



STATE OF NEW HAMPSHIRE
Department of Education
RESPONSE TO PROPOSAL: RFP 2017-073 DOE New Hampshire Statewide Assessments

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Section I: Executive Summary

Measured Progress is pleased to submit this response to the Request for Proposals issued by the New Hampshire Department of Education (NH DOE). Measured Progress has the expertise and experience necessary to meet the requirements of New Hampshire's request for English language arts (ELA), mathematics, and science tests to be administered in the spring of 2018. Measured Progress has successfully delivered statewide assessments of various types in New Hampshire since 1992, and we would welcome the opportunity to serve New Hampshire's students, teachers, and districts again.

As a New Hampshire-based company, Measured Progress is pleased to have worked with the NH DOE and several other New England states for the past several years on the NECAP system of assessments; previously on the ELA and Mathematics assessments, and currently on the NECAP science assessment.

The majority of Measured Progress employees are based and reside here in New Hampshire; we employ 291 permanent and 207 temporary New Hampshire residents on an annual basis. We are rooted in New Hampshire: many of our staff are former New Hampshire educators; our children go to New Hampshire public schools; we understand New Hampshire education and have a vested interest in the success of this program. Based on our long-standing relationship and record of successful implementations, we believe that Measured Progress is ideally suited to assist the NH DOE with its transition to a new assessment program.

The solution we propose here and describe in detail below offers significant benefits to the NH DOE and to the teachers and students of New Hampshire.

- **Available Now.** We propose a fully operational assessment program, fully aligned to the New Hampshire Grade Level Academic Standards in ELA and mathematics. As we explain below, we have developed our eMPower Assessments using industry best practices, and we have successfully implemented the program and delivered it online as Maine's summative accountability measure for the past two years.
- **Coherent and Meaningful.** The eMPower Assessment program provides both interim and summative assessments in ELA and mathematics in a design that minimizes testing time and maximizes utility. Fall interim assessments provide baseline information; winter interim assessments monitor progress and track growth; spring assessments serve as a year-end summative measure. All three parallel assessments are reported on the same scale, providing a clear record of growth throughout the year and across year—and providing the opportunity to explore aggregation of interim assessment results that could ultimately reduce or eliminate the need for the spring summative administration.
- **Linked to College Readiness.** At grade 8, the eMPower ELA and mathematics assessments include a predicted score on the PSAT 8/9. This link is the product of an empirical linking study between the two assessment programs conducted through a unique collaboration with the College Board. This powerful connection between the eMPower Assessments and the SAT Suite begins at the design level and results in a clear path from elementary and middle grades all the way up to the SAT, which is used as New Hampshire's 11th grade summative assessment.
- **Responsive and Inclusive.** Drawing on the extensive experience of staff at Measured Progress and our business partners at WestEd, we will build out a secure bank of items designed to assess the depth and breadth of the New Hampshire Science Standards. As part of that process, we will work with

New Hampshire educators, as well as educators from other states assessing similar standards, to ensure that we are faithfully assessing the standards.

- **Efficient, Economical, Reliable.** Through the use of an existing operational assessment program for ELA and mathematics, coupled with the licensing of a secure item bank for assessment of the New Hampshire Science Standards, the NH DOE avoids expensive and time-consuming content development activities. Likewise, the use of eMetric's *iTester* online administration platform to deliver these assessments offers a reliable method for online delivery, proven in high-stakes summative assessment programs in Maine, Oklahoma, New Mexico, and elsewhere.

Our experience in large scale assessment is extensive, both within New Hampshire and throughout the United States. We understand the New Hampshire standards and the content that is needed to produce the highest quality assessments, and this depth of understanding is bolstered by the addition of our experienced business partners eMetric, Measurement Incorporated, and WestEd.

Our proposal includes solutions for all components identified in the RFP as described below.

Summative Assessments in ELA and Mathematics

eMPower Assessments cover the depth and breadth of the college and career readiness standards to which the assessments are aligned and which, in turn, align fully with the New Hampshire standards. Therefore, for the ELA and Mathematics assessments at grades 3-8, we are proposing the eMPower configuration. This configuration consists of tests with selected-response items designed to measure a range of knowledge and skills related to academic success in high school and beyond. These assessments are pre-equated and completely machine-scored, which shortens the time between testing and reporting. The assessments contain multiple-choice, evidence-based selected-response, and multiple-select items. Reports provide reliable scores regarding students' learning related to each of the eMPower reading, writing and language, and mathematics claims.

The eMPower Assessments are designed to provide measures of students' progress toward college and career readiness. The tests are designed so that educators can make valid inferences about students' achievement of challenging academic concepts and skills. We designed the assessments to ensure that reported scores are reliable and the college and career readiness standards are covered in depth.

Consistent with the Standards for Educational and Psychological Testing (AERA/NCME/APA, 2014), we have documented all design and development decisions and have a research plan for gathering evidence to support the validity of test scores. eMPower assessments provide scores that can guide instruction, provide data to evaluate instructional programs, and measure students' growth over time (within and across school years).

The content specialists who created eMPower items also created items for the College Board, writing to the revised PSAT specifications and frameworks. Our development team and College Board content leaders collaborated to ensure solid alignment between the two sets of standards, specifications, and reporting categories. The result is a unified solution for measuring growth, using eMPower assessments for grades 3-8 and the SAT Suite of Assessments for high school. The eMPower assessments are vertically scaled to provide continuity with the SAT Suite for explicit data on growth over time and include a PSAT predicted score at grade 8.

Summative Assessment in Science

The development of valid and reliable assessments begins with sound test designs to guide test specifications, item specifications, and alignment of items and forms as they are developed. We are pleased to be offering our Measured Progress Secure Science Item Bank (SSIB) as the basis for fulfilling a test design for New Hampshire for its NGSS science assessments. We are developing our science item bank based on the recommendations put forth in the report *Developing Assessments for the Next Generation Science Standards* issued by the NRC and the Science Assessment Item Collaborative Assessment Framework, issued by CCSSO in collaboration with WestEd. The bank will contain item clusters and stand-alone items written to the multiple dimensions of the NGSS performance expectations. Measured Progress proposes to partner with WestEd to ensure the best possible test design for the New Hampshire Science Assessment.

Measuring the more complex skills and processes of the New Hampshire Science Standards requires assessment approaches that go beyond the traditional. Measured Progress proposes to assist New Hampshire DOE in its transition to these standards by providing a summative science assessment that requires students to demonstrate their ability to apply evidence and communicate scientific reasoning and information using items that encourage students to examine concepts that cross the boundaries of physics, biology, and chemistry. Measured Progress has not only been supportive of the NGSS goals and objectives, we have actively promoted the concepts upon which they are based because of their alignment with our own goals of improving student and teacher educational excellence.

Interim Assessments in ELA and Mathematics

The eMPower Interim Assessments provide an accurate indicator of student progress toward meeting state and national college and career readiness standards. The fall interim assessments are designed to be administered early in the school year to provide educators with a baseline of student performance. They address the previous grade's concepts and skills, as well as on-grade concepts and skills typically taught at the beginning of the year, with careful attention to learning progressions between the two assessed grades. Educators can use the results to plan instruction for the school year. Winter interim assessments measure grade-level concepts and skills; results can help educators monitor students' progress toward end-of-year learning goals and provide predictive information about student performance on the eMPower summative assessment.

Interim Assessment in Science

Measured Progress proposes the use of items from our proprietary item bank as an interim science solution. Our plan is to construct a fall interim and a winter interim for the 2018-2019 school year with items that are currently under development for an operational field test during the 2018-2019 school year. This will enable us to provide some reporting information as we track the cohort of students through the interim and summative testing programs. Then, in the 2019-2020 school year, we will be able to provide full reporting, including predictions about student performance on the science summative tests.

Prior to the first administration Measured Progress will facilitate a process with the NH DOE to develop test blueprints that cover how the operational points will be distributed across reporting categories. We will also discuss with NH DOE our ideas for implementing the operational field test, the requirements for the first year collection of student data on both the interim and summative assessments, and how to provide predictive information starting in the spring 2019-2020 school year.

Reporting

Score reports are central to communicating score meaning to stakeholders—administrators, teachers, parents, and students. Score meaning rests on how scores are interpreted. If the educator, parent, or student does not have sufficient knowledge to interpret scores appropriately, she or he may misinterpret scores, over- or under-interpret score changes, over- or under-interpret differences between scores in different domains.

Too often, score reports provide meaning to those who are statistically inclined rather than those who need to act on the information. Reports can and should differ depending on the audience. Administrators need to know average scores and what average scores mean in a given context (e.g., how a local school's average scores compare to state averages or how to use average score profiles to make decisions about where to focus professional development of teachers). Teachers need to have actionable information—reports that explain what students have accomplished as well as guidance on next steps. Parents need to know their children's status as well as what they can do to support their students' ongoing achievement.

Our proposed reporting portal, Data Interaction by eMetric, features a range of data views and report types that allow analysis across years from the group level down to the individual student level. Each report type can be customized to include or exclude fields and attributes to meet NH DOE's specific needs. Report types may include the following:

- Group Summary Report
- Roster Report
- Individual Student Report
- Pre-defined Report(s)

Strong, collaborative program management approach

Ensuring that projects are managed successfully and on time is critical to the success of any assessment program. Measured Progress program management staff members will act as primary liaisons between the NH DOE, Measured Progress and its strategic business partners. Our staff members will schedule, oversee, and facilitate each phase of the New Hampshire Statewide Assessment program, ensuring that all contract work is completed on time and in accordance with program specifications. Our proposed program managers and program assistants will work collaboratively with the NH DOE and will maintain frequent communication to keep you apprised of the status of all program activities.

Strategic Partnerships

To best meet the needs of the New Hampshire Statewide Assessment Program, Measured Progress will collaborate with three key business partners—eMetric, Measurement Incorporated, and WestEd. Below, we highlight the additional innovation and experience they bring to our proposed solution. We recognize that, as a prime contractor, we are fully responsible for the quality and timeliness of all program deliverables and that relationships between Measured Progress, and our business partners should at all times be seamless to the client.

eMetric

Founded in 2000 and located in San Antonio, TX, eMetric is a leading provider of K-12 web-based assessment and reporting solutions as well as psychometric services for school districts, state education agencies, and testing organizations. eMetric's innovative solutions combine their educational, statistical, and technical expertise. eMetric is pleased to offer their iTester online assessment delivery system and their Data Interaction reporting system to the state of New Hampshire.

Measurement Incorporated

Measurement Incorporated (MI) is a full-service assessment corporation, based in Durham, NC, specializing in the development, administration, scoring, and reporting of results for educational assessments and professional certification examinations. MI has maintained a record of excellence in performance assessment scoring for over 35 years. They have cultivated a depth of experience and expertise in both hand and AI scoring large-scale assessments, scoring more than 30 million tests annually. Their depth of experience in the scoring of large-scale assessments allows them to guarantee valid, reliable, and timely constructed-response scoring. Specifically, MI will provide New Hampshire the use of AI scoring for constructed-response items with the benefit for the State being reduced cost over hand scoring and improvement in scoring turnaround time while maintaining the assurance of consistency and accuracy of the scoring. MI's essay-scoring engine PEG™ has been used to provide tens of millions of scores to students in formative and summative writing assessments since 2005. Most recently in 2015 and 2016, PEG has been used to score large projects in Michigan, California, and SBAC states.

WestEd

WestEd is an educational research, development, and service organization with more than 600 employees and 17 offices nationwide. Since its inception in 1966, WestEd has been a leader in moving research into practice by conducting research and development programs, projects, and evaluations; by providing training and technical assistance; by working with policymakers and practitioners at state and local levels to carry out large-scale school improvement and innovative change efforts; and by developing high-quality student assessments for school districts, states, and multi-state consortia. The agency's mission is to promote excellence, achieve equity, and improve learning. WestEd will provide assessment consulting services to the state of New Hampshire.

In summary, Measured Progress has the experience necessary and is fully prepared to assist New Hampshire in addressing the challenges presented in the RFP. In the pages that follow, we provide our plan to assist New Hampshire in its pathway to ready its students for college and careers in the 21st century.



Section II: Glossary of Terms and Abbreviations

- AI – Artificial Intelligence (Scoring)
- APIP – Accessible Portable Item Protocol
- BC – Business Continuity
- BCM – Business Continuity Management
- BoW – Body of Work (Standard Setting Method)
- BRP – Business Recovery Plan
- CCC – Customer Care Center
- CCSSO – Council of Chief State School Officers
- CDNs – Content Delivery Networks (The use of CDNs reduces the need to access information from the private cloud during live administrations, allows for scalable performance during windows of peak student testing, and essentially eliminates the potential for distributed denial of service attacks.)
- CSV – Comma Separated Files (CSV files can be a very useful format because it is compact and thus suitable to transfer large sets of data with the same structure)
- CTT – Classical Test Theory
- DRP – IT Disaster Recovery Plan
- DRS – Data and Reporting Services Process – The process block that refers to a variety of complex data processing tasks that ensure the accuracy of client data.
- EDGE – The proposed solution will be hosted in a world class hosting infrastructure provided by EDGE Hosting (EDGE).
- ELLs – English Language Learners
- eMPower Assessments™ - Measured Progress’s ELA and Mathematics assessment solution for grades 3–8 that gives a direct predictive connection to the SAT® Suite of Assessments.
- ERP – Emergency Response Plan
- GRM – Graded-Response Model
- iCore – Serves as the repository of information for the state, districts, schools, contacts, enrollments, and test shipment orders and quantities, capturing the date and time of these transactions
- IDS – Intrusion Detection System
- IMP – Incident/Crisis Management Plan
- IPS – Intrusion Prevention System
- IRT – Item Response Theory

- iScore – The software used for scoring extended constructed response and scoring short constructed response. This block also includes scoring management labor, facilities and equipment rental, and transition-related activities.
- ISR – Individual Student Report
- iTester – eMetric’s proposed Online Testing Platform
- iTrack (Material Control) – A dynamic Web-based engine that records, tracks, accounts, and provides real-time reporting for all secure and non-secure test materials—from initial raw material receipt, tracking the process of kitting and packaging, shipping, receiving and log-in/check-in/reconciliation
- ITSM – Information Technology Service Management
- LERT – Local Emergency Response Team (Composed of staff members that have been selected or have volunteered to respond in an emergency, to protect the safety of their fellow employees.)
- NGA – National Governor’s Association
- NGSS – Next Generation Science Standards
- NTS – Nimble Tools Suite (Item Authoring and Content Management)
- PDIR – Prevention, Detection, Investigation, and Resolution (Measured Progress test security policies and practices protect student data privacy, test data security, and the security of test content. We use a framework for designing and implementing comprehensive test security systems, Prevention, Detection, Investigation, and Resolution)
- PII – Personally Identifiable Information
- PLDs – Performance Level Descriptors
- PMI – Program Management Institute
- PMP – Project Management Professionals
- Psychometric Analysis – The process block that refers to item and test analysis, scaling, equating, linking studies, third party equating check/verification, validity studies, alignment studies, data forensics, technical report, and work associated with standard setting meetings, validation, transition-related activities.
- QTI – Question and Test Interoperability (The QTI importer tool is a modular application, currently based on QTI 2.1 Final specifications, leveraging the: CEF – Chromium Embedded Framework)
- RAID – Redundant Array of Independent Disks (Redundancy and safeguard against hardware failures)
- Secure Science Item Bank – Science items aligned to NGSS owned by Measured Progress and used for the construction of test forms in grades 5, 8 and 11
- SFTP – Secure File Transfer Protocol
- SSL – Secure Sockets Layer (Websites containing sensitive material require public-key cryptography security through SSL connections.
- SSO – Single-Sign-On (to iTester Portal)
- TEI – Technology Enhanced Item
- UD – Universal Design (Test Development)

- WordPress CMS – The content management system used to make non-secure materials available to users.



Section III: Response to Requirements and Deliverables

System requirements are provided in Appendix C: System Requirements and Deliverables. Using the response tables in Appendix C, the vendor must document the ability to meet the requirements and deliverables of this RFP.

Table C-3 Deliverables Vendor Response Checklist

	Activity, Deliverable or Milestone	Deliverable Type	Projected Delivery Date
PLANNING AND PROJECT MANAGEMENT			
1	Conduct Project Kickoff Meeting	Non-Software	Summer 2017
2	Project Status Reports	Written	Monthly
3	Work Plan	Written	Monthly
4	Infrastructure Plan, including Desktop and Network Configuration Requirements	Written	Fall 2017
5	Security Plan	Written	Fall 2017
6	Communications and Change Management Plan	Written	Fall 2017
7	Requirements Trace ability Matrix	Written	Fall 2017
8	Software Configuration Plan	Written	Fall 2017
9	Systems Interface Plan and Design/Capability	Written	Fall 2017
10	Testing Plan	Written	Fall 2017
11	Data Conversion Plan and Design	Written	Fall 2017
12	Deployment and Roll-out Plan	Written	Fall 2017
13	Comprehensive Training Plan and Curriculum	Written	Fall 2017
14	End User Support Plan	Written	Fall 2017
15	Business Continuity Plans	Written	Fall 2017
16	Documentation of Operational Procedures	Written	Fall 2017

INSTALLATION			
17	Provide Software Licenses, if needed	Written	Winter 2018
18	Provide Fully Tested Data Conversion Software	Software	Winter 2018
19	Provide Software Installed, Configured, and Operational to Satisfy State Requirements	Software	Fall 2017 / Winter & Spring 2018
TESTING			
20	Conduct Integration Testing	Non-Software	Fall 2017 / Winter 2018
21	Conduct User Acceptance Testing	Non-Software	Fall 2017 / Winter 2018
22	Perform Production Tests	Non-Software	Fall 2017 / Winter 2018
23	Test In-Bound and Out-Bound Interfaces	Software	Fall 2017 / Winter 2018
24	Conduct System Performance (Load/Stress) Testing	Non-Software	Fall 2017 / Winter 2018
25	Certification of 3 rd Party Pen Testing and Application Vulnerability Scanning	Non-Software	Fall 2017 / Winter 2018
SYSTEM DEPLOYMENT			
26	Converted Data Loaded into Production Environment	Software	Fall 2017 / Winter & Spring 2018
27	Provide Tools for Backup and Recovery of all Applications and Data	Software	Fall 2017 / Winter & Spring 201
28	Conduct Training	Non-Software	Fall 2017 / Winter & Spring 2018
29	Cutover to New Software	Non-Software	Fall 2017 / Winter & Spring 2018
30	N/A		

31	Provide Documentation	Written	Fall 2017 / Winter & Spring 2018
32	Execute Security Plan	Non-Software	Fall 2017 / Winter & Spring 2018
OPERATIONS			
33	Ongoing Hosting Support	Non-Software	Fall 2017 / Winter & Spring 2018
34	Ongoing Support & Maintenance	Software	Fall 2017 / Winter & Spring 201
35	Conduct Project Exit Meeting	Non-Software	Fall 2017 / Winter & Spring 2018



Section IV: Narrative Responses

D-1 PROPOSED SOLUTION

D1.1 Test Construction

The vendor will propose a plan for the construction of test forms for the Spring 2018 assessment administration and subsequent operational administrations of the NH assessments. The vendor’s response must include a description of the processes and procedures that will be used to select items to be included on each assessment form and ensure that each assessment form and the assessment as a whole meets the requirements described in the test specifications. The vendor’s response should address the manner in which the NH Instructional Support Teams will be involved in the process of test construction. The vendor’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 assessment forms and the assessment as a whole.

Solution Overview

Before discussing the test construction process, we would like to present a high-level overview of our proposed solution for the New Hampshire Statewide Assessments. Although our proposed program consists of multiple components, we are prepared to implement the program starting in the 2017-2018 school year. We have constructed the program using our proprietary suite of products, which includes fixed-form tests and item banks. The following exhibit shows our proposed solution, along with implementation timelines.

EXHIBIT 1: NH STUDENT ASSESSMENT PLAN

	ELA and Math Summative	ELA and Math Interim	Science Summative	Science Interim
	eMPower with Direct Writing	eMPower	Secure Science Item Bank	Secure Science Item Bank
Operational Field Test	Spring 2018 (Direct Writing Only)		Spring 2018	Fall 2018
Operational Test	Spring 2018	Fall 2017	Spring 2019	Fall 2019

For the ELA and math components of the NH program, we are ready to provide our eMPower Assessments™. eMPower Assessments by Measured Progress provide a cohesive program for states to track students’ academic progress toward readiness for college and careers. Three forms are available each school year: two interims (one administered in fall and the other in winter) and one summative

(administered in spring). For the science interim and summative components, we will be ready to build tests using items from the Measured Progress Secure Science Item Bank.

In our response to Topic 1 (*Test Design*), we provide to NH DOE overviews of the design for each program component. Before proceeding into Topic 1, we describe our collaboration with the College Board® and describe the test construction process that will be used to build the science interim and summative assessments.

Collaboration with the College Board

Measured Progress and the College Board have collaborated to link the vertical scale of the eMPower Assessments for grades 3-8 to the SAT® Suite of Assessments for high school. The Measured Progress development team and College Board content leaders collaborated to ensure a solid relationship between eMPower Assessments and the SAT Suite of Assessments—especially at grade 8. Since Measured Progress content specialists contributed to the development of items for the recently revised SAT suite of assessments, they are particularly knowledgeable about writing items aligned to college and career readiness standards.

Test Construction Process

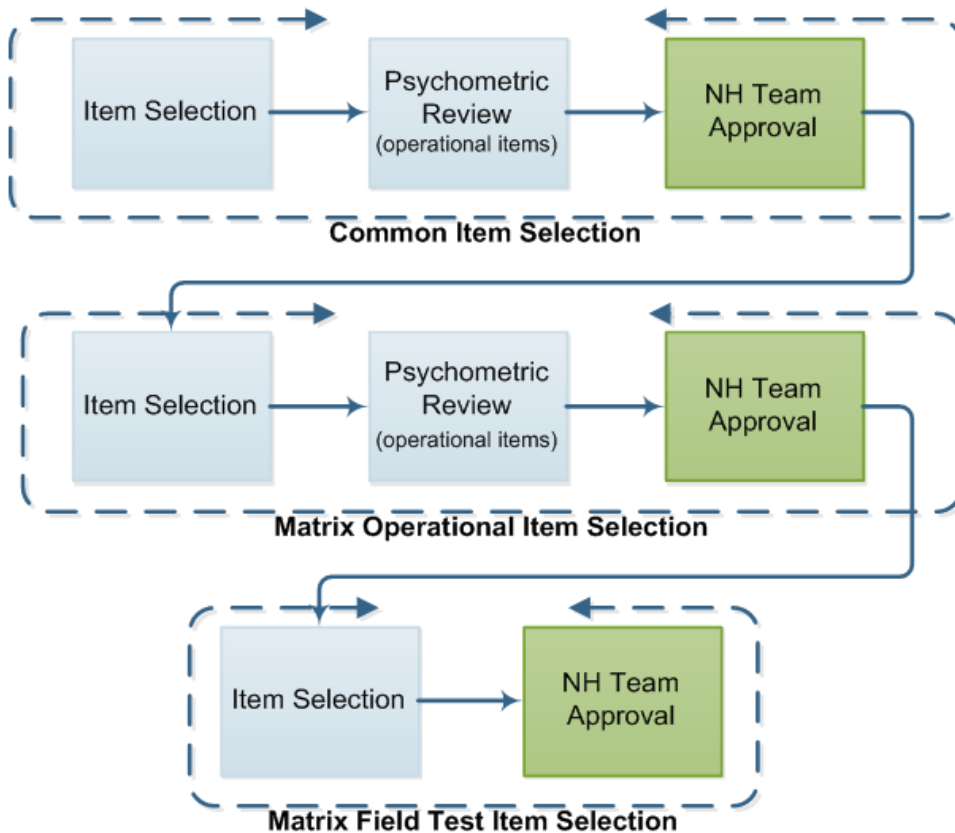
eMPower Assessments by Measured Progress are a suite of fixed-form assessments suitable as an interim/summative solution for states. For the direct writing assessment, the NH DOE will be able to select a prompt each year after we conduct an operational field test of multiple prompts in spring 2018. For the science interim and summative assessments, we are providing access to our science item banks for construction of custom test forms. In this section, we discuss our process for constructing the required interim and summative test forms. We use a similar process to construct our eMPower test forms.

Prior to the first round of science test construction, the NH DOE and their instructional team will work with our content specialists and psychometricians to develop test specifications. The *Standards for Educational and Psychological Testing* (AERA, APA, & NCME, 2014¹) state, “[in] nearly all cases, test development is guided by a set of test specifications.” The *Standards* go on to say, “test specifications are defined more broadly to include documentation of the purpose and intended uses of the test, as well as detailed decisions about content, format, test length, psychometric characteristics of the items and test, delivery mode, administration, scoring, and score reporting.” The test specifications will be reviewed each year with the NH DOE and their instructional teams before test construction.

For the science portions of the program, our content specialists will initiate the process of constructing test forms and will coordinate with our psychometricians during the process. The NH DOE and the NH Instructional Support Team will receive test forms after the forms have been reviewed and approved by both our content specialists and psychometricians. The following exhibit outlines the key steps of this overall process.

¹ American Educational Research Association (AERA), American Psychological Association (APA), & National Council on Measurement in Education (NCME) (2014). *Standards for educational and psychological testing*. Washington, DC: American Educational Research Association.

EXHIBIT 2: NH SCIENCE TEST CONSTRUCTION PROCESS



To construct the operational portion of the test, our content experts use the test specifications and field-test item statistics to identify from the pool of operational-eligible items a potential set of items. Once the content specialists are ready to propose a set of operational items, our psychometricians review the test form by comparing the test parameters (i.e., test characteristic curves and test information functions) with the “base form” that was used to set standards. They will also evaluate the quality of the information that will be generated for students performing at either end of the performance spectrum; again by comparing the proposed form to the base form. The psychometricians may request revisions to the proposed form to improve alignment between the base form’s test parameters and the parameters of the proposed operational form.

After psychometric review, we will provide the proposed form to NH DOE and the NH Instructional Team for review and approval. For this review, Measured Progress will provide:

- The proposed item set
- A test construction blueprint table which contains, at a minimum, the sequence of the items, each item’s statistics, the item’s alignment and cognitive complexity, and the number of points that item will be worth
- The test characteristic curve and test information function (on a graph with the base form to facilitate comparison)

The NH DOE will have the opportunity to ask for revisions to the form by requesting the substitution of items. Measured Progress anticipates that replacement items may be needed before test forms are approved by NH DOE. After NH DOE approves the operational test items, our content specialists will select items to populate the field test positions. Once these items are selected they will be provided to NH DOE for review and approval. Measured Progress will begin publishing the test forms (both online and on paper) after NH DOE reviews and approves the field test forms.

Topic 1 Test Design

The vendor must propose a plan for the design of the Spring 2018 field test and the subsequent operational NH assessments that best meets the purposes and intended uses of the results of the NH assessments. The vendor's response must reflect an awareness of the breadth, depth, and complexity of academic standards; the State requirements in RSA 193:C, Federal requirements for assessment as expressed in the Every Student Succeeds Act and US ED assessment regulations; the high level Test Design Framework and preliminary Test Specifications provided by the NH DOE; the NH DOE constraints related to testing time, test format, and the use of machine-scorable items described throughout this RFP, including the AI scored ELA writing assessment, and the NH DOE's desire for a cost effective and efficient assessment program which includes interim and summative components. The proposed field test and operational test designs must demonstrate the vendor's ability to balance those factors to produce an assessment program that meets the following high-level priorities:

- The NH summative assessments are being designed intentionally as relatively short (i.e., 2 hours of testing per summative assessment area, and easy to score (i.e., machine-scorable).
- The summative assessments will align to the corresponding academic standards in ELA, mathematics and science.
- The summative assessments will use a common-matrix design to support a) the reporting of student-level overall 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 academic standards.

The vendor shall create a proposed test blueprint for the assessments to be developed in each content area. Interim assessment frameworks should be based on the frameworks developed for the summative assessments. The successful vendor will provide refined blueprints to be reviewed by the NH DOE for approval. The blueprint must specify the numbers of each type assessment item to be used at each grade level in each content area, depth of knowledge, the numbers of items in each eventual test form (field and operational) and the total amount of testing time. The vendor must take into consideration the fact that the assessments must generate valid information throughout the data distribution in both tails.

Reading assessments may include a combination of literary and informational passages. Literary texts include fiction, literary nonfiction and poetry. Informational texts include exposition, argumentation, persuasive texts, procedural texts and documents.

Writing assessments may include a combination of narrative, informative and persuasive purposes.

The vendor must provide its plan for ensuring a high level of consistency between the summative and interim item types and blueprints with adjustments made due to time and item type constraints.

In this section, we present to NH DOE our test designs for each component of the New Hampshire Statewide Assessments. Each component of the program is intended to:

- Assess the breadth, depth, and complexity of the standards to which the test is aligned
- Meet technical requirements found in the Standards for Educational and Psychological Testing, the Every Student Succeeds Act, and US ED peer review guidelines
- Be untimed tests with estimated testing times for each test of two hours or less
- Use machine-scored items to provide a cost effective and efficient program.

In addition, we have designed the science assessments to use a common-matrix design for the operational items. This approach provides NH DOE with improved information at the domain level for schools, districts, and the NH DOE.

We plan to provide the NH DOE with a direct writing prompt as an augmentation to the eMPower writing and language assessment at each grade. The direct writing response will be designed to allow for artificial intelligence (AI) scoring.

eMPower Assessments (ELA/Math, Interim/Summative)

eMPower Assessments are a vertically scaled series of achievement tests designed to measure student knowledge and growth in reading, writing and language, and mathematics for grades 3-8. The assessments are secure and provide information about students' current level of achievement as well as their growth toward college and careers on a vertical scale, within and across school years. At grade 8, eMPower score reports provide a predicted PSAT score, based upon a linking study conducted in collaboration with the College Board. eMPower Assessments are composed of items developed specifically for eMPower to assess rigorous college and career readiness standards. eMPower Assessments include three forms per year, available for fall, winter, and spring administrations.

The fall interim assessments are designed to be administered early in the school year. They address the previous grade's concepts and skills, as well as on-grade concepts and skills typically taught at the beginning of the year, with careful attention to learning progressions between the two assessed grades. Educators can use the results to plan instruction for the school year. Winter interim assessments measure grade-level concepts and skills; results can help educators monitor students' progress toward end-of-year learning goals. Spring assessments can serve as the foundation of a state's accountability program.

The following exhibit provides information about the structure of eMPower Assessments in terms of item types, number of test sessions, and approximate testing time. Each eMPower subject area assessment is divided into two sessions to accommodate students' need to think and respond. The estimated time per session also includes time to organize the classroom for the assessment event. The estimated testing time makes each session suitable for administration during a single class period, but the tests are intended to be untimed to allow students to do their best work. Note that item counts include both operational and field-test items.

EXHIBIT 3: EMPOWER ITEM TYPES, NUMBERS OF ITEMS, AND TESTING TIMES

Content Area	MC/MS	EBSR	Number of Items	Sessions	Time per Session	Total Operational Points
Reading	24	4	28	2	40 minutes	25
Writing & Language	30	5	35	2	25 minutes	26
Mathematics	37-42*		37-42*	2	35 minutes	32-37*
MC = Multiple-choice MS = Multi-select EBSR = Evidence-based selected-response						*varies by grade level

College and Career Readiness Standards, eMPower Assessments, and Claims

eMPower Assessments are aligned to college and career readiness standards for reading, writing, language, and mathematics, which are based on those authored by the National Governors’ Association (NGA) and the Council of Chief State School Officers (CCSSO). These standards also align with many states’ college and career readiness standards. They reflect research on what knowledge, skills, and conceptual understanding best support students’ achievement in high school and beyond.

Measured Progress adopted the college and career readiness content standards for reading, writing, language, and mathematics in 2013. Each item, all passages for reading and for writing and language, and all mathematics stimuli developed for eMPower Assessments were developed using these standards. This content is carefully designed to draw out targeted conceptual understandings and/or skills aligned to the standards. We developed the test design and each item with the end goal in mind—to paint a valid picture of students’ academic progress toward readiness for high school and beyond. The assessments enable educators to make meaningful inferences about students’ achievements from test scores.

eMPower items, passages for reading and for writing and language, and stimuli represent a range of task difficulty so that most students can respond successfully to some items and experience an appropriate level of challenge. Students are given sufficient opportunity to demonstrate their knowledge and skills, ensuring that reported scores are reliable.

Reading Standards, Assessments, and Claims

Reading Standards

The college and career readiness standards for reading reflect contemporary research on the reading skills and strategies students must have in order to be prepared for high school and beyond. The reading standards focus on students’ abilities to comprehend, analyze, and interpret complex literary and informational texts. Young children learn to read primarily through stories and narratives; however, as students grow, more and more of what they read in school involves informational texts in social studies, science, and mathematics. To read informational texts requires complex word attack skills, a broad academic vocabulary, and the ability to integrate ideas from graphics, timelines, images, and other media with written text.

Reading Assessments

eMPower reading assessments present both literary and informational texts; passages are authentic, previously published texts. Assessments for grades 3-5 have a stronger focus on literary texts, and those for grades 6-8 have a stronger focus on informational texts. Our primary goal has been to select texts that represent the level of challenge seen in English language arts, social studies, and science coursework. Reading passages represent a range of text complexity. Passages are evaluated quantitatively through multiple text complexity metrics, and qualitatively for complexity and grade-level appropriateness. Test items ask students to comprehend central ideas or themes and supporting details. Items also ask students to analyze and interpret texts. Analyses and interpretations of text must be grounded in the text; therefore, eMPower reading assessments include evidence-based items.

Reading Claims

eMPower reading assessments are designed to provide reliable and valid scores for two aspects of reading: **comprehension** and **analysis and interpretation** of complex texts. The following exhibit presents the claims for the meaning of scores from eMPower reading assessments.

EXHIBIT 4: EMPOWER READING CLAIMS

Subscore	Reading Claims For These Subscores, Students Who Are At Standard or Above Standard Can:
Literary Text	<ul style="list-style-type: none"> ▪ Independently and proficiently read, comprehend, analyze, and interpret grade-level appropriate literary text. Apply reading skills and strategies to enhance enjoyment and understanding of literary text, and use evidence from texts to support their analyses, interpretations, and conclusions. ▪ Comprehend and analyze themes and important supporting details, interpret characters' motivations and actions, and analyze characters' development. ▪ Determine the meaning of new and unfamiliar vocabulary words and evaluate an author's use of literary devices to create effects. ▪ Analyze the structure of texts; identify and evaluate connections between events, characters, and ideas; and compare and contrast story elements and authors' treatments in two texts.
Informational Text	<ul style="list-style-type: none"> ▪ Independently and proficiently read, comprehend, analyze, and interpret grade-level appropriate informational text. Apply reading skills and strategies to understand and learn from informational text, and use evidence from texts to support their analyses, interpretations, and conclusions. ▪ Comprehend and analyze main ideas and important details and interpret an author's purpose, claims, and evidence. ▪ Determine the meaning of new and unfamiliar vocabulary words, analyze how authors use text features and structures to communicate meaning, and interpret graphical representations of information. ▪ Compare and contrast authors' presentations of information, arguments, and evidence in two texts.
Comprehension	<ul style="list-style-type: none"> ▪ Apply reading skills and strategies to read and comprehend central ideas and themes, identify supporting details, and determine the meaning of words and phrases in grade-level appropriate literary and informational text.
Analysis and Interpretation	<ul style="list-style-type: none"> ▪ Apply reading skills and strategies to grade-level appropriate literary and informational text in order to analyze how ideas, events, and characters are presented; examine relationships among elements of texts; interpret authors'

Subscore	Reading Claims For These Subscores, Students Who Are At Standard or Above Standard Can:
	<p>themes, purposes, claims, and evidence; determine and evaluate points of view; determine the meaning of figurative and connotative language.</p> <ul style="list-style-type: none"> Analyze authors’ word choice; compare and contrast the information and authors’ methods in two texts; make inferences; and draw conclusions using evidence from the texts to support their interpretations and analyses.

Writing and Language Standards, Assessments, and Claims

Writing and Language Standards

The college and career readiness standards for writing and language reflect current research on what students must know and be able to do to be effective writers. Students must write for many purposes. These skills include the ability to select appropriate content, organize ideas, and use appropriate English language conventions. Students in grades 3-5 generally write narratives and reports. By middle school, students write in nearly all of their courses—including science and social studies—and primarily to inform. As students move into high school and college, they must develop written arguments—supporting claims with evidence, whether the evidence is from literary, historical, or scientific sources. The writing and language standards reflect the knowledge and skills necessary for students to be successful in these writing purposes.

Writing and Language Assessments

eMPower writing and language assessments assess whether students can evaluate and identify needed improvements for written works. Items in grades 3-5 involve analysis of literary and expository writing; items in grades 6-8 involve analysis of expository and argument writing. Items related to writing analysis assess students’ ability to identify ways to improve the content and organization of written pieces (e.g., adding/removing details, revising and reorganizing content). Items related to English language and conventions assess their ability to improve the technical quality of writing through the improvement of language use (grammar and vocabulary) and language conventions (e.g., capitalization and punctuation).

Direct Writing Assessment

Measured Progress will develop direct writing prompts for the NH DOE and will augment the eMPower Writing and Language assessments with the prompts. Our plan, which we will finalize with NH DOE after contract award, is to conduct an embedded operational field test of 8 writing prompts per grade in spring 2018. Then, in subsequent years, the NH DOE will choose one prompt for each grade, from the pool administered in spring 2018, for inclusion in the NH assessments.

To provide NH students, parents/guardians, and teachers with the greatest visibility into student performance on the direct writing assessment, we plan to report direct writing scores separately from the eMPower Writing and Language scores.

Writing and Language Claims

The eMPower writing and language assessments were designed to provide reliable and valid scores related to students’ abilities to analyze writing (**writing analysis**) and evaluate English language usage and writing conventions (**English language and conventions**) in relation to written narratives, informational text, and text-based arguments. The following exhibit presents the claims for the meaning of scores from eMPower writing and language assessments.

EXHIBIT 5: EMPOWER WRITING AND LANGUAGE CLAIMS

Subscore	Writing and Language Claims For these subscores, students who are At Standard or Above Standard can:
Narrative Writing Analysis (Grades 3-5)	Analyze the effectiveness of written narratives and identify improvements needed for sequence of events, use of transitional language, use of descriptive details, character development, use of dialogue, and consistent narrative style. (Grades 3-5)
Expository Writing Analysis (3-8)	Analyze the effectiveness of expository or informational writing and identify improvements to logical organization, supporting facts and details, clarity of purpose, cause-and-effect relationships, and consistent informational writing style and tone. (Grades 3-8)
Argument Writing Analysis (6-8)	Analyze the effectiveness of written arguments and identify improvements in the clarity of a focus or claim, supporting arguments and evidence, logical organization, maintenance of a formal writing style and tone, and use of language to convince or persuade. (Grades 6-8)
English Language and Conventions (3-8)	Evaluate written narrative, expository, and argument writing and identify improvements needed in grammar and vocabulary; and in language usage and precision, spelling, punctuation, and capitalization. (Grades 3-8)

Mathematics Standards, Assessments, and Claims

Mathematics Standards

The college and career readiness standards for mathematics reflect current research on the underlying cognitive skills necessary for success in mathematics. Researchers have found that mathematical proficiency depends upon more than conceptual understanding and procedural skill. Many problem-solving and reasoning skills underpin successful mathematical learning. Readiness for high school and beyond depends on students' abilities to understand and apply mathematical concepts and procedures, as well as to use important mathematical skills such as problem solving, reasoning, and the use of mathematical models to represent and solve problems. The standards for mathematics are built on mathematical learning progressions.

- Standards for grades 3-5 focus on understanding and applying operations with whole numbers and fractions; early algebraic reasoning skills; and basic measurement, geometric, and data analysis skills.
- Standards for grades 6-8 focus on rational numbers, algebraic thinking, proportional reasoning, and initial understanding of numeric functions.

The college and career readiness standards for mathematics also include mathematical practices such as problem-solving, quantitative reasoning, modeling, and using mathematical patterns and structures.

Mathematics Assessments

eMPower mathematics assessments evaluate mathematics **concepts and procedures** as well as **mathematical practices** (problem solving; logical and quantitative reasoning, including the evaluation of the arguments of others; modeling; and patterns and structure). Within concepts and procedures, we assess mathematical domains that reflect important learning progressions in mathematics. For grades 3-5, we assess operations and algebraic thinking, whole number concepts and operations, fraction concepts and operations, measurement and data, and geometry. For grades 6-8, we assess ratios and proportional

relationships (grades 6 and 7) and functions (grade 8), the rational number system, algebraic expressions and equations, geometry, and statistics and probability.

eMPower mathematics assessments integrate assessment of mathematical practices with that of the mathematical content domains. Many of the mathematics concepts and procedures standards were written to ensure that students will apply one or more mathematical practices to demonstrate mastery of the standard. In addition, overarching practices require integration and application of mathematical concepts and procedures in real-world and mathematical contexts. For example, mathematical modeling is applied in theoretical mathematics as well as in the social sciences, earth and space science, biology, physical science, architecture, and engineering.

The majority of the items in eMPower mathematics assessments are designed to fully measure one mathematical practice. Most items measure a single content standard; however, where appropriate for the measurement of problem solving, reasoning, and modeling, items may require the application of more than one content standard.

Mathematics Claims

eMPower mathematics assessments were designed to provide reliable and valid measures of students’ understanding of, and ability to apply, grade-level appropriate mathematical concepts and procedures, as well as to use mathematical practices to analyze mathematical representations and solve problems. The following exhibits present claims for the meaning of scores from the eMPower mathematics assessments.

EXHIBIT 6: EMPOWER MATHEMATICS CLAIMS, GRADES 3-5

Subscore	Mathematics Claims—Grades 3-5 For these subscores, students who are At Standard or Above Standard in grades 3-5 can:
Operations and Algebraic Thinking	Apply mathematical operations (addition, subtraction, multiplication, and/or division) and use algebra representations (e.g., equations) to solve problems involving whole numbers. Identify, explain, and extend arithmetic patterns.
Number & Operations in Base 10 and Fractions	Understand and use whole number place values to represent and interpret numbers. Understand the concept of fractions, represent fractions and decimal fractions, and compare the sizes of whole numbers or fractions.
Measurement & Data and Geometry	Understand geometric and measurement principles and apply them to describe objects and solve problems. Represent and analyze data in simple graphs.
Problem Solving, Reasoning, and Argument	Apply grade-level appropriate mathematical concepts and procedures and use quantitative and logical reasoning to solve standard and nonstandard real-world and mathematical problems. Construct viable arguments and critique the reasoning of others.
Modeling, Patterns, and Structure	Use grade-level appropriate quantitative reasoning to interpret mathematical representations, represent real-world mathematical situations using mathematical models, and use mathematical models to solve real-world and mathematical problems. Look for and make use of structure and repeated reasoning.

EXHIBIT 7: EMPOWER MATHEMATICS CLAIMS, GRADES 6-8

Subscore	Mathematics Claims—Grades 6-8 For these subscores, students who are At Standard or Above Standard in grades 6-8 can:
Ratios & Proportional Relationships (Grades 6-7)	Understand, represent, and interpret ratios and proportional relationships between variables (e.g., the relationship between miles driven and gallons of gasoline used) to solve problems.
Functions (Grade 8)	Understand the concept of functions and represent linear functions in equations, tables, and graphs. Compare properties of two functions and interpret linear and nonlinear functions presented in a variety of forms.
The Number System and Expressions & Equations	Use expressions, equations, and inequalities to represent and solve mathematical and real-world problems. In grades 6 and 7, understand, represent, and compute with rational numbers (fractions and decimal fractions). In grade 8, understand and compare rational and irrational numbers.
Geometry	Understand and apply geometric properties related to area, surface area, volume, and angles to solve real-world and mathematical problems.
Statistics & Probability	Represent and analyze data in a variety of plots and graphs and summarize and describe distributions using multiple measures.
Problem Solving, Reasoning, and Argument	Apply grade-level appropriate mathematical concepts and procedures and quantitative and logical reasoning to solve standard and nonstandard real-world and mathematical problems. Construct viable arguments and critique the reasoning of others.
Modeling, Patterns, and Structure	Use grade-level appropriate quantitative reasoning to interpret mathematical representations, represent real-world mathematical situations using mathematical models, and use mathematical models to solve real-world and mathematical problems. Look for and make use of structure and repeated reasoning.

Secure Science Item Bank (Science Interim and Summative)

The Measured Progress Secure Science Item Bank will consist of items aligned to the Next Generation Science Standards (NGSS). Each item will be aligned to a Performance Expectation (PE) from the NGSS as well as at least two, if not all three, dimensions (Science and Engineering Practices, Disciplinary Core Ideas, and Crosscutting Concepts) of the PE.

Many of the items in our Secure Science Item Bank will be embedded in clusters; specifically, a set of items developed around a rich stimulus that presents a science phenomenon or engineering design problem to students. The clusters, in general, will be aligned to more than one PE. Each cluster will be constructed to require the group of items be presented in a particular order. This approach will support

developing clusters with a sense-making storyline for the phenomenon or problem to be addressed. Each cluster will have two groups of items written to it and then field tested.

Measured Progress will use the items from our secure science item bank to construct operational test forms for the NH DOE. For spring 2018, fall 2018, and winter 2019, we will construct test forms as part of an operational field test of the items. This means that the items will be exposed to students for the first time, but we will provide results following the administration. For spring 2019, fall 2019, and winter 2020, we will construct the first of the operational tests required by NH DOE.

We plan to construct science summative tests for the NH DOE utilizing a common-matrix design model for the operational items. This means that all students taking the test will encounter the same set of common operational items as well as additional operational matrix items that will be different from student to student, based on the test form the student receives. A student’s scale score and performance level will be determined using both the common and matrix operational items. Using a common-matrix approach allows us to assess a larger number of performance expectations across the testing population. This will allow us to provide schools, districts, and the NH DOE with additional information about how groups of students performed.

The following exhibit shows the proposed student experience for New Hampshire science summative assessments. The student experience includes common operational, matrix operational, and matrix field test items.

EXHIBIT 8: NH SCIENCE SUMMATIVE STUDENT EXPERIENCE

	Item Clusters		Stand-Alone	Total Number of Items	Sessions	Approx. Testing Time per Session	Total Operational Points
	Stimuli	SR/TE	SR/TE				
Grade 5	8	32	12	44	2	60 min.	60
Grade 8	8	32	12	44	2	60 min.	60
Grade 11	8	32	12	44	2	60 min.	60

For the science interim assessments, we will use a fixed-form approach to construct test forms. This approach will provide schools and districts with individual results across the domains and dimensions of the NGSS as well as predict performance on the summative assessment (starting fall 2019). Our proposed approach meets these obligations with a smaller pool of items. The following exhibit shows the proposed student experience for the New Hampshire science interim assessments. The student experience includes common operational and matrix field-test items.

EXHIBIT 9: NH SCIENCE INTERIM STUDENT EXPERIENCE

	Item Clusters		Stand-Alone	Total Number of Items	Sessions	Approx. Testing Time per Session	Total Operational Points
	Stimuli	SR/TE	SR/TE				
Grade 5	8	32	12	44	2	60 min.	60
Grade 8	8	32	12	44	2	60 min.	60
Grade 11	8	32	12	44	2	60 min.	60

After contract award Measured Progress will facilitate a process with the NH DOE to develop test blueprints for the science interim and summative assessments. The test blueprints will clarify how the operational points will be distributed across reporting categories. We will also discuss with NH DOE our ideas for implementing the operational field test and how to take advantage of the common-matrix design of the summative assessments to improve school, district, and state-level reporting.

In the next section we provide more detail regarding our plans to write items and clusters of items that incorporate the three-dimensional structure of the NGSS. Please refer to the sample science items we have included with our proposal in Appendix 3.

