items will be machine-scorable is intended primarily to control costs of the assessment program, based on prior experience that items requiring hand scoring are more expensive to develop and much more expensive to score. Additional factors contributing to the decision to rely exclusively on machine-scorable items include turnaround time for reporting and overall testing time.

- It is expected that with tests consisting of machine-scorable items it will be possible to significantly reduce the turnaround time for the reporting of results.
- Items requiring hand scoring often also require additional testing time for students to generate responses to be scored (e.g., essays, multi-step problems, or multi-part performance tasks).

Note on machine-scorable items
The requirement that all items will be machine-scorable should not be interpreted as an indication that all items can be traditional multiple-choice items or similar selected-response items. Also, it should not be interpreted as an indication that items can measure only basic content or low level cognitive skills such as recall of facts or simple procedures. (see additional discussion in the section on Item Types) Even when item formats were limited to traditional multiple-choice items, it was possible to develop items that measured higher level skills. With computer-based testing expanding the types of machine-scorable item types that can be included on an assessment, it is expected that items on the MSSA Science Tests will measure a range of depth of knowledge levels.

Note on automated scoring of student responses
The field of automated scoring has continued to advance in recent years, and the states expect that advances will continue to occur over the next several years. As automated scoring of content-based constructed-response items continues to improve and is proven to be accurate and reliable, the states are open to incorporating items requiring such scoring into the MSSA Science Tests. Inclusion of such items, however, would also have to fit within other design considerations such as cost, testing time, and the ability to include enough items to measure the depth and breadth of the standards.

Breadth and Depth of Test Content
It is expected that items on the tests will measure a range of depth of knowledge.

It is expected that items on the test will address the multiple dimensions within the NGSS. As indicated in the NRC report cited above, even if individual items are not able to assess all aspects of a standard, it should be possible for the entire test to reflect the three dimensional science learning described in the NGSS. Developing a small cluster of items around a common stimulus might also make it possible to assess the multiple dimensions of the NGSS.

The MSSA Science Tests are administered only once per grade span at grades 5, 8, and 11. As the NGSS are designed to be cumulative (i.e., disciplinary core ideas building on each other across grades and students understanding and application of science and engineering practices deepening over time), it is expected that the content covered on each of the MSSA Science Tests will also be cumulative – addressing the disciplinary core ideas, practices, and cross-cutting concepts developed over the course of the grade span.
Item Types
The MSSA Science Tests will include a variety of item types. Computer-based testing has expanded the range of machine-scorable item types that can be included on an assessment. In addition to a wider variety of selected-response items (including items requiring students to make multiple selections), there are also a variety of machine-scoring item types that require students to produce or generate a response. The set of machine-scorable student-generated responses may include, but is not limited to, the following types of responses.

- A single number or set of numbers
- A single word or short phrase
- An expression or equation
- Producing or modifying a graph
- Completing a data table
- Interacting with a diagram, map, or other graphic

It is expected that the MSSA Science Tests will make extensive use of clustering interrelated items of various types around the presentation of a scenario involving authentic real life anchoring phenomenon. As indicated in the previous section, these item sets, taken as whole, will result in better assessment of student proficiency in the application of the Science and Engineering Practices in the context of the Disciplinary Core Ideas and Crosscutting Concepts. Additionally, the use of individual scenarios to support sets of items should increase efficiency.

As the implementation of the NGSS proceeds, innovative methods of assessment the standards are emerging. It is expected that the development of MSSA Science Tests will draw upon current knowledge and best practices in the procurement of existing items and development of new items. A partial list of sources of sample items to review for consideration includes:

- NAEP 2009 framework is somewhat 3 dimensional: link to interactive questions;
- NGSA online tasks (need to create account to view tasks);
- a paper by SNAP (Stanford NGSS Assessment Project) with an analysis of existing assessment items and links; and review of a variety of existing assessment tasks
- another SNAP paper about assessment criteria; see Sample NAEP Question Short Answer uploaded into folder.
- Molecular Workbench interactive activities