Writing Items Incorporating the Three-Dimensional Aspects of the State Science Standards

Consistent with the recommendations in the National Research Council’s *Report on Developing Assessments for the Next Generation Science Standards* and the CCSSO Science Assessment Item Collaborative’s *Assessment Framework*, Measured Progress is in the process of developing three-dimensionally aligned item clusters. These item clusters, along with stand-alone items we’re also writing to be aligned with the NGSS, will be used to construct tests to fulfill the measurement goals of clients that use the Measured Progress Secure Science Item Bank.

Each item cluster will start with a rich stimulus that presents a science phenomenon or engineering design problem to students. We will focus considerable effort on developing stimuli that will foster student engagement in sense-making in order to explain phenomena and solve real-world problems in the series of questions then presented. Identifying a relevant phenomenon or problem that is grade appropriate and can be used to develop the storyline of the clusters is a crucial step in cluster development.

Based on our experiences with scenario-based assessments, we have found that stimuli must be suitable to the Performance Expectations, present the information needed to answer the questions, and utilize the correct presentation methods to provide the information. If the correct balance is not struck between these competing tensions, then the items associated with the stimuli will be misaligned in what they ask students to do when compared to the Performance Expectations. Or, the stimuli may become over-contrived to try to meet the Performance Expectations.

Our experiences have also led us to select a phenomenon or problem that typically relates and connects a bundle of two Performance Expectations. This allows us to develop items around the phenomenon or problem that collectively assess two target standards. While some Performance Expectations appear to stand alone in terms of the topic, and while others are particularly robust and may have sufficient depth and breadth to support an item cluster on their own, our experience has shown that clusters aligned to PE

bundles do a better job of targeting science connections and big-picture aspects of the featured phenomena.

We have also found it important to choose elements for each stimulus that match the type of information/evidence implied by the Performance Expectations. This provides the best opportunity for students to respond to the items in ways that most validly align with and demonstrate proficiency of the targeted Performance Expectations. For example, the fifth grade PE 5-PS1-1 requires students to “develop a model to describe that matter is made of particles too small to be seen.” In order to demonstrate the ability to develop such a model, students would need to be provided with descriptions, measurements, and/or diagrams of a change, such as inflating a ball or dissolving sugar in water. Students would then need to use the information as evidence to infer what is physically happening and develop the model representing the phenomena.

As we transition from developing stimuli to writing item clusters, our goal will be to develop items using the most appropriate interaction to measure the targeted construct and minimize non-construct interference. For example, assessing whether a student is able to identify evidence for a claim may be accomplished by a multi-select item or hot text item. Assessing a student’s ability to represent a pattern in data may be accomplished by completing a table, or a graphing item. Since all items are to be machine scored, we anticipate that this approach will help writers craft item clusters that align to the breadth and depth of the Performance Expectations as well as all the PE dimensions, while still making the items machine scorable.

Our item writers and content specialists will develop stand-alone items using a similarly structured approach. We will focus on the main intent or outcome of the Performance Expectation and require a scenario or lead that provides context and purpose for the task presented in the item. The scenario or lead cannot be as lengthy as the stimulus for an item cluster. However, we believe that, in order to assess NGSS, all or almost all items should be focused on a problem or phenomena. These scenarios or leads provide the information/evidence necessary for students to demonstrate the desired performance in responding to the item.

We do not intend to assess the three-dimensional nature of NGSS by isolating assessment of the first dimension in one item part, the second dimension in a second item part, and the third dimension in a third item part. To avoid parsing out the dimensions in this way, our content specialists will evaluate dimension alignment using item specifications for each Performance Expectation. We will also holistically evaluate each item using the following questions:

- What skills and knowledge is the item eliciting from the student?
- What types of understanding is the student applying together to respond to the item?

This critical evaluation will allow us to identify the multiple dimensions to which each item is aligned. Again, we will develop every item with the goal of aligning the item to at least two dimensions. We will develop item clusters that collectively show alignment to all three dimensions. Multi-dimensional alignment is required when measuring the Performance Expectations of the NGSS.

Topic 1.1 Standards Revision

The NH academic standards for ELA, mathematics and science are entering the revision cycle. It is therefore imperative that the vendor acknowledge and include in proposals a plan for assessment revision aligned to updated standards in 2018-2019.

All test design items must be updated to align to academic standards in years subsequent to the 2017-2018 administration. Vendor's response must provide a full description of its proposed plan for realignment and blue print updates.

After NH DOE completes its revisions to the NH academic standards, Measured Progress will conduct an alignment review between the new standards and our college and career readiness standards. After we conduct this review, we will recommend to NH DOE how to modify the program, if needed, to accommodate the changes to the academic standards. We anticipate that our recommendations, particularly for the ELA and math components of the program, could take one of three forms:

- Move to an augmented model using eMPower test forms as the starting point and either custom-developed items or items from our item banks
- Move to a custom-constructed test form using secure items from our item banks
- Move to a custom-developed test using items developed for NH DOE

Should the NH DOE decide to pursue any of the recommended changes, we will use our change management process to revise scope, budget, and schedule to accommodate the needed transition.

Topic 1.2 Test Administration

The summative assessment should be designed to take approximately two hours of testing time, per content area, for the vast majority of students. The test will be loosely timed, and allow for the accommodation of additional testing time into the schedule.

Additionally, each summative assessment component should be structured to be divided into two sessions. Both test sessions should also be available to schools to administer in one day if they chose to do so.

All of the assessments that we have proposed for use in the New Hampshire Statewide Assessments are designed to take less than two hours and are divided into two testing sessions. We present our test designs for the various assessments in our response to Topic 1.

Topic 1.3 Student Registration

The vendor shall be responsible for managing the student/organization registration process. This process shall include the registration of students in private out of school district placements.

The vendor will be able to accommodate any student in home education or private school environments that wish to participate in the assessment process by identifying their registration separate from public school student registrations for school accountability purposes. (Per NH RSA 193-C:6: Home educated students will contact their local school districts if they wish to participate in the statewide assessment. Private schools will contact the department of education to participate in the statewide assessment.)

After the window for registration is complete, the NH DOE shall approve the registration counts. The vendor must propose a plan for allowing the NH DOE the opportunity to review and amend registration information.

The vendor'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 the NH DOE a sufficient window of time to review and amend the registration information.

The vendor'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.

Measured Progress, working with eMetric, recognizes the colossal challenge of managing student data and has implemented carefully considered student data management features based on extensive experience and collaboration with our clients. Our goal is to provide the flexibility required to allow testing to proceed without delay, while ensuring student information is up to date, accurate, and reliable. To this end, the administration interface supports both file upload and manual entry of student enrollment data. Uploaded student information can be viewed within the administration portal and edited manually or via a subsequent file upload. This capability ensures that any new students arriving after the initial enrollment file are processed easily and quickly into iTester. Given the flexibility of the system, we will work with the NH DOE to define an overall online enrollment process that meets the needs of the schools. We have allocated a 10-day enrollment period prior to each administration. This will be further discussed at the initial project kick off meeting.

For any special forms (Braille and Large Print) and paper-based test booklets, orders will be submitted to the Customer Care Center in a timely manner as negotiated with NH DOE allowing sufficient time to pack and ship material prior to the test administration.

Topic 1.4 Accessibility and Fairness

Accessibility is a core principle of the NH DOE. The NH DOE is committed to ensuring that all students are able to have equitable and fair access to the NH assessments, 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.

The vendor's response must include a draft list of appropriate assessment accommodations separately for students with disabilities and English language learners.

Accommodations listed must be supported by the most current research. The list shall describe the test accommodations and supports that allow access for students with disabilities and English learners to most fully participate in each assessment without interfering with the measurement of the constructs. Vendors shall also discuss accommodations which would threaten the validity of the assessment by interfering with the construct being measured.

Vendors are asked to review the accessibility features and accommodations policies for the current state NH assessments in English language arts, mathematics and science as well as best practices for ensuring accessibility with computer-based tests. The vendor's response must detail their plans for meeting accessibility requirements. The vendor'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.

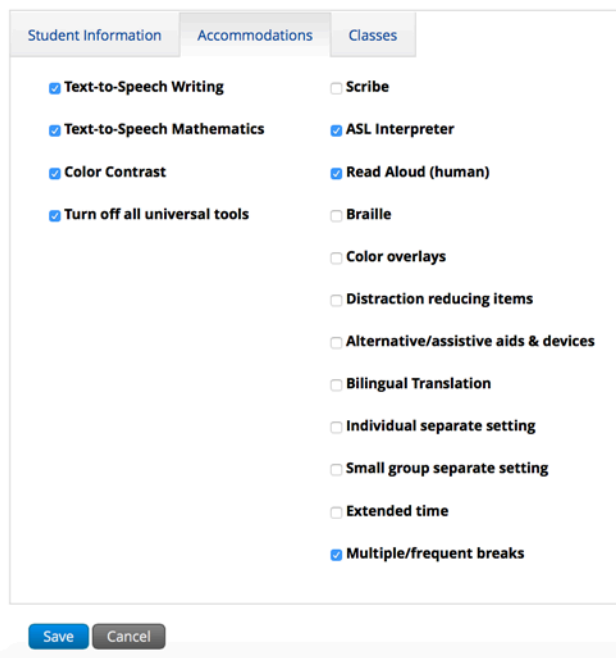
Vendors must include a description of how students with visual impairment will access on-line assessments or be provided with other accommodation, as appropriate.

Vendors must include a description of how students unable to access online assessments will participate in the assessments.

Measured Progress and eMetric are committed to providing a robust test administration and delivery platform that is highly accessible for all users. iTester was designed in accordance with industry standards in accessibility and is compliant with the design principles of the U.S. Rehabilitation Action Section 508. iTester is architected to comfortably support the Accessible Portable Item Protocol (APIP) version 2.0 standard. iTester services translate APIP items and student PNP preferences into HTML5 items tailored for a particular set of needs. The translation process employs HTML5 data (metadata technology to store all relevant APIP information in an HTML5 compliant manner). As APIP evolves, additional translations can easily be added to iTester services, and the delivery system can be updated to support new translations with no impact to district or school systems using this approach.

For students with visual impairments, online accommodations are available within iTester. In addition to general test taking tools, a comprehensive suite of accommodations are available to test-takers to ensure a fair, accessible test-taking experience for all students. iTester can utilize student accessibility data from the PNP to assign specified accommodations to students during the registration process. Additionally, accommodations can be added to a student’s profile through the administration portal. Accommodations assignments can be added via a file upload prior to the beginning of the administration window or individually added to a student’s profile manually at any time prior to or during testing. Allowing for manual edits to accommodation assignments avoids testing delays for students that may not have had the correct accommodations ordered. The administration interface allows assignment of both embedded accommodations (provided digitally through the iTester student interface) and non-embedded accommodations (provided at the local level), as illustrated in below in Exhibit 10. We will work with the state to incorporate the required non-embedded supports into the iTester administration interface.

EXHIBIT 10: STUDENT ACCOMMODATIONS INTERFACE



The screenshot shows a web interface with three tabs: "Student Information", "Accommodations", and "Classes". The "Accommodations" tab is active. It contains a list of checkboxes for various accommodations. The following table summarizes the visible options and their selection status:

Accommodation	Selected
Text-to-Speech Writing	Yes
Text-to-Speech Mathematics	Yes
Color Contrast	Yes
Turn off all universal tools	Yes
Scribe	No
ASL Interpreter	Yes
Read Aloud (human)	Yes
Braille	No
Color overlays	No
Distraction reducing items	No
Alternative/assistive aids & devices	No
Bilingual Translation	No
Individual separate setting	No
Small group separate setting	No
Extended time	No
Multiple/frequent breaks	Yes

At the bottom of the interface, there are "Save" and "Cancel" buttons.

Embedded accommodations can also be configured to be available as universal tools for all students for a given test or form being administered. Embedded accommodation options, like those available for visually impaired students, are described in more detail in the following exhibit.

EXHIBIT 11: ITESTER ACCOMMODATIONS OPTIONS

Accommodation	Description
Magnification	Students can magnify the entire screen up to 150 percent while preserving clarity, contrast and color.
Text-to-Speech	Students can play, pause, or stop audio. Items support default and on-demand load playback orders. eMetric will work with the state to identify a preferred voice pack.
Reverse Contrast	Students can invert all color values in the user interface.
Alternative Text and Background Colors	Student can change the onscreen background and/or font color based on need or preference. Students can select from a set of 12 predefined color combinations.
Answer Masking	Students can electronically “cover” answer options, as needed.
Line Reader Tool	Students have access to an onscreen tool to assist in reading by raising and lowering the tool for each line of text onscreen.

eMetric routinely works collaboratively with Measured Progress and clients to determine need for support of additional accommodations and engages in ongoing research and development efforts to continually build upon the suite of supported tools and accommodations.

Topic 2 Item Development

This section of the RFP addresses tasks related to the development, evaluation, and selection of the items that will be included in each Assessment Component (A, B, C, D). Each of the assessments may include a combination of items developed specifically for the assessment program and items procured from other sources.

While this RFP seeks an off-the-shelf solution, such a solution as well as a customized solution, may/will involve the creation of specific test items (defined below). This section dealing with Item Development applies to the development of items, whether used to tailor an off-the-shelf solution in response to this RFP or in a customized solution. Per NH RSA 193-C:3, III (d), “teachers shall be involved in designing and using the assessment system.”

Throughout this section of the RFP, the term item development will be used to refer to both items that are custom-developed for the NH assessments and items procured by the vendor from other sources. Whether custom-developed for the NH assessments or obtained from other sources, all items included on the assessments will be subject to the review processes described in the RFP.

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

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

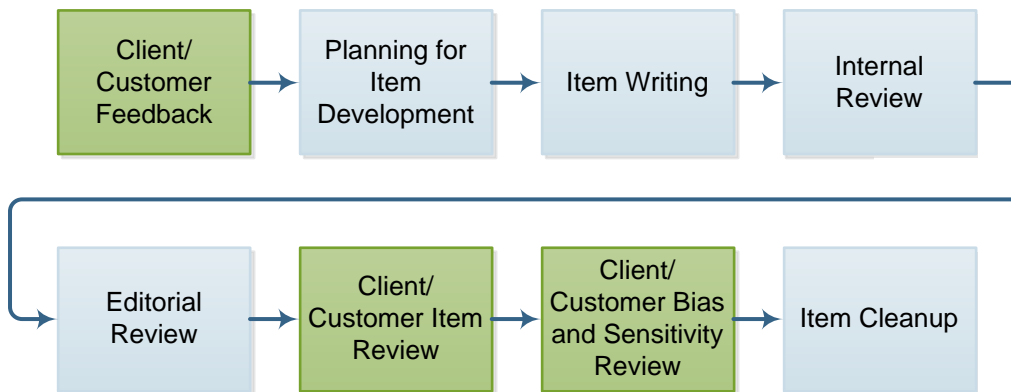
- The vendor's response must reflect familiarity with the academic standards as well as current best practices and recommendations regarding the assessment of student achievement in each content area bid on.
- The vendor's response must reflect familiarity with computer-based testing and the use of a 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 vendor's response must discuss the procedures that will be used to ensure that all assessment components are accessible to all students. The vendor'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 vendor's response should also address how technology will be used to enhance accessibility.
- The vendor'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 vendors believe that tasks not specified in this RFP are critical to the development of quality items and a testing program, they should identify and describe the significance of those tasks in their response.
- The writing component of the English language arts assessment must include constructed response item(s) as it relates to a reading passage to be included in the students overall score. The writing component must not simply ask students to reply to a writing prompt.

Measured Progress uses an effective and efficient item development process for all of our item development work. Our goal, whether constructing items for our products or custom-developing items for clients like the NH DOE, is high-quality items that reflect the depth, breadth, and complexity of the academic standards. We embed quality assurance throughout our process and our highly dedicated staff work diligently to produce high-quality work. We are proud that more than 90% of our items are accepted by external item review committees. We continue to maintain that standard even as we push to write innovative items that measure complex cognitive processes.

In our response to Topics 2.1 to 2.9, we will detail what takes place at each step of the item development process and the criteria we use to evaluate each item. In our response to Topic 2, we want to provide an overview of the item development process and then address some of the bullet points from page 43 of the RFP.

The following exhibit shows our item development process.

EXHIBIT 12: ITEM DEVELOPMENT PROCESS



In the remainder of our response to this topic, we address some of the bulleted requirements found on page 43 of the RFP. If not addressed specifically here, we believe the bulleted requirement was addressed in another part of our proposal response. The first of the bullets we would like to address has to do with computer-based testing.

Universal Design

Our content specialists and senior editors understand that a good test is “designed and developed from the beginning to allow participation of the widest range of possible students, and [must] result in valid inferences about performance for all students who participate in the assessment” (Thompson, Johnstone, & Thurlow, 2002²). One way to accomplish this goal is to develop assessment items and materials in accordance with universal design (UD) principles. Test developers apply these principles to create assessments that allow for the widest range of student participation while minimizing the need for accommodations. The assessment community adopted UD principles in the mid-2000s. Since that time, Measured Progress item development activities have been grounded in these principles. We train our item writers, content specialists, and senior editors in the principles of UD.

We apply UD principles to the development of both online and paper assessments. For each testing mode, we think through how to develop the test so that valid and reliable inferences can be made about student performance for the widest range of students. For example, test developers must consider how to move students through a test. The graphics and text cues used to move students through a test will be different based on the administration mode. We review the item-level cues (and the page cues for paper tests) and make sure that the cues are accurate for the testing mode.

Our senior content specialists focus on UD principles during item writer training. This training includes examples of items that do and do not incorporate UD principles. As item writers draft their items, our

²Thompson, S.J., Johnstone, C.J & Thurlow, M.L. (2002). *Universal Design applied to large scale assessments (Synthesis Report 44)*. Minneapolis: University of Minnesota, National Center on Educational Outcomes. Retrieved April 15, 2011, from the World Wide Web: <http://education.umn.edu/NCEO/OnlinePubs/Synthesis44.html>.

content specialists include comments related to UD principles when providing feedback. We ask item writers to write simply in order to maximize readability and comprehensibility for students.

We also train our graphic illustrators on UD principles. The visual supports developed for assessment items must avoid unnecessary content that may interfere with student interpretation of the visual representations.

Our content specialists, graphic illustrators, and senior editors apply UD principles to all of our content development work, including work with our reference accounts Maine, New Mexico, and Oklahoma. Applying UD principles provides for these very important benefits:

- Allow for the widest range of student participation, including students with disabilities and English language learners (ELLs)
- Ensure that the assessments themselves are not obstacles to improved learning
- Provide valid inferences about the performance of all students
- Provide students with a comparable opportunity to demonstrate their understanding of the content tested

Security of Test Items

Measured Progress ensures the security of its test items, in part, by using a Web-based item authoring system. Our item authoring system is configured so that it is only accessible to users based on pre-assigned logins and user-created passwords. Access rights are embedded in the system so that authorized users have access only to those items, data, and projects for which they have been granted permission. Measured Progress provides users access on an individual basis, after which they are assigned to user groups (generally based on contract) in the administration dashboard. As we add new users, we provide them with logins.

We also maintain confidentiality of test content through use of non-disclosure agreements. Measured Progress staff and consultants/contractors are required to sign non-disclosure agreements. Our staff renews these agreements each year. Consultants/contractors work under agreements that include non-disclosure language and are also required to adhere to any client requirements.

Direct Writing

The assessment of writing will consist of two components. First, we will provide a writing and language assessment as part of our eMPower Assessments. This assessment evaluates whether students can identify whether a sentence or paragraph needs improvements in content, organization, language usage, and grammar. In addition, we are proposing a direct writing assessment. The direct writing assessment will consist of a writing prompt that asks students to respond to a pair of passages about a topic.

Topic 2.1 Item Development Team

The successful vendor will appoint an Item Development Team, as necessary, responsible for the development of items for the each Assessment Component bid on. The vendor'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 vendor'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 vendor 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 vendor's response. The vendor's response must include a rationale to support the proposed composition of the item development team.

The vendor's response must include, as necessary, a description of the procedures, including the use of technology that will be used to facilitate interactions among the vendor's Item Development Team and the NH Instructional Support Team.

The vendor's response must describe the type, number, and duration of in-person and virtual meetings between the item development team and the NH Instructional Support 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.

Measured Progress is proposing an Item Development Team that will be responsible for developing the products being proposed for the New Hampshire state assessments. We list our content development professionals in the staffing tables found in Topic 29 of our proposal, including their titles; specific planned roles for the New Hampshire testing work, and their planned/budgeted time commitments for each of the four years of the contract.

We note that while we are proposing full solutions for New Hampshire's ELA, Mathematics and Science assessments (Summative and Interim), our solution for ELA and Mathematics is the eMPower Assessments product described previously in our proposal. The ELA and Mathematics content within eMPower is already developed and in use—therefore no ELA and Mathematics content specialist were proposed or budgeted.

Our proposed solutions for science and direct writing require the development of items. The science items are being developed for our Secure Science Item Bank, and the direct writing prompts are being developed specifically for the NH Assessments. Overseeing these efforts will be **Ms. Karen Paavola** Director of our Content Design and Development group.

For new Science development, our team will consist of NGSS Solutions Leader **Ms. Karen Whisler**, STEM Group Manager **Mr. David Harrison**, Science Development Leader and Grade 5 Lead **Dr. Karen Travers-Lynch**, Science Grade 11 Lead **Dr. Nandita Dangoria**, and Science Grade 8 Lead **Mr. Paul Ritchie**. As NH DOE requested, we note that Dr. Travers-Lynch will serve the two roles of Science Development Leader and Science Grade 5 Lead.

English Language Arts Content Lead **Mr. John Rogers** will lead our effort to develop writing prompts for the New Hampshire State Assessments. Mr. Rogers is a veteran ELA content specialist capable of leading the development of prompts for all grade levels.

Measured Progress will communicate with the NH Instructional Support Team using a number of tools. For the science and direct writing development efforts, we may provide access to our Web-based item authoring system. Our item authoring system is configured so that it is only accessible to users based on pre-assigned logins and user-created passwords. Access rights are embedded in the system so that authorized users have access only to those items, data, and projects for which they have been granted

permission. Measured Progress provides users access on an individual basis, after which they are assigned to user groups (generally based on contract) in the administration dashboard.

Test content that is provided to the NH Instructional Support Team outside of our item authoring system will be transmitted using a secure file transfer (SFTP) site. As with the item authoring system, logins and passwords provide users access only to the content to which they are granted access.

The preliminary New Hampshire Statewide Assessments Project Schedule that we have provided in Appendix 2 of our proposal shows the type, number, and duration of all in-person and virtual meetings that will be needed between our item development team and the New Hampshire Instructional Support Team. We have budgeted to include all costs for all face-to-face (in-person) meetings needed—including travel and lodging.

Topic 2.2 Item Development and Review

The vendor shall propose and describe the process that will be used to interact with the NH Instructional Support Teams throughout the item development and review process. The vendor's response should reflect an understanding of the responsibilities of the NH DOE staff and NH educators 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 vendor will describe the type and number of in-person and virtual meetings that will be held during an annual development cycle.

The vendor's response should include a proposal for an initial in-person meeting between the NH Instructional Support Team for each assessment area (ELA, mathematics, science) and the vendor's Item Development Team at the beginning of the project.

In this section, we describe for NH DOE the early steps of the item development process, before items are presented to clients/customers at external review meetings. Interactions with the NH Instructional Support Team will start after Measured Progress completes its internal review process. Our content specialists manage the procurement and internal review of items developed for our products.

Initial Content Team Meeting

Measured Progress will facilitate an in-person meeting between the NH Instructional Support Team and the Measured Progress content team. The meeting will be an opportunity for the NH Instructional Support Team to meet with the content specialists working on our products. Our team will share how we are creating items and tests that align to the standards for each content area and are consistent with the goals of the standards. We anticipate that the instructional support team would share information about how the standards are being implemented in New Hampshire. The meeting will provide an excellent opportunity to share information at the beginning of the project.

Item Writing

Item writing is an art and a science that requires in-depth content knowledge, research, creativity, and precision. Writing high-quality items takes considerable training with frequent opportunities to receive feedback over a long period.

All Measured Progress item writers undergo rigorous training with content area managers and senior content specialists. Item writing trainings and training materials place considerable emphasis on basic item writing techniques, alignment to standards, grammar, writing conventions, and rigor. We also customize each of our trainings to emphasize the specific requirements of the program for which items are being authored.

Once writers receive training and start authoring items, our content specialists remain available to answer questions and provide guidance. Writers receive written comments on each submitted item set. In most instances, the writer has opportunities to revise items before final acceptance.

Internal Review

Our content specialists will conduct multiple reviews of each item during the internal review process. At each step, our specialists refine items to comply with a project’s guidelines and requirements. We use checklists throughout internal review to support the specialist’s thorough review of each item. The checklist promotes consistency and quality throughout development. The checklist:

- Provides the expectations for item writers to assess their items against before submission
- Serves as a reminder to content specialists and content development editors about the specific criteria they should consider during the development of high-quality test items
- Helps content area managers provide focused and detailed feedback to specialists regarding the quality of items
- Facilitates the item review process for clients and content review committees

We organized our item review checklist around the following criteria:

EXHIBIT 13: ITEM REVIEW CRITERIA

Criteria	Description
Alignment	The performance required to answer the item matches that of the standard or performance expectation
Content	The concepts, principles, and skills presented and/or addressed in the item are accurate and appropriate
Context	The specific situation, example, or data by which the item assesses the standard is authentic—using real data and references—and is grade-level appropriate
Complexity	The cognitive demand of the item is appropriately matched to the standard and meets any requested targets for that item or set
Uniqueness	The item is part of a set that includes unique items
Graphics	The images in the item (stem, options, and/or scoring training notes) are appropriate and clear
Item Writing Mechanics	The item follows best item-writing practices
Metadata and Formatting	The appropriate metadata is included with the item, and the item is formatted properly
Language Complexity	Vocabulary is likely to be familiar to all students. Language structures are simple and straightforward.

After content review our content development senior editors will review the items for such considerations as grammar, syntax, and appropriate vocabulary and will assess them for technical quality with respect to accessible language, graphic fidelity, option balance, and adherence to the project style guide. The senior editors will also re-evaluate each item for bias and sensitivity issues, factual accuracy, and adherence to Universal Design principles.

Measured Progress's carefully designed approach to its internal item reviews ensures that high-quality items are produced and submitted for the external item reviews. Strict adherence to contract requirements enforces fidelity of items to the standards, and having multiple individuals review the items provides a high level of vetting and scrutiny to yield high quality.

Topic 2.3 Item Review Committees

The NH DOE believes that the use of Item Review Committees consisting of educators from the state 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 academic 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 vendor will support grade-level item review committees (3-8 ELA; 3-8 mathematics; 5, 8, and 11 science) for each of the assessments proposed. The committees will consist primarily of grade-appropriate teachers recruited and selected by the NH DOE. Additional committee members may include local curriculum coordinators, content specialists, and ESOL or special education specialists. The NH DOE will determine the composition of committees.

Meetings of the Item Review Committees will be jointly facilitated by the NH Instructional Support Team and the vendor's Item Development Team. The committee will meet annually in NH during the summer months.

The NH DOE is proposing an annual summer meeting due to the availability of educators and the timing of the meeting within the development cycle. If the vendor thinks that additional meetings of the Item Review Committee would be necessary and/or that the timing of the meetings should be changed, the vendor's response should include a proposal for an alternative meeting schedule. In particular, the vendor should indicate if they think that additional meetings will be needed during the initial year of the contract in preparation for the spring 2018 assessments. The vendor'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 vendor 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 vendor should plan on supporting the item review committee meeting with the following specifications:

- Each grade level committee will consist of 3-6 members.
- Committee members will be paid a stipend of \$150 per day for participation in the summer meetings. (If the vendor proposes meetings during the school year, the stipend will be replaced by

a corresponding payment to the committee members' school district for substitute reimbursement).

- **Representatives from NH will also attend the meeting, including the NH Instructional Support Teams (up to a maximum of three (3) people total).**
- **The vendor will support and arrange for lodging for committee members and NH representatives. The vendor's response should presume that all participants will require 3 nights lodging for the meeting (beginning one night prior to the meeting).**
- **The vendor will also be responsible for travel expenses (e.g., mileage, airfare) for all participants to attend any out of state meetings.**
- **The vendor 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 NH. The meeting location may vary around the state or may be held in a central location to minimize travel requirements and expenses for committee members. The vendor will work with the NH DOE to develop a timeline to ensure that the NH Instructional Support Teams have sufficient time to review and provide feedback on all materials and items prepared for the Item Review Committee meetings.

The vendor will schedule an additional meeting day following the conclusion of the Item Review Committee meeting for a meeting of the vendor's Item Development Team and the appropriate NH Instructional Support Team to reconcile item feedback.

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

We share the NH DOE's belief that item review committees are "a critical part of the item development process" (RFP, pg. 45). That's why, for all of our products, we convene item review committees with representation from our customers. Educators and community stakeholders provide important insight into how schools are implementing the standards and the local issues affecting their communities. By presenting potential items to these stakeholders, we increase visibility into the assessment program. By collecting their feedback, we collect valuable evidence for the validity of the assessment program. Measured Progress works diligently with its eMPower and Secure Science Item Bank customers to recruit participants for the item review committee meetings.

For the eMPower Assessments, we have established a schedule that, in general, puts the item review committees in the late winter or early spring (February – April). For the Secure Science Item Bank, we anticipate holding our first round of item review meetings in December 2017 with a second round in August 2018. We also conduct these meetings both face-to-face and online. When conducting face-to-face meetings, we either invite customer representatives to our Dover, NH headquarters or to a location in the central portion of the country. When conducting online meetings, we use web conferencing and our item authoring system as tools to support effective facilitation of the meeting.

Prior to each round of item review meetings, our content specialists develop the agenda, materials, and security procedures that will be used at the meeting. Our program management staff and customer care center work with customers to identify and recruit meeting participants. Should NH DOE become an eMPower and Secure Science Item Bank customer, we will work with you to include New Hampshire representation in the item review committee meetings.

During the first day of each item review meeting, our content specialists will train the committees on the expectations of the meeting, the process to be followed, and the criteria to be used to judge each item. The

following questions, or similar questions approved by the states, will be provided to the committees to guide their work during the meeting.

- Does the item align to the applicable standard?
- Is the item accurate?
- Is the item appropriate for students at this age and grade level?
- Is the item type being used to assess the content appropriate?
- Is the item instructionally relevant?
- Is the content interesting and relevant to students at the item’s assigned grade?
- For multiple-choice items, is there one and only one correct answer? Do the wrong answer choices focus on reasonable errors or misconceptions?
- Does the item and any included stimulus material follow universal design principles so that the item and stimulus are accessible to the maximum number of students?
- Is the language and phrasing of the item simple, clear, consistent, and understandable for both the administrator and the student?
- Are the graphics, charts, tables, graphs, and diagrams provided in the item clear and understandable?

After training, the committees will begin reviewing items. For each item, the committee will be asked to arrive at consensus as to whether the item should be accepted, rejected, or accepted with edits. Our content specialists will record the decisions of the committee. After the meeting, our content specialists will resolve the committee’s recommendations and finalize the disposition of each item.

Topic 2.4 Bias/Sensitivity Review Committee

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

There will be a single committee responsible for reviewing materials across grade levels for each content area; ELA, mathematics, science (i.e., there will not be separate bias/sensitivity committee for each grade assessed). Each committee (ELA, mathematics, science) will contain five (5) members.

The meetings will be facilitated by the vendor in coordination with a representative from the NH DOE. The committee will meet in NH annually during the summer. The vendor may propose additional meetings, if necessary during the initial year of the project.

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

The committee will consist of five (5) 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 NH DOE (1 person).
- The vendor will support and arrange for lodging for committee members and the state's representative attending the meeting.
- The vendor 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 Differential Item Functioning (DIF) analysis. If feasible, the Bias/Sensitivity Review Committee meetings may be scheduled concurrently with the Item Review Committee. The vendor'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 vendor will produce a written report documenting the committee meeting and recommendations within two weeks of each meeting.

The bias and sensitivity review process will involve educators and community members that represent the demographics of our clients' students. During this process, we will ask the bias and sensitivity review committees to evaluate the appropriateness of the items for use in our products. Each committee will be facilitated by a content specialist with specific training regarding the facilitation of a bias and sensitivity review and that has not been involved in other aspects of developing the product.

For the eMPower Assessments, we have an established schedule that, in general, puts the bias/sensitivity review meetings in the late winter or early spring (February–April). For the Secure Science Item Bank, we anticipate holding our first round of item review meetings in December 2017 with a second round in August 2018. We also conduct these meetings both face-to-face and online. When conducting face-to-face meetings, we either invite customer representatives to our Dover, NH headquarters or to a location in the central portion of the country. When conducting online meetings, we use web conferencing and our item authoring system as tools to support effective facilitation of the meeting.

Prior to each round of bias/sensitivity review meetings, our content specialists develop the agenda, materials, and security procedures that will be used at the meeting. Our program management staff and customer care center work with customers to identify and recruit meeting participants. Should NH DOE become an eMPower and Secure Science Item Bank customer, we will work with you to include New Hampshire representation on the bias/sensitivity review committees.

During the first morning of the meeting, we will train committees on what to look for during the review. The initial training will include reviews of exemplar items in order to increase understanding of expectations. Our bias and sensitivity meeting facilitators will ask reviewers to consider the following during the review:

- Sensitivity to different cultures, religions, ethnic and socio-economic groups, and disabilities
- Balance of gender roles
- Use of positive language, situations, and images
- Content that does not elicit such strong emotions that those emotions may prevent a group of students from demonstrating their skills

After training, the committees will begin reviewing items. For each item, the committee will be asked to arrive at consensus as to whether the item should be rejected or accepted. In general, we don't ask bias and sensitivity review committees to suggest edits to items. After the meeting, our content specialists will resolve the committee's recommendations and finalize the disposition of each item.

Topic 2.5 Content Review

The vendor 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 vendor's response must describe their methods and procedures for meeting this requirement within the item development process.

The vendor shall work in collaboration with the NH DOE to ensure all assessments adhere to current and future standards for ELA, mathematics and science. The State has begun a process for review and revision of the ELA, mathematics and science and expects to field test in the 2018-2019 school year.

Measured Progress works diligently throughout the item development process to ensure that items being prepared for field testing are accurate, aligned to the standard, grade-level appropriate, and free from bias and sensitivity issues. During the construction of test forms, which is described in detail in our response to Section D.1.1, we again evaluate the accuracy of the test content. Then, as part of the process of publishing test forms (both online and on paper), we engage staff to take the tests and identify accuracy and other content issues. If any issues are found, we correct the item before the tests are administered.

As stated in our response to Topic 1.1, Measured Progress is prepared to support NH DOE in evaluating the alignment between our current content standards and revised content standards that will be published by NH DOE. After reviewing the alignment between the two sets of standards, the NH DOE will receive from us recommendations about how to proceed. If the NH DOE accepts our recommendations, we will work to revise scope, budget, and schedule in order to implement the approved recommendations.

Topic 2.6 Item Types and Number of Items

As described previously, all items on the ELA, mathematics and science assessments must be machine/AI-scorable. The requirement for machine/AI-scorable items, however, must not limit the use of item types to traditional multiple-choice or selected-response items. The vendor's response must describe the variety of item types that could be included on the assessment components bid on, including item types that require students to generate or produce a response as well as select a response. The vendor's response must include a description of the vendor's experience with each of the item types proposed and provide access to sample items to allow the NH DOE to review proposed item formats.

- **Single Correct Response Items:**

Selected-Response – These are items in which students are presented with several answer choices, one of which is correct. Students are asked to select the correct answer. With an online assessment, this could include items such as drag and drop and hot spot items. Selected-response items should be designed to assess the highest level of content knowledge and cognitive complexity that can be appropriately measured through this type of item appropriate to the evidence outcome being assessed.

“Griddable” Response – Although “griddable” response items are too cumbersome or costly for paper/pencil administration, online administration provides for single number or single word

answers making use of the item type more feasible. These items should be easy for the computer to score without requiring extensive engine training.

- **Short Constructed Response** – These are items in which students write in a response to a question or a prompt. Student responses consist of 1) one to five sentences, 2) written work in solving a mathematics problem, 3) drawing, or 4) another response that can typically be provided in five minutes or less.
- **Extended Constructed Response** - These are items in which students write in a response to a question or a prompt. Student responses consist of one to several paragraphs. Student responses can be typically be provided in 20 minutes or less in ELA, mathematics, and science.
- **Performance Items** – These items are performance-based. They require students to engage in higher order thinking and to provide a response that is more complex than a simple correct or incorrect answer. Student responses may consist of written or illustrated integrated answers. Response time will vary across grades and content areas from 20-60 minutes.
- **Innovative, Interactive Technology-Enhanced Items** – These are sophisticated, simulation-based items that require students to respond with a virtual performance. The items utilize advanced simulation engines featuring online tools and content not previously assessed through selected-response or constructed-response item formats. Students’ responses are expected to be computer-scored.

As computer-based testing has grown and testing platforms matured, the diversity of item types has also been increasing. Now, test developers have a rich palette of item types to choose from, including selected-response, technology-enabled, and constructed-response items as well as performance tasks. Measured Progress has a rich history of working with clients to effectively use a wide variety of item types. For example:

- We developed short-answer and constructed-response items as well as writing prompts and performance tasks for the New England Common Assessment Program.
- We constructed item specifications, including a large number of sample items, for the Smarter Balanced Assessment Consortium (SBAC). For this project we focused on selected-response and technology-enabled item types that could be machine scored as part of a computer-adaptive assessment.
- We wrote test items for the Partnership for the Assessment of Readiness for College and Careers (PARCC), including machine-scored technology-enabled items.

Whether writing multiple-choice items for paper-based assessments, performance tasks where students submit their work online, or technology-enabled items that are administered on computer and machine scored, we have always started with the same fundamental question: *Does the selected item type effectively measure the construct?* We evaluate choices regarding which item type to use from the lens of effectiveness, seeking to select an item type based on its ability to effectively measure the construct. In some cases, the construct may be effectively measured with a selected-response item. In other cases, a constructed-response item or performance task may be called for. Our goal is to provide students with the best opportunity to show what they know and can do by selecting the item type that will best accomplish that goal for a particular construct.

Measured Progress is also sensitive to mode effects between paper and online testing. In 2016, mode effects became a national issue when Education Week and other outlets published articles describing the appearance of mode effects in the PARCC assessments. In part as a result of these findings, Measured Progress has begun looking more closely into mode effects. Our early findings support what PARCC has found; mode effects are persistent, but inconsistent in how they appear within a testing program.

Measured Progress has selected eMetric’s iTester platform to deliver the assessments required by NH DOE. This platform supports a number of item interactions, called widgets. Measured Progress and eMetric have an established collaboration and are able to deliver items using all of the available widgets. The following exhibit aligns these widgets to QTI interactions.

EXHIBIT 14: INTERACTIONS AVAILABLE IN ITESTER

QTI Interaction	Associated iTester Widgets
1. Choice Interaction Template	Multiple choice widget
	Textbox widget
	Stimulus widget (optional)
2. Extended Text Interaction Template	Rich text response widget
	Textbox widget
	Stimulus widget (optional)
3. Hot-spot Interaction Template	Hotspot widget or
	Sketchpad widget
4. Match Interaction Template	Connection widget
5. Text Entry Interaction Template	Text response widget
	Fill in the blank widget
6. Associate Interaction Template	Connection widget
7. Drawing Interaction Template	Sketchpad widget
8. End Attempt Interaction Template	Multiple choice widget
9. Gap Match Interaction Template	Draggable widget
	Goal box widget
	Tile box widget (optional)
10. Graphic Associate Interaction Template	Sketchpad widget
11. Graphic Gap Match Interaction Template	Media box widget
	Draggable widget
	Goal box widget
12. Graphic Order Interaction Template	Media box widget
	Draggable widget
	Goal box widget
13. Hot-text Interaction Template	Selectable text widget
14. Inline Choice Interaction Template	Select from drop down widget
15. Media Interaction Template	Media box widget
16. Order Interaction Template	Rearrange widget

QTI Interaction	Associated iTester Widgets
17. Select Point Interaction Template	Select point widget
18. Slider Interaction Template	Slider widget
19. Position Object Interaction Template	Media box widget
	Draggable widget
	Goal box widget

We have provided NH DOE with sample items to support our proposal and show you our strength in writing high-quality items across multiple item types. Please see Appendix 3 for our sample items.

Topic 2.7 Number of Items

The vendor’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 administration and subsequent operational test administrations. The vendor’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 Assessment Component bid on. The vendor’s response should reflect an understanding of the NH DOE’s intended use of the results from each Assessment Components, the type of scores that will be reported, the plan to release items, as well as an understanding of academic standards. The vendor’s response should also reflect an awareness of the testing time and cost constraints discussed throughout this RFP.

eMPower Assessments by Measured Progress are pre-built fixed form assessments. Measured Progress embeds a sufficient number of items (around 10 matrix forms for each assessment) each year to facilitate rotation of 25% - 35% of the operational items. The following exhibit shows the student testing experience for the eMPower Assessments.

EXHIBIT 15: EMPOWER ITEM TYPES, NUMBERS OF ITEMS, AND TESTING TIMES

Content Area	MC/MS	EBSR	Number of Items	Sessions	Time per Session	Total Operational Points
Reading	24	4	28	2	40 minutes	25
Writing & Language	30	5	35	2	25 minutes	26
Mathematics	37-42*		37-42*	2	35 minutes	32-37*
MC = Multiple-choice MS = Multi-select EBSR = Evidence-based selected-response						*varies by grade level

For the direct writing assessment, Measured Progress intends to develop 8 prompts per grade for operational field testing in spring 2018. This will provide a sufficient number of prompts for NH DOE to select a single prompt at each grade starting in spring 2019 through the term of the contract.

For the Measured Progress Secure Science Item Bank, we are preparing to field test around 600 items during spring 2018. Then, in subsequent years, we plan to field test around 150 items. This level of item

development is sufficient to rotate around 25% of the operational items. The following exhibit shows the student testing experience for the science interim and summative assessments.

EXHIBIT 16: NH SCIENCE INTERIM AND SUMMATIVE STUDENT EXPERIENCE

	Item Clusters		Stand-Alone	Total Number of Items	Sessions	Approx. Testing Time per Session	Total Operational Points
	Stimuli	SR/TE	SR/TE				
Grade 5	8	32	12	44	2	60 min.	60
Grade 8	8	32	12	44	2	60 min.	60
Grade 11	8	32	12	44	2	60 min.	60

Topic 2.8 Item Release

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

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

Release of items will begin with the first operational administration of the summative assessment. All item types should be represented in the release of items. The balance of item types should be proportional to their use on 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 assessment. 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.

For the summative products we are providing for the New Hampshire Statewide Assessments, Measured Progress will provide practice tests. The practice tests will be provided online through the iTester platform prior to the first operational administration of each assessment: spring 2018 for the reading, writing and language, and mathematics assessments and spring 2019 for the science assessments.

Topic 2.9 Rotation of Common Items

The vendor 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 assessment 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.

Measured Progress rotates operational items year-to-year to limit item exposure and maintain the security of items and tests. As we rotate items, we replace them with operational-ready items that will maintain content balance and create an operational test form that is similar in test characteristics to the first operationally administered form. We use the following guidelines in determining our rotation plans for operational items:

- Rotate at least 25% of the common operational items each year
- Rotate at least 20% of the matrix operational items each year
- Minimize re-use of core operational items as matrix operational items in the following year
- Remove common operational items before they are administered in three consecutive years
- Remove matrix operational items before they are administered in four consecutive years

Topic 2.9.1 Item Bank

The vendor will develop and maintain an item bank of all items developed for and included on the assessments. 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 NH Instructional Support Teams and Management Teams should have appropriate access to generate reports and/or view items and item information, as needed. The vendor'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 vendor's response will describe steps that will be taken to ensure the security of the items.

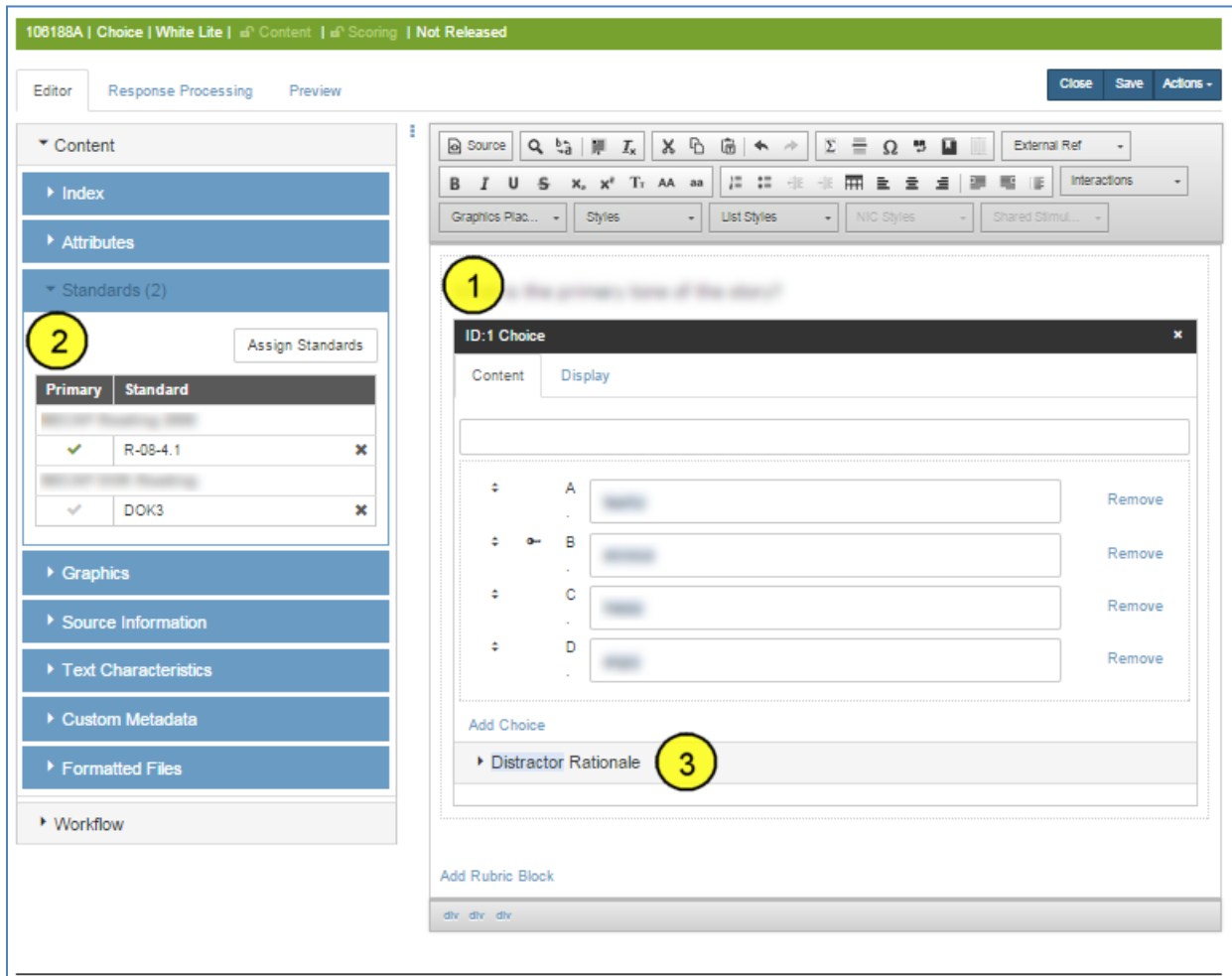
The vendor's response will describe how items and item information developed for the NH assessments through contracts awarded by the NH DOE will be accessible by the NH DOE at the conclusion or termination of those contracts.

Our item authoring system provides both internal users and external clients a flexible, accessible, and powerful way to create, manage, and use items, tasks, and metadata. This secure, Web-based application contains all pertinent information for each item, task, or stimulus and retains versions of all changes made at each process step.

The system is suitable for authoring a range of item types, including selected-response items, constructed-response items, and performance tasks. The system facilitates the development of additional content required to administer the item, including scripts, accessibility information, scoring rubrics, exemplar student responses, and associated stimuli. Our system allows authorized users to upload, edit, and manage assessment frameworks and curriculum standards. In addition, it provides the ability to configure project-specific settings for item banks and assessments such as grades, content areas, item types, rubric templates, and test designs.

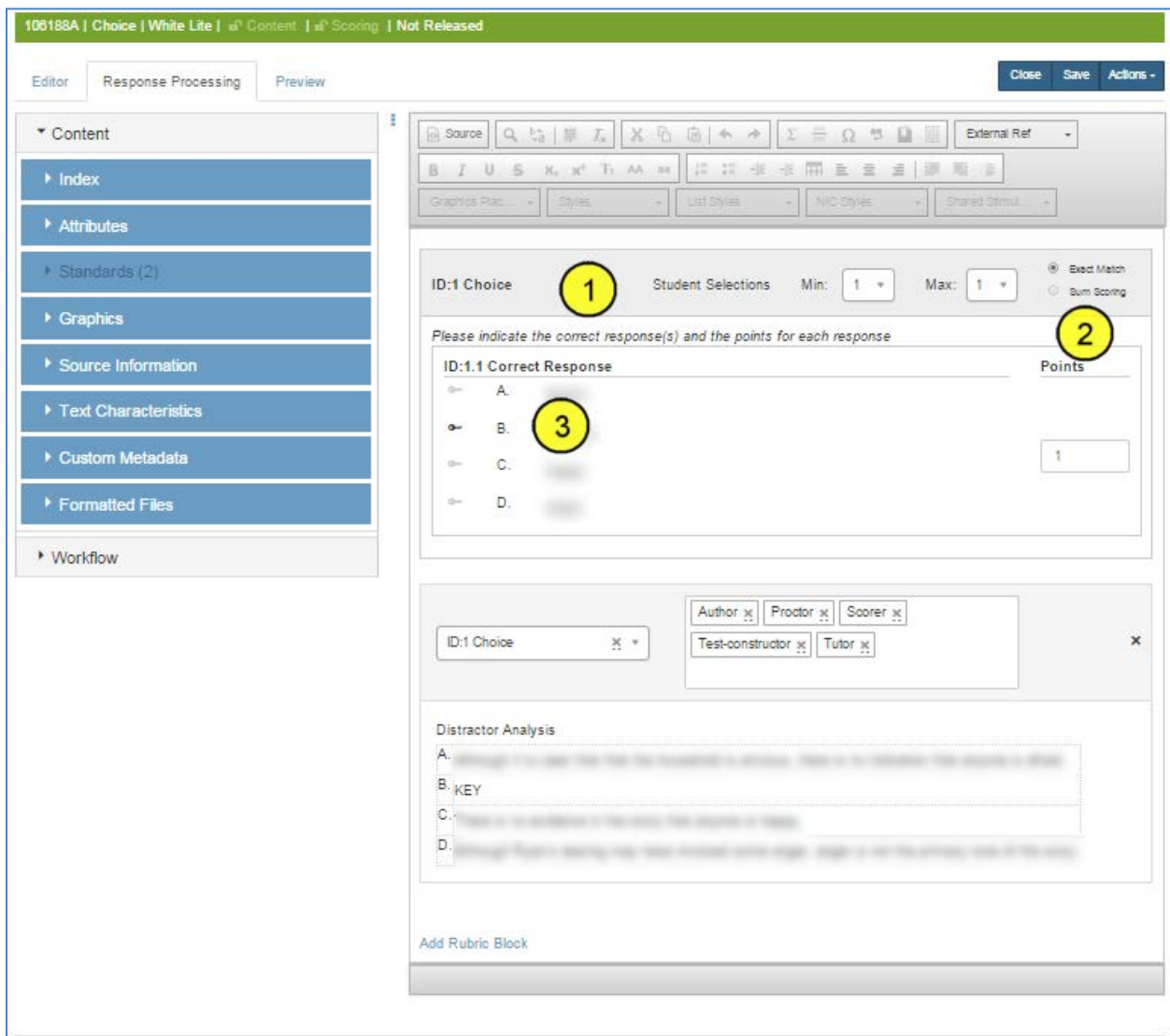
In the following exhibits, we provide annotated screenshots to orient NH DOE to our item authoring system. Item content is purposely muted in these screenshots.

EXHIBIT 17: ITEM AUTHORIZING SCREEN



1. The item-authoring panel provides for a place to structure the various elements (stimulus, stem, answer options, etc.) of an item. Menu buttons allow writers easy access to formatting and other controls.
2. Blinds to the left of the authoring panel contain most metadata regarding an item, including the item’s alignment to standards, and the item’s workflow status. There are also blinds to add content, such as graphics, to the item.
3. Important components of an item that are not seen by a student, such as distractor rationales and scoring rubrics, are included with the item.

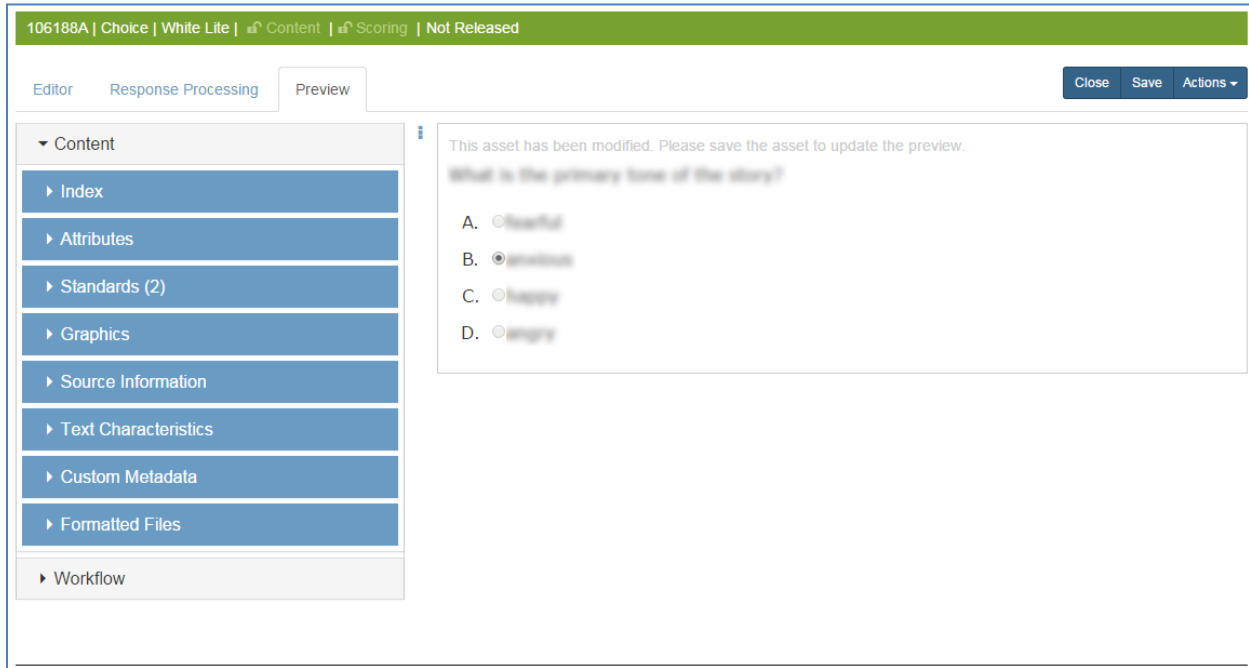
EXHIBIT 18: RESPONSE PROCESSING SCREEN



The response processing screen allows item writers to identify how the item is to be scored. This screen allows for complex processing of machine-scored items. This example shows the scoring of a one-point multiple-choice item.

1. The item author sets the minimum and maximum number of points for the item.
2. The item author sets the conditions (exact match or sum scoring) under which points are awarded.
3. The item author identifies the correct answer.

EXHIBIT 19: ITEM PREVIEW SCREEN

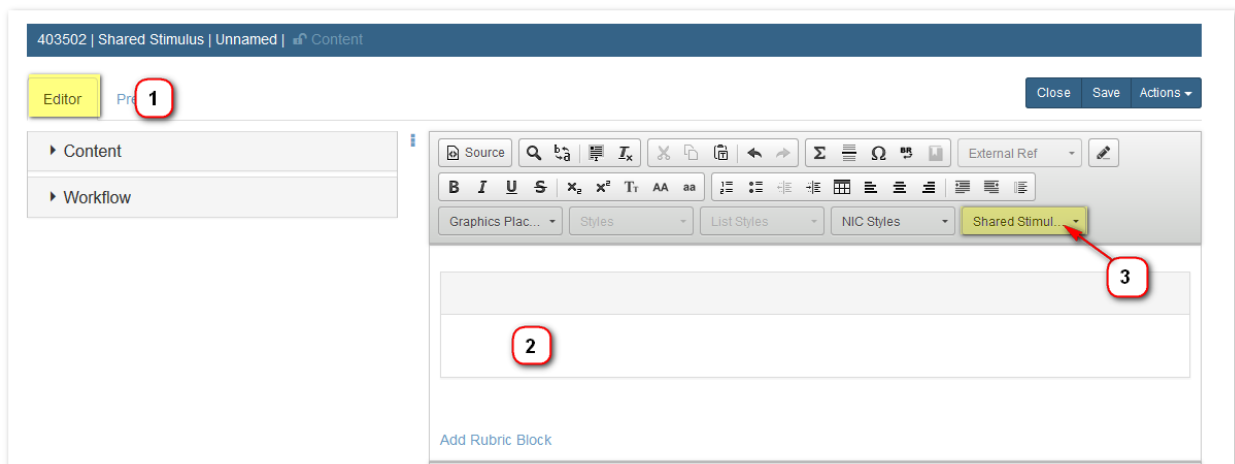


The item preview screen provides for a distraction-free view of the item while also providing easy access to the item’s metadata.

Stimuli in the Measured Progress Item Authoring System

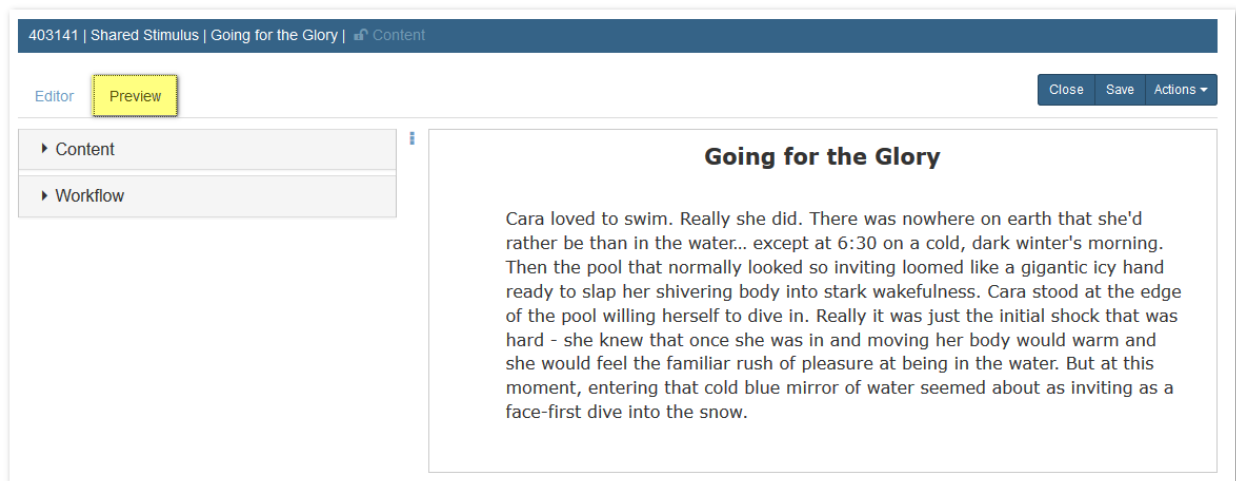
Screens for passages and stimuli are separate from the screens associated with item writing and review. There are two primary screens for stimuli and passages: an **Editor** screen and a **Preview Screen**. We referred to stimuli and passages as shared stimuli within the system because the stimulus is associated with one or more items. The following screen captures show the shared stimuli screens.

EXHIBIT 20: SHARED STIMULUS EDITOR SCREEN



1. The **Editor** Tab is where all Shared Stimulus asset content is entered, including asset text and any stimuli (graphics, tables, equations, etc.).
2. Unlike items, there are no **Interactions** in a Shared Stimulus asset. Click into the workspace to enter the appropriate text, graphics, or other stimuli.
3. Use the **Shared Stimulus Styles drop-down** to apply appropriate styles to the text of your asset.

EXHIBIT 21: SHARED STIMULUS PREVIEW SCREEN

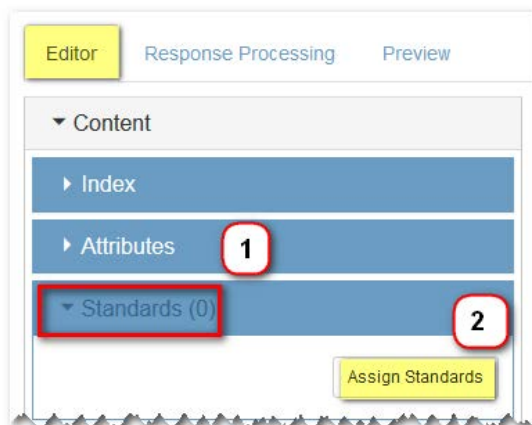


Metadata in the Measured Progress Item Authoring System

Our proprietary item authoring system can store the standard, topic, indicator, objective code, and assessment limit of each item. As an example, we briefly explain how the standard is assigned to the item.

The metadata panels for each item are located on the left side of the item authoring screen.

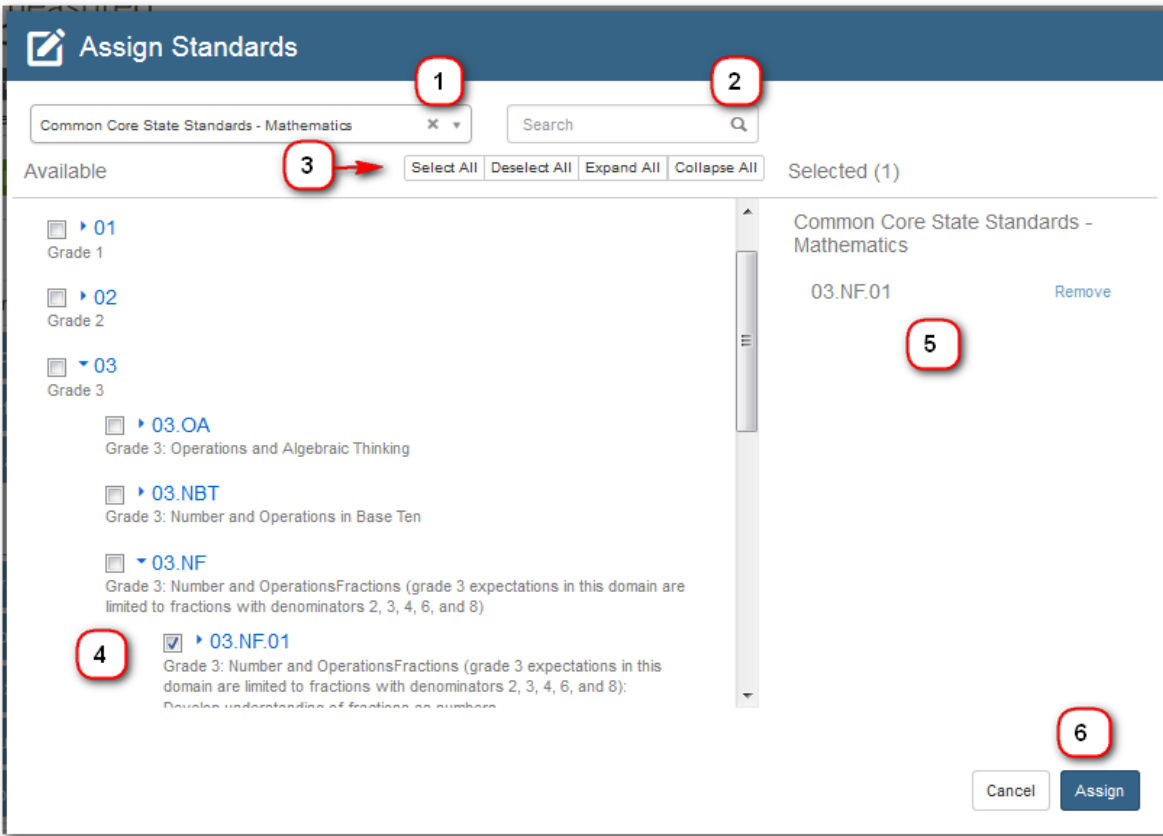
EXHIBIT 22: STANDARDS METADATA PANEL



1. To access and update the standards associated with the item, click on the **Standards** metadata panel.
2. Then, click on **Assign Standards** to assign standards to the item.

The Assign Standards window facilitates the assignment of a standard to an item.

EXHIBIT 23: ASSIGN STANDARDS WINDOW

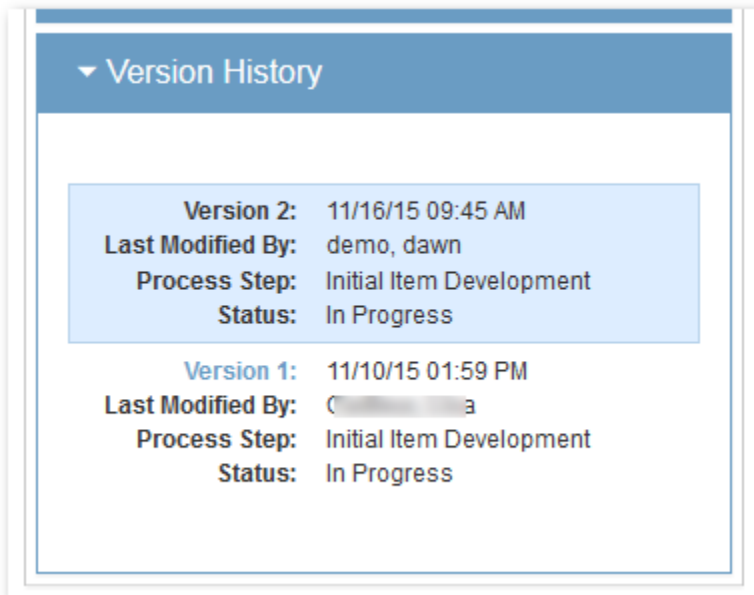


1. Click on the Select a Framework drop-down to see a list of all frameworks currently associated with the item pool. Click on the desired framework. Once a framework is selected, the available standards for that framework will appear in the Available section.
2. Standard codes can be entered directly into the Search box.
3. Use the Select All, Deselect All, Expand All, and Collapse All buttons to control how many standards are shown or to select or deselect all standards listed.
4. All standards are initially shown at their highest level. They can be expanded by clicking on the corresponding arrow, or by clicking the Expand All button. Click in the corresponding checkbox to select a standard.
5. The selected standards are listed in the Selected section. The total number of standards selected is indicated next to the word Selected. Click on the word Remove to remove a selected standard from the selected list.
6. Click on the Assign button to assign the selected standards to the item.

Version History in Measured Progress Item Authoring System

The Measured Progress Item Authoring System maintains a history of all version changes to items. The version history can be found by accessing the *Version History* metadata pane to the left of the item. The following exhibit provides an example of a version history. Hyperlinks to previous versions are provided in this view.

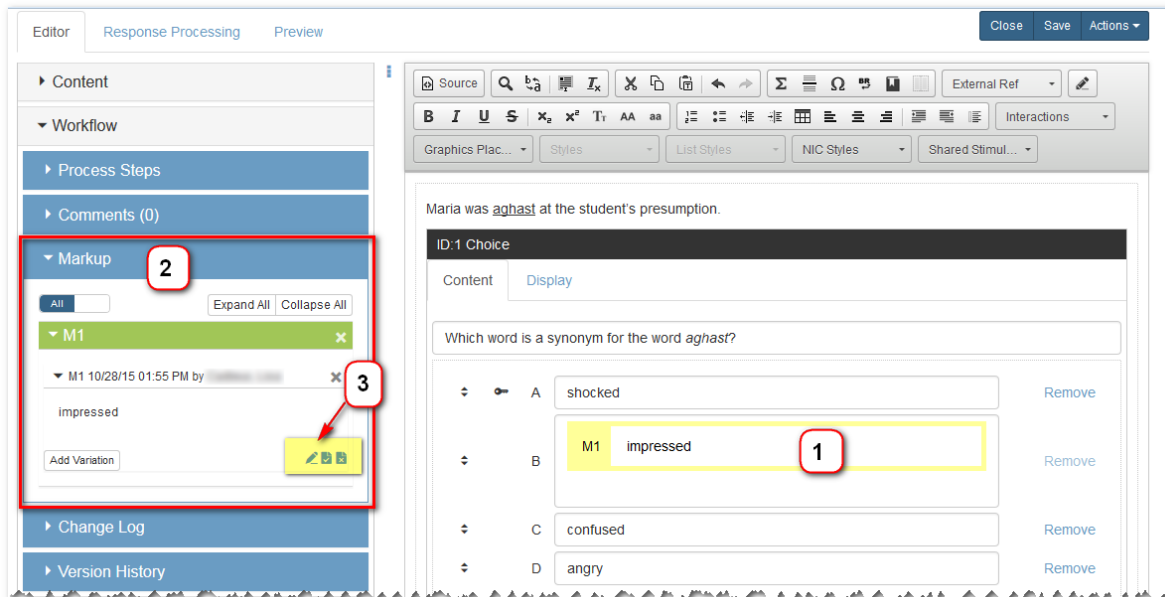
EXHIBIT 24: VERSION HISTORY METADATA PANE



External Item Review in the Measured Progress Item Authoring System

Measured Progress will make batches of newly-developed items available to the NH DOE in the NTS item authoring system. We will work with the NH DOE to develop conventions for usage of the system for such reviews. The following screen capture shows how the markup tool in our item authoring system works.

EXHIBIT 25: SCREEN CAPTURE OF ITEM MARKUP FEATURES.



1. The designated text will be enclosed in a markup box and will be locked from additional edits until

- the markup is resolved.
2. When the Markup metadata panel is opened, unresolved markups will be listed with an identifying header and ID (M1).
3. To access and edit the markup, click on the pencil *tool*.

Item Metadata Report

The Measured Progress Item Authoring System assigns a unique identifier to each item at the time the item is created. Data about items, including the unique identifier, current status of the item (i.e., accepted, rejected), and the reason why a rejected item was marked as such, can be obtained from an item metadata report. The item metadata report contains more than 50 fields for each item that provide valuable information about status, contents of the item (such as graphics), correct answer, standard alignment, and associated stimuli. The report is rendered from our system as an Excel spreadsheet, a portion of which is provided in the following exhibit.

EXHIBIT 26: SAMPLE ITEM METADATA REPORT

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U
1	Asset ID	Associate Name	Contract C	Content P	Content P	Contract C	Project Ty	Content A	Grades an	Sample Ty	Lock Item	Lock Scori	Process St	Status	Asset Typi	Key	Graphics	Graphic Al	Open Mar	Prima	
2	400074			MP Interir	MP Interim	Summative, MP Int	Mathema		6	Field Test	No	No			Choice	C	Yes	Yes	No	06.EE.1	
3	400081			MP Interir	MP Interim	Summative, MP Int	Mathema		6	Field Test	No	No			Choice	C	Yes	Yes	No	06.EE.1	
4	400084			MP Interir	MP Interim	Summative, MP Int	Mathema		6	Field Test	No	No			Choice	C	Yes	Yes	No	06.G.0	
5	400092			MP Interir	MP Interim	Summative, MP Int	Mathema		6	Field Test	No	No			Choice	B	Yes	Yes	No	06.G.0	
6	400096			MP Interir	MP Interim	Summative, MP Int	Mathema		6	Field Test	No	No			Choice	D	Yes	Yes	No	06.G.0	
7	400100			MP Interir	MP Interim	Summative, MP Int	Mathema		6	Field Test	No	No	Initial It	In Progre	Choice	C	No	No	No	06.RP.1	
8	400102			MP Interir	MP Interim	Summative, MP Int	Mathema		6	Field Test	No	No			Choice	B	Yes	Yes	No	06.G.0	

Topic 2.9.2 Use of Items from Other Sources

The vendor will describe how the interests of the NH DOE will be assured and protected if items from other sources are included on the assessments. In particular, the vendor’s response will describe:

- How items eligible for use on the NH assessments 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 NH assessments for multiple administrations.
- The vendor’s experience in handling any restrictions that may be placed on the use of items from other sources that would negatively impact the NH DOE.

Measured Progress is providing only secure content that it owns or has leased to fulfill the requirements of the NH Statewide Assessments. This content will undergo strict scrutiny and will follow the item development process and principles described in our response to Topic 2, including subtopics. We believe that the content we provide to NH DOE will align to the NH standards, be free from errors, and of high quality.

The content we are providing to NH DOE will be securely stored in our proprietary item authoring system. The content will be delivered through eMetric’s secure administration platform, iTester. For more information about the item authoring system, please see our response to topic 2.9.1. For more information about iTester, please see our response to Topic 4.

If needed, Measured Progress will enter into licensing arrangements to secure content for use on the NH Statewide Assessments. We will enter into licensing agreements that allow NH DOE to use content for the full life cycle of an item, which may include field test and multiple operational administrations.

Content owners, including Measured Progress, generally restrict the editing of test content found in their products. The purpose of the restriction is not to saddle clients like the NH DOE with low-quality content, but to protect the content fidelity and item parameters associated with high-quality items. These items represent a significant investment by the content owners, both in internal and external reviews and in pilot testing the content. If NH DOE ever has a concern with the quality of an item or of the test content, we encourage the NH DOE to bring the matter to their primary contact. We will work to resolve the matter in a way that protects the quality of the NH Statewide Assessments, protects the fidelity of the test content and item parameters being provided by Measured Progress, and provides the NH DOE with a technically defensible assessment program.

D1.2 Solution Technology

Topic 3 Technology Requirements

The vendor will provide the test delivery platform, hosting site, test administration application, server, and application management services for the NH summative and interim assessments.

The vendor 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 vendor's response must provide a full description of its proposed computer-based test administration solution. The vendor'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. Practice and training tests 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 vendor will be responsible for providing up to four (4) one-half day regional trainings 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.

Measured Progress Systems Overview with eMetric

In the sections that follow, we detail and illustrate the infrastructure, software, and information security protocols that will be used to complete all aspects of this contract.

eMetric

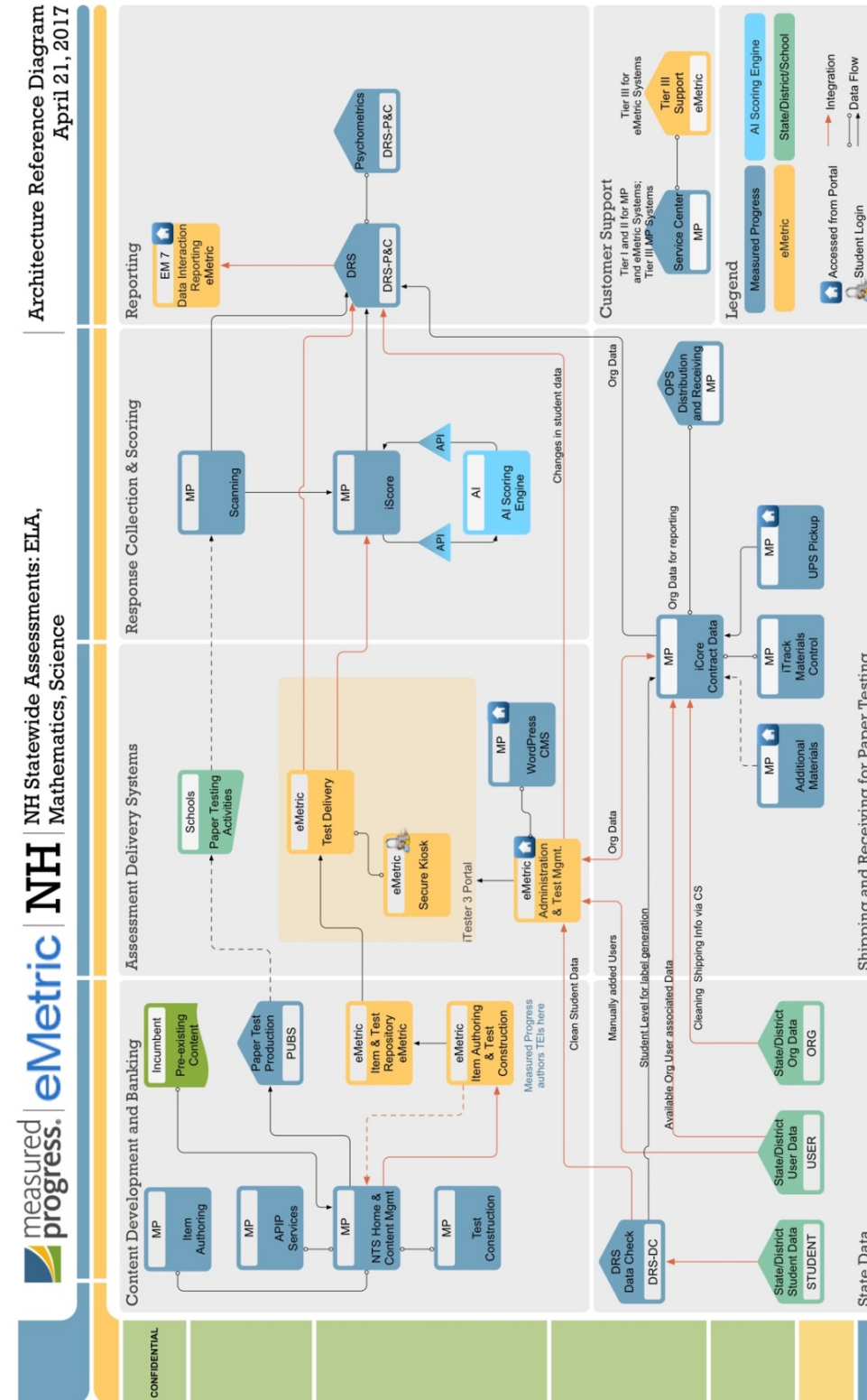
- Administration and Test Management: the software and processes that allow an authorized user to upload and manage student data. It also allows an authorized user to register a group of students to take a test within a pre-defined test window.
- Item Authoring and Test Construction: the software and processes used for the creation of Technology Enhanced Items (TEI) that will later be placed onto online tests via Test Construction. This tool also allows authorized users to construct forms and tests.
- Item & Test Repository: the systems used to import and store items and test packages.
- iTester Portal: the user interface/application that integrates a range of applications and components that are discussed within the scope of this RFP. All these components are tied together with a seamless single-sign-on (SSO) approach at the portal level.
- Online Test Delivery: the online test delivery system that provides students secure access to take assessments online.
- Machine Scoring: the online test delivery system's ability to automatically score items.

Measured Progress

- Nimble Tools Suite (NTS) Item Authoring and Content Management: the software and processes used for the creation of items that will later be placed onto paper and online tests. This tool provides a unique and intuitive means of creating numerous item types. NTS also produces QTI item packages for use in QTI-compliant systems.
- Content Bank: the internal data storage system used store QTI items and test packages.
- Publishing/InDesign: the process block that refers to the construction of paper-based tests from blueprints.
- iCore (Contract Data): a powerful system that serves as a contract's master database. It contains product definitions and configuration rules (e.g., algorithms and product ratios.) Once appropriate client data is uploaded (e.g., district contact information, number of enrollments), iCore configures materials orders. iCore then serves as the repository of information for the state, districts, schools, contacts, enrollments, and test shipment orders and quantities, capturing the date and time of these transactions.
- Additional Materials: the software application that allows schools to request additional materials online. Requests submitted through this application will later receive approval by program management before they are sent for processing through iCore and distribution.

- UPS Pickup Request: the software application that, through a connection with iCore, allows schools to request a UPS pickup online. Requests submitted through this application will later receive approval by program management for processing through iCore and distribution.
- iTrack (Materials Control): a dynamic Web-based engine that records, tracks, accounts, and provides real-time reporting for all secure and non-secure test materials—from initial raw material receipt, tracking the process of kitting and packaging, shipping, receiving and log-in/check-in/reconciliation.
- WordPress CMS: the content management system used to make non-secure materials available to users.
- Scanning: the process block that refers to the scanning and editing
- iScore: the software used for scoring extended constructed-response and short constructed-response items. This block also includes scoring management labor, facilities and equipment rental, and transition-related activities.
- Data and Reporting Services (DRS) Processing: the process block that refers to a variety of complex data processing tasks that ensure the accuracy of client data. Tasks include but are not limited to cleaning received data files, performing verification and quality-control checks of demographic data for standard setting and other processing-related work, conducting test item analysis and special studies, and performing scoring, scaling, and equating analyses to produce student-level and aggregated reports.
- Psychometric Analysis: the process block that refers to item and test analysis, scaling, equating, linking studies, third-party equating check/verification, validity studies, alignment studies, data forensics, technical report, and work associated with standard setting meetings, validation, transition-related activities.
- Reporting: the software and processes that generate assessment-related reports from aggregated demographic, test, and scoring data.

EXHIBIT 27: OUR COMPONENT ARCHITECTURE ILLUSTRATES ALL THE ELEMENTS USED IN EXECUTING THE ASSESSMENT PROGRAM



Due to the nature of differing hosting environments and infrastructure, we have provided Measured Progress's and eMetric's response separately. Measured Progress's infrastructure discussion focuses on the eMPower test content within our content management system and the post-test data reporting and psychometric services work performed on student results.

Measured Progress Hosted Systems and Infrastructure

For systems within Measured Progress's span of control, we deliver high-availability services with system and network redundancy to minimize single points of failure. Our infrastructure is built with a complement of robust systems that help prevent failure, such as:

- Redundant network hardware (firewalls, routers, switches, load balancers)
- Load balanced Web servers
- High-availability, clustered server virtualization
- Multiple Internet paths
- Clustered SQL servers
- Backup power generators and redundant power and cooling

Infrastructure

The following diagrams illustrate a high-level overview of Measured Progress's infrastructure and a sample data protection model often employed with our clients.

EXHIBIT 28: MEASURED PROGRESS HIGH LEVEL INFRASTRUCTURE

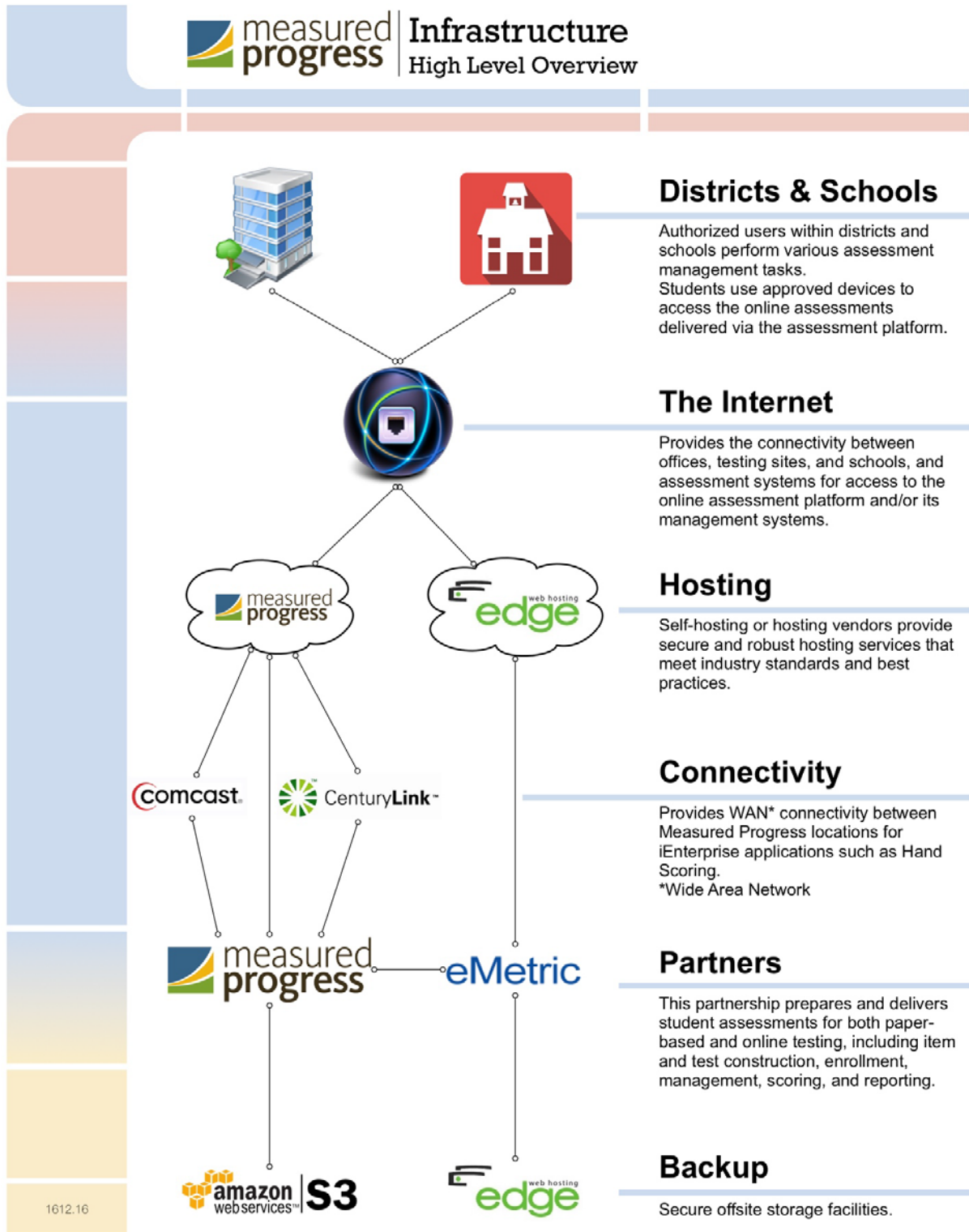


EXHIBIT 29: MEASURED PROGRESS HIGH LEVEL DATA PROTECTION OVERVIEW



Data Protection

High Level Overview



Web Browser

A Web browser provides the means for a user to access login forms that grant (depending on their user's role) access to one or more systems and/or data. The browser displays the user interfaces for various web services and software.



Authorized Users

Only users with a registered username and password can successfully access secured systems and data.



Internet

The internet, via Secure Sockets Layer, provides the connectivity from a user's location to the various systems or data a user has been granted permission to access.



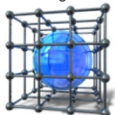
Firewall

The Firewall is one of several network security systems that control the incoming and outgoing network traffic based on an applied rule set.



Intrusion Detection System

Measured Progress employs an intrusion detection system to alert staff to unauthorized activity.



Security Controls and Monitoring

Network protections such as firewall, secure server configuration, user management, authentication, remote VPN, logging and auditing, antivirus protections, physically secured data center, and company policies and procedures provide additional layers of security.



Operational Databases

These are the workhorses that manage dynamic data in real-time. Other kinds of databases are also employed to provide usable information to authorized users.



Encrypted Storage

Sensitive data contained within our systems or environments resides on encrypted stored media in an environment within the United States.



Off-Site Backup

Provides a secure, fireproof alternate physical location long-term data storage solution. Amazon S3 and Amazon Glacier provides a secure, triple alternate physical location long-term data storage solution.

1612.16

Technology Requirements

Measured Progress proposes eMetric’s iTester assessment platform. iTester is a suite of robust applications for item and test authoring, scheduling and administering, test delivery, and machine scoring. For over five years, Measured Progress has partnered with eMetric to successfully deliver high stakes assessments using iTester in multiple states, such as New Mexico, Oklahoma, and Maine.

1. Use of Software: Tests are delivered via iTester’s secure Kiosk application. The Kiosk is very rarely updated to ensure low cost of ownership. The iTester platform provides standard and easy-to-use deployment options to package the Kiosk for mass distribution and deliver it to test-taking devices within highly controlled, secure, and monitored environments such as school labs.

2. Technology Infrastructure: The iTester test delivery engine is truly a next generation assessment solution that is neutral with respect to platform, device, and content. It is designed to provide a consistent, intuitive user experience regardless of test-taking device. Exhibit 30 outlines the specifications for test-taking devices for existing clients for Spring 2017. As new operating system versions and devices become available, eMetric conducts extensive testing to determine usability with iTester and updates the list of supported test-taking devices accordingly. While support for Android devices is not identified in the table below due to lack of demand from existing clients, Android-specific Kiosks can be made available upon request.

EXHIBIT 30: TEST DELIVERY SPECIFICATIONS, SPRING 2017

System Requirements – All Hardware	
Connectivity	Must be able to connect to the internet via wired or wireless networks
Screen Size	9.7” screen size or larger/ “10-inch class” tablets or larger
Screen Resolution	1024 x 768
Browsers (Used for Practice Test ONLY)	Chrome™ 57 or newer Firefox™ 49 or newer Safari® 9 or newer Internet Explorer 11 Microsoft Edge
Headphone/Earphone/Ear Buds	Headphones/earphones/ear buds are required for students who have a text-to-speech accommodation
Desktop and Laptop Specific Requirements	
CPU	1.2 GHz
Memory	1 GB (2 GB is strongly recommended for best performance)
Input Device	Keyboard – wired or wireless/Bluetooth® enabled mouse or touchpad
Windows® operating system	Windows 7, 8.1, 10 (32-bit and 64-bit)

Mac OS® operating system	10.9 – 10.12 (64-bit only)
Linux® OS	Ubuntu 14.04 LTS – 16.04 LTS (64-bit only) Fedora™ 24 (64-bit only)
Tablet/Netbook/2-in-1 Specific Requirements	
iPad®	iOS 10.2-10.3
Chromebook™ notebook computer	Chrome OSTM 55 – 57(based on anticipated OS release dates)
Windows-based tablets/netbooks/2-in-1	Windows 8.1, 10

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3. Technical Support Documentation: Clear technical support documentation will be provided outlining test delivery specifications and suggested computer lab configurations, as well as instructions for the site and device readiness tools outlined in the following section.

4. Assistive Technologies: eMetric is committed to providing a robust test administration and delivery platform that is highly accessible for all users. iTester was designed in accordance with industry standards in accessibility and is compliant with the design principles of the U.S. Rehabilitation Act Section 508. iTester is architected to comfortably support the Accessible Portable Item Protocol (APIP) version 2.0 standard. iTester services translate APIP items and student PNP preferences into HTML5 items tailored for a particular set of needs. The translation process employs HTML5 data (metadata technology to store all relevant APIP information in an HTML5 compliant manner). As APIP evolves, additional translations can easily be added to iTester services, and the delivery system can be updated to support new translations with no impact to district or school systems using this approach. In addition to the accommodations detailed below in Table 2, iTester works in conjunction with JAWS screen reader and allows for the incorporation of American Sign Language videos. eMetric will work with the state to identify commonly used assistive technologies in the field to target support of such devices.

iTester Embedded Accommodations	
Accommodation	Description
Magnification	Students can magnify the entire screen up to 150 percent while preserving clarity, contrast and color.
Text-to-Speech	Students can play, pause, or stop audio. Items support default and on-demand load playback orders. eMetric will work with the state to identify a preferred voice pack.
Reverse Contrast	Students can invert all color values in the user interface.
Alternative Text and Background Colors	Student can change the onscreen background and/or font color based on need or preference. Students can select from a set of 12 predefined color combinations.
Answer Masking	Students can electronically “cover” answer options, as needed.
Line Reader Tool	Students have access to an onscreen tool to assist in reading by raising and lowering the tool for each line of text onscreen.
Turn Off All Universal Tools	Selecting this accommodation will turn off accessibility tools.

EXHIBIT 31: ITESTER ACCOMMODATIONS OPTIONS

5. Practice Test: Practice tests are administered in the operational environment to ensure that all stakeholders (administrators, proctors, and students) have the opportunity to become comfortable with the testing interface and tools prior to operational testing. Practice tests provide the same functionality that will be offered in the operational test, including accommodations and accessibility features. Further discussion of the Practice Tests is found within Topic 14.

6. Student Demographic Data Management: Once Measured Progress has pre-loaded the iTester system with data, the administration portal supports both file upload and manual entry of student enrollment data. Uploaded student information can be viewed within the portal and edited manually or via a subsequent file upload. Accommodations assignments can be uploaded via the enrollment file or added to a student’s profile manually at any time prior to or during testing. Allowing for manual edits to accommodations assignments avoids testing delays for students who may not have had the correct accommodations ordered during the initial enrollment upload.

7. Security of Testing Environment: eMetric proactively addresses security on a number of fronts and employs policies and processes that provide for stringent control to limit physical and logical access to systems that house the New Hampshire data. Please see Topic 6 and Topic 8 for details regarding security of the test environment and data.

8. Monitoring System Performance: eMetric, along with our hosting partner Edge, performs extensive performance monitoring of all databases and application servers using a number of tools, both third party and proprietary. Reports can be provided based on the state’s need to monitor performance status, alerts, and statistics. Metrics available via dashboard reports that are available within the administration component at the state and district level include portal logins, concurrent testers, number of tests scheduled and completed, number of tests in progress or paused, and operating systems used.

9. Import and Export Capacity: Pre-existing content and item banks can be efficiently imported and exported using QTI standards, currently based on QTI 2.1 Final specifications. Student response data, student registration, demographics and accommodations data, as well as files containing user accounts, can be imported and exported.

Topic 4 Assessment Delivery Platform

The vendor will ensure that the assessment delivery platform provides the technical infrastructure necessary to manage and administer assessments across the state. The vendor’s response will address each of the following subcomponents and functionalities:

- Administrative portal;
- Test registration and scheduling;
- Test administration (administrator interface);
- Test delivery (student interface);
- Test client;
- Key-based and rule-based machine scoring;
- Assessment delivery data storage; and
- Student toolset (e.g., virtual calculators, protractor, ruler, notepad, highlighter).

The vendor’s response will also address each of the following functionalities:

- **Authentication/User Identity Management:** internal user management, user authentication, role-based authorization.
- **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.
- **System Monitoring and Alerting:** A centralized system for monitoring all processes and systems (network, hardware, software) in the 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.
- **Common ID system:** A centralized system for assigning and managing persistent, unique identifiers to all users (educators and students) of the NH assessment system. The purpose of this service is to assure the integrity of student data, including to avoid multiple creation of the same ID number, and to prevent the mismatching of students to assessment results.

The vendor will provide a detailed description of the interfaces and the System components used for processing.

- Describe the software platform that the system operates on (code base, database, etc.). Note any third party platform components. Indicate the need for the State to purchase licenses.
- Include details of the proposed software Solution including the database management system, licensed software suggested for data retrieval and reporting, proposed approach to developing any custom-built software components.
- Discuss plans for anticipated future release of System software. Address any impact on System users or interfaces.

Assessment Delivery Platform

iTester was designed to support the specific needs of high stakes testing while providing the flexibility to manage and deliver multiple testing programs in a single environment. The result is a powerful tool that meets a myriad of assessment goals and eliminates the need to manage multiple test delivery systems. The platform offers the reliability, scalability, feature set, and security to ensure technology is an enabler, not a distraction.

a. Administrative Portal. The browser-based administration portal provides single sign on access to the tools necessary to schedule and manage assessments. Role-based user management allows the state to define multiple levels of roles and permissions. Higher level users can create and manage user profiles at lower levels and assign new users to one or more organizations in the organization hierarchy. The organization hierarchy includes school level, district level and state level organizations. User profiles are configured to comply with state privacy laws and FERPA by restricting student data access to authorized users. Portal users will have regulated access to student data management, test management, kiosk downloads, and site and device readiness tools, depending on their assigned permissions.

b. Test Registration and Scheduling. We recognize the colossal challenge of managing student data and have implemented carefully considered student data management features based on extensive experience and collaboration with clients. Our goal is to provide the flexibility required to allow testing to proceed without delay, while ensuring student information is up to date, accurate, and reliable. To this end, the administration interface supports both file upload and manual entry of student enrollment data. Uploaded student information can be viewed within the administration portal and edited manually or via a subsequent file upload. In addition, accommodation assignments can be uploaded via the initial enrollment file or using iTester's accommodations file upload feature. Individually, accommodation assignments can be added/edited manually within the student's profile at any time prior to or during testing.

iTester provides an intuitive interface to complete all tasks related to test management. The test management capabilities in iTester are flexible, robust, and time-tested across multiple assessment programs. Published tests are easily assigned to applicable student groups and unique login information is automatically generated for each student. Online, centralized test management provides quick access to all testing logistics, eliminating confusion and allowing for a smooth test administration. The intuitive workflow ensures administrative users can easily schedule students to test sessions. Testing progress can actively be monitored in the administration portal. A roster of all students scheduled to test along with the details of their test session is provided. In addition, authorized users can invalidate a student's test in this interface in the event the test was breached or, if for any other reason, the test is no longer deemed to be a valid test session. With appropriate authorization, a student test session can be reactivated should students need to revisit their test after submission. Additionally, dashboard or on-demand reports can be provided to monitor performance status, alerts, and statistics allowing for quick and efficient intervention if needed.

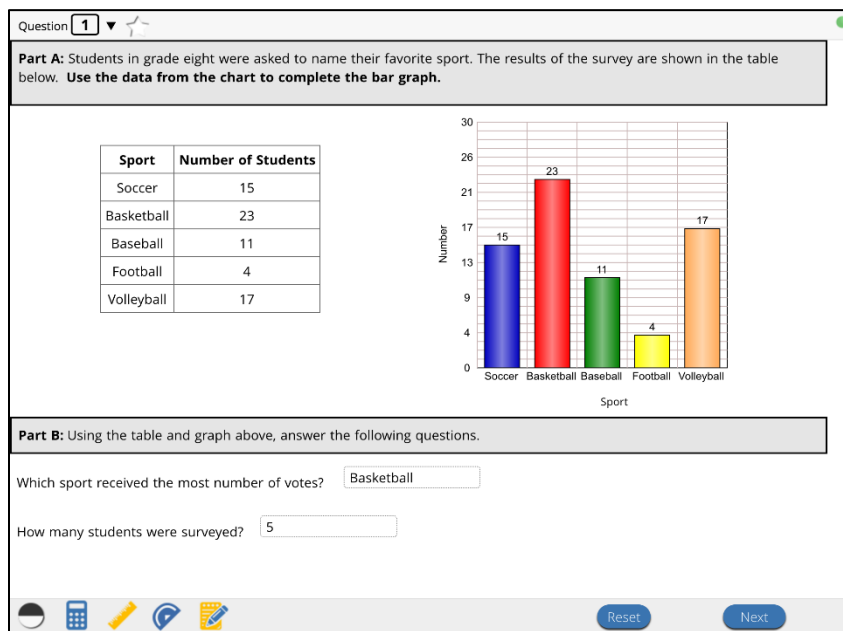
c. Test Administration (administrator interface). iTester includes user-friendly web-based readiness tools which allow schools and districts to verify network infrastructures, network bandwidth, and testing devices are properly configured in order to address any potential issues well before testing begins. During testing, progress can actively be monitored in the administration portal. With appropriate authorization a student's test can be invalidated or their test session can be reactivated.

d. Test Delivery. Software that requires habitual updating is an inhibitor to the successful administration of online assessments. iTester's architecture does not require frequent maintenance on student devices. The iTester platform is comprised of two distinct components that work seamlessly together: Application and Kiosk. The web application resides on the cloud. Developed using HTML5 technologies, a single application services all Kiosks regardless of device to ensure a consistent testing experience for all students. When the Kiosk is launched, it accesses the latest version of the application that is hosted in the cloud. Any necessary updates to iTester are typically applied to the application without requiring districts and schools to make any changes to their previously downloaded Kiosks.

iTester offers a network-independent operation providing a rich user experience for the student throughout the duration of the test. The disconnected architecture works by downloading all resources before the test start for each student, which drastically reduces the need for network and server dependence during the test. During testing, our online system uses “heartbeats” to periodically send student responses back to the servers. This heartbeat process protects student responses by regularly saving them on the server. If an Internet outage occurs, student testing is not impacted and the data from the heartbeats are encrypted and saved on the student device. When the Internet connection becomes available, the saved student responses are automatically sent to the server.

e. Test Client. Following the principles of Universal Design, iTester has been designed to enable every student to test without frustrations and with limited directions. Display elements clearly indicate where students can interact and which tools and accommodations are available for students to use, while remaining subtle enough to prevent distraction. Text, such as the student profile, directions, and item review panel, is large and easily readable. Navigation buttons are large and recognizable. Bright colors and subtle animations engage students and make the interface friendly and natural.

EXHIBIT 32: ITESTER STUDENT INTERFACE

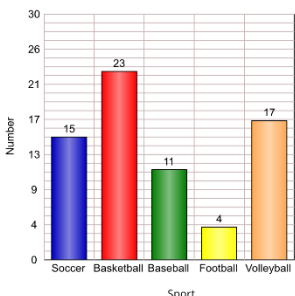


Question 1

Part A: Students in grade eight were asked to name their favorite sport. The results of the survey are shown in the table below. Use the data from the chart to complete the bar graph.

Sport	Number of Students
Soccer	15
Basketball	23
Baseball	11
Football	4
Volleyball	17

Number



Sport

Part B: Using the table and graph above, answer the following questions.

Which sport received the most number of votes?

How many students were surveyed?

Reset Next

f. Key-based and Rule-based machine scoring. iTester provides a sophisticated scoring system that can automatically score student responses for multiple-choice items as well as technology-enhanced items. The machine scoring system allows for dichotomous and partial scoring modes. Based on the needs of the state, students may be presented with a raw score and/or performance level upon submitting a test session.

g. Assessment Delivery Data Storage. Student data contained within our systems or environments resides on encrypted stored media in an environment within the United States that provides an industry-standard set of security controls. During test delivery, an SSL Certificate (128-bit) is served to online users through an “HTTPS” connection. The application communicates with the database using stored procedures with execute permissions which use a least-privileged user account. The application does not pass any SQL queries as strings to the database to avoid risk of SQL injection attacks.

h. Student Toolset. A comprehensive suite of tools and accommodations are available to test-takers to ensure a fair, accessible test-taking experience for all students. iTester utilizes student accessibility data from the PNP to assign specified accommodations to students during the registration process. Additionally, accommodations can be added to a student’s profile through the administration portal. This will allow for the assignment of specified accommodations to students based upon registration data. Accommodations features can be configured to be displayed for all students for a given test or form being administered. Tools and accommodation options available in the current version of iTester are described in more detail in Table 4. eMetric routinely works with clients to determine need for support of additional accommodations and we engage in ongoing research and development efforts to continually build upon the suite of supported tools and accommodations.

EXHIBIT 33: ITESTER TOOLS & ACCOMMODATIONS OPTIONS

Test-Taking Tools	Accommodation Options
Ruler: The vector-based, partially translucent ruler is rotatable, draggable and resizable by the student.	Magnification: Students can magnify the entire screen up to 150 percent.
Protractor: The vector-based, partially translucent protractor is rotatable, draggable and resizable by the student.	Text-to-Speech: Students can play, pause, or stop audio. Items support default and on-demand load playback orders. iTester supports both machine-read and human-recorded text-to-speech.
Calculators: Four calculator modes are available: 1) Basic (four function), 2) Standard, 3) Scientific, and 4) Graphing.	Reverse Contrast: Students can invert all color values in the user interface.
Dictionary: The dictionary tool interfaces with Wiktionary™, an open and free dictionary, and supports the whitelisting or blacklisting of words.	Alternative Text and Background Colors: Students have the ability to choose a text and background color from a set of 12 pre-defined color combinations.
Custom Masking: Provides the ability to mask certain parts of the test interface or question.	Answer Masking: Students are able to “cross out” possible answer choices (for multiple choice items only).
Sketch Pad: The sketch pad allows test takers to highlight, sketch, or draw using black, red, or blue brushes, and erase drawings.	Line Reader Tool: Students use an onscreen tool to assist in reading by raising and lowering the tool for each line of text onscreen.
Notepad: A notepad is provided for students to write different notes for different items. The notepad is resizable, draggable, and displays a timestamp for when its contents were last modified.	Turn Off All Universal Tools: Selecting this accommodation will turn off accessibility tools.
Reference Sheets: Reference sheets, formula sheets, and periodic tables can be provided to students as a reference for a test.	

Authentication/User Identity Management

Role-based user management allows states to define multiple levels of roles and permissions. User profiles are configured to comply with state privacy laws and FERPA by restricting access to student data to authorized users. Portal users will have regulated access to student data management, test management, kiosk downloads, and site and device readiness tools, depending on their assigned permissions. Users are

assigned a username and password that is tied uniquely to their role and organization. iTester uses standard username and password based authentication for restricting access to unauthorized users. The authentication cookies are encrypted using industry standard algorithms. The sign-out process for the application is implemented with the authentication to safely dispose the authentication cookie.

Logging and Audit

ClickStream is an innovative data science component of the iTester platform which provides centralized capability for logging, log analysis and audit support, and capturing and recording all system and testing activities. Major test events and test-taker interactions, including students' use of tools and accommodations, are captured and streamed to a massively large database hosted on a scalable public cloud infrastructure. This data is analyzed to generate meaningful insights that are used to support and improve the iTester platform on a regular basis. ClickStream data is collected from every test-taker in a non-intrusive way and without affecting the reliability of the student test-taking path.

- Operational Intelligence – Micro Trends
 - Comprehensive logs of each student's actions during testing are thoughtfully integrated into Insight (an internal level 2/3 support and diagnostics tool). These logs provide a detailed account of student actions during testing and allows us to more efficiently troubleshoot and support any escalations or inquiries from the field during testing windows.
- Quality Engineering – XPLAY
 - We have built a library of real student test-taking patterns based on the data we collect from iTester ClickStream. We use this library to replay and simulate student test-taking activity on every new version of platform release. This initiative helps to eliminate and minimize common student scenarios that could be 'test misses' and result as bugs in the software. As we collect more data in our ClickStream repository, we expect to have a more comprehensive library of test-taking patterns to produce the best possible software.
- Product Design – Macro Trends
 - The availability of ClickStream data analytics at a macro level produces meaningful and powerful insights into how students use the iTester test delivery features and their test-taking behavior. This insight provides data to drive our product design. By diving deep into granular insights, we refine the usability and functionality of our system.

System Monitoring and Alerting

eMetric's hosting partner, Edge, provides extensive server and application monitoring and recovery, and alerts of any abnormalities. eMetric also performs extensive performance monitoring of all databases and application servers using a number of tools, both third party and proprietary. Our technology leadership team has always been assiduous in monitoring the performance of our systems. The following tools are used daily to ensure the security, reliability and performance of the iTester environment.

- Amazon Quicksight: Amazon Quicksight is monitored throughout the day. Testing activity produces a vast amount of data. We collect virtually every interaction a student has while taking a test. This is referred to as clickstream data. Our technology team uses Quicksight to summarize the clickstream data and to identify and investigate abnormalities to ensure the platform operates as expected. For example, we can closely monitor all the different types of alerts our database servers are producing and respond accordingly.

- New Relic: This tool is considered the gold standard for Application Performance Management and allows our technology teams to see application performance trends at a glance via a number of data visualizations and dashboards. We also use this tool to monitor our load tests to understand the impact of large volumes of simultaneous activity on platform performance and this insight helps provide us direction for fine-tuning the system.
- Sentry: Sentry provides proactive detection of application exceptions and errors and robust diagnostic and analytical tools.
- Insight: This proprietary tool aids in verifying testing information and troubleshooting issues.

Common ID System

When Measured Progress receives the student data from the state, its Data Reporting Services team assigns a unique Measured Progress ID number to each student to preserve the integrity of student data. This helps prevent the mismatching of students to assessment results. While preserving the unique Measured Progress ID for pre-loaded students, eMetric uses the state-assigned student ID to avoid duplication and mismatching of students to assessment results. Students manually added to iTester after the pre-load will be matched to a Measured Progress ID after the administration. Educator accounts for the administration system are tied to unique usernames and can include an assortment of special characters (e.g., @, etc.).

Description of Interfaces and System Components

The iTester test delivery system is not reliant upon third-party software. As long as the minimum technical requirements are met, the test delivery system will function as intended. These requirements will be published well before the testing window each school year allowing for updates to be planned as needed. Any necessary subsequent communication will occur in accordance with an established communication plan. Per best practice for the integrity of the testing experience, eMetric phases out support of an OS once its manufacturer has discontinued support. In these instances, we will work closely with New Hampshire and with district technology personnel to understand the impact of the change, consider any known issues with the OS, and schedule the phase out in close coordination with the State.

The iTester platform is comprised of two distinct components that work seamlessly together: Application and Kiosk. The Application resides on the private cloud. Developed in HTML5, a single application services all Kiosks regardless of device to ensure a consistent testing experience for all students. HTML5 is the key to enabling our application to work on the Kiosk regardless of device. When the Kiosk is launched, it accesses the latest version of the application that is hosted in the private cloud. Should an update need to be made to iTester, it can easily be made on the Application without requiring districts and schools to make any changes to their downloaded Kiosks. This streamlined process ensures updates to the application are made efficiently and that all students are always using the latest version of software and accessing the most up to date content.

The Kiosk is software that resides on each device that will be used for testing. For Windows, Mac, and Linux computers, the Kiosk is a secure client obtained from the Administration Portal and installed on the device. For tablet devices and Chromebooks, the Kiosk is a secure App downloaded from the appropriate app store. The Kiosk is very rarely updated to ensure low cost of ownership. When an update to the Kiosk is required, eMetric will collaborate with the state and Measured Progress to ensure clear guidance and timelines are established and clearly communicated.

The iTester platform provides standard and easy-to-use deployment options to package and distribute the Kiosks for mass distribution within schools and districts. As a general rule, we follow these guiding principles:

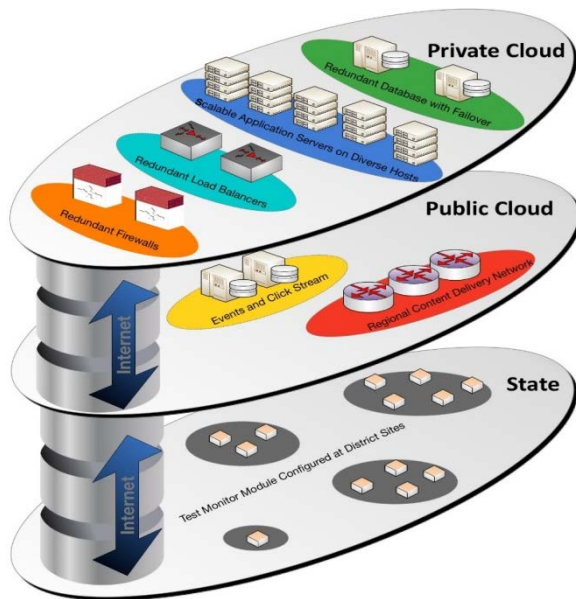
- Keep the footprint of the software reasonably minimal.
- Keep the deployment procedure simple and straightforward.
- Support bundling of the software with system images.
- Support a wide range of IT scenarios and tools school districts typically use to manage their infrastructure without requiring intrusive setup.
- Provide school and district IT personnel with adequate professional development and training, especially during the initial rollout of the software.

The test delivery interface offers a network-independent operation to provide a rich user experience throughout the duration of the test. The “disconnected” architecture works by downloading all resources ahead of the test start for each student, drastically reducing the need for network and server dependence during the test. During testing, the system uses “heartbeats” to periodically send student responses back to the servers. This heartbeat process protects student responses by periodically saving them on the server. When an Internet outage occurs, the data from the heartbeats are encrypted and saved on the student workstation. When the Internet connection becomes available, the saved student responses are then sent to the server. Should the Internet connection still not be available when the student(s) submits their test and ends a session, special handling procedures are provided to the proctor to submit those responses when the Internet becomes available again.

The transition to large-scale online assessment has not come without significant challenge. Multiple states have experienced test administration failures with their technology vendors. High stakes assessment requires technology platforms to be invariably available and reliable. To this end, eMetric has employed ‘no single point of failure’ design principles in the development of iTester.

A single point of failure is an aspect of a technology platform that, if it fails, will prevent the entire platform from functioning. For example, in a datacenter where a single server runs an application that server presents a single point of failure. For this reason, datacenters have introduced redundancy. While redundancy should greatly reduce the chances of failure it does not alone eliminate potential for failure. The iTester platform solves this reality by introducing rings of redundancy: private cloud, public cloud, and individual district/school networks, as illustrated in the exhibit below.

EXHIBIT 34: INFRASTRUCTURE DESIGN



Moving away from a physical datacenter to cloud based computing provides multiple advantages including scalability and instant provisioning. Cloud computing services can be both private and public. The private cloud provides a proprietary network, whereas the public cloud is a multi-tenant environment. iTester employs a hybrid approach utilizing both private and public cloud technology to avoid single points of failure and harness the strengths of each cloud. The private cloud provides a single tenant environment dedicated to iTester. This infrastructure component provides databases with failovers, scalable application servers on diverse hosts, redundant load balancers, and redundant firewalls. Use of the private cloud guarantees isolation and eliminates the possibility of co-tenants monopolizing resources and affecting performance.

iTester employs the public cloud, via Regional Content Delivery Networks (CDNs), to individually host definable static assets. The use of CDNs reduces the need to access information from the private cloud during live administrations, allows for scalable performance during windows of peak student testing, and essentially eliminates the potential for distributed denial of service attacks.

With redundancy on both the private cloud and public cloud, the lowest level of dependency exists with individual district and school networks. This potential point of failure is addressed by iTester’s caching module. This module allows for definable static assets to be stored locally at the district or school level. If the internet connection at a district or school is severed during a live administration, students can still complete their scheduled assessments.

iTester’s infrastructure design is a critical differentiator. By employing rings of redundancy through the private cloud, public cloud, and individual district and school networks, iTester is able to harness the strengths of each component and avoid single points of failure.

Topic 5 Data Exchange and Process

The vendor will provide a detailed description of the mechanism and tools included in the proposed System to enable the specified data sharing between the vendor and the State.

- Identify the type of interface/mechanism/tool and the frequency of data exchange between the State and the vendor with a full explanation of the processes involved in the exchange.
- Identify the format of the data the vendor will provide.

The vendor will provide a detailed description of how State staff will track status of the data submissions and follow to view a record of:

- Administrative actions: Login, Logout, Password reset, IP address, batch file transmission;
- Data submission including user, date, time, and IP address;
- Users viewing validations by date, time, file, IP address;
- Users viewing completeness measures by date, time, file, IP address;
- Users making corrections by date, time, file, record, element, and IP address.

The vendor will provide a detailed description of the process the State will follow to submit special requests for research. The vendor may wish to include a sample scenario with the format of returned results.

The vendor will describe and provide samples of the available documentation supporting the system and the asset verification service.

Measured Progress and eMetric use secure-file transfer protocols (“SFTP”) and hypertext transfer protocols over secure socket layer (“HTTPS”) as cryptographic protocols that provide confidentiality and integrity of data during transmission over the Internet. Student data contained within our systems or environments resides on encrypted stored media in an environment within the United States that provides an industry-standard set of security controls to include network protections such as firewall, secure server configuration, access controls, user management, authentication, remote VPN, logging and auditing, antivirus protections, physically secured data center, and company policies and procedures. During test delivery, an SSL Certificate (128-bit) is served to online users through an “HTTPS” connection. This ensures secure communication between the student workstation and the server. The application communicates with the database using stored procedures with execute permissions which use a least-privileged user account. The application does not pass any SQL queries as strings to the database to avoid risk of SQL injection attacks. Once a student logs into the kiosk, the encrypted test content is downloaded from the servers and stored in memory on the student's workstation or device. This encrypted test content is then decrypted and stored in memory for displaying it on student interface. Once the student is finished taking his or her test, the encrypted and decrypted test content is deleted from the device memory.

We gather historical information on system use, server utilization, configuration, data updates during the course of the operational test administration. We constantly review the information to identify patterns around potential problems and policy deviations. We share our observations with State during weekly meetings. Our logs include information about administrative actions, data submissions, and user activity.

Topic 6 Data Privacy and Security

All hardware and software components and all services and processes must ensure the highest levels of auditable security for the NH assessments, data, and data access at all times and at all levels of state, district, and school use. The vendor will be expected to comply with Federal laws

data privacy and security that include how data are accessed, stored, and exchanged; and how the vendor's employees are managed and trained regarding data security protocols.

The vendor's response must detail their privacy and security plans. The vendor'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.

eMetric proactively addresses security on a number of fronts and employs policies and processes that provide for stringent control to limit physical and logical access to systems that house New Hampshire's data. Access to iTester is role-based providing a clear separation of duties. User profiles are configured to comply with New Hampshire privacy laws and FERPA by restricting access to student information, performance data, and test items to authorized users only.

Data encryption and security provisions are available to safeguard sensitive data such as test content, student personal information, and student responses. The platform supports the best security algorithms and techniques such as isolated storage. Our approach to security is time tested and follows all industry standard best practices. We also employ strict internal policies to protect student personal information. Employee access to client data is restricted. All server consoles are locked with tightly controlled passwords. All workstations require network authentication and screen savers. Available security updates and patches are reviewed on a daily basis and implemented on all servers when applicable. Websites containing sensitive material require public-key cryptography security through secure sockets layer (SSL) connections.

The security of our products and services is provided at the infrastructure level, application level and the data layer of the application. Our products have gone through extensive internal audits over the past few years, and those audits have instilled confidence and trust to our clients and supported the success of their programs.

Infrastructure Level

The assessment platform is a centrally hosted, enterprise-level application service built using industry-standard technologies and best practices in security, networking, hardware, and software. This system is designed for high availability and fault tolerance. Redundant hardware at all layers ensures that there is no single point of failure; servers can fail and the system will continue operating with no perceptible change to the user. System monitoring allows for immediate alerts of hardware or software failures, allowing for rapid resolution and restoration of the failed components.

Application Level Security

- **Authentication:** Our secure applications use standard username and password based authentication for restricting access to unauthorized users. The authentication cookies are encrypted using industry standard algorithms. The sign-out process for the application is also implemented with the authentication to safely dispose the authentication cookie.
- **Hashed Passwords:** The passwords for the user accounts are stored in the database. These passwords are stored as one-way hashes, which cannot be decrypted or reverted back by the application. The hashing is done using an MD5 algorithm that is nonreversible. This is done to ensure the minimum expectation for privacy and security for the users.

Data Layer Security

- Access Control: Data encryption provides an added layer of security to sensitive student information in addition to the security measures deployed at the infrastructure and the application level. We utilize secure protocols to transfer and store student information and assessment data.
- Stored Procedures: The application communicates with the database using stored procedures with execute permissions which use a least-privileged user account. The application does not pass any SQL queries as strings to the database which might cause SQL injection attacks.
- Test Content: Once a student logs into the test delivery system using a randomly generated unique username and password, the encrypted test content is downloaded from the servers and stored in memory on the student's workstation or device. This encrypted test content is then decrypted and stored in memory for displaying it on the student interface. Once the student is finished taking his or her test, the encrypted and decrypted test content is automatically deleted from the device memory.

Topic 6.1 Information Technology Standards

The vendor will provide a detailed description of how the proposed solution complies with established information technology standards. The proposed solution must comply with Open Standards and Open Data Formats as mandated by RSA 21-R (HB418 2012). Include the following:

- A description of the degree to which the solution complies with information technology standards on the State of NH web site: <http://www.nh.gov/doit/internet/vendors.php>
- A description of Open Source Software
- A description of Open Data Format?
- A statement of compliance with privacy and confidentiality standards including HIPAA, NIST, FERPA.

We have reviewed and confirm we abide by the Information Technology Standards listed on the State of NH web site.

Open source software and open data formats

We use the following open data file formats as mandated by RSA 21-R (HB418 2012)

- JSON: JSON is a simple file format that is very easy for any programming language to read. Its simplicity means that it is generally easier for computers to process than others, such as XML.
- XML: XML is a widely used format for data exchange because it gives good opportunities to keep the structure in the data.
- Comma Separated Files (CSV): CSV files can be a very useful format because it is compact and thus suitable to transfer large sets of data with the same structure.

Document Review

We gather and maintain comprehensive documentation on Data Security – Internal Security Controls and also ensure we have procedures in place to adhere to State IT Policies, Standards, and Procedures. For example, following procedures are tracked under data security

- All Student Personally Identifiable Information (PII) and other confidential or proprietary information (test content, business plans, source code) is stored in a secure database/folder and the access related information is reviewed on periodic basis

- Information stored in the database is accessible using the Portal or internal tools. Access to the portal is role based.
- All Student Personally Identifiable Information and other confidential information is transferred between client and partner using secure file transfer protocol (SFTP).
- Data File Archival Agreements

Log Review

We gather historical information on system use, server utilization, configuration, data updates during the course of the operational test administration. We constantly review the information to identify patterns around potential problems and policy deviations. We share our observations with State during weekly meetings. Our hosting partner, EDGE maintains audit logs in compliance with PCI requirements. As such, they will have 90 days of logs readily searchable in a portal environment and up to one year retrievable for further analysis if needed and upon request.

Ruleset-based content delivery

From the infrastructure perspective, we have implemented Content Delivery Network (CDN). We have implemented the rule-based content delivery. This is done to ensure content is delivered with high performance.

System Configuration Review

We periodically employ manual as well as systematic checks to review configuration values, role permissions as defined in the checklists to ensure they are in line with agreed upon system settings and in the process take the precautions to minimize the security risks. We periodically review server logs to ensure there are unauthorized access attempts. iTester's infrastructure design is a critical differentiator. By employing rings of redundancy through the private cloud, public cloud, and individual district and school networks, as depicted in Figure 2: Infrastructure Design, iTester is able to harness the strengths of each component and avoid single points of failure.

Authentication

At the application level our secure applications use standard username and password based authentication for restricting access to unauthorized users. The authentication cookies are encrypted using industry standard algorithms. Our applications provide a CAPTCHA feature to safeguard the applications from robots or other scripted programs that could be used to break into secure systems. The sign-out process for the application is also implemented with the authentication to safely dispose the authentication cookie.

Overt and Covert Security testing

- We periodically perform in-house security scan of our application to detect and prevent compliance breaches.
- We use the services of Qualys a provider of cloud security, compliance and related services to perform regular security audits of our software services.
- We regularly receive a detailed application scan report as soon as Qualys completes their detailed scan for all critical vulnerabilities.
- We constantly monitors these reports to ensure any vulnerability identified is addressed right away and ensure system is in compliance to host the test administrations.

- We have already used the services of Qualys in other states and successfully received the certification from OIT to host student test administrations.

Communication Flow of Server and Test Interface

Our online system delivery platform is built on a robust network programming interface utilizing relevant HTML5 features to take advantage of efficient transfer of data in highly congested and latent network environments. Data between Server and iTester is transmitted over a 128-bit HTTPS / SSL encrypted connection. Test content being downloaded to client is encrypted using AES algorithm.

Hosting and network

The proposed solution will be hosted in a world class hosting infrastructure provided by EDGE Hosting (EDGE). We collaborated with EDGE, an SSAE 16 SOC 2 Type 2 certified provider focused exclusively on mission critical hosting platform, to design a highly available and secure hosting solution to maximize the performance and availability of our iTester platform. Benefits of EDGE include:

- Compliance with NIST 800-53 Rev 4, PCI, HIPAA, SSAE 16, SAS 70, and FISMA. EDGE's primary data center is located in Baltimore, Maryland with a disaster recovery datacenter in Virginia.
- Multiple measures to control access to confidential information. Access to the EDGE datacenter and associated facilities is controlled to prevent unauthorized persons from accessing customer equipment and EDGE infrastructure.
- Intrusion Prevention System (IPS)/Intrusion Detection System (IDS) appliances to block and monitor malicious traffic on their network. IPS appliances are placed in-line with network connections via redundant network taps to prevent network failure in the event of IPS failure. The intrusion prevention systems protect devices on the network from a number of threats such as brute force attacks, synfloods, and vulnerability scanners. The security team at EDGE monitors these devices.

Topic 7 Technical Compatibility

The NH DOE is committed to an assessment system that utilizes solutions that recognize the heterogeneity of technology capacities in the 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 vendor's response must describe how it will ensure and verify that its system functions comparably across a range of devices. The vendor's response should address how it will ensure that the system is not impacted by upgrades or other changes to devices or operating systems.

eMetric has provided the iTester assessment platform for high-stakes online assessment administration since 2008 and has gained valuable experience and understanding of the realities that exist in schools in regards to available technology, bandwidth and technical support. As a result, the iTester platform has been fine-tuned to account for a host of unique technology environments and constraints that exist in many schools. iTester is neutral with respect to platform, device, and content. It supports both wired and wireless connections on all eligible devices and is designed to provide a consistent, intuitive user

experience regardless of test-taking device and operating system. A caching module is available if deemed necessary. Topic 3 details iTester's technology requirements.

During a live administration all updates to iTester will be shared with New Hampshire and only deployed upon approval. All patch updates related to operating system, web servers, database servers will be performed during the weekend when there is no online student activity. The system will be thoroughly tested after every update and the state will be informed as soon as the update is complete. Upgrades or other changes made by districts or schools will not affect iTester provided the upgrades remain in line with our technology specifications. When new versions of OSs are released we routinely thoroughly test the application. If it is deemed to be in the best interest of users to upgrade, we will work with New Hampshire and Measured Progress to plan and schedule an upgrade.

Topic 7.1 Interoperability

Interoperability is a core design principle for NH assessments technology development and operations. The NH DOE is 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 districts. Reliable and flexible interchanging of data between components that are both internal and external to the assessment system, and across diverse networks, are key requirements of the NH Assessment System.

The vendor's response must detail their plans for ensuring interoperability. The vendor's response should address its compliance with industry-recognized, open-licensed interoperability standards and the processes and procedures used to verify and validate interoperability.

eMetric's powerful and intuitive iTester platform was built using the latest technology with a resolute commitment to quality. Our platforms are regularly cited by our clients and competitors as technically advanced and innovative. To provide for uncomplicated transfer of test content from various authoring and delivery systems into iTester, the authoring module includes a Question and Test Interoperability (QTI) importer tool. The QTI importer tool is a modular application, currently based on QTI 2.1 Final specifications, leveraging the Chromium Embedded Framework (CEF). Once a QTI item package is uploaded to iTester, imported items can be previewed, edited, and finalized. Items authored in iTester can be exported in QTI format and conform to IMS specifications. Our clients and partners have found iTester's QTI capabilities to substantially lessen the burden associated with changing assessment vendors.

Data transmissions between users and servers are encrypted and sensitive data are stored in an encrypted format on a server with the infrastructure and perimeter secured using industry standard best practices. eMetric provides a Secure FTP (SFTP) site for the transfer of sensitive student-level data files. eMetric utilizes industry standard authentication protocols such as enforcement of strong passwords for the SFTP sites and signed digital certificates. After successful completion of data transfers for each administration, eMetric utilizes the same security protocols to move data from the SFTP site to eMetric data processing equipment. Websites containing sensitive material require public-key cryptography security through secure sockets layer (SSL) connections.

eMetric and Measured Progress have worked together linking applications to streamline and automate business processes wherever possible to generate maximum benefit. The Measured Progress and eMetric teams will work with the State throughout all phases of the systems interconnecting life cycle to standardize and achieve the desired objective—sharing data and other information resources in a secure way.

D1.3 Security and Protection of Data

Topic 8 Security and Forensics

The vendor 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.

Measured Progress takes test security seriously, including the security of our eMPower test content and local test administrations. Our test security policies and practices protect student data privacy, test data security, and the security of test content. We use a framework for designing and implementing comprehensive test security systems, Prevention, Detection, Investigation, and Resolution (PDIR; Ferrara, 2017). And we rely on close collaborative efforts with our clients to protect test security and data integrity.

We commit to working collaboratively with NH DOE to prevent test security violations. Our efforts include, for example, providing training materials that are required for mandatory local training sessions and reporting procedures and forms for test administration irregularities and security concerns.

We also commit to working collaboratively with NH DOE to encourage and support rigorous, professional investigations if security issues should arise to resolve all details to the degree possible after investigations. We have developed data forensics procedures to detect (as well as deter) cheating and other security violations in the following areas:

- Unusual score gains or drops from one administration to another, within and across school years. This analysis serves as a general check that something may be going on in the background that may require forensic analysis and other investigations.
- Inordinately similar item response patterns for scored and field test items that may be due to student collusion, test administrator intervention, or prior knowledge of test content.
- Inordinate numbers of wrong-to-right answer changes. This form of cheating may be due to test administration intervention during or after test administration. It is most well-known form cheating for paper-pencil testing and may be less prevalent for online testing.

We provide reporting mechanisms so that test administrators, School and District Test coordinators, and other can report test administration irregularities, including disruptions to a test administration, unruly behavior in a testing room, misuse of test administration accommodations, and concerns about possible test security violations. Measured Progress reviews those reports each day and follows up in a timely fashion. We are developing procedures to monitor online behavior, including web crawling to identify social media discussions and postings of secure test content and other possible violations and unusual behavior such as inordinately short or long response times which may suggest possible prior knowledge of test content or activities to steal test content.

We use all of this information to guide forensic analyses, actions necessary to mitigate risks, efforts of all stakeholders to enhance security protections, and support follow-up investigations. Measured Progress will identify potential security issues and risks, report our findings as part of test administration security reporting, and make recommendations for additional prevention measures. We will then work with NH DOE to develop a plan to address all flagged risks.

The eMPower *Test Security Policies and Procedures* document (see Appendix 5) specifies 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. (We are using the Irregularity process as a baseline, and will work with NH DOE to create a process that meets New Hampshire-specific policies.) These procedures are specified in the *Test Administration Manual* and school and district *Test Coordinator Manuals*. We codify the collaborative agreement about shared responsibilities for test security of Measured Progress and eMPower users in a *Test Security Agreement* and support local efforts at protecting test security and orderly administrations by providing test administration and security training materials for use by testing coordinators and *Testing Irregularity Report* forms to report test administration irregularities to support decisions about whether follow-ups are needed.

Topic 8.1 Test Security

The vendor’s response should address the following areas in general test security:

- **Develop and implement a comprehensive plan to ensure the security of test items, materials, and student data throughout the assessment cycle.**
- **Develop and implement training procedures and materials regarding test security, and confidentiality of student data and personally identifiable information**
- **Develop protocols for the secure collection, storage and destruction of secure and confidential teacher and student information.**
- **Develop and implement uniform policies and procedures for identifying and dealing with possible security breaches and testing irregularities.**
- **Develop 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.**
- **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.**
- **Provide a secure architecture to protect the development and administration environment from network-based attacks.**

Data encryption and security provisions are available to safeguard sensitive data such as test content, student personal information, and student responses. The platform supports the best security algorithms and techniques such as isolated storage. Our approach to security is time tested and follows all industry standard best practices. We also employ strict internal policies to protect student personal information. Employee access to client data is restricted. All server consoles are locked with tightly controlled passwords. All workstations require network authentication and screen savers. Available security updates and patches are reviewed on a daily basis and implemented on all servers when applicable. Websites containing sensitive material require public-key cryptography security through secure sockets layer (SSL) connections.

Figure 2 in Topic 4 details iTester’s architecture. iTester employs the public cloud, via Regional Content Delivery Networks (CDNs), to individually host definable static assets. The use of CDNs essentially eliminates the potential for distributed denial of service attacks.

In section D 1.2, Topic 3, we provided a systems overview of Measured Progress and eMetric systems. This included two high-level diagrams around infrastructure and security. Please see Exhibit 28: Measured Progress High Level Infrastructure and Exhibit 29: Measured Progress High Level Data Protection Overview.

Measured Progress has provided its Information Security details in Appendix 12.

Policies and Procedures for Identifying and Addressing Possible Security Breaches and Test Administration Irregularities

Because student privacy and district data integrity and reliability and validity of eMPower test content is important to all of us, together we are obligated to resolve all suspected, alleged, and supported test administration irregularities and security violations.

Investigations may be simple or require rigorous, sensitive, professional inquiry and follow-up. For example, follow-up investigations may be as simple as asking a test administrator to clarify an irregularity report that a disruption occurred during test administration. Other follow-up investigations may be complicated and highly sensitive—such as investigating reports that students were coached on item responses during test administration, that particular testing group or school may have had access to test items before the test administration, or that there was educator intervention after student test taking. Follow-up investigations may be undertaken by district staff, by agreement between Measured Progress and New Hampshire Department of Education, or by a third party.

Measured Progress recognizes that in most cases no single report or piece of evidence is adequate to support an allegation of cheating or other test security violations. We also recognize that no single protocol is adequate for all situations and contexts for weighing evidence to draw conclusions and take corrective or punitive or other actions. Evidence must be reviewed to determine whether it indicates and supports the need for further investigation; and whether it indicates and supports the need to take corrective, punitive, or other actions to resolve a security incident. The types, amounts, and strength of evidence required will depend on the suspected or alleged violation, the extent of harm that results from the violation, and the severity of the sanctions or damages or claims to be imposed on violators.

Measured Progress will work with the New Hampshire Department of Education to review substantiated evidence of a security breach (within legal limitations), determine programmatic corrective measures needed, and make recommendations to mitigate risk in the future. Measured Progress may follow its change order process to determine the level of corrective measures needed and, once mutually agreed to, will enact the corrective measures. School districts may be expected to take action in a school or with school or district personnel who may be responsible for a test administration irregularity to prevent similar errors in the future, or take appropriate personnel actions for educators who are responsible for significant test security violations. If Measured Progress's intellectual property is harmed or damaged due to a security breach outside the control of Measured Progress or its subcontractors, Measured Progress may be forced to take action to recoup lost assets.

In addition to requesting monitoring of eMPower administrations in schools by district and state personnel (see Topic 8.3), Measured Progress conducts standard data forensics analyses to guard against the highest risk threats to test security for paper-based and online test administrations (see Topic 8.2 for details).

Topic 8.2 Data Forensics

The vendor will apply procedures to monitor, detect, and evaluate the assessments for potential cheating, and provide documentation to the NH DOE. The vendor's response should describe plans and procedures to provide continuous updates that capture a variety of data including but not limited to:

- Time of testing,
- All student answer choices including the final choice used for scoring;
- Response latency;
- Tracking the movement of the examinee through the test;
- Student response times;
- Accessibility options used by the student; and analysis of student gains over time; and
- Differential performance on common and matrix-sampled items, if applicable.

Measured Progress takes test security seriously, including the security of our eMPower test content and local test administrations. Our test security policies and practices protect student data privacy, test data security, and the security of test content. We use a framework for designing and implementing comprehensive test security systems, Prevention, Detection, Investigation, and Resolution (PDIR; Ferrara, 2017). And we rely on close collaborative efforts with our clients to protect test security and data integrity.

We have little systematically collected information about incidence rates of different kinds of threats to test security (Ferrara, 2017). Based on media reports over the last 20 years, the most frequent violations in educational testing appear to be disclosure of test content to students before test administrations and educator intervention on student responses to items during or after test administrations. Of course, the majority of these reports were about paper-pencil test administrations. In contrast, respondents to a periodic survey by the Association of Test Publishers regarding online test administrations (Association of Test Publishers; 2015) ranked exposure and dissemination of test content through social media the most important concern for their clients (p. 95) and computer intrusions, test administrator, coaching of examinees, and manipulation of examinee responses the least concerns.³

With these highest priority threats in mind, Measured Progress conducts standard forensic analyses for all eMPower administrations. These include:

- Unusual score gains or drops from one administration to another, within and across school years. This analysis serves as a general check that something may be going on in the background that may require forensic analysis and other investigations.
- Inordinately similar item response patterns for scored and field test items that may be due to student collusion, test administrator intervention, or prior knowledge of test content.
- Inordinate numbers of wrong-to-right and all answer changes. This form of cheating may be due to test administration intervention during or after test administration. It is most well-known form cheating for paper-pencil testing and may be less prevalent for online testing.

³ The majority of respondents were from certification, licensure, and vendor organizations; the response rate was only 13.5% (Association of Test Publishers, 2015, pp. 11-12).

We apply these analyses to test data from both online and paper-based test administrations. In addition:

- We analyze total testing time, response latency for all items, and differences in performance and response latencies for common and matrix items (e.g., field test and linking items, the New Hampshire matrix operational items). Combining results from these analyses to other standard analyses enables us to identify potential security threats that are particularly relevant to online testing.
- We conduct web patrolling of popular social media outlets to identify and deter posting and open discussions of secure test content.
- Consistency between test administration accommodations specified for a student and those indicated as delivered during test administration.

Topic 8.3 Test Monitoring

The vendor shall describe in detail the steps that it would take to monitor the fidelity with which the test administration and security procedures are being applied.

In New Hampshire the district test coordinators are expected to report violations of administration and security procedures to the NH DOE. Should a district test coordinator contact the vendor, the vendor shall redirect the district test coordinator to verify with NH DOE that the issue was appropriately reported.

While the ultimate responsibility for the fidelity of the test administration and security resides within each classroom and school as part of the assessment process Measured Progress will require each Principal to sign a document used by principals or their designees to provide certification that correct administration procedures have been followed by the school. This will help us to ensure that the principal is aware of the administration procedures and to the fact that procedures were followed, which goes to strengthen the validity of the assessment.

In addition, should a district test coordinator contact the Measured Progress through the Customer Care Center this information will be passed on to our Client Services program team who in turn will contact the NH DOE to report the violation.

Topic 9 System Security

The vendor shall provide a detailed description of the security design and architectural features incorporated into the proposed system. At a minimum, the vendor will discuss the following:

- Describe the practices employed to ensure that your system and staff comply with FERPA regulations.
- Describe the system assurance provisions incorporated into the proposed system. At a minimum, discuss the following:
 - a) What process or methodology is employed within the proposed system to ensure data integrity?
 - b) To what degree does the approach rely on system assurance capabilities of the relational database management system (RDMS)?
 - c) If multiple databases are employed, what extra procedures are employed to ensure synchronization among databases?
- Discuss the company's practices pertaining to the following security testing:

- a) The identification and authentication methods used to ensure that users and any interfacing applications are identified and that their identities are properly verified.
- b) The authorization methods used to ensure that users and client applications can only access data and services for which they have been properly authorized.
- c) The immunity methods used to ensure that unauthorized malicious programs (e.g., viruses, worms and Trojan horses) do not infect the application.
- d) The methods used to ensure that communications and data integrity are not intentionally corrupted via unauthorized creation, modification or deletion.
- e) The methods used to ensure that the parties to interactions with the application cannot later repudiate or rebut those interactions.
- f) The intrusion detection methods used to ensure the detection, recording and review of attempted access or modification by unauthorized individuals.
- g) The privacy methods used to ensure that confidential data and sensitive communications are kept private.
- h) The system maintenance methods used to ensure that unauthorized system maintenance does not unintentionally disrupt the security mechanisms of the application or supporting hardware.
- i) The testing methods conducted to load and stress test your system to determine its ability to withstand Denial of Service (DoS) attacks.
- j) Your software patch schedule employed to protect the software from new security vulnerabilities as they arise.
- k) The ability of your system's software to be installed in a "locked-down" fashion so as to turn off unnecessary features (user accounts, operating system services, etc.) thereby reducing the software's security vulnerabilities and attack surfaces available to system hackers and attackers.

Compliance with FERPA: As previously described, iTester provides role-based system access. User profiles are configured to comply with New Hampshire privacy laws and FERPA by restricting access to student information, performance data, and test items to authorized users only.

eMetric and Measured Progress employ strict internal policies to protect student personal information. Employee access to client data is restricted. All server consoles are locked with tightly controlled passwords. All workstations require network authentication and screen savers. By default, the system denies all access to sensitive data and then grants access only to selected staff. Available security updates and patches are reviewed on a daily basis and implemented on all servers when applicable. Websites containing sensitive material require public-key cryptography security through secure sockets layer (SSL) connections.

System Assurance Provisions: The assessment delivery system is built on a solid standards-based data storage system. Our delivery system relies on the operational data store implemented using a Microsoft SQL Server relational database management system which is optimized to handle IO and data intensive OLTP workloads. Data flows into the operational data store from both external and internal components using standards such as APIP, SOAP and REST.

Secure data are the lifeblood of eMetric's infrastructure and we are stringent when it comes to data integrity and the ability to quickly restore any lost data. Network Appliance Filers are in use throughout our entire organization. These filers facilitate the replication of all data stores to an off-site facility across our proprietary gigabit fiber. The replication of data is accomplished by taking periodic snapshots of data stores at various time intervals. These intervals are set according to different parameters, including how often data changes occur and the importance of data sets. The most frequent interval is fifteen minutes, while the longest time interval between snapshots is eight hours. By replicating data from high-speed filer

to high-speed filer, we are able to create restore points, which may be referenced instantaneously, as opposed to several hours or days with conventional tape media.

In addition to replicating data to off-site stores, we also make use of super digital linear tape (SDLT) libraries for creating permanent archives of data. These tape libraries are a complement to our high-speed filers since they give us the ability to reference data sets that are several years old.

eMetric implements hourly and nightly maintenance plans comprised of the following tasks: Backup - All Tables, Full Backup, Backup - Selected Tables, Full Back up (hourly), Backup - Transaction Logs (every 15 minutes), Check database integrity, Reorganize index, Update statistics, Rebuild index, Temp db cleanup. In addition, we also implement a weekly schedule of full-system backups, shrink database, and archiving as well as nightly incremental backups to capture daily activities.

Company Practices:

a) The identification and authentication methods used to ensure that users and any interfacing applications are identified and that their identities are properly verified.

Each student is assigned a unique username and password for each test scheduled. In order for a student to take an operational test, the student must use a secure Kiosk and must log in with the correct username and password. Further, session access codes can be activated to ensure that the student only has access to the appropriate test session at any given time.

The iTester user management system provides role-based system access and includes multiple levels of roles and permissions. Standard username and password based authentication for restricting access is employed to unauthorized users.

b) The authorization methods used to ensure that users and client applications can only access data and services for which they have been properly authorized.

The iTester user management system provides role-based system access and includes multiple levels of roles and permissions. Standard username and password based authentication for restricting access is employed to unauthorized users. The authentication cookies are encrypted using industry standard algorithms. The sign-out process for the application is also implemented with the authentication to safely dispose the authentication cookie.

User profiles are configured to comply with New Hampshire privacy laws and FERPA by restricting access to student data to authorized users only.

- Classroom level users will only have access to student information for students in their own classroom(s).
- School level users will only have access to student information for students in their own school.
- District level users will only have access to student information for students in their own district.
- State level users will have access to all student information across the state.

User Management allows administrative level users to control access to the iTester portal for users within their own organization (class, school, district). Administrative users may add, edit, or deactivate existing

accounts within their organization. Users may not control account access for users outside their class, school, or district.

Measured Progress and eMetric will work closely with NH DOE to ensure the appropriate user permissions are assigned to each role within the portal. We also anticipate NH DOE will provide authentication data such as username conventions to Measured Progress. As appropriate to the system in question, Measured Progress generates passwords and matches them with user names. The credentials are uploaded in bulk to the system and provided through appropriate channels to users. The Measured Progress Customer Care Center supports user authentication and user management support calls for students, administrators, and educators. If password assistance occurs via email, the pre-registered address on file will be used. Password information will not be provided over the phone.

c) The immunity methods used to ensure that unauthorized malicious programs (e.g., viruses, worms and Trojan horses) do not infect the application.

Edge maintains Intrusion Prevention System (IPS)/Intrusion Detection System (IDS) appliances to block and monitor malicious traffic on their network. IPS appliances are placed in-line with network connections via redundant network taps to prevent network failure in the event of IPS failure. The intrusion prevention systems protect devices on the network from a number of threats such as brute force attacks, synfloods, and vulnerability scanners. The security team at Edge monitors these devices. Edge maintains audit logs in compliance with PCI requirements.

For data contained within Measured Progress's systems, we employ various solutions to perform either active system monitoring or on-demand system monitoring depending on the business need. These tools monitor the state of the system to ensure normal system function and reports data such as capacity, efficiency, and resource management as well as anomalies, errors, and other trouble alerts. More information is available in the attached Information Security Appendix 12.

d) The methods used to ensure that communications and data integrity are not intentionally corrupted via unauthorized creation, modification or deletion.

The iTester framework implements extensive logging features to capture and log interactions with the system. Reports can be provided to authorized users when requested.

e) The methods used to ensure that the parties to interactions with the application cannot later repudiate or rebut those interactions.

The iTester framework implements extensive logging features to capture and log interactions with the system. Reports can be provided to authorized users when requested.

f) The intrusion detection methods used to ensure the detection, recording and review of attempted access or modification by unauthorized individuals.

eMetric's hosting partner, Edge, maintains Intrusion Prevention System (IPS)/Intrusion Detection System (IDS) appliances to block and monitor malicious traffic on their network. IPS appliances are placed in-line with network connections via redundant network taps to prevent network failure in the event of IPS failure. The intrusion prevention systems protect devices on the network from a number of threats such as brute force attacks, synfloods, and vulnerability scanners. The security team at Edge monitors these

devices. Edge maintains audit logs in compliance with PCI requirements. As such, they will have 90 days of logs readily searchable in a portal environment and up to one year retrievable for further analysis if needed and upon request.

Measured Progress employs an intrusion detection system as well, and details can be found in the attached Information Security Appendix 12.

g) The privacy methods used to ensure that confidential data and sensitive communications are kept private.

The iTester user management system provides role-based system access and includes multiple levels of roles and permissions safeguard confidential data and sensitive communication are only accessible by authorized users. Measured Progress systems also used role-based access with functional permissions to control access to sensitive data. Please our Security Appendix 12 for more information.

h) The system maintenance methods used to ensure that unauthorized system maintenance does not unintentionally disrupt the security mechanisms of the application or supporting hardware.

We have SQL Server Maintenance Plans, Application Maintenance Plans, Server patching plan scheduled over the weekends to improve system performance.

We work with the respective teams to ensure these activities are planned during the time when there is no online student activity (weekends/holidays). We keep the state informed of any patching mechanism in advance.

We test the system after every maintenance task is completed to ensure it works as per design. Examples of maintenance tasks include:

- Verify that predefined maintenance tasks scheduled to run weekly are running successfully.
- Archive unnecessary files from site systems.
- Back up application, security, and system event logs and clear them.
- Check the site database size and verify that there is enough available disk space on the site database server to allow the site database to grow.
- Perform SQL Server database maintenance on the site database according to your SQL Server maintenance plan.
- Check available disk space on all site systems.
- Implement vendor patching/OS upgrades as per plan

i) The testing methods conducted to load and stress test your system to determine its ability to withstand Denial of Service (DoS) attacks.

iTester employs the public cloud, via Regional Content Delivery Networks (CDNs), to individually host definable static assets. The use of CDNs reduces the need to access information from the private cloud during live administrations, allows for scalable performance during windows of peak student testing, and essentially eliminates the potential for distributed denial of service attacks.

j) Your software patch schedule employed to protect the software from new security vulnerabilities as they arise.

We immediately fix, test, and deploy hotfixes as we identify any issues, including security vulnerabilities. Because the core of our delivery client is a web application, we have the flexibility to update it in the after-hours without requiring end-users to perform any action or download any new software.

If an issue arises in our kiosks, we will post an updated version as soon as a fix is made, but it is rare because our kiosks are lightweight and are simply delivery engines for the shell web app.

k) The ability of your system's software to be installed in a "locked-down" fashion so as to turn off unnecessary features (user accounts, operating system services, etc.) thereby reducing the software's security vulnerabilities and attack surfaces available to system hackers and attackers.

iTester's secure Kiosk follows industry standard best practices. Before launching the Kiosk, the lock-down functionality initiates a scan and enforces active applications, native device features, and tools are closed. To connect to the Application on the private cloud, the Kiosk must pass an authentication security check. Once these layers of security are satisfied, the Kiosk launches in full screen mode and will intercept and override all system commands that attempt to capture screenshots, close, or minimize the testing interface.

Topic 10 Backup and Recovery

The vendor shall provide a detailed description of the backup and recovery processes used to protect mission-critical data. The State seeks a sound backup and recovery provision as part of the solution. The vendor will:

- Describe the tools used for backup and recovery of applications and data.
- Describe the impact of the proposed backup process on the operation of the System.
- The vendor will address the following:
 - Use of and method for logging and journalizing;
 - Single points of failure and recommended approaches for their elimination; and
 - Approach to redundancy.

Describe options to have the collected data stored at the vendor's site in addition to sending results along to the State. Include a proposed retention schedule

At Measured Progress, all data is stored on encrypted disks, in fault-tolerant RAID configurations. All production data is backed up at least daily. The critical, frequently changing databases are backed up hourly or more often as appropriate. Copies of backup data are stored onsite for rapid restore, as well as offsite for disaster recovery purposes. Offsite backup data is securely transferred to Amazon S3 cloud storage. This allows us to move data offsite efficiently, ensure the integrity of the backup media, and have immediate access to backup data for recovery should the need arise.

eMetric's approach to system design and implementation takes into consideration that at any point in the software development cycle or production operations there may be a need to recover data. We developed our approach to backups after a careful evaluation process to determine and classify critical data. This evaluation eliminates data duplication and improves efficiency of the overall backup process.

- **Data Backups:** For all of our critical systems, we use RAID (Redundant Array of Independent Disks) volumes that offer redundancy and safeguard against hardware failures. These resources are also secured using industry standard ICISA certified firewall solutions. Critical data such as Application Source Code is backed up on a nightly basis. Important data such as business requirements, specifications and documentation are stored on redundant cloud services with guaranteed SLAs. Secure information, such as student assessment data that falls under FERPA guidelines, are stored within a secure internal NAS solution. Access to the NAS is only assigned to designated employees.
- **Database Backups:** We use log shipping and mirroring features provided by Microsoft SQL Server technology to backup databases. All databases on the primary production database server are configured to ship/mirror to a secondary production grade database server that is always available on stand-by. At the start of every administration, we plan, test and document our backup strategies. As part of our strategy, we take daily incremental and weekly backups. We have automated and scheduled our critical database maintenance tasks using the SQL Server maintenance plan. Most databases are configured for one-hour log ship intervals while some databases that do not change on a day to day basis are configured for 24-hour intervals.

Disconnected Architecture: iTester offers a network-independent operation providing a rich user experience for the student throughout the duration of the test. The disconnected architecture works by downloading all resources before the test start for each student, drastically reducing the need for network and server dependence during the test. During testing, our online system uses “heartbeats” to periodically send student responses back to the servers. This heartbeat process protects student responses by regularly saving them on the server. If an Internet outage occurs, student testing is not impacted and the data from the heartbeats are encrypted and saved on the student workstation. When the Internet connection becomes available, the saved student responses are automatically sent to the server.

Logging: The iTester portal framework provides a robust mechanism for logging errors in the database. Logging options related to verbosity and severity can be configured per application/component using a simple configuration file. In addition to application logging, high-impact components that require high availability such as the services required for Test Delivery component will expose simple methods used for health checks. We rely on these health checks to configure appropriate load balancing policies and algorithms.

Data returned by these health checks can also be used for quick reporting and instrumentation. We will define a set of minimum requirements per component/application to extend the existing logging and instrumentation functions available in our existing platform.

Eliminating Single Points of Failure: eMetric has employed ‘no single point of failure’ design principles in the development of iTester. iTester’s architecture design is detailed in Topic 4 Figure 2.

Redundancy: eMetric’s philosophy is to build redundancy and fault tolerance in the design and implementation of our computing infrastructure and applications. This approach reduces the potential for serious downtime or interruption. We have multiple application servers, database servers, and network devices such as load balancers and switches configured to allow for operations to continue, should one resource fail. Our service providers maintain a supply of extra equipment that is available for immediate deployment. We have negotiated with our providers for expedited services of any other technology that is needed.

Topic 11 Assurance of Business Continuity

The vendor shall provide a detailed description of the business continuity plan that mitigates risk to the State.

- Provide information on business continuity plans in the event that the hosting site becomes unavailable.
- Discuss plans for moving operations to a remote site if the hosting site is incapacitated.
- Discuss recovery time objectives and how the company will continue to meet federally required response metrics.
- The State believes that additional software license fees solely related to redundancy for assurance of business continuity would be inappropriate. If the proposal differs from this standard, describe and provide rationale for the difference.

eMetric actively maintains and updates a formal plan for disaster recovery and business continuity. The plan, included as Appendix 10, details eMetric's approach for archiving and business continuity solutions, system redundancy and fault tolerance, business continuity, and disaster recovery. The result is a reliable platform that takes the anxiety out of online testing.

Measured Progress plans for a variety of continuity risks that could potentially affect the ability to consistently deliver products and services that our clients rely upon.

Business Continuity Management

The purpose of Measured Progress's Business Continuity Management (BCM) program is to meet client expectations by:

- Assisting all Measured Progress locations and assigned personnel in preparation for, in response to, and recovery from continuity events
- Ensuring the safety and security of employees and visitors
- Minimizing the disruption of business operations
- Maintaining or restoring access to systems and data
- Recovering critical business functions
- Returning Measured Progress to normal business operations.

The goals of Measured Progress's BCM program include the protection, recovery, and preservation of:

- Employee safety and well-being
- Brand and reputation
- Client confidence
- Enterprise assets such as facilities, equipment, products, information systems and assets (digital and non-digital), intellectual capital and property
- Decision-making processes
- Continuity of business operations in acceptable time frames
- Revenue streams, funding sources and investments

- Legal, contractual and regulatory obligations

It is Measured Progress’s policy that all locations have in place Business Continuity (BC) Plans to direct, control, and coordinate the response and recovery of operations. These plans describe specific organizational roles, responsibilities, and procedures.

Our BC Plans document the processes for keeping clients, employees, suppliers, senior leaders, other stakeholders, and the public informed, including procedures to coordinate with other Measured Progress locations, business partners, regulators, and public authorities. All Measured Progress locations and departments develop, maintain, and continuously improve their Business Continuity Plans to ensure organizational resilience and sustainability, and promote a coordinated and timely response to a continuity event.

Measured Progress’s management recognizes its ethical and fiduciary responsibility to protect, preserve and recover enterprise resources (for example, personnel, facilities, equipment, IT systems and information assets) if a continuity event occurs.

The BCM program is supported and directed at the executive level, with an executive sponsor and steering committee. A program leadership team representing a cross section of all business areas monitors and manages progress. Business Continuity Coordinators are assigned responsibility for key business areas, departments, and office locations.

BCM teams have responsibility for both developing and maintaining the BC plans, as well as for executing those plans in an actual continuity event. All BCM roles must have a primary person and at least one alternate assigned.

Operational Impact Risk Assessment

Ongoing assessment of operational risks occurs to develop and implement strategies for prevention or mitigation that are appropriate and effective, considering the realities of constraints in resources, time, and corporate priorities.

A standard risk assessment process has been defined and is executed on a periodic basis or when new risks are identified. The steps in this process are as follows:

Process Steps	Explanation
Risk identification	Includes appropriate escalation of a risk once it has been recognized
Risk definition	Clearly describe, quantify, or qualify the risk
Assessment of Likelihood	Typically this utilizes a 3 level (high, medium, low) or 5 level (high, med-high, medium, med-low, low) rating scale
Assessment of Impact	Impact can be ‘hard’ (dollars, people, other assets, etc.), or ‘soft’ (lost opportunity, damage to brand or public relations, customer service, failure of critical corporate objectives, etc.), using a relevant rating scale similar to likelihood
Definition of Timing Considerations	the likelihood or potential impact may change based on the timing of an anticipated event, or certain known risks may have a specific date or time associated, and should be considered in developing a strategy

Process Steps	Explanation
Identification of any Dependencies	Identified risks may be dependent on other risks, or on known or anticipated events
Prioritization / Ranking against other known Risks	Based on the likelihood and impact ratings, use of a ‘magic quadrant’ is helpful in visualizing and prioritizing risk
Prevention, Reduction, or Mitigation Strategy definition	Strategies may require significant efforts or projects, to effectively prevent, reduce, or mitigate impact from risks
Development and Implementation of Prevention / Reduction/Mitigation Strategies	Clear accountability, requirements, and timelines must be established to ensure successful implementation
Monitoring / Tracking / Improving	Risks and strategies must be monitored and periodically re-assessed to ensure strategies remain effective, or to identify opportunities for continuous improvement

The Risk Assessment process is often the point of initiation for significant ‘mitigation projects’. These are projects that typically take on their own life, managed separately from BCM, with assigned resources and defined timelines for completion. The Risk Assessment process must therefore monitor mitigation projects to ensure they have ownership, make appropriate progress with proper participation, and come to completion.

Emergency Response/Business Recovery Plan

The purpose of the Business Recovery Plan (BRP) is to minimize the impact of business interruptions by enabling employees to respond in an organized, efficient manner to an incident, thereby ensuring that critical business functions are restored within predetermined times, so that we can continue to meet the needs and expectations of our customers and stakeholders.

BRP includes assessment and analysis of the risk and impact of a continuity event, to mitigate risk in advance of an event where possible, and develop strategies for recovering business functions after an event has occurred.

The goals of Measured Progress’s BRP program include the following:

- Ensure continued client satisfaction
- Continue critical business functions in a cost-effective manner
- Limit the severity of the disruption
- Protect corporate assets, including information assets
- Maintain a positive image/reputation
- Comply with all statutory and/or regulatory requirements
- Effectively restore critical business functions in accordance with recovery priorities
- Develop contingencies for effective communication with employees, customers, business partners, regulators, and other stakeholders following a continuity event
- Develop strategies for recovering critical business functions, resources, and assets

- Establish recovery teams with clearly defined roles and responsibilities for both planning and execution of the BRP



The Business Recovery Plan is one of 4 components of the overall Business Continuity Management program (reference “BCM Overview”):

- Emergency Response Plan (ERP)
 - Focus on employee safety
 - Evacuation, medical emergency, shelter-in-place, etc.
- Incident/Crisis Management Plan (IMP)
 - Focus on crisis command and control
 - Protect and account for people, safeguard Measured Progress brand and reputation, protect corporate assets, mitigate further risk
- Business Recovery Plan
 - Focus on recovery of business operations
 - Critical functions, processes, services, and communication with customers, business partners, and staff
- IT Disaster Recovery Plan (DRP)
 - Focus on information technology
 - Systems, data, telecommunications, IT services, network, data center operations

Business Continuity and Employee Training

All individuals who have a role in response activities as part of Emergency Response, IT Disaster Recovery, Business Recovery, and Incident/Crisis Management, receive periodic orientation/refresher for emergency event scenarios identified in the plans and participate in drills, tabletop exercises and other plan testing.

All Measured Progress locations ensure that every employee is provided with site-appropriate building evacuation procedures. New employees receive training during orientation upon hire. Periodic refreshers are provided to existing employees to maintain awareness and relevance. Certain response plans such as evacuation procedures are exercised annually as part of a drill.

Employee training associated with cross training occurs on a regular schedule but is defined by department leadership based on business need. For example, departments may train annually, prior to planned time off, or before major upgrades or releases.

Emergency Responders

The Local Emergency Response Team (LERT) is composed of staff members that have been selected or have volunteered to respond in an emergency, to protect the safety of their fellow employees. Following is an itemization of key emergency response duties:

Planning role

- Be fully aware and knowledgeable of all Emergency Procedures
- Participate in drills
- Participate in periodic continuous improvement meetings
- Gather feedback to support improvement efforts

Advocate for emergency preparedness in relevant business units, and across the company

Response role

- Direct others during an actual evacuation, and during drills
- Provide emergency medical response if trained and qualified
- Take charge in an emergency situation
- Gather information about the emergency to support good decision making
- Alert others, ensure proper notification is given and escalated

Should an incident occur, the following roles will activate:

Incident commander

- Takes charge in an emergency and leads the Local Emergency Response Team (LERT)
 - Ensures proper notifications regarding the event are made
- Gathers accurate information about the emergency from staff, building management, or civil authorities

- Deputy incident commander
 - Assists the Fire Warden with communications to employees and in evacuating the premises
- Backup replacement for the Incident Commander if unavailable

Searcher

- Searches the assigned floor space, including rest rooms, conference rooms, offices, cafeteria, etc
- Assist the Warden and Deputy Warden in guiding people out of the building or to safe havens

Facilities/Security

Security personnel or Facilities staff assist and provide direction in the event of a building emergency or evacuation, based on pre-defined emergency procedures.

As a sound business practice, Measured Progress has provided a summary of the business continuity plan for processes that can be accomplished remotely during a disruption. Specifically, Measured Progress categorizes potential business disruptions into the following categories:

- One or more vital systems are non-functional
- The building(s) is not available for an extended period of time but all systems are functional within it
- The building(s) is available but all systems are non-functional
- The building(s) and all systems are non-functional

Alternate Locations

It has been determined that the majority of functions can operate remotely, resuming business-as-usual operations at 100% capacity provided the necessary software tools and hardware resources are available. For the remainder of functions requiring a workspace, response personnel at each location has defined alternate locations and resources necessary to continue work at capacity or at a reasonably reduced capacity.

Workforce Contingency

Measured Progress has conducted pandemic planning at the department level where critical roles were identified and contingency planning has been accomplished with cross training. Cross training occurs with peers within functions, departments, and among leadership to support functions and tasks. Ideally, no role is a single-point of failure. We are configured to support work from home for the majority of functions and operations. For remaining functions and operations, multiple personnel are trained, back-up equipment is in place, and the resources to schedule additional shifts with short notice are on contract to support reduced staff and increased operating times.

Secondary Communications

In the event of any or all of these types of business disruptions affecting the company, Measured Progress will do all it possibly can to continue business within 24 hours of the business disruption. Measured Progress Client Services staff will to contact our clients, suppliers, partners and critical vendors by telephone and email to apprise them of the operational status of the company. Additionally, notification will be placed on our main number outgoing message. Human Resources systems are in place and made

readily available for leaders to communicate with employees, replacing the prior phone tree method of contact.

Business Continuity Plan Testing

Various exercises (walk-through, scenario planning, table-top, drill, etc.) will be used throughout the planning and improvement processes to identify planning gaps and overlaps, and verify effectiveness and thoroughness of the plan that is being developed.

Formal testing is especially required for backup/alternate technology, equipment, facilities, physical assets, and/or alternate personnel that are utilized in a recovery plan.

Exercises or tests are required on a periodic basis for all business continuity plans to ensure readiness and effectiveness. Measured Progress has not employed third-party testing but is happy to do so upon contract award at a negotiated price.

D1.4 Training and Support

The vendor will be responsible for providing the training and support required to ensure the administration of the NH assessments, including maintaining a support center to provide quality customer service and support to districts and schools throughout the registration, testing, and reporting cycles. The vendor will develop test coordinator and test administrator manuals to ensure effective administration of the NH assessments.

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.

In accordance with the specifications set forth in the RFP, Measured Progress will maintain a support center discussed in Topic 38 and 39 and we will develop and deliver electronically in an ADA-compliant format to all schools and test coordinators the Test Administration Manual (TAM) and Test Coordinator Manual (TCM) for the administration of NH ELA, Math and Science summative and interim assessments. For school and district test coordinators who wish to order print copies of the TAM, copies will be available in small quantities by calling the Measured Progress Customer Care Center. We have developed a budget for the eMPower ELA and Math TAM and for a Science TAM of 44 pages plus covers with perfect binding for print order of 850 copies. The materials will provide detailed guidelines for planning and managing the administration of the assessment. Our eMPower ELA and Math administration manuals will form the basis of these guides. We will make available downloadable copies of all final, approved materials in PDF format for posting on NH DOE website four weeks prior to each administration. Measured Progress will assume responsibility of updating the TCM and TAM as needed after each administration based on changes to the program. Discussion of the training assets can be found in Topic 13 below.

We will provide drafts of the Science manuals to the NH DOE for review and approval prior to production. Measured Progress editorial staff will also proofread the manuals. We place heavy emphasis on test security throughout the manuals. We will also include information on procedures for inclusion of accessibility and accommodations. The TAM and TCM will provide information regarding the activities that must take place prior to administration, during administration, and after administration. The TAM and TCM will include information specific to the test coordinators' role and will detail their

responsibilities regarding all aspects of administering the assessments. There will also be a focus on completing these manuals for system training events.

Topic 12 User Manuals and Guides

The vendor shall develop and produce an Online User's Guide. The guide shall provide technical specifications for use of the online platform used for testing.

Information shall include but not be limited to: hardware specifications, proctor caching requirements if needed, student data upload process, data editing information, detailed information on the use of the assessment tools, and other technical guidelines as necessary. Thumbnail art shall be included as much as possible. Separate guides may be provided with focuses for technical and assessment staff. The guide shall be provided in PDF format for posting to NH DOE and vendor websites and in Word for use by the NH DOE in creating training and informational materials.

Measured Progress will work with NH DOE to establish and implement training protocols for technology coordinators and test coordinators on all aspects of the assessment program. This information is typically described in a test delivery platform manual as well as test coordinator and test administrator manuals. An Online User Guide will be provided in PDF format posted on the NH DOE and Measured Progress NH state-facing sites.

Workstation Readiness

In addition to the Online User Guide the eMetric iTester platform includes user-friendly web-based readiness tools for school districts to assess their readiness for the successful deployment of the delivery platform. These tools allow schools and districts to verify network infrastructures, network bandwidth, and to ensure that testing devices are properly configured for administering student testing. The results (pass/fail) from the verification process are immediately viewable; deficits, including inadequate bandwidth to support the desired number of concurrent test takers, are identified as well. The readiness tools allow districts and schools to address any potential technology related issues well before testing begins to ensure a smooth testing experience.

To access these tools, unique login credentials are provided to authorized technology coordinators within the administration portal at the school-level. Technology coordinators use these credentials to access and execute the readiness tool on the actual student workstations. The following guidelines are provided as part of the readiness surveying and profiling process:

- School sites are expected to run the device readiness tool only when they are certain the configuration of the device in terms of operating system, installed software, updates, device drivers, patches, and hardware, will remain consistent with the configuration that will be used for student testing.
- If a site comprises devices with different configurations, it is advised that the readiness tool be executed on at least one device for each of the configurations.
- The device readiness tool should be executed on devices that are connected to a network in the same manner they will be connected during student testing (wired or wireless).

The site readiness tool performs the following test and verification tasks on the site infrastructure:

- Performs a network connectivity check by connecting to the data center and provides remedial instructions when a problem is discovered.

- Performs a throughput check to determine the available bandwidth at the site.
- Collects from the admin user the number of devices that will be used within the site and the anticipated number of students testing online.

When a readiness test is completed, a log is created and displayed in the administration portal. Logged information includes the IP address of the workstation, operating system, and additional information required for validation. The authorized technology coordinator may also certify site readiness, indicating the site is ready to begin testing. The certification process logs the date and time of site certification as well as the username of the account certifying site readiness. Workstation readiness testing will be made available at least 50 days prior to pre-identification of students for specified tests.

Topic 12.1 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.

The Test Coordinator Manual (TCM) provides comprehensive instructions to guide district and school-level test coordinators through the preparation for, and receipt of, computer-based and paper-based test materials, test day administration procedures (including security requirements and policies for online and paper testing), and return of test materials to the contractor. The TCM will contain general instructions for administering the assessment including, information about checking materials, planning testing schedules, security of materials, technology requirements, student registration completing the student demographic portion of the response documents, test directions, administration of the test. The TCM also includes discussion of security policies and protocols. The ELA and Math TCM will be based on the eMPower administration manuals and will be updated to include state specific accessibility and security policies. The Science TCM will be customized for the NH assessment and will contain content similar to the eMPower manuals.

Topic 12.2 Test Administration Manual

The Test Administration Manual (TAM) will provide all directions needed by the test administrator to prepare for and administer the assessments, including security procedures.

The vendor shall develop and produce a TAM for each assessment per administration. This document is provided to assist the test administrator during the testing session. Administration requirements for all grade levels and/or content areas assessed for each assessment shall be included in the TAM. Separate TAMs may be developed for field test administrations, online assessments, and paper assessments.

The TAM shall contain general instructions for administering the assessment including, but not limited to, information about checking materials, planning testing schedules, organizing classrooms, preparation of students, use of standardized testing procedures, administering practice activities, security of materials, completing the student demographic portion of the response documents, accessibility instructions, test directions, administration of the test, assembly of materials for scanning and processing, checklists for class, school and district level procedures and information for returning materials. Thumbnail to full scale images of documents, forms, and other ancillary materials as needed with illustrations and explanatory diagrams shall be used extensively. The TAM will include scripts necessary to administer the assessments, and procedures and scripts necessary for accommodated testing outside of the assessment delivery system.

The TAM shall be reviewed prior to each administration and revisions shall be made to reflect changes related to the program, State and/or federal guidelines. The vendor shall make these documents available in printed form and for downloading from the Internet on a secure site.

Test Administration Manual

The *Test Administration Manual* (TAM) provide comprehensive instructions to guide test administrators through the preparation for, and receipt of, computer-based and paper-based test materials, test day administration procedures (including security requirements and policies for online and paper testing), and return of test materials to the contractor. The TAM will contain general instructions for administering the assessment including, information about checking materials, planning testing schedules, organizing classrooms, preparation of students, use of standardized testing procedures, administering practice activities, security of materials, completing the student demographic portion of the response documents, accessibility instructions, test directions, administration of the test, assembly of materials for scanning and processing, checklists for class, school and district level procedures and information for returning materials. Images of documents, forms, and other ancillary materials as needed with illustrations and explanatory diagrams are used to highlight important procedures. The TAM include scripts necessary to administer the assessments, and procedures and scripts necessary for accommodated testing outside of the online assessment delivery system. For each administration the TAM will be based on the eMPower administration manuals which are updated with each administration in Fall, Winter and Spring to highlight any changes from the previous test administration. A separate accessibility manual will also be made available for each of the ELA and Math administrations.

We will make available downloadable copies of all final, approved materials in PDF format for posting on NH DOE website at least four weeks prior to each administration. Measured Progress will assume responsibility of updating the TAM as needed after each administration based on changes to the program.

Topic 13 Training Materials

The vendor 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 NH DOE approval.

The vendor 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 vendor 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.

The vendor will be responsible for providing annually up to four (4) one-half day regional trainings throughout NH 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 vendor's response must describe the type and amount of training that the vendor feels is necessary to ensure the administration of the NH assessments (Summative, Formative, Reporting). The vendor'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 vendor'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.

The following topics present our plans for meeting the training requirements of this RFP. Measured Progress will produce training materials that address the needs of New Hampshire schools and districts. We propose series of recorded online training modules to supplement the face-to-face workshops and virtual meetings described below. Suggested topics include:

- Introduction of ELA and Math eMPower and Science assessment and provides an overview of available training modules and resources
- Four (4) modules to provide test administration protocols of Paper-Based Testing and Computer-Based Testing for Test Administrators
- Overview of eMetric platform
- Overview of Accessibility Features and Accommodations policies and procedures

Measured Progress will work with the NH DOE to determine the content of the modules and topics for the task-based modules. Modules are posted online and available in Microsoft PowerPoint® presentations should a school or district wish to print the modules and use them for local training purposes. Modules also have a completion point so that users can be tracked in the event a district or school chooses to use them as continuing education.

Topic 13.1 Teacher Directions

The vendor shall develop and produce teacher's directions for each assessment per administration. The teacher's directions shall contain specific instructions for the administration of each grade level and/or content area per assessment. The teacher's directions shall include information related to test administration including but not limited to, test security, the timing of tests and/or subtests, and the number of items on each assessment part.

A script for the administration of each content area shall be included to ensure consistent and appropriate directions are given to students to begin the test. The teacher's directions shall be reviewed prior to each administration and revisions shall be made to reflect changes related to the program. Directions shall be provided electronically.

The Test Administrator Manual [TAM], discussed in Topic 12.2, will present grade level and content specific information for the administration of each assessment. Measured Progress will review these scripts 12 weeks prior to each administration. The final TAM will be posted as a PDF on a secure NH DOE website.

Topic 14 Practice Tests and Student Materials

The vendor shall provide practice tests for each of the Summative Assessment Components bid. 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 vendor'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.

The eMPower Assessments in ELA and Math include a full-length online practice test at each grade level. The posted practice tests are released unsecure interim forms. Students will access practice tests through the same interactive eMetric interface they will use on test day. Administrators will also have the opportunity to train on the setup, management, and monitoring features of eMetric, which is included as part of the training site. Using the NH training site, students can practice using all aspects of iTester, including the online tools and presentation methods. The NH training site will be available during the entire interim testing periods and for a month prior to the spring test window opening.

The practice tests will:

- Include all machine-scorable item types and a writing prompt which a student may encounter during testing
- Support accessibility features and functionalities that a student will have access to during testing
- Include a range of content, depth of knowledge, and rigor
- Require approximately 30 minutes, but no more than 45 minutes, for students to complete
- Provide a raw score at the conclusion of the practice test

Practice Test Environment

Practice tests are administered in the operational environment to ensure that all stakeholders (administrators, proctors, and students) have the opportunity to become comfortable with the testing interface and tools prior to operational testing. Practice tests are designed to mirror the operational test in format, content, and structure, and to provide the same functionality that will be offered in the operational

test, including accommodations and accessibility features. At the end of each practice test, the student will have the ability to view points earned for each item as well as the correct answer to each item.

Test administrators will use the same iTester administration features that will be required of them during the operational administration. This gives the school system administrator practice in setting up and modifying test sessions and provides proctors practice in administering a test session.

Topic 15 Software Implementation Training

The vendor will provide a detailed summary of proposed training approach to include:

- **Recommended training approach (instructor led vs. computer based)**
- **Training evaluation tools**
- **Training coordination**
- **Description of training materials and plans for revision**
- **Training timeline**

Technology Training

The successful implementation of a new assessment platform is contingent on quality, comprehensive training and technical support that results in confident end users. We have planned for four regional training workshops prior to test administration. Our budget covers travel for three members of the Measured Progress Program team, cost of a meeting room in each of the four regional locations and a light snack for attendees.

Measured Progress will work with NH DOE to establish and implement training protocols for technology coordinators and test coordinators and administrators on all aspects of the assessment program. This information is typically described in a test delivery platform manual as well as TCMs and TAMs. Training will also include technical and administrative workshops on relevant test administration processes and system functionality for all stakeholders. Our training plan will cover:

- Preparing for Online Testing and Paper-based Testing
- Administering Online Tests and Paper-based Tests

Effective training solutions are a cornerstone for the implementation of successful paper-based and computer-based solutions. Our training, program management, and technology staff are experienced in providing training to various audiences. For both in-person and web-based training, Measured Progress prepares client focused training sessions with resource materials that are clear and concise. Our clients have the opportunity to review and approve all training materials prior to distribution and implementation of our training programs.

Topic 15.1 Training and Professional Development

Training and support for the NH assessments shall be provided by the vendor to NH educators as needed for each assessment component. The vendor must include in its proposal a detailed plan of action and timeline that describe how and when each of the training and support tasks will be accomplished.

Training Plan

Measured Progress will produce training materials that address the needs of New Hampshire schools and districts. We propose a series of recorded online training modules to supplement the face-to-face workshops and virtual meetings previously described. Suggested topics include:

- Introduction of New Hampshire ELA, Math and Science assessments and provides an overview of available training modules and resources
- Four (4) modules to provide test administration protocols of Paper-Based Testing and Computer-Based Testing for Test Administrators
- Overview of eMetric platform
- Overview of Accessibility Features and Accommodations policies and procedures

Measured Progress will work with the NH DOE to determine the content of the modules and topics for the task-based modules. Modules are posted online and available in Microsoft PowerPoint® presentations should a school or district wish to print the modules and use them for local training purposes. Modules also have a completion point so that users can be tracked in the event a district or school chooses to use them as continuing education. Measured Progress will work with the NH DOE to establish a schedule for posting of both the face to face and online training modules to be discussed as part of the initial kick off meeting.

Topic 15.2 Technology Director Training

The vendor shall describe its training plan for district technology directors. This training may include training on the operation and features of the online assessment system. It may include training on the physical and electronic security of assessments, system requirements for implementing the online assessment and troubleshooting of technology issues at the school or district site. Training may include a visual as well as oral presentation and may include other types of interactive technology. The delivery mode for these activities must be identified. The vendor shall discuss the role NH DOE will have in previewing each training session and webinar.

In addition to the Online User's Guide, training will also be presented at technical and administrative workshops on relevant test administration processes and system functionality for all stakeholders. Our training plan will cover:

- Preparing for Online Testing and Paper-based Testing
- Administering Online Tests and Paper-based Tests
- Post-Testing Report and Data Interpretation, in collaboration with Reporting Contractor

Effective training solutions are a cornerstone for the implementation of successful paper-based and computer-based solutions. Our training, program management, and technology staff are experienced in providing training to various audiences. For both in-person and Web-based training, Measured Progress prepares client focused training sessions with resource materials that are clear and concise. Our clients have the opportunity to review all training materials prior to distribution and implementation of our training programs.

Topic 15.3 Assessment Administration Training

The vendor shall describe its assessment administration training plans for district test coordinators and test administrators. This training may include how to sign up for the interim assessment program, as well as how to enroll students in the summative assessment. Training related to the actual test administration should also be discussed. Training may include a visual as well as oral presentation and may include other types of interactive technology. The delivery mode for these activities must be identified. The vendor shall discuss the role NH DOE will have in previewing each training session and webinar.

Test Administrator and District Coordinator Training

For years 1 and 2 Measured Progress will coordinate a series of half-day spring administration workshops for up to 50 participants per site, in four regional locations to be identified by the NH DOE. These workshops are to train test coordinators and test administrators in current test administration requirements and procedures, and will provide materials related to the administration of NH assessments. These sessions will be to introduce the users to the computer-based testing system, outline the process for ordering paper-based testing materials, provide an overview of available resources, and to provide training on test administration procedures. Test administrators and test coordinators will have the opportunity to ask questions during the sessions and will be provided with contact information to contact our support team after we have completed them. The training curriculum will ensure that test coordinators have ample information for a smooth test administration. Measured Progress prepares client-focused, intuitive training sessions with resource materials that are clear and concise and help to ensure engaging and informative sessions. NH DOE will have the opportunity to review and approve all training materials prior to each session. The workshops will take place at least four weeks before the beginning of the spring administration each year.

We have budgeted to be responsible for all tasks and costs associated with planning and conducting these workshops, including but not limited to the following:

- Procuring and paying for workshop sites approved by the NH DOE
- Notifying, pre-registering, and sending confirmation, including driving directions to participants
- Developing, designing, preparing, and producing workshop materials, including evaluations for participants (All workshop materials will be available for posting on the NH DOE website within three business days of the start of the workshop)
- Coordinating with site staff prior to and during the workshop
- Providing light refreshments for workshop participants
- Coordinating all logistics, including audiovisual needs
- Assuming lodging costs for all workshop presenters as appropriate

Virtual/WebEx Workshops

For years 3 through the end of the contract, Measured Progress will support three virtual presentations, delivering a presentation similar to the one given at the year 1-2 face-to-face regional administration workshops, for audiences of up to 350 people. Our corporate virtual meeting platform is Cisco WebEx which has been deployed successfully to host a variety of meeting types, and is scalable to support the number of attendees required for these workshops. We will use *iRegister* to notify, pre-register, and send a confirmation to all teleconference participants, including dial-in instructions as well as distributing

relevant materials to participants. We will provide an electronic database (including name, district, school and position) of all workshop participants to the NH DOE, within three weeks after the final teleconference session.

Topic 15.4 Assessment Results Training

The vendor shall describe its plans for providing educators with tools to evaluate and analyze assessment results in order to make informed instructional and programming decisions. Training may include a visual as well as oral presentation and may include other types of interactive technology. The delivery mode for these activities must be identified.

The vendor shall discuss the role NH DOE will have in previewing each training session and webinar.

Reporting and Instructional Needs Information

We propose Data Interaction™ to provide NH DOE and school administrators and educators with data reporting and analytics capabilities that go beyond reporting for accountability's sake. Data Interaction provides significant advantages over static reporting by offering quick, easy access to a number of report types plus self-service data discovery and analytics, all through a simple, intuitive interface which has been optimized for mobile devices. Data Interaction will bring about a new way of accessing and analyzing assessment data whereby educators are actively participating in the data discovery and analysis process.

On-site workshops on the optimal usage of Data Interaction will be conducted at locations determined in conjunction with the NH DOE. We are confident in our abilities to create meaningful workshops that prove extremely beneficial to attendees. eMetric conducts training sessions using “Train the Trainer” methodologies to provide instruction and familiarity to higher level users that can be disseminated throughout the field. Our training is designed using real use case scenarios and we consciously allocate plenty of time for Q&A. We typically record one in-person workshop to make available online for all platform users. eMetric will work in conjunction with the NH DOE to finalize the format of the workshops as well as content. Online training sessions will follow the same format as on-site training workshops.

eMetric will also provide user guides and a Quick Start series:

- User Guides
 - Detailed user level guides provide instruction on all aspects of the solution and are readily available online.
- Quick Start series
 - The Quick Start series provides easily accessible, concise directions and training via videos and written documentation.
 - Videos

Videos are created based on real use case scenarios that will be advantageous to the field eMetric will work with NDE to identify topics for Quick Start videos
 - Documentation

Quick Start sheets provide detailed guidance for how to perform certain tasks or utilize reports

Topic 15.5 Online Training Support

The vendor shall describe its plan to provide training and customer support specific to online assessment. The description should include training with an easy to understand set of directions, including screenshots, for operating the online assessment software. The vendor may also include other beneficial training materials in its response such as e-learning modules and online tutorials for users.

The successful implementation of a new assessment platform is contingent on quality, comprehensive training that results in confident end users. eMetric has extensive experience working with states to roll out our platforms smoothly and efficiently. We have proficiently worked with clients transitioning from a previous online assessment or reporting tool as well as clients that have never administered or reported assessments online. Our training will include on-site workshops as well as online training sessions and recorded webinars.

On-site workshops will be conducted at locations determined in conjunction with the State. We are confident in our abilities to create meaningful workshops that prove extremely beneficial to attendees. eMetric conducts training sessions using “Train the Trainer” methodologies to provide instruction and familiarity to higher level users that can be disseminated throughout the field. Our training is designed using real use case scenarios and we consciously allocate plenty of time to Q&A. We typically record one in-person workshop to make available online for all platform users. eMetric will work in conjunction with the State to finalize the format of the workshops as well as content. Online training sessions will follow the same format as on-site training workshops.

eMetric will also provide user guides and a Quick Start series:

- User Guides
 - Detailed user level guides provide instruction on all aspects of the solution and are readily available online.
- Quick Start series
 - The Quick Start series provides easily accessible, concise directions and training via videos and written documentation.
 - Videos
 - Videos are created based on real use case scenarios that will be advantageous to the field. eMetric will work with NDE to identify topics for Quick Start videos.
 - Documentation
 - Quick Start sheets provide detailed guidance for how to perform certain tasks or utilize reports.

D1.5 Assessment Scoring, Analysis and Equating

The vendor is responsible for the accurate and efficient scoring of all items on the NH assessments. The vendor’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.

The NH DOE is interested in providing real time scoring to students and teachers for the interim assessments. The efficiencies of automated and artificial intelligence scoring must be maximized.

Measured Progress will conduct all paper-based scanning operations under this contract. Measured Progress maintains an advanced and scalable scanning operation at our Dover, NH facility that will provide for accurate, timely reporting compliant with all federal regulations and contract requirements.

We will follow ATP/CCSSO Best Practices guidelines in all aspects of scanning for New Hampshire. Our scanning systems and procedures provide tremendous capacity and stringent quality control features, which allow more accurate, faster scanning of all student responses. Through our scanning system, we are able to automatically generate school, class, and student counts, which are used to verify prior counts from both the log-in process and the master database. Through the scanning process, we capture student demographic information and multiple-choice answers. We also capture high-quality images of written answers to constructed-response questions, which are securely transferred electronically to scoring locations.

Accurate Scanning and Imaging

Measured Progress has been electronically scanning and machine-scoring multiple-choice items for 30 years, regularly upgrading our equipment and software to ensure accuracy and optimal productivity. We have consistently maintained the highest levels of accuracy and reliability through rigorous quality control (QC) procedures and the use of sophisticated and appropriate technology. The accuracy, economy, and built-in QC mechanisms associated with machine scanning make it a desirable method to effectively collect large amounts of data

Topic 16 Machine Scored Items

The vendor's response must include a description of their experience scoring all item types proposed for use on the NH assessments 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 vendor'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.

Multiple-choice (selected-response) items are scored using a technology-based automated process. Measured Progress has been electronically scanning and machine-scoring selected response items for more than 30 years. We have consistently maintained the highest levels of accuracy and reliability in our scoring operations through rigorous quality control procedures and the use of sophisticated and appropriate technology.

For paper tests, scoring selected-response items begins with our scanning process, and includes scanning of student identification and demographic information. Answer documents are scanned and selected-response items are electronically scored by comparing the students' answers to the key for each item. This scanning method is used to collect information provided by students filling in the bubbles for selected-response items, demographics, and identifying information. The hardware elements of the scanners and the software that drives these scanners monitor continuously for correct data reads.

For online testing, iTester provides a sophisticated scoring system that can automatically score student responses for multiple-choice items and technology-enhanced items. The machine scoring system allows for dichotomous and partial scoring modes. The partial scoring mode permits a student to receive partial credit for certain interactions when the student responds to the item. The dichotomous scoring mode

allows the item to be scored as either correct or incorrect, regardless of item complexity or indication of partial knowledge or understanding.

Our Data and Reporting Services (DRS) department generates and reports score results for selected-response items. DRS staff also collaborate with our psychometricians in computing IRT or classical statistics to be used in assigning proficiency levels and determining the scale scores.

Scoring Services is involved in the quality control process of multiple choice items in advance of the test administration. Our Scoring content specialists review the test material to ensure the accuracy of the item keys, the clarity of the prompt, and to ensure that none of the distractors are correct options.

To ensure that items are properly coded with the correct answer, Measured Progress proposes to perform key verification on all items. Key verification comprises pre-administration and post-administration processes used to identify possible miskeyed items or flawed item presentations. This verification will occur within the timeline of test form reviews prior to the printing of test materials. To perform this task, staff will verify that selected-response items are accurately keyed with their correct answer. They will also simulate the student's experience of taking the whole test by taking the test from start to finish replicating the administration experience the student would have. This will allow us to obtain a holistic view of the overall test-taking experience.

In addition to conducting the pre-administration answer key verification procedures described, we will also analyze post-administration live student responses to determine item difficulty (p-values) and item-total correlation (point biserial correlations) for all selected-response answers within the collected population. In a paper-based test administration, the analysis process will use the full set of students tested. Specifically, the student test results will be used to identify possible miskeyed items. Classical item statistics are used to flag potential problem items.

Measured Progress has experience creating and scoring multiple types of Technology Enhanced Items (TEIs) for students that take the test online. These items types are generally designed to be scored by the test administration engine, based on a set of defined answers. Whenever possible, these items will be scored automatically. Certain technology items cannot be machine scored. These responses will be sent to our imaged based scoring system, where they will be scored at one of our scoring centers.

Constructed responses are scored using our image-based scoring system. Students who take a paper test will have their answer documents scanned. An image of the student response is uploaded to our scoring system. Students who take a computer based test have their responses migrated into the same scoring system through established technical procedures.

Student responses are then assigned randomly to scorers. Paper- and computer-based responses are intermixed. Each Scorer who is qualified on an item will score both types of responses. No student demographic information is available to Scorers. Once scoring is complete, our Data and Reporting Services team merges the results of human scored responses with the machine scored responses and the student data.

Topic 16.1 Automated Scoring of Student-Generated Responses

The vendor'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, and extended essay). In addition to issues related to technical quality and accuracy of scoring, the vendor'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.

The vendor must indicate in detail its experience in developing or using artificial intelligence (AI) software in scoring student responses. The description shall illustrate the vendor's experience with using AI scoring for each of the proposed item types, as well as limitations to the use of the vendor's artificial intelligence scoring engine for each of these item types. This includes past and current projects, the software used in each, the manner in which the vendor proposes to use its software for this assessment component, the issues that it anticipates in using its software in NH, as well as the areas in which it anticipates that its software will not be effective. The vendor shall describe how its AI engine functions, including how it is trained in relationship to content. The vendor shall provide its projected plans, if any exist, for improving its AI scoring capacity, including a description of why the company believes that this is a realistic goal. This description shall include specific time frames and must be considered within the context of the projected online implementation schedule of each content area in the summative assessment component.

For all constructed response items it is proposing to bring to the NH Assessment System, the vendor shall present its current procedures for development and selection of training papers for scoring of constructed response items and training of the artificial intelligence scoring system. The vendor shall also present its plan for development and selection of training papers for scoring of constructed response items and training of the artificial intelligence scoring system for items developed specifically for NH. The role, if any, of NH educators in validating the rubrics and scoring of the training papers should be discussed.

Measured Progress proposes automated scoring of the direct writing prompt that will be included as part of the ELA assessment. The successful application of Artificial Intelligence scoring hinges on the successful calibration of the AI platform to match human scoring of student responses to writing prompts. Measured Progress has not developed its own Artificial Intelligence scoring platform. Instead, we have taken the approach of establishing partner relationships with different vendors who specifically focused on the development of this technology. With multiple partnerships in place, we are able to select the automated scoring solution that best matches the need of each client. Measured Progress focused its technology development on being the secure transfer of student responses and score data between our scoring and reporting platforms and the Automated Scoring/Artificial Intelligence Scoring vendor selected for each client.

In order to ensure that all student responses are scored consistently and accurately, Measured Progress proposes using our established and proven methods for field testing items using human scoring in order to capitalize on AI scoring when the items are used operationally. Using this approach, we are able to:

- Conduct field test scoring (human scoring) in our iScore system
- Use the reliable results of field test scoring to calibrate the AI scoring engine
- Route student responses during operational scoring to the AI scoring engine
- Incorporate the AI scores into the iScore scoring system to allow human verification of scores and conduct human scoring of responses deemed not scorable by the AI engine
- Seamlessly integrate the results of AI scoring and human scoring into a final record for reporting purposes
- Leverage the strength of various technology platforms to provide the best integrated solution for our clients

For this approach, we will follow the same processes for field testing and benchmarking items that we have refined over 30 years and that we have used to score thousands of items for millions of student responses. By using the same process flow for items destined for either human scoring or AI scoring, we establish a consistently reliable system to calibrate an AI engine to score responses the same way human scorers do. To achieve this, we will apply the following process as illustrated in this high level overview:

- **Field Test Scoring Process**
 - Scoring Services will review unscored student responses for each field test item and select a representative sample of the full range of student performance
 - Measured Progress content staff will meet with DOE content staff and/or teacher committees selected by the DOE to review this representative subset of student responses in benchmarking meetings
 - The final scores and the rationale behind each score will be determined at the benchmarking meetings
 - Based on the benchmarking decisions, Scoring staff will create training materials which will be used to train scorers on the scoring of each item
 - A random sampling of student responses will be scored, with the results being used to both determine the suitability of the item(s) to be used on operational tests, and as source material to calibrate the AI engine to score student responses consistent with the decisions made in the benchmarking meetings
- **Operational Scoring Process**
 - The AI engine will be calibrated using the scored responses from the field test administration of the item(s)
 - Human scorers will be trained using the Training materials that were developed and used during the field test process
 - Student responses from the testing platform will be sent to both the iScore scoring engine and the AI scoring engine
 - The scores received from the AI scoring engine will be integrated into the iScore scoring platform
 - Any student response that could not be scored by the AI engine will be scored by trained scorers
 - In addition, 10% of the student responses scored by the AI engine will also be scored by human scorers to provide current and consistent validation of the accuracy of the AI scoring engine.
 - Any discrepancies between human and AI scoring will be resolved by scoring staff in leadership positions

The clear advantages of this approach to scoring, are that New Hampshire can gain the cost efficiencies and faster scoring and reporting of AI scoring while maintaining the important aspect of human oversight and agreement on the scoring of student work.

Measurement Incorporated: Automated Essay Scoring

Measurement Incorporated is a recognized leader in the field of performance assessment scoring (human scoring) and automated essay scoring. MI has continually refined and improved our state-of-the-art automated essay scoring engine, Project Essay Grade (PEG™) and we have extended our artificial intelligence (AI) expertise to content scoring. MI's AI scoring engine is able to automatically score a variety of constructed response items, from paragraphs, extended essays to short-answers that comprise of 1-2 sentences, a few words, or single word responses, and can work with any number of predefined score-point ranges and rubric definitions. PEG's flexibility allows us to build AI models using the methods that are most effective for each type of response.

Building an AI Scoring Model – Development and Implementation

Building an AI scoring solution for an assessment is a multi-step process of analysis, model building, and training the model, in which we identify and score training responses that are then used to develop the AI scoring model. The model is calibrated prior to being released for production scoring. AI model building requires 1500-2000 student responses per item, depending on the complexity of the item and the complexity of the rubric. AI model building requires at least 100 student responses at each score point for each trait (some of the same papers may be used across traits).

Model Building & Benchmarking

To build an essay scoring model, PEG examines the variables and features, correlates them with human scores previously assigned, and identifies those variables that have high predictive value. The variables are combined into a model and weighted according to their contribution to the scoring decision. Results from executing the model are scaled according to the scale of the target rubric. For essay and content scoring, the predictive model is run against a benchmarking set of responses derived from the original training set. The benchmarking set is independent from the training set in that none of the responses it contains have been used to build the model. If the model produces results of high quality (based on human/computer inter-rater reliability measures), it can be released for production scoring.

For more detailed information about MI's automated essay-scoring engine "PEG," see the brief research paper in Appendix 7.

Topic 17 Analysis and Psychometric Support

The vendor is responsible for designing and conducting all analyses necessary to report student, school, district, and state results from the NH assessments and for ensuring that the NH assessments meet standards of technical quality for high-quality state assessments. In particular, the vendor 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.

The vendor shall describe how the different types of scores it is proposing, individual scale scores and subscores, will be produced and verified. The vendor must include scores produced strictly on items which are computer-scoreable and scores produced based on a combination of the computer-scored and hand-scored items. The limitations in interpretation of both of these scores must be discussed.

The vendor shall also describe how the Interim Assessment reports will provide predictive information regarding expected performance on the summative assessment. The timeline for providing this information must be discussed.

Psychometric Framework

The specific psychometric framework we propose for the New Hampshire assessment system will provide valid and reliable scores for use in state and local reporting as well as federal accountability. To meet these requirements our psychometricians plan to use a mix of existing and custom-developed psychometric models and scales. For reading, writing and language, and mathematics summative and interim assessments in grades 3-8, we will use our existing (eMPower) psychometric vertical scales and accompanying psychometric models (three-parameter logistic model for dichotomously scored items, graded response model for polytomously (meaning a student can achieve a score of other than 0 or 1) scored items). The psychometric models used with these scales have undergone rigorous statistical analyses to ensure that every item selected for operational use provides appropriate fit to the data.

For the direct writing summative and science interim/summative assessments, we will evaluate several psychometric models, determine the appropriate models to use, and establish scales during operational field testing. The operational field test for the summative assessments will be administered in spring 2018. The operational field test for the science interim assessments will be administered in fall 2018 and winter 2019. For more information about our plans to establish a psychometric framework for science and direct writing, please our response to Topic 18: Calibration and Scaling.

In our response to this topic, we present the reported scores and subscores for the eMPower assessments. We also discuss how scale scores are vertically linked and linked to the SAT Suite of Assessments developed by the College Board. Then, we provide more detail about our plans to establish scales and report scores/subscores for the science assessments.

eMPower Reported Scores

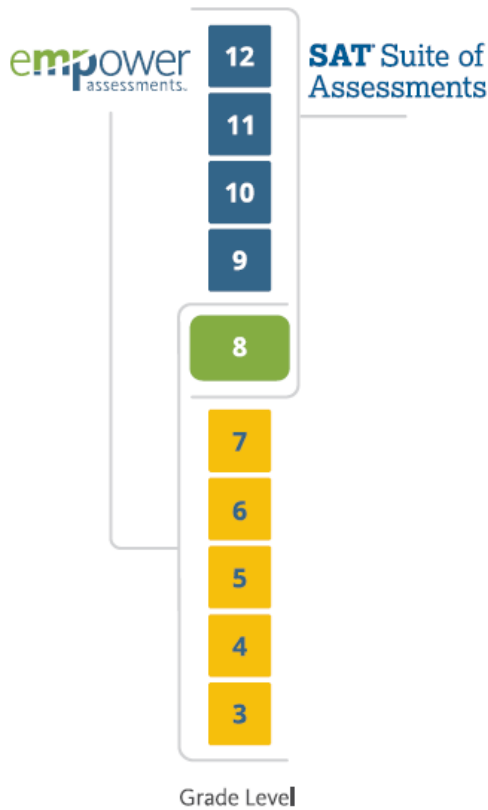
Measured Progress will report two primary indicators for each eMPower content area assessment: an **overall scale score** on the growth scale for each subject area and an **overall proficiency level** indicating the degree to which students are making progress toward college and career readiness.

At grade 8, eMPower assessment scales in reading, writing and language, and mathematics are linked to College Board's grade 9 PSAT scale. Our score reports for grade 8 provide eMPower scale scores, eMPower proficiency levels, and the PSAT College and Career Readiness Benchmarks.

States can provide continuous measurement of students from grade 3 through high school using a combination of eMPower and PSAT/ SAT assessments, measuring growth from grades 3-8 on the eMPower scale and using the PSAT 8/9 beginning at grade 9. The following exhibit illustrates the vertical linking of the grades 3-8 eMPower Assessments and the PSAT/SAT scale.

EXHIBIT 35: GRADES 3-8 SCORE SCALE LINK BETWEEN EMPOWER ASSESSMENTS AND THE SAT SUITE OF ASSESSMENTS

Reporting Scales



Subscores

Reports for eMPower provide subscores—reliable indicators of students’ strengths and needs for each claim described in Topic 1. We report students’ performance for each subscore as Below Standard, At Standard, or Above Standard. Educators can use the subscores to group students for instruction or to plan instructional interventions for individual students.

At grade 8, eMPower assessment scales in ELA and Math are linked to College Board’s grade 9 PSAT scale. Our score reports for grade 8 provide eMPower scale scores, eMPower proficiency levels, and the PSAT College and Career Readiness Benchmarks.

Reading Subscores

Subscores for reading focus on students’ skills and strategies (comprehension, analysis and interpretation) as they apply to literary and informational text. The four claims areas and their reports are listed below.

- **Comprehension:** Indicates how well students comprehend main ideas and important details in both literary and informational texts.
- **Analysis and Interpretation:** Indicates how well students apply higher-order thinking skills to both literary and informational text.

- Literary Text: Indicate how well students comprehend, analyze, and interpret literary text.
- Informational Text: Indicate how well students comprehend, analyze, and interpret informational text.

The following exhibit presents reporting information for eMPower reading assessments.

EXHIBIT 36: REPORTED TOTAL SCORES AND SUBSCORES FOR EMPOWER READING ASSESSMENTS

Score	Scale Score	Proficiency Level
Total Reading	✓	✓
Literary Text		✓
Informational Text		✓
Comprehension		✓
Analysis and Interpretation		✓

Writing and Language Subscores

eMPower writing and language subscores focus on students’ abilities to analyze the effectiveness of written works and apply English language conventions. Writing analysis reports indicate how well students can evaluate written works for improvement in content, organization, mood, and tone. Reports for English language and conventions indicate how well students can improve writing conventions, language usage, and vocabulary in written works.

- Subscores for grades 3-5 include Narrative Writing Analysis, Expository Writing Analysis, and English Language and Conventions.
- Subscores for grades 6-8 include Expository Writing Analysis, Argument Writing Analysis, and English Language and Conventions.

The following exhibits present the reporting information for eMPower writing and language assessments for grades 3-5 and 6-8, respectively.

EXHIBIT 37: GRADES 3-5 REPORTED TOTAL SCORES AND SUBSCORES FOR EMPOWER WRITING AND LANGUAGE ASSESSMENTS

Score	Scale Score	Proficiency Level
Total Writing	✓	✓
Narrative Writing Analysis		✓
Expository Writing Analysis		✓
English Language and Conventions		✓

EXHIBIT 38: GRADES 6-8 REPORTED TOTAL SCORES AND SUBSCORES FOR EMPOWER WRITING AND LANGUAGE ASSESSMENTS

Score	Scale Score	Proficiency Level
Total Writing	✓	✓
Expository Writing Analysis		✓
Argument Writing Analysis		✓
English Language and Conventions		✓

Mathematics Subscores

In addition to providing information on students’ understanding and application of grade-level mathematics concepts and procedures, eMPower mathematics subscores include information on students’ use of mathematical practices.

- The mathematics concepts and procedures category is divided into several mathematics domains based on grade level, as shown in the figures below.
- Subscores within mathematical practices include problem-solving, logical and quantitative reasoning, using mathematical models to represent and solve problems, and understanding the patterns and structures within mathematics.

The following figures present the reporting information for eMPower mathematics assessments for grades 3-5 and grades 6-8, respectively.

EXHIBIT 39: GRADES 3–5 REPORTED TOTAL SCORES AND SUBSCORES FOR EMPOWER MATHEMATICS ASSESSMENTS

Score	Scale Score	Proficiency Level
Total Mathematics	✓	✓
Operations and Algebraic Thinking		✓
Numbers & Operations in Base 10 and Fractions		✓
Measurement & Data and Geometry		✓
Problem Solving, Reasoning, and Argument		✓
Modeling, Patterns, and Structure		✓

EXHIBIT 40: GRADES 6–8 REPORTED TOTAL AND SUBSCORES FOR EMPOWER MATHEMATICS ASSESSMENT

Score	Scale Score	Proficiency Level
Total Mathematics	✓	✓
Ratios & Proportional Relationships (Grades 6-7)		✓
Functions (Grade 8)		✓
The Number System and Expressions & Equations		✓
Geometry and Statistics & Probability		✓
Problem Solving, Reasoning, and Argument		✓
Modeling, Patterns, and Structure		✓

Direct Writing Reported Scores

For the direct writing prompts administered as operational field test items in spring 2018, a raw score and corresponding performance classification will be determined in coordination with NH DOE as a result of empirical study evaluating scaled score options and standard setting to define the appropriate system of cut scores.

Science Reported Scores

For the science interim and summative assessments, Measured Progress has proposed to construct custom test forms using a bank of secure items. This approach provides the NH DOE with the opportunity to work with Measured Progress to develop a plan for score/subscore reporting. Through our common-matrix operational test design, student-level performance information is available not only for generation of overall science scaled scores and performance levels but also for performance on each of the domains and dimensions. We will work with NH DOE to determine which domains, dimensions, and combinations thereof are of greatest interest so that our test and score report design can be optimized.

Science Subscores

To maximize the utility of the assessment, we propose the reporting of an overall scale score and performance level as well as performance level reports for the science domains and dimensions of the NGSS. There are sufficient items and points available at the student-level to reliably generate subscale proficiency levels or performance categories indicating “below”, “similar to”, and “above” proficient for individual students on at least three domains. Because of the operational common-matrix design, greater flexibility exists for reporting a greater variety of subscale proficiency levels at the district and state levels. Again, we will work with NH DOE to determine the precise emphases that are desired for the student-level reports as well as for the higher level reports. The following exhibit presents our recommended reporting information.

EXHIBIT 41: GRADES 6-8 REPORTED TOTAL AND SUBSCORES FOR EMPOWER SCIENCE ASSESSMENT

Score	Scale Score	Proficiency Level
Total Science	✓	✓
Physical Science		✓
Life Science		✓
Earth and Space Science		✓
Disciplinary Core Ideas		✓
Crosscutting Concepts		✓
Science and Engineering Practices		✓

Student performance on a domain or dimension below overall science performance will be categorized as "below", "similar to", or "above" the performance of students who are proficient on the overall science scale. These subscales are constructed by comparing each student's observed score on the domain or dimension of interest to the model-predicted mean and standard deviation of these scores for students at the proficient cut on the overall science scale. The mean and standard deviation are calculated from the IRT model for the items corresponding to the domain or dimension of interest.

Predicting Performance on the Summative Assessments

The Psychometrics department at Measured Progress is committed to demonstrating the predictive relationship between interim performance on the eMPower assessments and the science assessments and subsequent performance on the summative assessments. eMPower Assessments have vertical scales for each subject area that enable educators to evaluate growth over time within a grade and from one year to the next. Scaled scores for reading, writing and language, and mathematics are reported on the vertical scales. During the year, the scale scores show progress toward end of year performance expectations. The vertical scale allows for measurement of growth related to the college and career readiness standards from grades 3-8.

Evidence for the predictive validity of eMPower ELA and Math assessments as well as the Science summative and interim assessments will be demonstrated following methods recognized by the National Center for Response to Intervention in the evaluation of interim assessments. These include but are not limited to the following: correlational analysis of predictor interim performance with outcome summative performance, regression of outcome summative performance on predictor interim performance, sensitivity/specificity analysis (e.g., Receiver Operating Characteristic curve analysis). Analyses will be conducted by grade and subject overall and disaggregated by student subgroups identified by NH DOE. These results will be provided as part of the first round of technical reporting subsequent to the spring 2018 administration.

Topic 18 Calibration and Scaling

The vendor will calibrate test items and develop a scale(s) for each of the NH assessments using appropriate item response theory model(s).

The vendor'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 NH assessments;
- Its appropriateness based on anticipated initial student performance on items aligned to NH Academic Standards for ELA, Math and Science; and
- Its appropriateness for the type of scores that will be reported from the NH assessments.

The vendor's response must identify the software that will be used to perform item calibration and scaling and include a description of the vendor's familiarity and experience with the software. If the vendor is proposing the use of proprietary or open-source software, the vendor's response must include a description of the steps that will be taken to ensure and verify the accuracy and reliability of the software.

The NH DOE can be assured that Measured Progress will perform all psychometric activities in accordance with the most recent publication of the *Standards for Educational and Psychological Testing* and will be consistent with all federal, state, and local laws, regulations and guidelines—including those that pertain to special populations.

All of our psychometricians have doctoral level education, have experience applying a broad array of psychometric models, are familiar with all major commercial IRT software packages (including BIGSTEPS®, WINSTEPS®, MULTILOG®, PARSCALE™, BILOG®, and flexMIRT®), and take a consultative approach to working with clients on technical issues. Each of our psychometricians specializes in a unique area of the psychometric field and work together as a team to share research results and knowledge. This combined depth and breadth of expertise will provide comprehensive, valid solutions for New Hampshire that capitalize on the most innovative thinking in the assessment community while grounding the assessments in valid, reliable measurement approaches.

eMPower ELA and Math

For ELA and mathematics interim and summative assessments in grades 3-8, we will use the already proven, operational psychometric models (three-parameter logistic model for dichotomously scored items, graded response model for polytomously scored items) and accompanying vertical scales established for eMPower. The psychometric models used with these scales have undergone rigorous statistical analyses to ensure that they are appropriate for the types of items selected for operational use by providing appropriate fit to the data.

Direct Writing and Science

For item calibration and scaling of the Direct Writing and Science interim and summative assessment components, we plan to implement the three-parameter logistic (3PL) Item Response Theory (IRT) model for dichotomously scored selected-response items and the graded-response model (GRM) for polytomously scored items. A limitation of 3PL and GRM relative to simple alternative models is that 3PL and GRM require larger sample sizes, which means their use could be more problematic in some testing situations. Fortunately, the sample sizes involved in our plans for New Hampshire are indeed supportive of their use. Further, these models will benefit the NH statewide assessment program because they generally give better fit to the data compared to simpler alternative models. This is especially important because sophisticated item types are required for assessing the complex constructs of the New Hampshire Science Standards and our recommended models will provide more accurate model fit for these items.

In regard to calibration software, we recommend the use of flexMIRT for the NH statewide assessment program because it is the most up-to-date IRT calibration program and includes more recently developed diagnostic statistics and the most up-to-date parameter estimation techniques and options.

During test construction, our content specialists and psychometricians will finalize the TCC and TIF for each operational form. By using the “inverse-TCC method,” the value of the theta estimate will be calculated for each possible raw score on each form. Next, the theta estimate will be transformed to a scaled score using the linear transformation that was established in the standard setting year (spring 2019). This results in a raw-score-to-scaled-score look-up table for each test form. The cut scores (on the scaled scores) for each performance level will be determined by applying this same linear transform to theta cuts that were established in the standard setting

Topic 18.1 Calibration Plan

The vendor’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 vendor’s response should address how a 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 vendor’s response must include a description of how embedded field-test items on operational administrations of the NH assessments will be calibrated and placed on NH assessment scoring scales.

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

The vendor’s response must include a description of the calibration process and/or established concordance table that will align the student results on the proposed NH Summative Assessments for ELA and mathematics with the current Smarter Balanced reporting scale.

eMPower ELA and Mathematics

The interim and summative administrations of eMPower ELA and Math in grades 3-8 are pre-equated using the psychometric model established during rigorous prior administration and analysis. Conducted on the product level, we conduct a “post-equating check” following each operational administration. This process entails checking all the operational items for item parameter drift using standard equating procedures as well as new procedures we have developed ourselves. We use this check to identify and correct any item parameter drift while it still has only a small effect. This prevents the drift from accumulating.

After the post-equating check is completed and any item drift has been corrected, the embedded matrix field-test items are brought on to scale. Equating techniques are employed to check whether the psychometric model used during the 2018-2019 administrations and beyond are consistent with the prior year’s scale. Items demonstrating stability across administration years will be retained for possible use in equating the unused items from the current administration onto the scale.

Direct Writing and Science

For item calibration and scaling of the New Hampshire science assessments, we plan to implement the three-parameter logistic (3PL) Item Response Theory (IRT) model for dichotomously scored selected-response items and the graded-response model (GRM) for polytomously scored items. A limitation of 3PL and GRM relative to the alternative models is that 3PL and GRM require larger sample sizes, which means their use could be more problematic in some testing situations. Fortunately, the sample sizes involved in our plans for New Hampshire are indeed supportive of their use. Further, these models benefit the assessment program because they give better fit to the data compared to alternative models. This is especially important because sophisticated item types are required for assessing the complex constructs of the New Hampshire Science Standards; and our recommended models provide more accurate model fit for these items.

We recommend the use of flexMIRT for the New Hampshire Science assessment program because it is the most up-to-date IRT calibration program and includes more recently developed diagnostic statistics and the most up-to-date parameter estimation techniques and options.

Spring and Fall 2018 Operational Field Test

Our psychometric plans for the spring 2018 administration of direct writing and science summative assessments and fall 2018 science interim assessments provide a strong foundation for placing the items on a common IRT scale. The primary purpose of the stand-alone field test is to verify that a sufficient number of items are functioning properly to conduct the first operational administration (spring 2019). We use both IRT and classical statistics to evaluate which items function properly and are ready for use on the spring 2019 assessments. We plan to administer each field test form to an equivalent random sample of students, and the forms will be linked together using a small number of common items. When these items are used to construct the spring and fall 2019 forms, the IRT scale items will enable us to use IRT analyses during test construction, enabling us to have greater confidence in the psychometric characteristics of the forms.

Spring and Fall 2019 First Operational Administration

Since the items will be calibrated during the operational field test, it is possible that the psychometric model established at that time could be used for scaling the first operational administration. However, we plan to recalibrate the items and set the scale based on the spring summative and fall interim 2019 administrations, respectively. We recommend this approach for two reasons. First, the stand-alone field test will be administered under special circumstances. Untested items that may be unfamiliar to students are being administered under conditions where students don't have an incentive to perform at their best. Under these conditions, parameters for some of the items may not be accurately estimated. Second, because scores on the summative assessments will not be reported until after a standard setting is conducted in summer 2019, we will have the time to recalibrate the items.

We have significant experience assisting clients in developing meaningful score scales. Our approach has matured to the point where we have developed easy-to-use Excel spreadsheets that help our psychometricians provide fast, comprehensive, and understandable quantitative evaluations of possible options. We will work with NH DOE to construct a meaningful score scale for reporting overall science performance using the IRT model established from the spring and fall 2019 administrations together with the results of standard setting.

After we set the scale using the Spring and fall 2019 administrations, we will use equating techniques to check whether the psychometric model used during the Spring and fall 2018 operational field test is consistent with the Spring and fall 2019 scale. Items demonstrating stability across years will be retained for possible use in equating the currently unused items onto the 2019 scale.

Spring 2020 Embedded Field Testing

For the spring and fall 2020 administrations (and all operational administrations that follow on this contract), the tests will be pre-equated using the psychometric model put into place during the spring and fall 2019 administrations.

After the post-equated check is completed and any item drift has been corrected, the embedded matrix field-test items will be brought on to scale in the same manner as was done after the spring 2019 administration.

Concordance with Smarter Balanced Assessment Results

To align student results with the Smarter Balanced reporting scale, we provide three options for the development of a concordance table against the spring 2018 eMPower ELA and Math assessments. Each option leverages the vertical scale yielded by the Smarter Balanced assessments and requires historic student-level scale score results for New Hampshire in order to create the necessary link to eMPower results. We welcome collaboration with NH DOE in selecting and designing the methodology appropriate for demonstrating the relationship between these two assessment systems in the interest of facilitating understanding by educators, administrators, and the general public.

Option 1 (Distribution): Using spring 2017 Smarter Balanced scale scores, equipercentile equating may be conducted using the observed eMPower spring 2018 results. This method will achieve comparable distributions of student performance across years and assessment programs. The output of this method will be a concordance table associating spring 2017 Smarter Balanced scale scores with spring 2018 eMPower scale scores. This option is the most expedient of the three proposed; straightforward methods are used under the assumption that student growth has a negligible effect on the overall relationship between assessments across administration years.

Option 2 (Projection): Student performance on the spring 2017 Smarter Balanced assessments may be projected forward onto the subsequent grade by presuming normal growth and, therefore, stable positioning on the scale relative to the achievement level cut points. These projections will then be compared to observed eMPower performance in spring 2018 and concordance tables created for each grade and subject. This option explicitly accounts for New Hampshire students' prior performance on Smarter Balanced while providing a balance between (a) expediency and simplicity of analysis with (b) assumptions regarding average student growth across years.

Option 3 (Prediction): Multiple years of prior student-level Smarter Balanced scale scores will be used to predict spring 2018 scale scores. As in Option 1, these predicted scale scores will then be compared to observed eMPower performance in spring 2018 and concordance tables created for each grade and subject. Again, this option explicitly accounts for prior performance; in comparison to Option 2, additional data and analysis are required but fewer assumptions about student growth are made.

Topic 19 Equating

The vendor will design and conduct all analyses required to equate the NH assessments from year to year.

Our team of psychometricians is experienced in implementing a variety of equating designs and transformation methodologies. We have successfully implemented equi-percentile, mean-mean, mean-sigma, fixed common item parameter, and Stocking & Lord equating transformations for operational large-scale assessment programs.

Topic 19.1 Equating Plan

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

As described above in the Calibration section, our plan is to implement (eMPower) or achieve (direct writing and science) a pre-equated model with post-equated checks to provide the highest level of quality assurance to the validity of the underlying scale.

Our procedures for implementing a pre-equated model involve a number of safeguards. First, field test items will be embedded in operational tests to minimize any context changes between field testing and operational use. Second, operational items will undergo a post-equating check after the operational administration in order to detect item parameter drift before it becomes a problem. This, of course, safeguards the operational items that will be re-used the following year. Since we carefully safeguard the operational scale this protects the field-test calibration anchored to those operational items.

Topic 19.2 Equating Verification

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

The vendor will support an independent real-time review of the equating process, analyses, and results by independent vendor(s), identified by the NH DOE. The vendor(s) will support this effort by providing the consultant(s) with the necessary data files and other materials in a timely manner during the equating process.

Measured Progress is prepared to provide thorough instructions, steps, and data so that a designated technical reviewer can completely replicate our results. Measured Progress will employ a number of procedures used to calibrate, equate, and scale the New Hampshire assessments for which documentation will be provided. During the course of these psychometric analyses, a number of quality control procedures and checks on the processes will be conducted and the exact steps used will be provided to a technical reviewer. Documentation for the following quality control procedures will also be provided:

- Evaluations of the calibration processes (e.g., checking the number of Newton cycles required for convergence for reasonableness)
- Checking item parameters and their standard errors for reasonableness
- Examination of test characteristic curves (TCCs) and test information functions (TIFs) for reasonableness)

- Evaluation of model fit
- Evaluation of equating items (e.g., delta analyses, rescore analyses)
- Examination of a-plots and b-plots for reasonableness
- Evaluation of the scaling results (e.g., parallel processing by the Psychometrics and Research and DRS divisions, comparing lookup tables to the previous year's)

All software used by Measured Progress to conduct psychometric analysis (e.g. BIGSTEPS®, WINSTEPS®, MULTILOG®, PARSCALE™, and BILOG®) is publicly available. In addition, Measured Progress will make all data files, command files, and output files available for review on an FTP site. Finally, Measured Progress will conduct a conference call with the NH DOE and the designated reviewer to discuss any potential discrepancies so that a resolution can be reached prior to reporting.

Topic 19.3 Equating Report

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

Each year the NH DOE will receive an annual equating report from our psychometric team. This report documents the equating processes and quality control procedures used to ensure the accuracy of equating results. Annual equating reports will include the procedures used to calibrate, equate, and scale the NH tests and the quality control procedures used to verify accuracy. The procedures documented in the report include:

- Evaluate the calibration processes
- Check item parameters and their standard errors for reasonableness
- Examine of test characteristic curves (TCCs) and test information functions (TIFs) for reasonableness
- Evaluate of model fit
- Evaluate of equating items
- Examine of a-plots and b-plots for reasonableness

The equating report also provides data that can be used to evaluate the reasonableness of the scaling and equating results, such as: 1) raw score to scaled score lookup tables, 2) raw scores associated with cut points, 3) percentage of students by performance level, and 4) scaled score distributions. The NH DOE will review a draft of the report and approve the final report.

Topic 20 Assessment Evaluation – Item Evaluation

The vendor will design and conduct all analyses required to evaluate the quality and performance of all items developed for and/or included on the NH assessments. The vendor's response must include a description of item statistics that will be generated and other analyses that will be conducted. The vendor'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.

The forms design for eMPower ELA and Math, Direct Writing, and Science assessments—whether a simple common form design or common-matrix design—has been specified to allow sufficient sample

size coverage for each and every individual item. Matrix forms are spiraled at the student level, affording a number of benefits: 1) by designing our sampling in an appropriate manner, we ensure that a simple random sample occurs for each field-test item, which means that the sample statistics will be unbiased estimators; 2) by using sampling techniques we reduce the amount of testing per student while also ensuring the testing of a large enough number of items to support the development of future forms; and 3) by carefully embedding field test items at appropriate locations, we are able to effect minimal context changes when those items become operational in future years, thus ensuring a stable pre-equated model.

Topic 20.1 Field-Test Item Evaluation

The vendor'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.

Difficulty Indices

We will evaluate all multiple-choice and constructed response items in terms of difficulty according to standard classical test theory (CTT). The expected item difficulty, also known as the p -value, is the main index of item difficulty under the CTT framework. This index measures an item's difficulty by averaging the proportion of points received across all students who took the item. Multiple-choice items will be scored dichotomously (meaning correct vs. incorrect), so for those items, the difficulty index will be shown as the proportion of students who have correctly answered the item.

Constructed responses will be scored polytomously depending on the item's rubric. To place all item types on the same 0–1 scale, the p -value of a constructed response item will be computed as the average score on the item divided by its maximum possible score. Although the p -value is traditionally called a measure of difficulty, it can be properly interpreted as an easiness index, because larger p -values indicate easier items. An index of 0.00 indicates that no student received credit for the item. At the opposite extreme, an index of 1.00 indicates that every student received full credit for the item.

Items that almost all students answer correctly will provide little information about differences in student ability, but they do indicate knowledge or skills that have been mastered by most students. The converse is true of items that most students answer incorrectly. In general, to provide the most precise measurement, difficulty indices should range from near-chance performance (0.25 for four-option multiple-choice items, 0.00 for constructed response items) to 0.90. Experience has indicated that items conforming to this guideline provide satisfactory statistical information for the majority of the student population.

Discrimination Indices

It is generally desirable for higher ability students to perform better on an item than lower ability students. A commonly used measure of this characteristic is the correlation between student performance on the item and total test score. Within CTT, we refer to this item-test correlation as the item's discrimination, because, in effect, the strength of the correlation indicates the extent to which successful performance on an item discriminates between high and low scores on the test. For polytomous items, the Pearson product-moment correlation will be used as the item discrimination index, and the point-biserial correlation will be used for dichotomous items. The theoretical range of these statistics is from -1.0 to 1.0 , with a typical range from 0.2 to 0.6. Any items with item point-biserials less than 0.2 will be excluded from the pool of eligible operational items.

Distractor Analysis

Measured Progress will perform distractor analysis for all multiple-choice items. Our work will examine the psychometric performance of the items including response frequencies, point-biserial correlations, and differential item functioning.

Distractor analyses examine the following statistical properties of each item:

- Percentage of students who select the correct option (p-value)
- Percentage of students who select each incorrect option
- Point-biserial correlation of the correct option
- Point-biserial correlation of each incorrect option

DIF

The Standardization Differential Item Functioning procedure (Dorans & Kulick, 1986) will be employed to evaluate construct-irrelevant differences in item-level student performance which may be attributable to factors such as demographic subgroups. Under this procedure, item differences are calculated between each demographic subgroup or focal group and the reference group, according to matched weighted total test scores. This approach addresses the assertions made by both the *Code of Fair Testing Practices in Education* (Joint Committee on Testing Practices, 1988) and the *Standards for Educational and Psychological Testing* (AERA, 2014) that test items must be free from construct-irrelevant sources of differential difficulty.

It should be noted that DIF between groups may or may not indicate bias in the test. Group differences in course-taking patterns, interests, or school curricula can also lead to DIF. What is important is to determine whether the cause of this differential performance is construct-relevant. If subgroup differences are related to construct-relevant factors, items should be considered for inclusion on a test. Computed DIF indices will have a theoretical range from -1.00 to 1.00 for dichotomous items. DIF indices for polytomous items will be adjusted to the same scale by dividing by the maximum possible score on the item. For reporting purposes, items will be categorized according to DIF index range guidelines suggested by Dorans and Holland (1993). Indices between -0.05 and 0.05 (Type A) will be considered “negligible.” Most items should fall in this range. DIF indices between -0.10 and -0.05 or between 0.05 and 0.10 (Type B) will be considered “low DIF” but will be further inspected to ensure that no possible effect is overlooked. Items with DIF indices outside the $[-0.10, 0.10]$ range (Type C) will be considered “high DIF” and will trigger a more detailed examination of the item.

Topic 20.2 Operational Test Item Evaluation

The vendor’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.

The NH DOE will receive a comprehensive list of all operational item types and associated item statistics as part of the technical report. These item statistics will be summarized at the test level by item type. In addition, items statistics will be stored in the item bank and accessible to NH DOE.

Statistical Analyses

After every operational administration, for items whose most recent previous usage was as an operational item, whether core or matrix, we will calculate difficulty indices, discrimination indices, and conduct DIF analyses according to the field test procedures described earlier. We will use these statistics to evaluate current item performance against previous operational administration. As mentioned earlier, operational items will also have undergone a post-equating check for item parameter drift after that previous operational administration. Furthermore, if an operational item was previously used as an equating item in the post equating check of that previous administration, still more statistical checks will have been conducted to ensure the stability of its item parameters. Moreover, we also will conduct a nonparametric dimensionality analysis on every operational form after each operational administration. The results from this analysis will be helpful in evaluating the degree to which the separate domains exhibit dimensionality differences.

Key Verification

The NH DOE can be assured that Measured Progress will perform key verifications to identify possible miskeyed machine-scored items. First, prior to the administration our staff simulates the student's experience of taking the test, and compares their responses with the answer keys. Second, post administration but prior to reporting, we analyze live student responses to determine item difficulty (p-values) and item-total correlation (point biserial correlations) for all machine-scored answers within the collected population. These statistics are used to flag potential problem items that are re-evaluated and corrected as needed.

Topic 20.3 Test Construction Evaluation

The vendor 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 NH assessments.

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

The vendor will design and conduct all analyses necessary to produce accurate results student, school, district, and state reports.

Our specialists will submit proposed operational test forms composed of core and matrix items to our psychometricians to evaluate. We will use the appropriate IRT model to generate a Test Characteristic Curve (TCC), Test Information Function (TIF), and raw score to scaled score conversion table for each proposed test. These data will be compared to the TCC, TIF, and conversion table of the initial form, as well as to those of any tests that have been administered after the initial form.

When making the comparison, we will focus on the behavior of the proposed test near each of the performance level cut points. At each of the cut points, the raw cut-score, the TCC value, and the TIF value for the proposed form will be compared to the values from the previously administered forms. The goal is to make the proposed form as psychometrically close as possible to past forms, while maintaining alignment to the content blueprint.

Topic 20.4 Additional Assessment Analyses

The vendor shall describe its proposed procedures for assuring that the assessments will be scored in a reliable and valid manner. Reliable and valid scoring for subgroups must also be discussed.

The vendor shall describe its system’s capabilities in identifying unusual responses such as those that indicate abuse or potential for student self-harm and in flagging those responses on Interim Assessments for the teacher to review, and on Summative Assessments to notify the NH DOE.

At the start of every New Hampshire human scoring assignment for scoring writing prompt responses,(all of the Field Testing in Year 1, and 10% of the operational testing beginning in Year 2—to validate AI scoring) scorers will receive what is called “crisis paper training.” Scoring leadership will introduce and explain which responses are considered crisis papers, and may present examples to scorers. During scoring, scorers will flag crisis papers for review within the scoring system and notify scoring leadership. Once a crisis paper is flagged, the Content Specialist will alert the Scoring Project Manager, who will work in conjunction with scoring operations and the program management team to obtain student information and to notify necessary parties within the NH DOE of the crisis paper. Once a crisis paper is flagged, the Scoring Content Specialist will review the entirety of the student’s responses to identify any concerning material that appears in the student’s work.

Model Confidence Level & Identifying Responses with Low Confidence and Crisis Papers

As Measurement Inc’s (MI’s) PEG essay-scoring engine receives student responses it will determine its confidence in scoring the response, directing responses for which it has low confidence to human scorers.

MI will work closely with Measured Progress to determine the requirements for initial model confidence levels and ongoing model validation. Methods can include human spot-checking, designating a percent of read-behinds (such as 10-20%), and routing atypical responses from the AI system to expert readers for decision.

Regardless of whether responses are scored by humans or machines, it is inevitable that issues will appear in student responses that require human intervention. Built into MI’s automated essay scoring engine are a variety of triggers for identifying alert papers and responses in which it has low confidence. Our AI scoring software flags responses that lack proper development, lack enough content to be scored, are written in an unsupported language, contain vulgar language, indicate potential endangerment to the student or others, abuse and/or any other abnormalities, or other alert words or phrases that indicate that the response should be reviewed by the client.

In order to maintain a high level of system response time in returning scores, the alert paper screening is done independently of, but immediately following, the scoring. MI understands that clients will have a variety of screening requirements, and we can configure PEG to meet each set of unique requirements.

D1.6 Reporting

The vendor is responsible for the accurate and timely reporting of results of the NH assessments. The assessment results are to be reported in a “user friendly” format. The vendor shall describe the process it has used or will use to develop the formatting of the reports.

The NH DOE is especially interested in reporting approaches that provide actionable information for students, parents, and classroom teachers. The reporting system should be designed to complement instruction and to facilitate the use of assessment results to improve student achievement. Reports should reflect areas of strength as well as areas that need to be targeted for instruction.

The NH DOE is also interested in collecting and reporting annual longitudinal student achievement data for the purpose of measuring growth and setting academic goals. The vendor shall describe the process it has used for collecting, monitoring and reporting longitudinal growth data and provide sample reports.

Results from the first operational administration will be reported following standard setting. Complete results from subsequent operational administrations of the NH assessments will be reported in a timely fashion at the completion of testing.

The vendor'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 vendor's response must also include a plan for the design, review, approval, and production of color reports. The plan should describe how the vendor will interact with the NH DOE throughout the design process.

The vendor must discuss the availability of reports in languages other than English. The vendor will describe and provide examples of the various report forms distributed to students, schools, and districts. It will contain supportive information related to interpreting the test results, including but not limited to: reporting categories assessed and definitions for technical assessment terms.

The comprehensive interpretive guides shall be developed for use by schools and districts and shall be posted on the vendor's information portal and available electronically for the NH DOE, schools and districts to download.

The vendor shall collaborate in the development of the interpretive guides to ensure accurate information related to the assessment design is clearly provided. From the comprehensive guide, a smaller Parent Brochure shall be developed containing information pertinent to student level reports. The parent brochure shall be translated into one or more languages for distribution to non-English background parents as requested by the NH DOE. The parent brochure shall be distributed with the printed test scores and posted on the vendor's information portal.

The specifications for the interpretive guides and Parent Brochure include but are not limited to:

- Available in electronic format that is accessible via the Internet.
- Include thumbnails and larger images of selected reports.
- Interpretive guides are developed for the purpose of providing schools and districts with an understanding of the reports that are available.
- Interpretive guides include training information for use of online reporting tools.
- Parent Brochure: developed for the purpose of providing test awareness for parents and students, shall include training information for use of online reporting tools.
- Parent Brochure: provided in print format on a 1:1 ratio to student reports per content area per assessment.

Measured Progress will deliver to NH DOE, New Hampshire schools and districts, and New Hampshire families important and actionable information regarding student performance and growth. The components of this reporting system are as follows:

- **eMPower Static Reports:** We have built a set of standard individual and aggregate reports for eMPower that provide student achievement and growth measures and aggregate reports that summarize student performance at the individual, school, district, and state levels
- **Custom Direct Writing and Science Reports:** We will build individual and aggregate reports for the NH DOE to report student performance on the direct writing and science assessments.
- **Data Interaction by eMetric:** Data Interaction provides school, district, and state users with a powerful system for analyzing student results and aggregated reporting information. This tool will help make the data reported for the New Hampshire Student Assessments actionable. As educators work with the data, information will be revealed that will help them adjust instruction and improve student learning.

We start our response to this section by introducing the eMPower reports and discussing the development of interpretive guides and materials. Then, in our response to this section's topics, we provide detail about eMPower reports and discuss how we will develop custom reports for the direct writing and science components of the New Hampshire Statewide Assessment program.

eMPower Reports

Measured Progress has implemented a principled, research-based design and development process for eMPower score reporting. eMPower score reporting includes static reports, which users can view, customize, copy, and print locally, and interactive score reporting capabilities, whereby users can query the data by sorting, filtering, drilling down, and so forth to create custom reports and to answer user specified questions.

We provide student-level reports that provide students and their parents with a clear indication of their performance with regard to meeting college and career readiness expectations. The excerpt below from a mockup of an Individual Student Report shows a student's Reading, Writing & Language, and Mathematics eMPower scale scores (on the eMPower vertical scale), the achievement level and confidence band around the cut score, and interpretive information about the scale score and proficiency level and corresponding Lexile and Quantile scores.

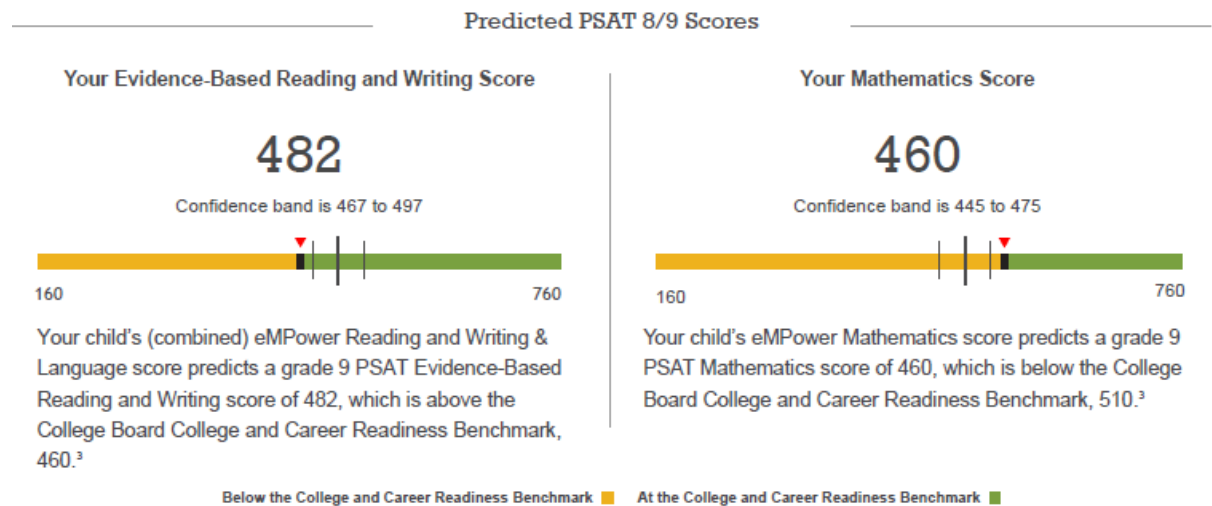
EXHIBIT 42: EMPOWER SCALE SCORE REPORTING



Individual Student Reports will be available in both English and Spanish language versions.

In addition, the eMPower Individual Student Report for 8th graders indicates the student's predicted PSAT 8/9 score and whether that score is consistent with the College Board's College and Career Readiness Benchmarks in Evidence-Based Reading and Writing and in Mathematics.

EXHIBIT 43: EMPOWER PREDICTED PSAT 8/9 REPORTING



The Individual Report also provides information on student performance in relation to subscore areas in Reading, Writing & Language, and Mathematics. We offer proficiency level indicators for each subscore area—At Standard, Above Standard, Below Standard—rather than scale score estimates with exceedingly wide confidence bands.

eMetric's Data Interaction (described in Section D1.8) offers flexible support of Individual Student Reports that contain the information to provide students and parents with a clear picture of the student's performance and learning needs. Data Interaction's student reports display overall scores and information about student strengths and weaknesses when domain level scores are provided. Additionally, these reports can be downloaded for printing to be shared with a parent.

Measured Progress will also provide a data file to NH DOE that includes student score results. The specific data elements and file format will be determined in consultation with the NH DOE.

Achievement Growth Reporting and Vertical Scales

The eMPower assessments are reported on cross-grade vertical scales for each subject area. Educators can assess growth within a grade, using the fall, winter, and spring secure test forms, and from one year to the next. The vertical scales enable measurement of growth toward being on track to reach the eMPower college and career readiness standards in grades 3-8. We are in the middle of a research-based process to determine how achievement growth will be defined, measured, and reported for eMPower users. The research-based process includes a comprehensive literature review of how state and other assessment programs define, measure, and report growth plus research papers and two seminars involving Measured Progress assessment designers, content developers, and psychometricians and outside consultants from Harvard University, UCLA/CRESST, and the University of Colorado who are nationally recognized experts on achievement growth measurement and reporting. We will complete that process and produce achievement growth measures and reports in time for the fall 2017 eMPower interim test administration window. eMPower growth scores will indicate the amount of achievement growth students have achieved since all previous eMPower test administrations, whether that amount of growth is likely to enable students to be on track to reach college and career readiness by the next eMPower administration, and how that growth compares to the growth of students in the classroom, school, district, state, and student subgroups.

Performance Levels for eMPower Assessments

Measured Progress has set preliminary cut scores for four performance levels for each content area in the eMPower Assessments: **proficiency levels 1, 2, 3, and 4**. We will complete standard setting for eMPower in August 2017. At that time the proficiency level labels will indicate the degree to which students are or are not on track for readiness for college and careers. The grade 8 eMPower proficiency level 3, which we plan to label *On Track*, will be the score on the grade 8 test that predicts the PSAT College and Career Readiness Benchmark score. The grade 7 *On Track Score* cut score will be the grade 7 score that predicts the *On Track* score on the grade 8 test. *On Track* cut scores will be cascaded downward so the level 3 on each grade level test will indicate students who are on track for readiness for college and careers. The other three eMPower proficiency levels will indicate students who are progressing above the *On Track* standard and those who are not on track and in need of intervention to get them on track.

The *On Track* standards for each grade represent benchmarks for the standard setting process (see Ferrara, Lewis, Mercado, Egan, D'Brot, & Barth, 2011; McClarty, Way, Porter, Beimers, & Miles, 2013). We will use the Item-Descriptor (ID) Matching standard setting method (Ferrara & Lewis, 2012) to set standards because its cognitive judgmental task enables educators to bring their expertise in college and career readiness test content and the capabilities and needs of students in elementary and middle school grades into the standard setting process.

eMPower Set of Score Reports

Measured Progress has built a set of five reports for the eMPower assessment program. More information about each of these reports is provided in our response to Topic 22: Reports.

- Individual Student Report
- School (and other groups) Summary Report
- Classroom Roster Report
- Instructional Grouping Report
- Item Analysis Reports

We are working on a sixth report, the **Achievement Growth Report**, which will support the evaluation of student growth. We have provided examples of the first five reports in Appendix 4.

Report Interpretation Guide and Parent Brochure

Measured Progress has extensive experience working directly with clients to create interpretation materials that clarify reporting results. These guides are intended to provide guidelines for interpreting student-level reports in a clear, easily-understood manner for school and district personnel and parents. The interpretive guides are designed to include information about the assessments, to support local educator use of test data, to better serve the academic needs of students, and to evaluate and improve the quality of curriculum and instruction.

We will work with the NH DOE to design and produce both a report interpretation guide and a parent brochure. Once the documents are approved by NH DOE, we will make the final versions available electronically in a printable PDF format. In addition, we will print the parent brochure and ship to schools at the same time as student reports are shipped.

References

- Ferrara, S., & Lewis, D. (2012). The Item-Descriptor (ID) Matching method. In G. J. Cizek (Ed.), *Setting performance standards: Foundations, methods, and innovations* (2nd ed., pp. 255-282). New York: Routledge.
- Ferrara, S., Lewis, D. M., Mercado, R., Egan, K., D’Brot, J., & Barth, J. (2011; manuscript under revision). Setting benchmarked performance standards: Standard setting workshop procedures, panelist judgments, and empirical results. In K. Egan (Chair), *Innovations in standard setting*. Invited symposium at the annual meeting of the National Council on Measurement in Education, New Orleans, LA.
- McClarty, K. L., Way, W. D., Porter, A. C., Beimers, J. N., & Miles, J. A. (2013). Evidence-based standard setting: Establishing a validity framework for cut scores. *Educational Researcher*, *42*(2), 78-88.

Topic 21 Assessment Scores

The primary student scores reported on each of the NH assessments will be an overall achievement score and performance level. A student's achievement score will be based on her/his performance on all operational items (common and matrix) included on the test form and reported on a vertically scaled learning continuum.

The vendor'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.

The NH DOE is interested in providing reporting measures that contain actionable information, such that teachers and parents can use results to connect students with targeted instructional and academic materials that meet and challenge the student's abilities, interests and learning objectives. Should the vendor propose to utilize the scores of a subcontractor that can help identify appropriate reading materials, those costs must be listed as an option.

eMPower Reported Scores

We provide the following scores in the eMPower score reporting system:

- **Total scale scores** will be reported using a vertical scale that covers grades 3-88. We also provide **total test proficiency levels** using a system of four performance levels. Level 3 will designate whether students are on track for readiness for college and career in each grade (grades 3-8).
- **Lexile and Quantile scores** will be determined from the student's eMPower Reading and Mathematics scale scores.
- At grade 8 only, we will report the **Predicted PSAT 8/9 Evidence-Based Reading and Writing and Mathematics scores**, and indication of the College Board College and Career Readiness Benchmark score on the PSAT 8/9.
- **Subscore Proficiency Levels** will be reported in each content area that indicate whether students are *At Standard* and proceeding successfully, *Above Standard*, and *Below Standard* and in need of additional support to improve their learning and achievement in each subscore area.
- We are currently working to develop **Achievement Growth Scores**, which will indicate the amount of achievement growth students have achieved since all previous eMPower test administrations, whether that amount of growth is likely to enable students to be on track to reach college and career readiness by the next eMPower administration, and how that growth compares to the growth of students in the classroom, school, district, state, and student subgroups.

Direct Writing Reported Scores

Measured Progress will work with the NH DOE to determine the scores to be reported on the direct writing assessment. However, we recommend reporting a **raw score** using the number of points the student received from scoring of the assessment and a **proficiency level** associated with the raw score.

Science Reported Scores

We will work with the NH DOE to determine the scores to be reported for the science interim and summative assessments. We recommend that student score reports include an **overall science scaled score** and **overall performance level** resulting from performance on all operational items (both common

and matrix). Additionally, we believe there are a sufficient number of items to consider reporting **student level categorical subscales** and **subscale performance** levels on each domain and dimension of interest.

Topic 21.1 Aggregate School, District, and State Scores

A primary focus of the NH Assessment System is to provide detailed information about student achievement at the school and district level. An intended benefit of the use of 72 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 NH academic standards.

The vendor'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 achievement.

The vendor's response should also indicate whether such school and district scores will be reported on their own subscales which can be linked across years to allow comparisons in performance from one year to the next.

eMPower Aggregate Scores

The eMPower score report system enables aggregation at the classroom, student subgroup, school, district, and state levels for several reports. The *School, District, and State Reports*, which summarizes percentages of students at each eMPower proficiency level, is designed explicitly to meet this information need. In addition, the *Group Roster Report*, *Instructional Grouping Report*, *specific Item Analysis Reports*, and *Achievement Growth Reports* provide aggregations in these areas to support group analysis by educators.

Direct Writing Aggregate Scores

Measured Progress will work with the NH DOE to develop aggregate reports summarizing group performance on the direct writing assessment, using the raw scores and performance levels being reported to individual students.

Science Aggregate Scores

Measured Progress will work with the NH DOE to develop aggregate reports summarizing group performance on the science assessments. Aggregations can be based upon student reported scores: overall scale score, overall performance level, subscale scores, and subscale performance levels.

Since we are proposing the use of a common-matrix model for test administration, we believe aggregations of subscores will be of particular value. These aggregations will be based on both common item and matrix item performance, meaning that the aggregations will be based on the assessment of a larger number of performance expectations than if the assessment were fixed form. Thus, we will be able to report at a more detailed level for the aggregate scores. The exact nature of the more detailed reports will be determined through discussions with NH DOE.

Topic 22 Reports

The vendor shall propose a process for the design of reports that includes participation of the NH DOE management team and the NH Content Teams. The vendor’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 vendor’s response should address the feasibility of obtaining external feedback on proposed report designs.

Measured Progress has proposed a combination of pre-designed and custom-designed reports in response to NH DOE’s requests. For the eMPower Reading, Writing & Language, and Mathematics summative and interim assessments, we are proposing our pre-designed reports. For the direct writing summative and science interim and summative assessments, we are proposing custom-designed reports. In our response to this topic, we start by describing our eMPower score reports. Then, we describe the process of developing custom-designed reports that we’ll use to develop the direct writing and science interim and summative reports.

eMPower Score Reports

The eMPower score reporting system has followed a principled design-research based process. All reports and report elements have been tested with educators in interviews and focus groups. Individual Student Reports will be tested with parents and students in the coming months and refined as necessary. We offer five static score reports; mockups of all five can be seen in Appendix 4.

- **Individual Student Report**, intended for students, their families, and their teachers. This report provides the student’s eMPower scale score and proficiency level, corresponding Lexile and Quantile scores, predicted PSAT scores (at grade 8 only), eMPower subscore area proficiency levels, and will soon provide links to *eMPower Classroom* diagnostic testlets and links to recommended instructional material for areas where students need additional improvement.
- **School, District, and State Summary Reports**, intended for school, district, and state educational leaders. These reports can be aggregated for any groups and subgroups of students that the user may choose. These reports indicate percentages of students in a classroom, school, district, state, student subgroups, and other configurations who are and are not on track for college and career readiness.
- **Classroom Roster Report**, intended for teachers and school leaders. The rosters are easily customizable so that any groupings of students in a school can be listed in the report. The report lists all selected students and indicates their eMPower scale scores, total test proficiency levels, and subscore proficiency levels.
- **Instructional Grouping Report**, also intended for teachers and school leaders and also easily customizable by the user. This report lists students who are Below Standard in any subscore area so that teachers receive a first recommendation on grouping students who need to improve learning and performance in specific areas in Reading, Writing & Language, and Mathematics.
- **Item Analysis Reports**, intended for teachers as another guide to making instructional grouping and instructional focus decisions for individual students and groups of students. Although we do not release items from eMPower operational test forms, the *Item Analysis Report—Individual* (see Appendix 4) indicates the content area knowledge and skill demands of each item on a test that a student has taken, the content standards that the item targets, whether or not the student was successful on the item, whether the item was easy, moderately difficult, or difficult, and how other students (e.g., in the classroom, the school) did on each item. (Note that this report is still in the

research and development process so should be viewed as a conceptual treatment that is under development.) Other *Item Analysis Reports* provide similar information about the items that students have taken, aggregated across items for classrooms and other groupings of students. An Item Mapping Report will summarize individual and student group performance on items that are aligned with each proficiency level and proficiency level descriptor.

We are in the process of developing an additional set of information elements, on achievement growth. We have planned a sixth set of customizable score reports, **Achievement Growth Reports**. These reports will enable parents, teachers, and school, district, and state educational leaders to monitor the achievement growth of students during a school year (e.g., 4th graders who participate in fall, winter, and spring eMPower administrations) and across grade levels (e.g., growth from the end of grade 4 to the end of grade 5). In all reports, growth scores will indicate the amount of achievement growth students have achieved since all previous eMPower test administrations, whether that amount of growth is likely to enable students to be on track to reach college and career readiness by the next eMPower administration, and how that growth compares to the growth of students in the classroom, school, district, state, and student subgroups.

Report Design Process for Direct Writing and Science

Measured Progress has a long history of providing our clients with customizable reports that are built to their specifications and are designed to meet the needs of their unique audiences. Our report development process is built on collaboration and well-documented requirements and specification to ensure our reporting is accurate and meets the needs of our clients.

Our report design process starts with asking our clients what seems to be a basic question: “What questions do you want to answer?” At first this may seem to be an obvious question, but too often when dealing with reporting it is easy to get trapped by starting with what results there are to report: scaled scores, achievement levels, demographic information, etc. By starting with the results we can lose track of what our client intends to communicate. By starting with the questions we want to answer, we can focus on what each audience wants to know and how to present the information in a way that helps them understand the information. Once we have the set of questions a client wants to answer, we break the information into the following two basic categories:

1. **Informational content** is critical information that is necessary to help each audience understand why an assessment is given. The level of detail and type of information will vary based on the needs of the intended audience.
2. **Scoring content** is the information that we are able to derive from the assessment results. If we were to start our report development with the results, we would likely end up saying we need to report average scaled scores and the percentage of students in each achievement level. While this is information we may end up reporting, what is most important is not the numbers themselves but the meaning behind why the numbers are important and how the audience can use them to answer the question that brought them to the report.

We understand users will interpret each statistic based on the question they are trying to answer. Our report design process delivers several different content displays to communicate each statistic. We aim to tailor the content display to the anticipated need of the audience and the question they want answered. We design reports using an interdisciplinary team consisting of:

- Reporting specialists
- Data analysts

- Psychometricians
- Content specialists
- Program managers

Throughout this process we will provide drafts and samples for review to the NH DOE; which will make the final decision on what is reported and how the data is displayed. All content is customizable and can be edited and updated to meet the specific needs of our clients.

Report Requirements Process for Direct Writing and Science

Once the basic design of the report is established, we document all of the reporting requirements and specifications in a document referred to as the decision rules. This document identifies how all reporting calculations are performed; including how student participation is defined and which students are included in aggregations. The decision rules also document report-specific actions such as the suppression of data or special formatting of results. The decision rules provide sections dedicated to each report or data file deliverable for the contract as well as sections that outline the calculations across all reports. This will provide uniformity across the reports as well as focused attention on each unique report or data file.

As the reports and decision rules are developed they will be provided to the NH DOE for review and approval. Our process will involve the NH DOE throughout the development process so that ideas and updates are incorporated as the reports are developed. This ensures a final product that is in line with the NH DOE's vision and minimizes the amount of rework due to a misunderstanding or miscommunication of the requirements. No report or data file will be released without an NH DOE-approved set of decision rules.

Measured Progress can also participate in, and help facilitate, focus groups to obtain external feedback prior to finalizing report designs. Measured Progress didn't budget for the process of obtaining external feedback. However, we would be happy to talk with NH DOE about its vision for this work and, if necessary, provide a budget.

Topic 22.1 Types of Reports

The vendor will be responsible for producing a variety of reports intended for use by a variety of audiences.

Measured Progress has significant experience producing reports. Our experience includes the production and distribution of paper reports and electronic reports for students, schools, districts, and states. In our response to this topic we describe the quality assurance processes in place during the development and production of reports. These processes will be implemented for all portions of the NH Statewide Assessment program. Then, in our responses to Topics 22.2 (Student Reports) and 22.3 (School, District, and State Reports), we discuss the production of specific reports, clarifying any differences between eMPower reports and the reports needed for the direct writing and science assessments.

Report Quality Assurance: Development

Our quality assurance process for physical reports (both online and paper) focuses on two different stages in the report process: development and production. During report development the focus is on insuring the physical aspects of the report are correct:

- Data are placed in the correct location

- Data are formatted correctly
- Reporting rules are applied correctly (e.g., showing or suppressing footnotes, suppressing data)
- Reports are complete – correct number of reports and pages within a report

During development our reporting programs are evaluated using a series of test cases to insure the programs are functioning properly. Each test case has an expected outcome, and only when all test cases meet expectations is the report program ready for the next step in the process.

As a final step in the development process we programmatically generate a set of simulated students we refer to as our demonstration schools. The students in these schools are generated from an analysis of the reporting requirements for the contract and represent all possible reporting scenarios that can exist for a particular contract. The demonstration schools provide the means to demonstrate how each specific testing scenario will appear on the final reports, and allows us to validate the reports are performing as expected. Once the reports have passed our internal QC checks, the reports are provided to our psychometric team and our external clients for review and approval. This review during development insures the reports are accurate and sound.

Report Quality Assurance: Production

During the production run of reports, in addition to re-checking the demonstration reports, we will validate a random sample of reports. During this review, we look for issues that were introduced into the reporting process from outside factors (such as server issues). Once the random sample of reports has passed through the review process our Data Analysis and Reporting group, they are released to the CSDE and to our psychometricians for review and approval.

Topic 22.2 Student Reports

The vendor will produce hard copy student reports (one per student) that will be shipped directly to schools.

The vendor will also produce a printable, digital version of the student report that may be printed by the district or school.

Measured Progress will, for all components, print one paper copy of each student report and ship that report directly to schools. In addition, we will provide student report data to eMetric so they can render a printable, digital version (HTML) of the student report in *Data Interaction*. School, district, and NH DOE staff with appropriate permissions will be able to access reports from *Data Interaction*.

Topic 22.3 School, District, and State Reports

The vendor will produce school-, district-, and state-level reports in printable, digital format.

The vendor'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:

- Rosters providing individual student-level results at the school or classroom level (dependent upon data available). Rosters 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.
- o **State Report Package** containing the same information as the school report aggregated at the state level.
- o **School Summary Report** providing summary participation and performance information across grade levels tested within the school.
- o **District Summary Report** providing the same information as the school summary report aggregated at the district level.
- o **State Summary Report** providing the same information as the School Summary Report aggregated at the state level.

Measured Progress will provide aggregate report data to eMetric so they can render a printable, digital version (HTML) of school, district, and state reports in *Data Interaction*. School, district, and NH DOE staff with appropriate permissions will be able to access reports from *Data Interaction*. eMetric's Data Interaction (described in Section D1.8) offers flexible support for providing both confidential and non-confidential reports.

For the eMPower assessments, Measured Progress and eMetric will prepare the reports described in our response to Topic 22 (Reports). For the direct writing and science assessments, Measured Progress acknowledges that school, district, and state reporting may include any or all of the reports listed on page 73 of the RFP.

Topic 23 Data Files

In addition to printable, digital reports, the vendor will provide the information contained in all reports in a data file in an agreed upon format that can be imported into the NH DOE and schools' reporting systems.

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 vendor will also propose the development of supplemental materials to assist in the interpretation and use of NH assessment reports by the parents and students, local educators, and the public.

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

The vendor will also support two in-person reporting workshops following the first two operational administrations of the NH assessments.

Measured Progress uses a similar process to provide quality assurance to the production of data files as it does in producing reports. During report development, we will clarify with NH DOE the needed data files and document requirements for the creation of the files. We will then develop and evaluate the programs

used to create the data files, including generating sample files using a set of demonstration schools. Then, when the production data files are created, they are re-checked prior to being provided to the NH DOE.

Measured Progress provided a response to the NH DOE's requirements to provide interpretive material. Please see our response to Section D1.6 (Reporting).

D1.7 Standard Setting

Student results from the NH assessments will be reported according to performance levels. Details on the number and names of performance levels will be determined during 2017-2018. The vendor shall describe its standard setting methodology for summative and interim assessments. Use of empirical data, including summative data, as well as the any inclusion of

NH educators in the process must be discussed. The vendor's plan to ensure continuity between grade levels must be described.

Cut scores indicating the level of student performance required to attain each performance level classification will be determined in the summer following the first operational administration of the NH assessments.

The vendor shall recommend methods of validating cut scores across time, including approaches to revising as evidence indicates. In addition, the vendor shall suggest how to approach communication with the field regarding potentially changing cut scores.

The vendor will support the NH DOE in all activities related to establishing performance standards for the NH assessments. Major activities that are the responsibility of the vendor are described in the tasks that follow.

Measured Progress will be setting standards for the various components of the New Hampshire Statewide Assessments. The plan for each program component is as follows:

- **eMPower:** Measured Progress will be setting standards for eMPower during the summer of 2017. We will use these standards, once established, for the NH program. If awarded the contract we will invite New Hampshire educators to participate in our standard-setting process.
- **Direct Writing:** Measured Progress will work with NH DOE to set standards for the direct writing assessment during the summer of 2018. Prior to setting standards, we will work with NH DOE and NH educators to develop performance level descriptors (PLDs).
- **Science:** Measured Progress will work with NH DOE to set standards for the science assessment during the summer of 2018. Prior to setting standards, we will work with NH DOE and NH educators to develop performance level descriptors (PLDs).

In our response to Topic 24 (Performance Levels), we describe the process we use to develop PLDs. This process is essentially the same and will be followed for the direct writing and science components. In our response to Topic 25 (Cut Scores), we describe the standard-setting models we will use for each component. There are essential differences in the various components that require different standard-setting methods, so we have provided detailed descriptions of the methods chosen for each component.

Topic 24 Performance Levels

The vendor will be responsible for proposing, organizing, and supporting a process for supporting the NH DOE in determining the number and names of performance levels appropriate for the NH assessments. Such performance levels shall be set, at a minimum, to meet federal assessment reporting requirements.

The vendor will be responsible for proposing, organizing, and supporting a process for developing appropriate performance level descriptions for the NH assessments.

The vendor'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 vendor's response should include a timeline of major activities and/or milestones in the process.

The vendor will be responsible for all costs associated with proposed meetings, including expenses, stipends and/or reimbursement costs for external panelists. Vendors should use \$150 per day per panelist for stipends/substitute reimbursement when budgeting for these meetings.

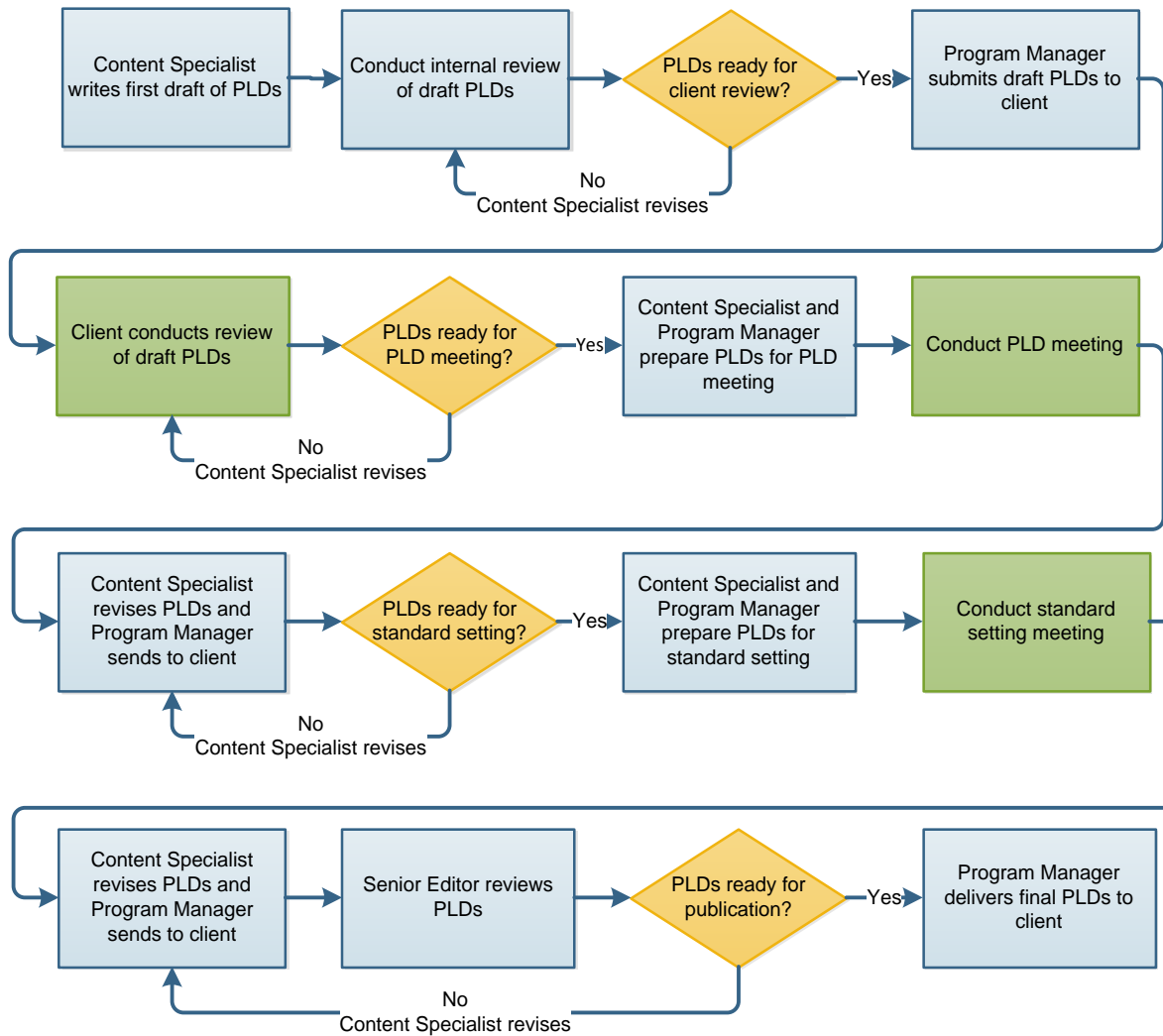
In conjunction with standard setting for direct writing and science, Measured Progress will facilitate a process on behalf of the NH DOE for the development and review of performance level descriptors (PLDs). This process requires significant discussion among educators about the meaning of the different levels of achievement. PLDs are the cornerstone of the standard setting process because they indicate what performance in a particular content area and grade level looks like when students are approaching, meeting, or exceeding expectations. When developing PLDs and setting standards, we will conduct this work so that the results meet the federal reporting requirements in place when the activities were performed.

The process of developing PLDs will start prior to the standard-setting meetings. Measured Progress will write draft PLDs and present to the NH DOE for review. After the NH DOE provide their first round of comments, the PLDs will undergo several reviews throughout the standard-setting process. The PLDs will be presented to the standard-setting committee and comments collected. After standard setting, the PLDs will undergo final editing by the NH DOE and Measured Progress. When complete, we will present to the NH DOE so that they can make the descriptors available to educators, parents, and interested stakeholders

The performance level descriptors will be used during the standard-setting meeting to help the committees understand the meaning of the various levels of achievement. In many cases, standard-setting committees suggest changes to the PLDs. After the standard-setting meetings, we will work with NH DOE to review the additional suggestions and arrive at final descriptors.

The following exhibit shows a flow chart for developing achievement level descriptors

EXHIBIT 44: PROCESS FOR DEVELOPING PERFORMANCE LEVEL DESCRIPTORS



Topic 25 Cut Scores

The vendor will be responsible for proposing, organizing, and supporting a process for determining performance level cut scores (i.e., thresholds) on each of the NH assessments.

The vendor's response will propose a standard setting method that is appropriate for use with the NH assessments. The vendor'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 assessments.

The vendor's response will include a description of the processes and procedures necessary to implement the proposed standard setting method. The vendor will be responsible for all costs associated with standard setting meetings, including expenses, stipends and/or reimbursement costs for standard setting panelists. Vendors should use \$150 per day per panelist for stipends/substitute reimbursement when budgeting for standard setting meetings.

The vendor'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.

For all standard-setting meetings, Measured Progress staff, including members of the program management team, the lead psychometrician, and panel facilitators, will ensure that all meeting logistics are handled smoothly and that panelists receive thorough training and information needed to set standards accurately. Our staff will also be responsible for security of the materials throughout the process. Participants will be required to sign a confidentiality and non-disclosure statement before they are allowed to view any assessment materials. All test-related materials will be collected and accounted for at the end of each day, and Measured Progress will have designated staff responsible for material security during meals and break times throughout the standard-setting meeting. At the conclusion of the meeting, all secure materials will be destroyed on-site by a certified document destruction vendor.

eMPower ELA and Math

In late summer 2017, Measured Progress will set standards for the grades 3-8 reading, writing and language, and mathematics eMPower assessment suite of products. We will use the Item-Descriptor (ID) Matching method (Ferrara & Lewis⁴, 2012; Cizek & Bunch, 2007⁵) because of its advantages over other methods (i.e., it does not require probability judgments as in Bookmark and Angoff; it does not require panelists to imagine borderline examinees; it is consistent with teachers' expertise in teaching and student learning). ID Matching has been used in a wide range of assessment programs in the US and in other countries, as documented in Ferrara and Lewis (2012).

⁴ Ferrara, S., & Lewis, D. (2012). *The Item-Descriptor (ID) Matching method*. In G. J. Cizek (Ed.), *Setting performance standards: Foundations, methods, and innovations* (2nd ed., pp. 255-282). New York: Routledge.

⁵ Cizek, G. J., & Bunch, M. B. (Eds.). (2007). *Standard setting: A guide to establishing and evaluating performance standards on tests*. Thousand Oaks, CA: Sage Publications.

In addition, we will use a standards benchmarking process⁶ to ensure that the: a) grade 8 standards reflect established and validated college and career readiness standards, using the College Board's College and Career Readiness Benchmarks established in the SAT Suite of Assessments; and b) grades 3-7 standards indicate whether students are on track for readiness for college and career by grade 8. These performance standards and proficiency level descriptors will be available for all state and district adopters of eMPower assessments shortly following conclusion of the standard setting meeting.

No further standard setting is necessary for New Hampshire's use of the grades 3-8 eMPower assessment, unless NH DOE wants to set state-specific standards.

Direct Writing

For the Direct Writing component of the NH statewide assessment systems, Measured Progress proposes to use the Body of Work (BoW) standard setting method. The BoW method was developed specifically for use with assessments that are designed to allow for a range of student responses, such as writing, portfolio-based or performance-based assessments (Kingston, Kahl, Sweeney, & Bay, 2001)⁷. A modified version of the method has been found to yield reasonable and defensible cut points.

In the BoW method, panelists are presented with samples of actual student work and make their judgments based on those samples. Specifically, panelists examine each student response and determine which achievement level best matches the knowledge, skills, and abilities exhibited by the student. In the following sections, we provide an outline of the BoW method, logistics associated with implementing this method, and a plan for preparation and follow-up.

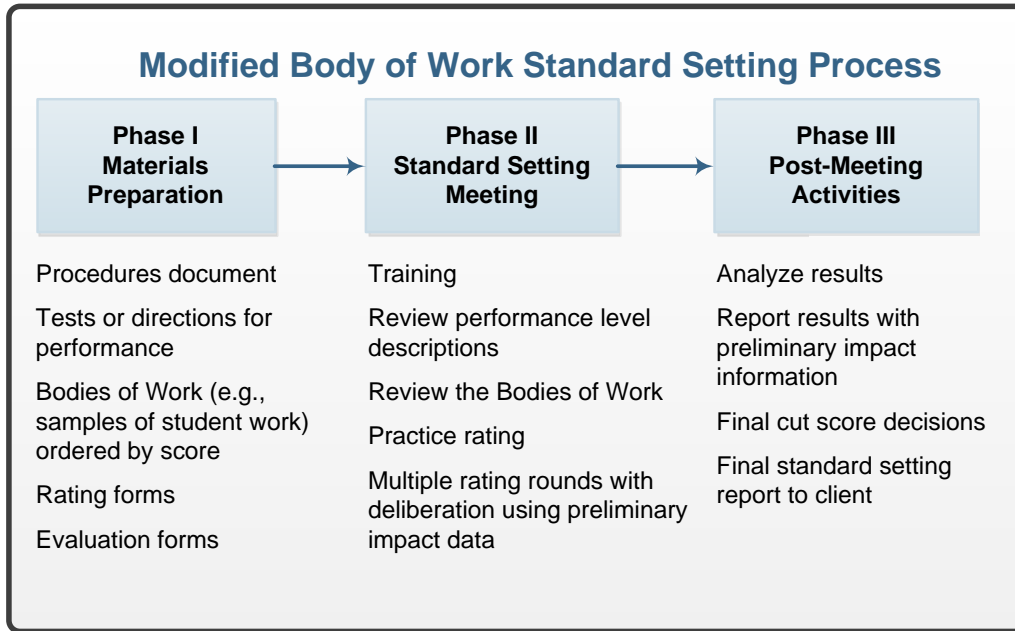
Measured Progress developed the BoW method, which belongs to the holistic family of standard setting methods in which panelists are asked to assign each examinee's work into one of the performance categories (Hambleton & Pitoniak, 2006)⁸. Standard setting would take place in three phases as shown in the following diagram and described after the diagram.

⁶ Ferrara, S., Lewis, D. M., Mercado, R., Egan, K., D'Brot, J., & Barth, J. (2011). *Setting benchmarked performance standards: Standard setting workshop procedures, panelist judgments, and empirical results*. In K. Egan (Chair), *Innovations in standard setting*. Invited symposium at the annual meeting of the National Council on Measurement in Education, New Orleans, LA; also under revision.

⁷ Kingston, N. M., & Kahl, S. R. Sweeney, & Bay, L.(2001). *Setting Performance Standards Using the Body of Work Method*, 219-248.

⁸ Hambleton, R. K., & Pitoniak, M. J. (2006). Setting performance standards. *Educational Measurement*, 4, 433-470.

EXHIBIT 45: MODIFIED BODY OF WORK STANDARD SETTING PROCESS



Phase 1: Preparation of Materials

Measured Progress will prepare all materials and handouts required for the standard setting meetings. We will provide, for NH DOE review and approval prior to the meetings, written procedures for standard setting activities. Materials and handouts, which will also be approved by NH DOE prior to the meetings, will contain guidance for panelists about what to expect during the meetings and their role in the standard setting process.

Phase 2: Standard Setting Meetings

EXHIBIT 46: STANDARD SETTING TRAINING AGENDA, PART 1

Sample Standard Setting Meeting Agenda		
Day 1		
8:00 a.m.	Registration and Continental Breakfast	
8:30 a.m.	Welcome and Introductions Overview of the Standard Setting Process	
9:30 a.m.	Take the Test	
10:00 a.m.	Break	
11:00 am	Discuss PLDs and Describe Characteristics of "Borderline" Students	
12:00 pm	Lunch	
1:00 pm	Practice Round	
1:30 pm	Readiness Discussion	
2:15 pm	Training Evaluation	All times are approximate Breaks will take place as needed
2:30 pm	Break	
<i>Rating rounds to follow</i>		

Training

At the beginning of the standard setting meeting, participants will attend a group orientation session. During this session, participants will be given an overview of the assessment, a description of the purpose of standard setting, and an overview of the process they will go through to set standards. We will provide this initial training so that all participants have a common understanding of their task. Initial training will be conducted by a lead psychometrician. Additional staff from Measured Progress will facilitate each standard setting committee.

Review the Performance Level Descriptors

After initial training, panelists will be divided into committees. Committee facilitators will start committee-level training by presenting performance level descriptors (PLDs) to the committee. Panelists will discuss characteristics of student work at each performance level.

Specifically, they will come to agreement on the combination of knowledge, skills, and abilities (KSAs) typically demonstrated by students at each performance level. Panelists will develop bulleted lists of the specific characteristics defining each level. These lists will be posted in the room for panelists to refer to throughout the rating process. This process gives panelists the opportunity to come to a firm grasp of the content being assessed and the KSAs that differentiate students at each performance level.

Review the Bodies of Work

After reviewing PLDs, committee facilitators will familiarize the panelists with the bodies of work. A body of work consists of 25-30 student exams/collections of student work that were selected from the pool of test takers to represent the range of performances of students across the state. Committee facilitators will present the student work to the panelists in order from lowest to highest scores.

The facilitator will walk the panelists through the information contained in each student exam. Panelists will also review every fifth exam in order to review the increasing level of performance represented within the set of exams.

Training Round of Body of Work Classifications

Each panelist will be given a training set of three student exams ordered from lowest to highest scoring. The facilitator will walk the panelists through the three exams, engage the panelists in discussion about the categorization of each exam into one of the performance levels, and check for understanding. If any of the panelists show an incomplete understanding of the rating task, the facilitator will clarify any misconceptions before proceeding to the first rating round. At the end of the training round, panelists will complete an evaluation that asks, among other things, to identify any lingering issues or questions about the task.

EXHIBIT 47: STANDARD SETTING TRAINING AGENDA, PART 2

Training has just been completed

Day 1

2:45 pm Round 1
4:30 pm Adjourn

Day 2

8:00 am Continental Breakfast
8:30 am Round 1 questions and discussions
9:30 am Round 2
10:00 am Break
10:15 am Continue Round 2
12:00 pm Lunch
1:00 pm Round 2 questions and discussion
1:30 pm Round 3
2:30 pm Break
2:45 pm Continue Round 3
3:30 pm Round 3 questions and discussion
4:15 pm Final Evaluation
4:30 pm Adjourn

All times are approximate. Breaks will take place as needed.

Rating Rounds

Panelists will work through several rating rounds. Data will be collected for each rating round and analyzed so that results and feedback can be given to the panelists in stages to inform their ratings. This feedback “provides evidence for the quality of the [standard setting] process as well as a direct indication that the standard setters considered relevant information when participating in the process” (Reckase, 2001)31F9.

⁹ Reckase, M. D. (2001). Innovative methods for helping standard-setting participants to perform their task: The role of feedback regarding consistency, accuracy, and impact. *Setting performance standards: Concepts, methods, and perspectives*, 159-174.

Body of Work Round 1

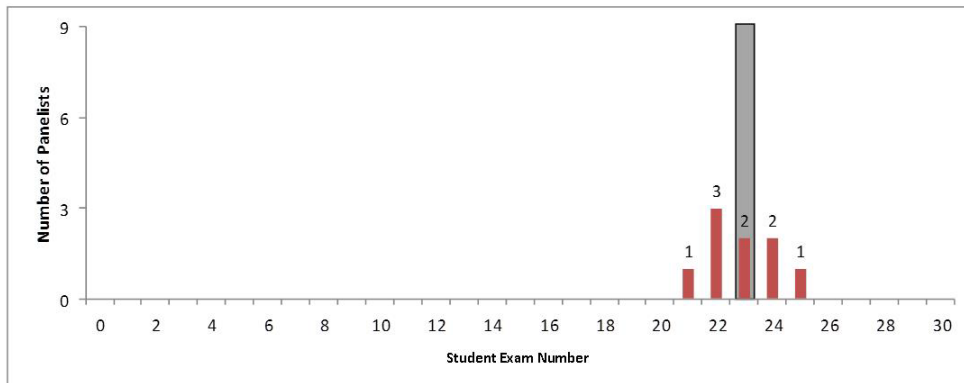
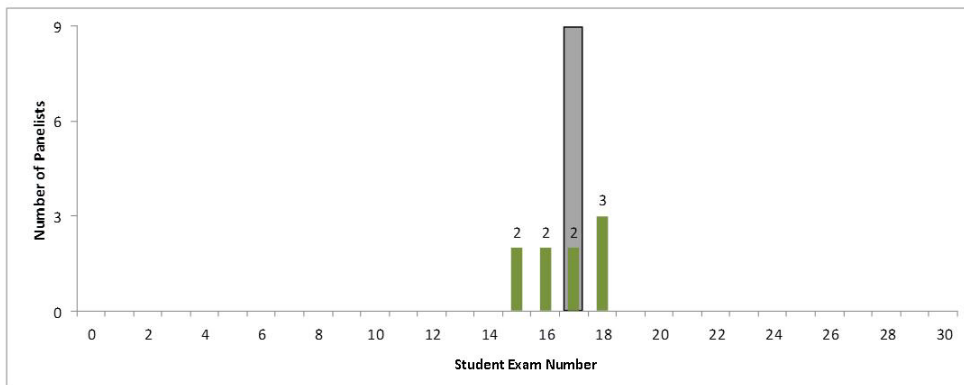
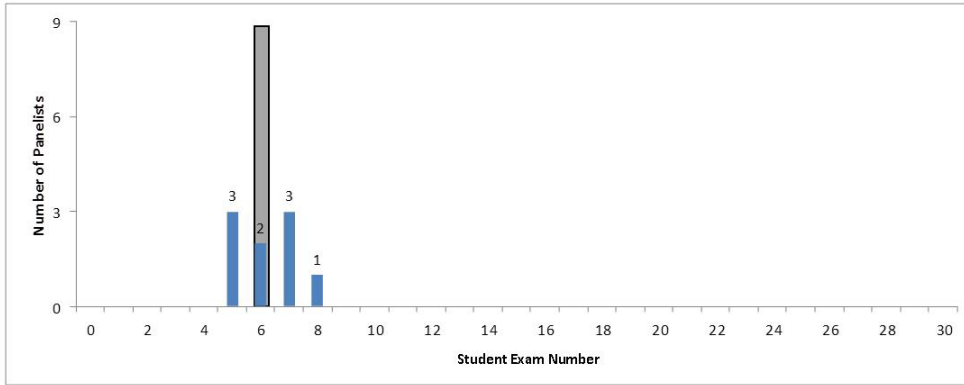
Panelists will begin by individually considering each student exam in order and by making an initial judgment as to which performance level best matches the KSAs demonstrated by the body of work for the student. Panelists will refer to the lists of KSAs related to each PLD as they consider their placements and mark their categorizations on the rating sheet.

Cut scores will be calculated by first determining each panelist's individual cuts using logistic regression, then averaging across panelists to get the overall cuts. Logistic regression models the panelist ratings using an s-shaped curve. Using this curve, the number correct value along the x -axis that corresponds to a 0.5 probability along the y -axis is the estimated cut score for the panelist. The average cuts for the group of panelists will constitute the panelists' recommended cuts for each performance level. Programming for the analyses will be done using SAS® , which is commercially available statistical software that can estimate logistic regression models.

The exhibit below shows information provided to panelists prior to beginning Round 2. The figure shows the distribution of cut scores in color with the average cut score in grey. Then the facilitator will ask panelists to discuss their Round 1 ratings. The facilitator will record the ratings for each student exam and will lead a group discussion of specific bodies of work where panelists were widely discrepant in their ratings. The discussion will focus on the relationship between the KSAs demonstrated in each student exam and the PLDs. Each panelist will have an opportunity to share the rationale for his or her ratings. The panelists will also discuss the categorizations based on the empirically-determined cut scores.

EXHIBIT 48: SAMPLE ROUND 1 RATING RESULTS

**Sample Project
Standard Setting Committee Results
Round 1 Cut Frequencies**



Body of Work Round 2

After the discussion, panelists will begin round two. Each panelist will record his/her categorizations on the “Round 2” rating form, with revisions as appropriate. Revised cut score locations will be calculated.

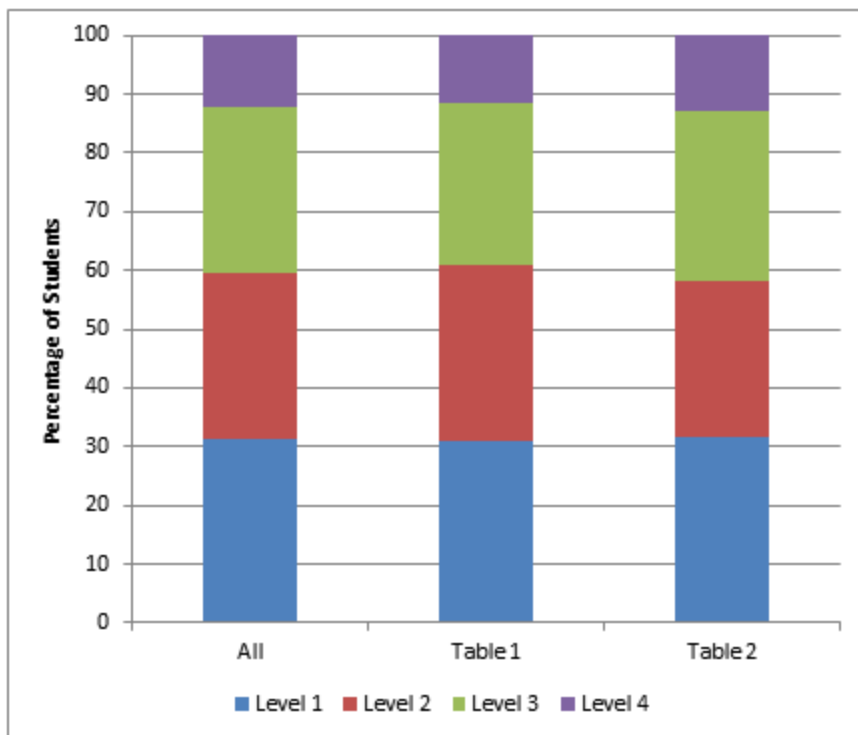
Body of Work Round 3

In Round 3, panelists will have a final opportunity to revise their ratings. Panelists will be able to consider whether the percentage of students in each performance level category seems reasonable to them; if not, they may decide to change one or more of their student exam categorizations. The Round 3 ratings will be averaged across tables and considered the panelists’ final recommendation.

After this round, Measured Progress will also calculate impact data. The impact data will consist of the percentage of students who would score in each performance level according to the average cut score locations resulting from the Round 2 ratings. Exhibit 49 shows how impact data could be reported to panelists.

EXHIBIT 49: SAMPLE ROUND 3 IMPACT DATA

**Sample Project
Standard Setting Committee Results
Round 3 Impact Data**

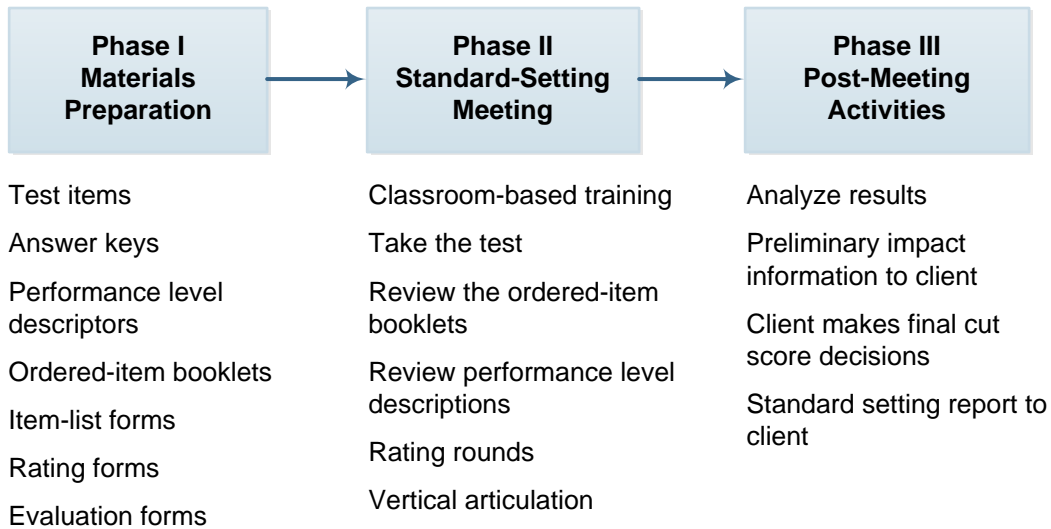


The facilitator will present the final cut scores and impact data to the committee. The facilitator will lead panelists through a debrief discussion. At the end of the discussion, panelists will complete an evaluation form before leaving the meeting.

Science

Measured Progress proposes to use the modified bookmark method to set standards for the New Hampshire science assessment. This method is appropriate for the current test design given the mixture of dichotomous and polytomous items, our use of an IRT framework to estimate item parameters within a common-matrix test design, and the desire to establish performance levels reflective of students’ increasing degrees of science ability. Standard setting would take place in three phases as shown in the diagram below.

EXHIBIT 50: MODIFIED BOOKMARK STANDARD SETTING PROCESS



Phase 1: Materials Preparation

We will prepare all materials and handouts required for the standard setting meetings. We will also prepare written procedures for the standard setting activities that NH DOE will need to approve in advance of the meeting. Materials and handouts will explain the activities planned for the standard setting committee so that participants understand what to expect.

Preparatory Analyses

We recommend that standard setting be conducted using test items from the most recent operational test administration. Item Response Theory scaling will be used to locate each multi-choice item on the underlying IRT scale¹⁰. For each constructed-response item, we will use step difficulties to locate each score point on the IRT scale. We will provide two student responses at each score point to illustrate the level of ability exhibited at each score point. The result will be an ordered item booklet that presents each

¹⁰ The probability level used to place items on the IRT scale will be 67% (this is referred to as response probability 67 or RP67). The choice of RP67 over other possible values (e.g., RP50) is based on best practice within the standard setting community as well as research supporting the use of that particular value.

item, or score level for constructed-response items, in order of difficulty with the easiest item first and the most difficult item last.

Phase 2: Standard Setting Meeting

Initial Training

At the beginning of the standard setting meeting, participants will attend a group orientation session. During this session, participants will be given an overview of the assessment, a description of the purpose of standard setting, and an overview of the process they will go through to set standards. We will provide this initial training so that all participants have a common understanding of their task. Initial training will be conducted by a lead psychometrician. Additional staff from Measured Progress will facilitate each standard setting committee.

Take the Test

After initial training, participants will be divided into smaller groups and assigned to set standards for a grade level and content area. Once in smaller groups, participants will begin by taking their assigned test. This activity gives participants their first in-depth look at the test items and reminds them of the experience a student faces when taking an on-demand assessment. Following this exercise, participants will be given a scoring guide to evaluate their own responses.

Review the Ordered-Item Booklet

Next, participants will be provided with an ordered-item booklet. Each page in the booklet will contain a single item. Facilitators will lead the group through the first few pages of the ordered-item booklet and explain the booklet's setup. The participants will then be asked to individually review every fifth page or so in the booklet and to recognize the increasing difficulty of the items as they progress through the booklet.

Complete the Item-List Form

After reviewing the ordered-item booklet, participants will complete the item-list form. Our facilitator will point out that the items appear in the same order as in the booklet, and will walk them through the process using the first few items. Participants will then individually continue the exercise for the rest of the items to determine: 1) the knowledge, skills and abilities measured by each item; and 2) why each is more difficult than the preceding items. They will record this information on the item-list form. After panelists complete the independent activity, our facilitator will hold a group discussion that allows panelists to raise any questions or concerns.

Review the Performance Level Descriptors and Create Borderline Descriptions

Each facilitator will present the performance level descriptors for the group's assigned test. Panelists will identify the knowledge, skills, and abilities of students at the borderline of each achievement level and create a bulleted list of student characteristics. This list will help them during the rating rounds as they determine whether a student at the borderline is able to respond to an item correctly. The goal is for standard setting panelists to have a firm grasp of the content being assessed as well as a solid understanding of the knowledge, skills, and abilities that differentiate students in each performance level.

Rating Rounds

Panelists will work through several rating rounds. Data will be collected for each rating round and analyzed so that results and feedback can be given to the panelists in stages to inform their ratings. This

feedback “provides evidence for the quality of the [standard setting] process as well as a direct indication that the standard setters considered relevant information when participating in the process” (Reckase, 2001)¹¹.

Modified Bookmark Round 1

In the first round, participants are asked to work individually, without consulting with their colleagues. Starting with the first item in the ordered-item booklet, and using the PLDs, borderline descriptions, and the completed item-list form as guides, participants will evaluate each item. Panelists will be asked to assess whether a student performing at the borderline of a performance level would answer each question correctly.

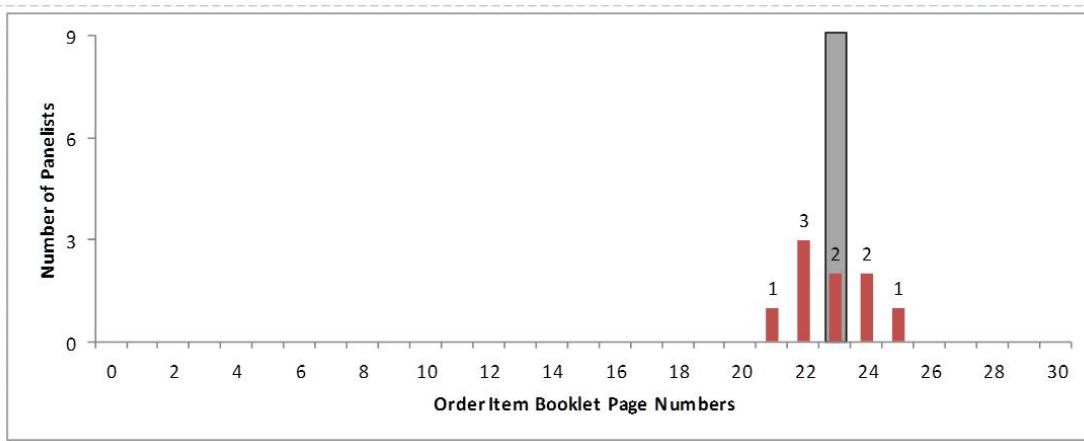
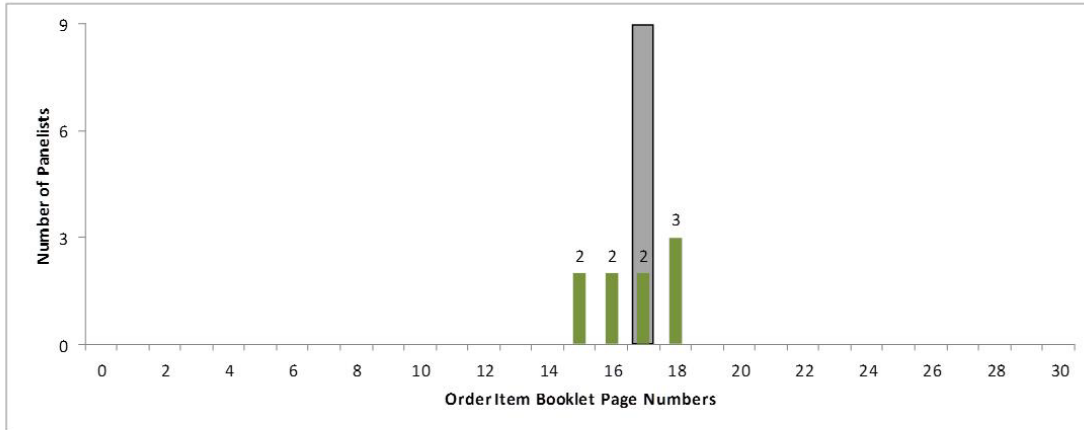
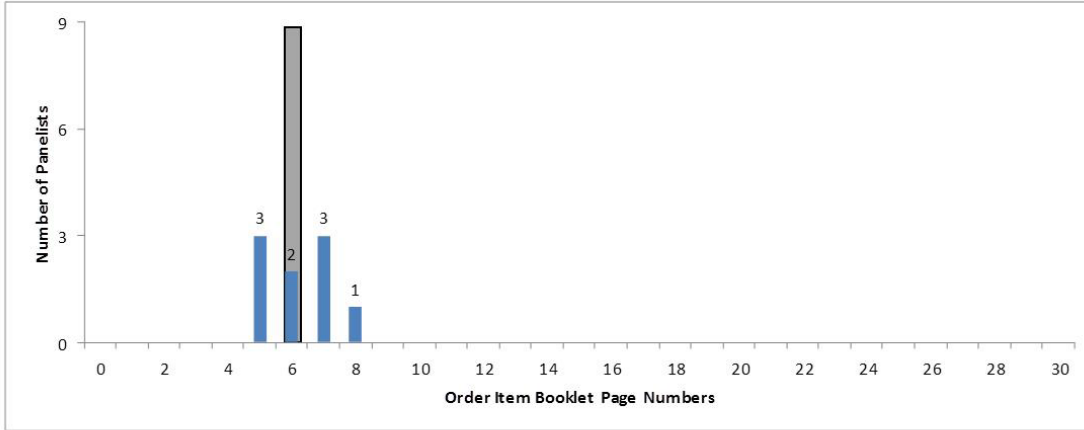
Since the items increase in difficulty, at some point, the panelist will identify an item which they believe a borderline student would probably not answer correctly. Each panelist will determine where they think that point is, and place their bookmark there. This will be done for each cut score and the bookmark placements will be recorded on the rating sheet. Rating sheets will be submitted to the data analysis team for data entry and analysis.

After participants submit their first round rating, on-site facilitators will analyze the data and provide participants with the results from Round 1. Results include the cut score locations in relation to the ordered item booklet and a visual display of the dispersion of the panelists ratings. The participants will then engage in a discussion about the Round 1 ratings. Participants will be encouraged both to share their own opinions and to listen to the arguments made by their colleagues. An example of the results from Round 1 are provided in the following exhibit.

¹¹ Reckase, M. D. (2001). Innovative methods for helping standard-setting participants to perform their task: The role of feedback regarding consistency, accuracy, and impact. *Setting performance standards: Concepts, methods, and perspectives*, 159-174.

EXHIBIT 51: SAMPLE ROUND 1 RATING RESULTS

Sample Project
Standard Setting Committee Results
Round 1 Cut Frequencies



Modified Bookmark Round 2

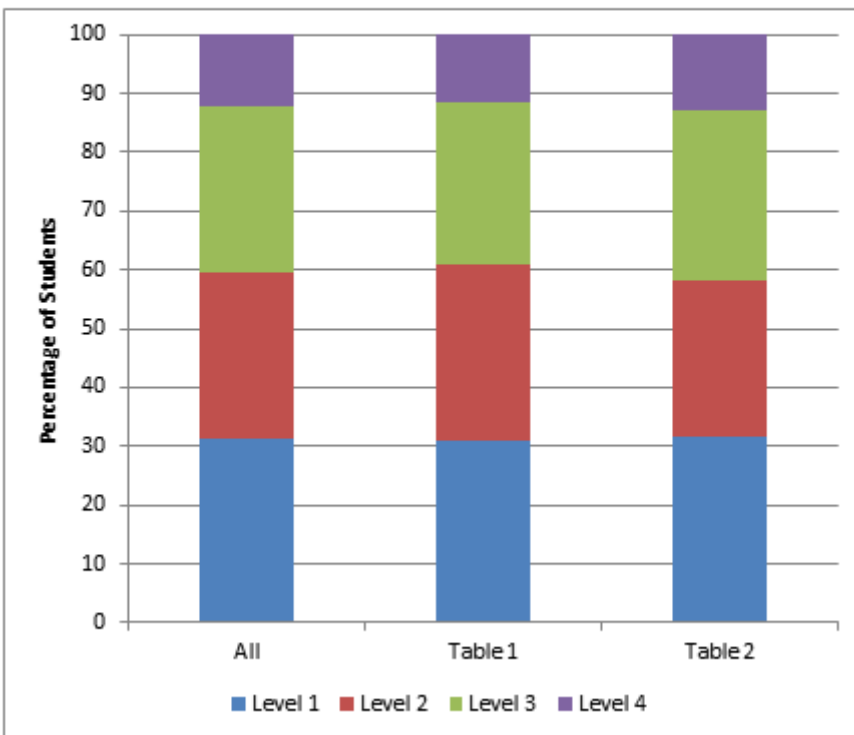
Round 2 begins by providing participants with an opportunity to make changes to their bookmark placements. Participants will complete the Round 2 rating forms, which will be submitted to the data analysis team for analysis. Updated cut score locations a revised visual display of the dispersion of the panelists’ ratings is provided. Participants then go through a second round of discussions.

Modified Bookmark Round 3

Round 3 follows a slightly different process. Participants start by making changes to their bookmark placements. Data analysts then provide the average cut score locations and the dispersion of individual panelist classifications. In addition, impact data is presented to the participants. The impact data consists of the percentage of students that would fall into each performance level if the Round 3 group average cut scores were used. The group facilitator will again lead a whole-group discussion of the bookmark placements. The Round 3 results are considered the final recommendations of the committee. The following exhibit shows an example of how impact data may be presented.

EXHIBIT 52: SAMPLE ROUND 3 IMPACT DATA RESULTS

**Sample Project
Standard Setting Committee Results
Round 3 Impact Data**



Phase 3: Post-Meeting Activities

After the standard setting meeting, Measured Progress staff will review and analyze the results of the participants’ evaluations. The review serves several functions, including the identification of potential

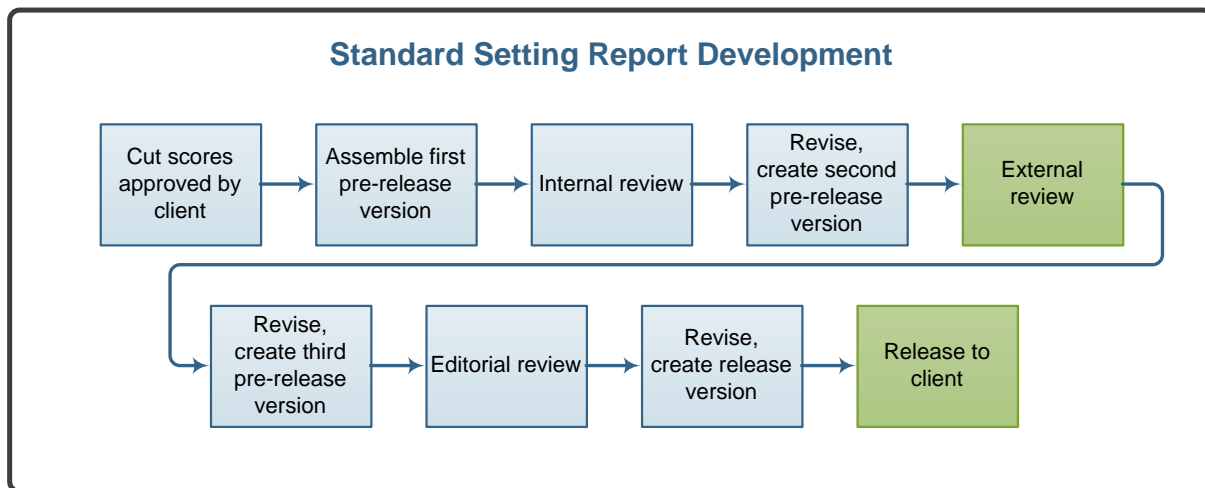
problems with the standard setting process and the documentation of process validity. In the unlikely event that problems or concerns arise from our evaluation, we may recommend adjustments to the final cut scores. Final results of the standard setting meeting will be presented to NH DOE for review. The results will include the participant-recommended cut scores from the final round of ratings and any adjustments recommended by either the articulation panel or Measured Progress.

Topic 26 Standard Setting Report

The vendor 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.

Measured Progress will work closely with NH DOE staff to synthesize data and establish valid and defensible cut scores for the Direct Writing and Science assessments. After cut scores are established, we will document the processes used, expertise and experience of the participants, and the results in a standard setting report. The development, review, and approval process for the standard setting report is shown in the following diagram.

EXHIBIT 53: STANDARD SETTING REPORT DEVELOPMENT PROCESS



Topic 26.1 Standard Setting Validation

The vendor’s response should include a plan for conducting analyses to validate the performance standards following the second operational administration of the NH assessments.

Standard setting validation for the eMPower ELA and Math assessments will occur at the national level in application to the product as it is offered by Measured Progress. This activity is beyond the scope of the current proposal.

The NH DOE can be assured that Measured Progress will conduct a standard setting validation in spring 2020, after the second operational administration of Direct Writing and Science. Through inspection and consideration of the cut points against impact data from the spring 2020 assessment, the NH DOE will be able to verify that the proficiency standards and cut points are reflective of student participation and performance on the Direct Writing and Science assessment.

The standard setting validation activity will engage a group of stakeholders, identified by and including NH DOE representatives, in a one-day meeting to review the placement of previously established cut points against the current distributions of student performance levels. Adjustments to cut points are then made around the existing cut points. Unlike the standard setting the previous year, impact data would be provided up front to inform such modifications. Supplementary materials will be available to stakeholders during this process, including item content, test specifications, and performance level descriptors.

Results of this standard setting validation meeting will be documented and prepared as an addendum to the original standard setting report. This report will be subject to review and approval by NH DOE similar to the original standard setting report. Final documentation will be published and made available for release and dissemination according to the usual procedures set by NH DOE.

D1.8 Reporting Portal

The NH Assessment Reporting Portal should provide a platform that seamlessly integrates data from state summative and interim assessments, providing stakeholders with a user-friendly interface that increases access to results. The NH DOE prefers a system that would allow users to customize particular aspects of their individual dashboard profiles. The vendor should describe the features of its Reporting Portal, including the extent to which its system includes the preferred features. The system must be designed to allow the state access to high level information and would ideally allow students and parents to access detailed information. In addition, educators, school administrators and district administrator roles must be included. For costing purposes included in the Pricing Model, state costs for making the system operable to the educator level should be provided.

Vendors may choose to provide a separate Pricing Model for a parent portal option and a separate Pricing Model for student portal option.

The optional parent portal should provide parents with a user- friendly platform that allows them to access their child’s assessment results, as well as other classroom and school information. The vendor shall indicate whether or not its system includes features for parents. The vendor shall describe the parent- related features of its dashboard system, including the extent to which its system includes the preferred features. Pricing for the parent portal should be included separately as an option.

Vendors may describe how the student portal will allow for students to customize their individual pages. Pricing for the student portal should be included separately as an option.

Today’s educators and parents are becoming increasingly sophisticated data consumers. The clamor for meaningful, timely information regarding school and student performance demands more advanced, robust, and tailored data analytics tools. While thoughtfully-conceived static reports can quickly convey general performance data, they often stifle additional data inquiries and fall short of answering many questions essential to effective decision-making. Dynamic reporting allows assessment data to inform decision making and instruction at all levels.

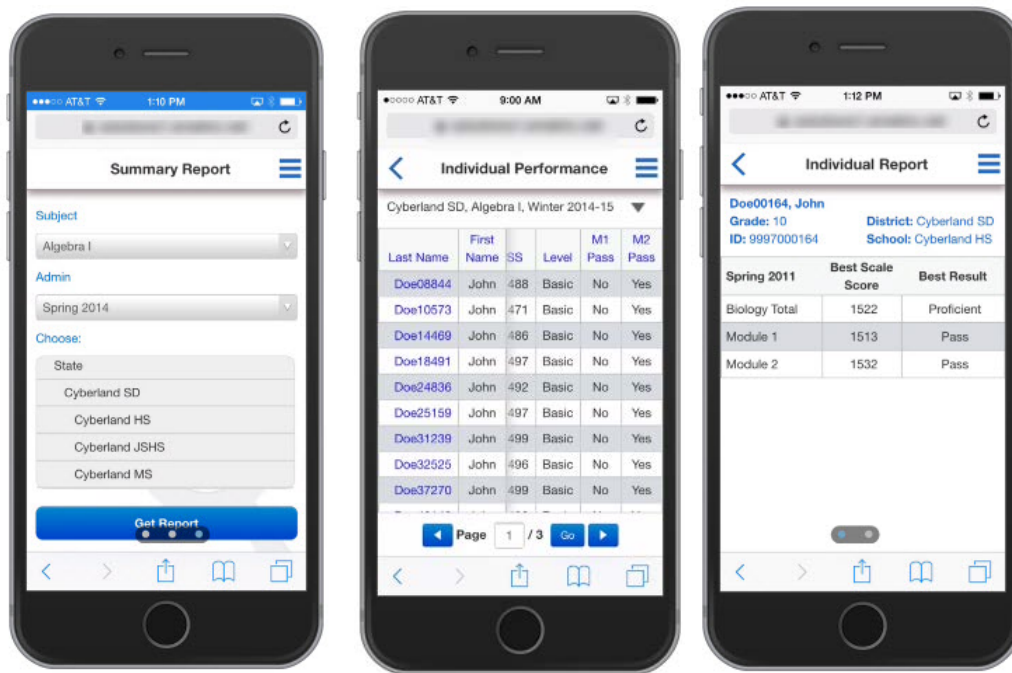
To address the reporting needs described in this RFP, Measured Progress proposes eMetric’s core *Data Interaction™* offering, a secure site providing role-based access to state, district, and school level users with privileges defined by the site administrator. Data Interaction combines ease-of-use with sophisticated analytical capabilities, providing educators with a richer understanding and greater flexibility than a traditional repository of static reports. Dynamic summary and roster reports as well as individual student

reports for New Hampshire’s ELA, mathematics, and science summative and interim assessments can be accessed via a single Data Interaction portal.

The Data Interaction Advantage – Quicker, easier, more insightful

For ultimate ease of access, Data Interaction offers seamless, native support for multiple devices, including tablets and smartphones. Recognizing users' shift towards mobile as their primary device, eMetric's design philosophy embodies a mobile-first approach for all components that reflects design directed at mobile devices, rather than a watered-down experience of the desktop platform. This provides information for users where and when they need it, which is often not sitting at their desks behind a PC. Access to overall achievement data, achievement of specific groups and individual students is readily accessible from a user’s tablet or smartphone, as illustrated in Exhibit 54.

EXHIBIT 54: MOBILE VIEW



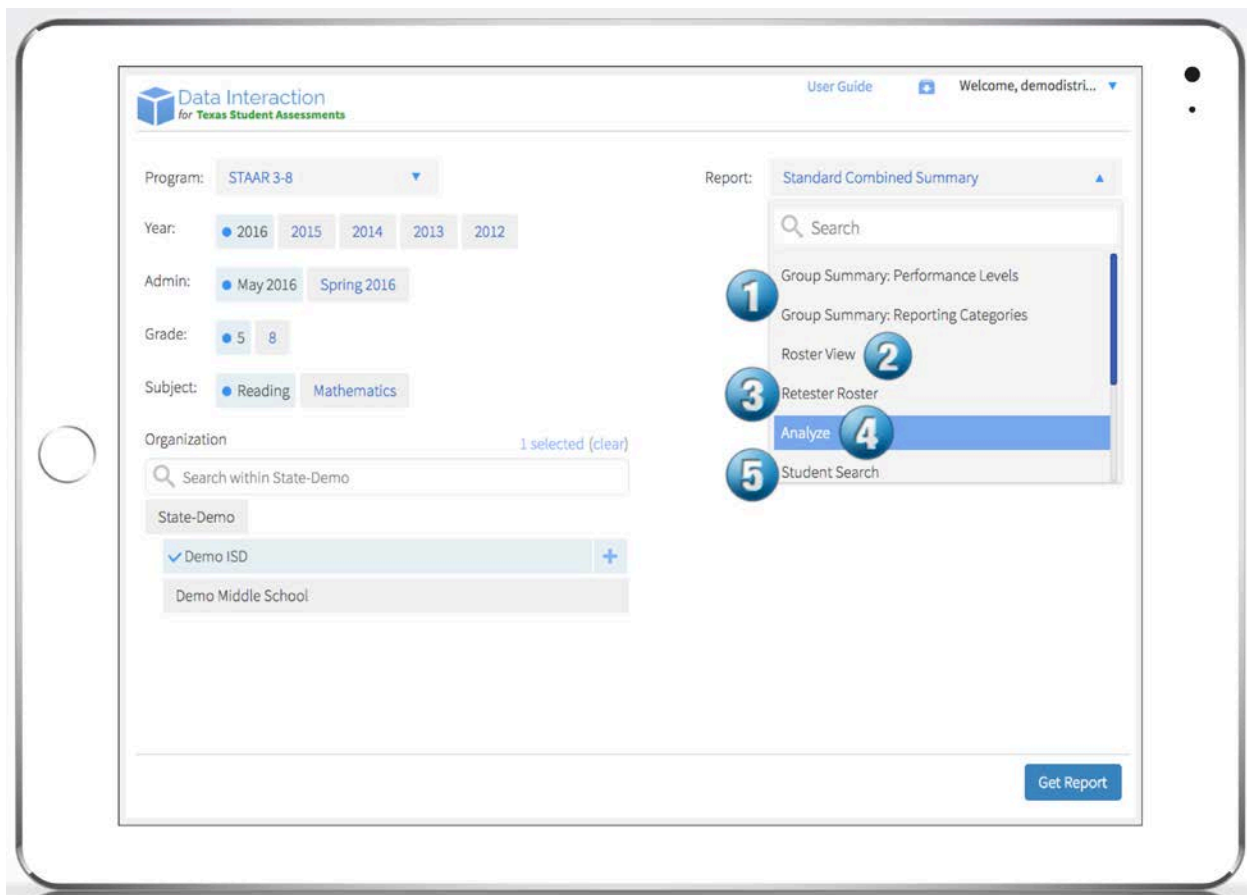
Interactive, accessible reporting through Data Interaction provides for informed discussion without delay. For example, while attending a district strategic planning session emphasizing educational outcomes and attainment for students with disabilities, a building principal can use her tablet to quickly report on the achievement of students with disabilities in her school and generate a visual representation to share with colleagues. The ability to compare her school’s achievement with other schools in the district stimulates conversations about teaching and learning in the various buildings based on actual data rather than anecdotes or perceptions. The ability to disaggregate the data further as well as evaluate trends over time within and between schools provides additional insight by identifying areas of needed system level improvements.

Secure Site for State, District, and School Personnel

To address the reporting needs described in this RFP, Measured Progress and eMetric propose our core offering, a secure site providing role-based access to state, district and school level users. As a cost

option, we propose a separate portal for students and their parents to securely access individual student reports. This solution is discussed further, a few pages below here. Data Interaction’s intuitive interface, as depicted in Exhibit 55, provides quick, easy access to group summary and roster views, as well as predefined reports and individual student reports.

EXHIBIT 55: DATA INTERACTION'S INTUITIVE INTERFACE



1) Group Summary views display school, district, and state group performance data in a table or graphical format and allow customization using various summary statistics (e.g. number of students tested, mean scale score, number and percent of students in each performance level, mean raw scores by standards, maximum score possible, and percentage of total points earned for each standard). Users can also customize the display by selecting different content areas, statistics, administrations, demographic variables, and report views. Users can export data in a CSV file or convert this data to a graphical representation and download as a PDF or JPEG, which can be easily integrated into a publication or presentation. Drill-down features allow users to further disaggregate by subgroup or directly access individual student results for a selected subgroup. These tools allow educators and administrators to dig deeper to better understand the data, the individual students behind the group summary data, where their strengths are, and where improvement, even intervention, may be needed.

2) Roster views provide dynamic access to individual student results. Interactive data analysis features allow users to dig deeper into the data. For example, a district administrator can quickly identify the

lowest performing students in her district by applying a single filter. From there, the administrator can identify the number of struggling students, what schools they are enrolled in, and performance outcomes on previous assessments. The roster can also be downloaded as a CSV file for importing into other systems, such as a performance monitoring system, or printed and distributed to campus teams. Data can be displayed for single or multiple test administrations, enabling longitudinal analysis of student performance to identify trends and patterns.

3) Users can also access pre-defined reports based on the State’s requirements. These reports can be either summary or roster level reports.

4) Advanced data users can select the Analyze report view to immediately access several analytical tools to create summary statistics, as shown in Figure 4, frequency distributions, cross-tabular reports, as shown in Figure 5, and scatter plots.

EXHIBIT 56: SUMMARY STATISTICS VIEW

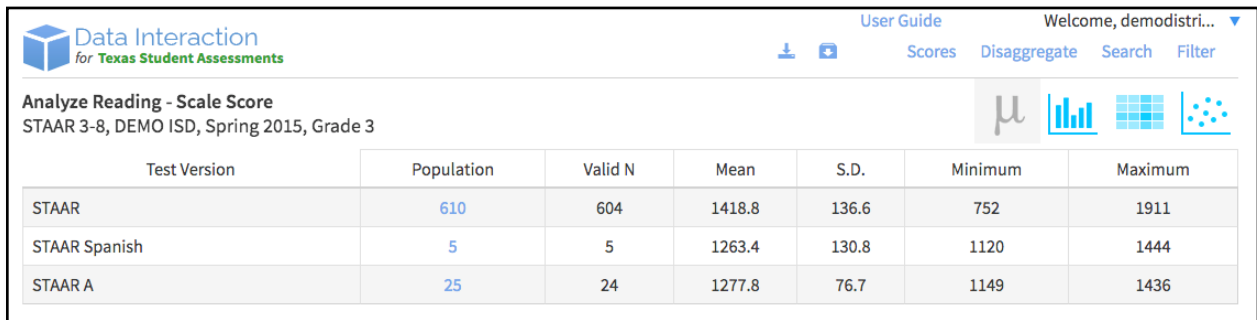
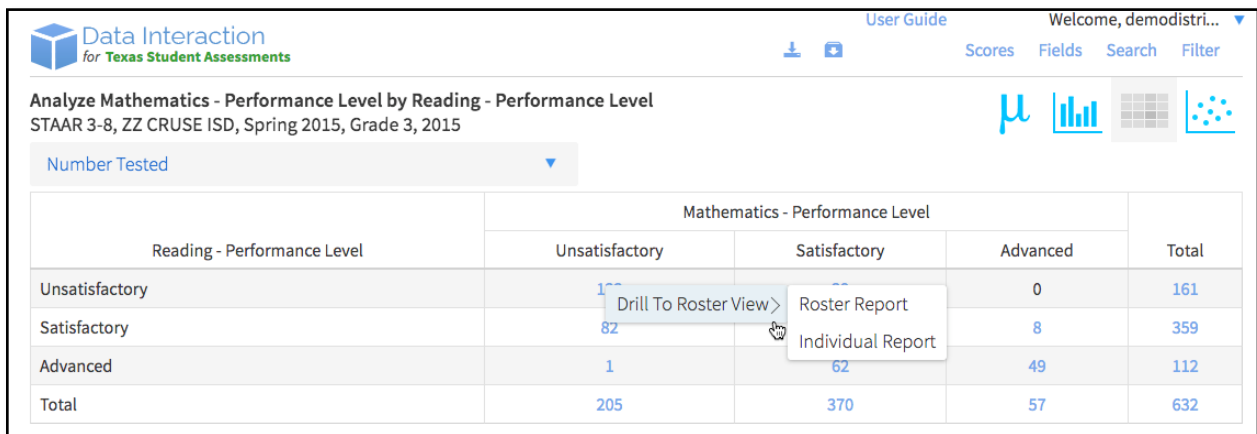


EXHIBIT 57: CROSS-TAB VIEW



5) For convenient access to a specific student’s Individual Student Report (ISR), Data Interaction also offers a Student Search function. ISRs can also be accessed by drilling down from a summary or roster view. ISRs can be downloaded as PDFs (individually or as a batch) for distributing to parents or other authorized educators.

A secure reporting site powered by Data Interaction provides a rich suite of data analysis capabilities to help educators easily discover trends, patterns, and areas of strengths and weaknesses. From interactive

disaggregation capabilities and calculations to advanced functions for univariate and bivariate analyses, these flexible functions allow users to view and manipulate data at multiple levels to produce customized, actionable reports. In an intuitive and easy to use manner, these data analysis tools allow users to switch from summary reports to roster reports with drill-down capabilities, display raw scores into percentages, and perform commonly used data investigation techniques such as frequency distributions. Additional features and functionalities are available throughout the secure Data Interaction system enabling users to interact with data to meet their specific needs and preferences. Universal system features in Data Interaction include the ability to save and bookmark queries, customize tabular report displays by determining what data elements to show or hide, and download reports and graphs.

Robust and Secure Architecture

eMetric understands the essential responsibilities associated with being accountable for confidential, sensitive data and addresses security on multiple fronts to protect personally identifiable student information and ensure data integrity. We rigorously follow industry best practices for security at the infrastructure, application and data layers. Our IT staff and hosting provider actively monitor potential threats and prepare accordingly to mitigate risks.

Secure, Role-Based Access: Data Interaction employs role-based authentication to ensure users can access only the data which they are authorized to view. All users within the Data Interaction platform are assigned a user role. User roles can be defined by the client and will specify which data, reports, and platform features users can access. Users are assigned a username and password which is tied uniquely to their role and organization. For added security, Data Interaction automatically logs a user out after a period of inactivity.

Secure Data Transmissions and Storage: Data transmissions between users and servers are encrypted and sensitive data are stored in an encrypted format on a server with the infrastructure and perimeter secured using industry standard best practices. eMetric provides a Secure FTP (SFTP) site for assessment vendors to transfer sensitive student-level data files. eMetric utilizes industry standard authentication protocols such as enforcement of strong passwords for the SFTP sites and signed digital certificates. After successful completion of data transfers for each administration, eMetric utilizes the same security protocols to move data from the SFTP site to eMetric data processing equipment.

Data Integrity Measures: eMetric understands the importance of accuracy and integrity of data reported through the data portal. Our internal operations and procedures are engineered with particular focus on accuracy of processed and reported data. Stringent data quality checks are implemented throughout the quality assurance lifecycle. eMetric uses industry standard best-practices and tools to process and verify data. All data that is processed and loaded into eMetric's data warehouse undergoes an internal, independent analysis and audit. In addition, eMetric utilizes automated testing tools to perform a full functional verification and a regression run for both major and minor releases of the application.

Reliable Infrastructure: eMetric utilizes Clustered Database Services, which enables mirroring of data on two simultaneous servers using SQL Server Clustering Services. The load-balanced web farm of application servers hosting the Data Interaction application connects to the database cluster, thereby providing redundancy at the application and data layers. Downtime of any single server will not cause any interruption to the service, making the downtime invisible to users. This setup requires no human intervention and provides an effective solution to mitigate major disasters.

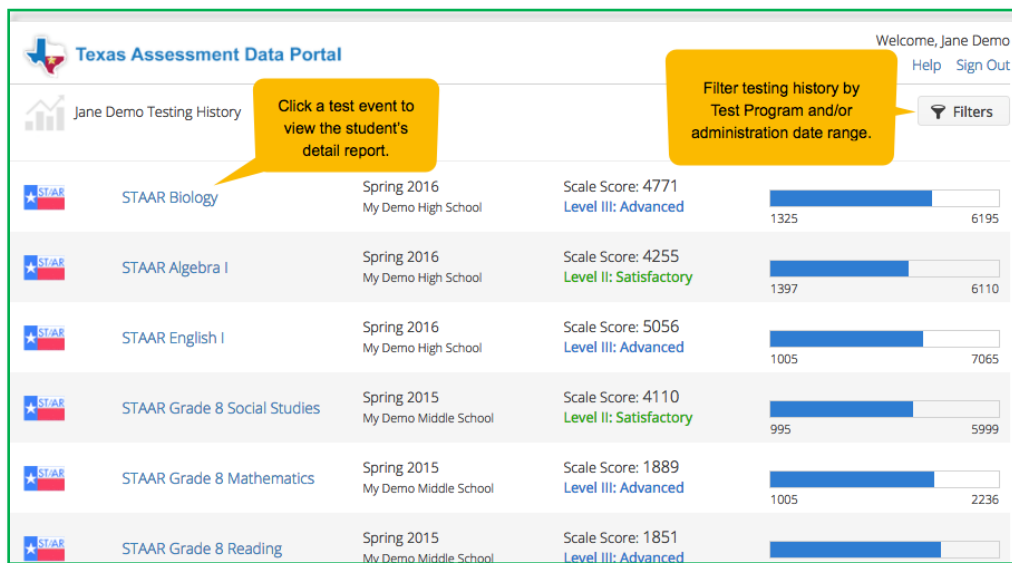
Cost Option: Parent/Student Portal

Measured Progress and eMetric propose an optional parent/student portal to be hosted under its own sub-domain and used exclusively for parent/guardian and student access. The parent/student portal will provide exclusive, on demand access to individual student assessment performance data from throughout the student's academic career. This site will feature a responsive design, ensuring that parents and students have an optimized view of important student assessment performance data, whether they are accessing from a desktop, laptop, tablet, or smartphone.

Measured Progress and eMetric will establish a system for generating unique logins for students that will allow students and their parents to log into the portal throughout their academic careers.

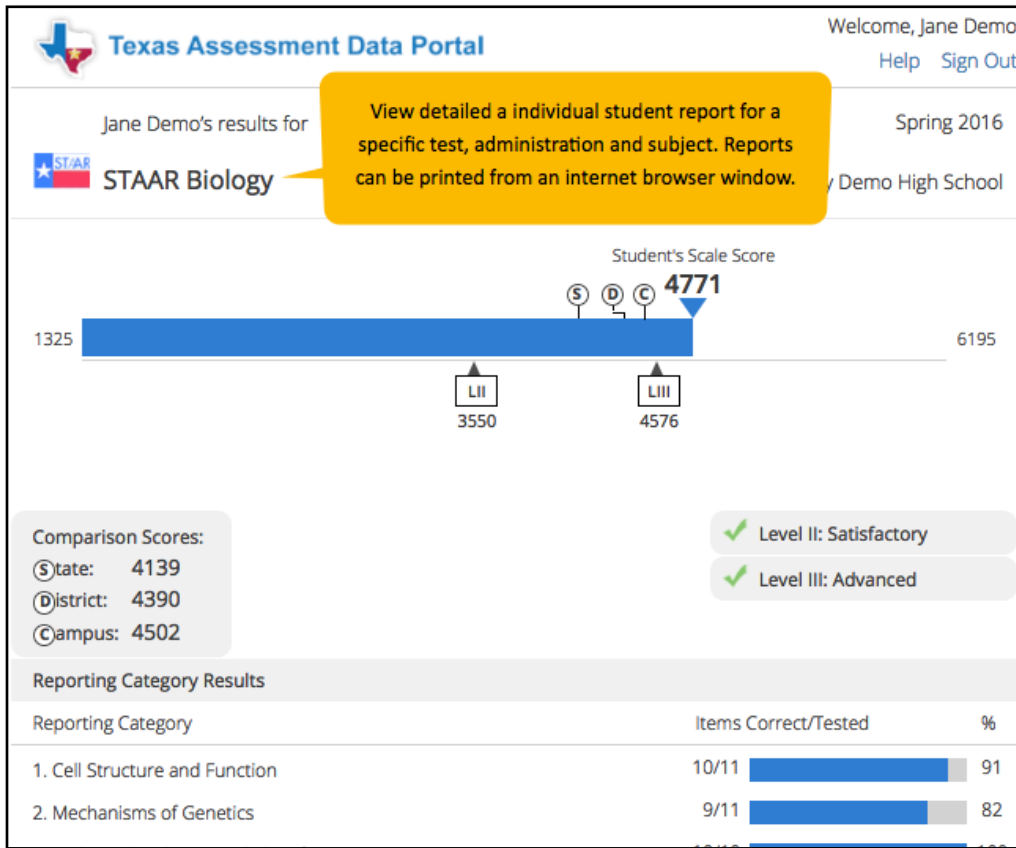
As an example, Texas parents and students can access current and historical assessment results through the Texas Assessment Data Portal, as illustrated in Exhibits 58, 59 and 60. The screenshot in Exhibit 58 presents a listing of all the statewide assessments administered to a student. In addition to allowing parents and students the opportunity to view how their child performed on the most recent assessment administration, the portal provides the convenience of storing results across time in a single repository that can be accessed at any time.

EXHIBIT 58: TEXAS STUDENT PORTAL-LIST VIEW



By clicking a test administration name, “STAAR Biology” for example, a student or parent can view detailed information from a specific test administration, as illustrated in the figure below. Depending upon the level of information provided in the assessment results for that specific test, parents and students can view not only how the student performed on the test overall, but where his/her strengths and weaknesses might be. Being able to view results across time allows students and parents to easily track improvements or declines in performance. Parents will also have on demand access to this detailed information should it be helpful in advocating for their child and seeking additional services or support.

EXHIBIT 59: TEXAS STUDENT PORTAL-DETAILED REPORT VIEW



Students and parents will also have easy, on demand assistance with navigating the portal, as illustrated in the following figure. eMetric will initially use this functionality to provide a portal user guide and will also include related interpretive materials.

EXHIBIT 60: ON-DEMAND USER ASSISTANCE

Welcome, Jane Demo
Help Sign Out

Jane Demo Testing History

Assessment Data Portal

Introduction Access Testing History View Detailed Test View Download Guide

1.1. Student Portal Overview

The Texas Assessment Student Portal is designed to provide students and parents with online access to a student's state assessment scores. This portal will assist a student and his or her parents with tracking assessment information throughout the student's academic career.

The portal provides scores from the State of Texas Assessments of Academic Readiness (STAAR), STAAR Alternate (includes STAAR Alternate 2), the Texas English Language Proficiency Assessment System (TELPAS), and the Texas Assessment of Knowledge and Skills (TAKS). TAKS-Alternate scores are not available through the Student Portal.

1.2. Technical Support

If you have any questions, please contact eMetric support at support@emetric.net or by calling toll-free (877) 829-7769.

STAAR Grade 8 Reading	Spring 2015 My Demo Middle School	Scale Score: 1851 Level III: Advanced	957	2156
	Spring 2015	Scale Score: 4528		

D-2 CORPORATE OVERVIEW AND PROJECT MANAGEMENT

D2.1 Corporate Qualifications

Topic 27 Corporate Overview

See Appendix E

Topic 28 Vendor Experience

The vendor must present a description of corporate capabilities. The vendor shall provide the company's history, including the number of years that it has been in business, buyouts, takeovers, IPO's, bankruptcies, litigations and claims, etc. within the last five (5) years, or for that period which the firm has been in business, if less than five (5) years. Situations arising in assessed liquidated damages (LDs) must be described with their resolution, along with the amount of the LDs or provided additional services.

The description shall also identify the number of employees in the company and the company's location(s), including any presence in New Hampshire. The overall capacity of the vendor's organization(s) and the resources that it will commit to the work for the project (by name and role in project) shall be discussed.

The description shall also outline the vendor's overall position in the State assessment market, including the length of time, states served, addition/loss of states over the past five (5) years. A general description of the vendor's capabilities and capacities related to development, production, shipping and receipt, administration (of paper-based and online assessments), scanning, scoring (human and artificial intelligence), data processing, reporting and psychometric activities shall be included. Responses must demonstrate that the vendor meets, at a minimum, the mandatory qualifications presented at the beginning of this component. Specific examples of the vendor's work products such as test and item specifications, items, forms, technical manuals, research reports, technical services, etc. should be identified under the relevant requirements and specifications and provided in attachments as appropriate. NH DOE expects to receive the same or better quality of work throughout the contract, including any extensions, as the examples that are provided in the proposal.

We have provided a description of our corporate capabilities, and a brief history of our company, in Section V.

We currently employ approximately 360 full-time staff nationwide—291 of those being employed here in New Hampshire. We also employed 207 seasonal personnel, here in New Hampshire, over the past year. Our corporate headquarters campus is located on Education Way in Dover, NH, and we also operate a warehouse and distribution facility in Lee, New Hampshire.

Measured Progress has not been involved in any buyouts, takeovers, IPO's, bankruptcies, or litigation claims in the past 5 years. We have had no situations arising to assess liquidated damages in the past 5 years.

In the following table we have provided a summary list of the large-scale business segment activity of Measured Progress during the previous five years with a listing of the services Measured Progress provided.

We have included with our proposal specific examples of our work products, and have identified them under the relevant requirements and specifications and provided them in attachments as appropriate.

EXHIBIT 61: MEASURED PROGRESS LARGE SCALE BUSINESS ACTIVITY

Measured Progress Contracts from 2013-Current (Wins & Losses)			
Florida Alt (Ended 2016) Won RFP * Full services provided			
Maine (Ended 2016) Won RFP * Full services provided			
Maine Alt			
Massachusetts MCAS (Ended in 2017) Won RFP			
Michigan			
Mississippi Alt (Ended in 2016) Moved to another vendor through RFP			
Missouri Alt (Ended in 2015) Moved to another vendor through RFP			
Montana			
Montana Alt			
NECAP			
Nevada (Ended in 2016) Moved to another vendor through RFP			
Nevada Alt (Ended 2015) Moved to another vendor through RFP			
New Hampshire Alt			
New Mexico			
New York Alt (Ended in 2015) Won RFP			
Rhode Island			
Rhode Island Alt (Ended in 2015) Won MSAA*)			
Utah (Ended in 2014. Moved to another vendor through RFP/SBAC)			
Washington Alt (Ended in 2016) Moved to another vendor through RFP			
New MP Contracts from 2014-Current	New MP Contracts from 2015-Current	New MP Contracts from 2016-Current	New MP Contracts from 2017
Oklahoma	North Dakota	South Carolina Alt	Maryland
New York	*MSAA (Includes 12 states: AZ, AR, CNMI, Guam, MD, ME, MT, RI, SD, TN, US V.I.)	Florida Alt	Massachusetts MCAS Next Generation
		Maine	Massachusetts MCAS Alt
	New York Alt		

*full service contracts include – Item and test development, materials production [test booklets, answer documents, manuals], shipping/receiving, scanning, hand-scoring, data processing and analysis, psychometrics, reporting and customer care center.

Topic 28.1 Relevant Experience

In tabular format, the vendor shall provide a listing and descriptions of all work in similar projects that it and its proposed subcontractors have carried out or are carrying out for other clients. The table shall include client, program name, content area, grades, administration mode (paper-pencil or computer-based), use of scoring (human and artificial intelligence), length of contract and number of students.

For computer-based testing, the vendor shall include the total number of tests administered and the highest number of on current testers. For each such project, the vendor must provide the name of the state or other organization, name of client contact person, this individual's telephone, email and fax numbers, and e-mail address

Current Use of Vendor Proposed Software – Current Implemented Sites of Vendor Proposed Software Components that constitute the vendor's proposed software suite must be fully implemented and operational in at least one (1) government entity comparable in size and complexity to the State of New Hampshire.

Measured Progress and eMetric have successfully partnered on a number of recent large scale assessment contracts. Please find a listing and description of these contracts including all the requested information on the following pages.

EXHIBIT 62: CURRENT JOINT MEASURED PROGRESS-EMETRIC CLIENTS

Maine Department of Education	
Program	Maine Educational Assessment Mathematics & English Language Arts/Literacy
Contract Length	November 1, 2015-October 31, 2016
Students Tested	78,000
Program Overview	Measured Progress provides grades 3-8 mathematics and English language arts/literacy content through Measured Progress eMPower Maine. Tests are delivered online via eMetric's iTester system. High school mathematics and English language arts/literacy assessed through the SAT via the College Board.
Services Provided	eMetric and Measured Progress successfully partnered to deliver the 2016 eMPowerMEA Maine summative assessment in Mathematics and English Language Arts (ELA)/Literacy testing. Students were tested in grades 3-8. Students take their tests on desktops and laptops, as well Apple tablets and Chromebooks.
Online Delivery Platform	eMetric's iTester
Total Number of Tests Administered	244,285 (eMPower spring 2017)
Highest Number of Concurrent Testers	80,000
Contact Information	Charlene Tucker Director of Assessment and Accountability Maine Department of Education 23 State House Station, Augusta, ME 04333 Email: Charlene.Tucker@maine.gov Phone: 207-624-6827

Oklahoma Department of Education	
Program	Oklahoma Core Curriculum Tests (3-8 and End of Instruction)
Compliance with ESEA (NCLB)	Oklahoma's assessment system, under Title I of the Elementary and Secondary Education Act of 1965 (ESEA) as amended by the No Child Left Behind Act of 2001 (NCLB), has been approved by the United States Department of Education and amended by the ESEA Waiver.
Contract Length	2014-2019
Students Tested	Approximately 295,000 students per year Grades 3-8. 389,609 EOI tests administered annually across 7 administrations (2 are retests)
Program Overview	<p>We work with the Oklahoma State Department of Education to create test forms for the Oklahoma College and Career Ready Tests (OCCT) in grades 3-8 and End of Instruction that align to the Priority Academic Student Skills (PASS) standards. The OCCT assess English Language Arts and mathematics in all grades, Writing at grades 5 and 8, Science and Social Studies at grade 5, Geography at grade 7, Science and U.S. History at grade 8. EOI assessments include: Algebra I & II; Geometry; English II & III; Biology; U.S. History.</p> <p>eMetric, LLC, serves as a subcontractor for this program, providing the online platform for administration and reporting. The OCCT is given as a paper/pencil test in grades 3-5 and online in grades 6-8 with a paper form of the tests available as an accommodation for a small number of students.</p>
Services Provided	<ul style="list-style-type: none"> ▪ Program management ▪ Test development and production of test materials ▪ Distribution ▪ Field and operational testing ▪ Paper and online administration ▪ Scoring, data analysis, and reporting ▪ Service center assistance devoted strictly to Oklahoma ▪ Regional workshops and training sessions
Online Delivery Platform	eMetric's iTester
Total Number of Test Sessions Administered	1,989,097 (2016 volume; 2017 still in progress)
Highest Number of Concurrent Testers	40,000
Contact Information	<p>Craig Walker Executive Director of State Testing Oklahoma State Department of Education Oliver Hodge Building 2500 North Lincoln Boulevard Oklahoma City, OK 73105 Phone: 405-521-3341 Email: walker.craig@sde.ok.gov</p>

New Mexico Department of Education	
Program	New Mexico Standards Based Assessments (SBA) Science, SBA Spanish Reading, SBA Science Fall Retest, SBA Reading and Math Fall Retest (High School Graduation Assessment (HSGA), and New Mexico High School Competency Exam (HSCE)
Compliance with ESEA (NCLB)	<p>New Mexico assessments meet state and federal requirements for Title I, Title II and Title III. These assessments are used for a variety of purposes including High School Graduation, School Grading, and NMTeach Educator Evaluation.</p> <p>The annual state assessment (formerly SBA, now PARCC) is an essential part of measuring and supporting students' academic growth. New Mexico's alternate assessments (NMAPA and NCSC) ensure that students with disabilities receive meaningful feedback on academic progress and can fully participate in school and teacher accountability. The annual language fluency assessment (Access for ELLs®) assists students transitioning into English only classrooms and helps bilingual and multicultural program implement the most successful strategies.</p>
Contract Length	2009-2016
Students Tested	Approximately 180,000 students in grades 3-8 and 11 per year
Program Overview	Measured Progress provides the operational test administration of the New Mexico Standards Based Assessments for Science (March) and Spanish Reading, (late April early May), and the SBA Science Fall Retest, SBA Reading and Math Fall Retest, High School Graduation Assessment (HSGA), and New Mexico High School Competency Exam retests in fall and winter—2016 winter HSCE was the last of these administrations.
Services Provided	<ul style="list-style-type: none"> ▪ Test production ▪ English and Spanish forms, PBT and CBT for SBA Science Operational and SBA Science retest, 100% PBT for SBA Reading/Math Retest (HSGA), and HSCE ▪ Distribution and test administration logistics ▪ Paper and online administration ▪ Scanning and scoring ▪ Data analysis ▪ Reporting ▪ Standard setting ▪ Program management ▪ District Test Coordinators trainings, fall and winter ▪ Development Committee Meetings (IRC, Bias, Range-Finding, Data Review) ▪ Local billing to individual schools and districts
Online Delivery Platform	eMetric's iTester
Total Number of Tests Administered	71,870 (Spring SBA)
Highest Number of Concurrent Testers	76,140

New Mexico Department of Education	
Contact Information	Gabe Martinez Deputy Director of Assessment New Mexico Public Education Department 300 Don Gaspar, Room 120 Santa Fe, NM 87501 Phone: 505-827-6509 Email: Gabriel.Martinez@state.nm.us

Maine Department of Education	
Program	Maine Educational Assessment Mathematics & English Language Arts/Literacy
Contract Length	November 1, 2016-October 31, 2017 (Contract renewal)
Students Tested	78,000
Program Overview	<p>Measured Progress provides grades 3-8 mathematics and English language arts/literacy content through Measured Progress eMPower Maine. Tests are delivered online via eMetric's iTester system. High school mathematics and English language arts/literacy assessed through the SAT via the College Board.</p> <p>eMetric, LLC and Measured Progress successfully partnered to deliver the 2016 eMPower MEA Maine summative assessment in Mathematics and English Language Arts (ELA)/Literacy testing. Students were tested in grades 3-8. Students take their tests on desktops and laptops, as well Apple tablets and Chromebooks.</p>
Services Provided	<ul style="list-style-type: none"> ▪ Project Management and Planning ▪ Test Design and Development ▪ Development of Assessment Frameworks ▪ Operational Test Form Development Process ▪ Online Assessment and Technical Requirements ▪ Application Testing ▪ User Acceptance Testing ▪ Technical Support & Help Desk ▪ Manufacture, Delivery, and Scanning of Paper-based Tests ▪ Ancillary Materials - Specifications Guides and User Manuals ▪ Test Security ▪ Data Forensics ▪ Benchmarking ▪ Scoring/Scoring QC ▪ Plan for, create, host, and maintain an MEA portal—in conjunction with the DOE— ▪ Training and Workshops ▪ Technical Advisory Committee ▪ Calibration and Equating ▪ Standard Setting ▪ Technical Report ▪ Reliability and Validity
Online Delivery Platform	eMetric's iTester
Total Number of Tests Administered	244,285
Highest Number of Concurrent Testers	80,000

Current Use of Vendor Proposed Software

eMetric's end-to-end assessment delivery system, iTester, has been used for summative, interim/benchmark, and formative assessments in multiple states and districts, most notably in Maine,

Oklahoma, New Mexico, South Dakota, as well as Arkansas, Indiana, Missouri, and Nevada. Each individual iTester implementation incorporates state specific business rules. In addition to providing a solid, reliable testing experience for students, we have proven to be quite nimble, working with the states as they reacted to legislative changes and mandates from state superintendents and boards. Current iTester clients are identified in the exhibit below.

EXHIBIT 63: ITESTER CLIENT LIST

Client	Project Overview
<p>Maine Department of Education</p>	<p>eMetric and Measured Progress successfully partnered to deliver the 2016 eMPowerMEA Maine summative assessment in Mathematics and English Language Arts (ELA)/Literacy testing. Approximately 550,000 students were tested in grades 3 through 8. Students take their tests on desktops and laptops, as well Apple tablets and Chromebooks. All tests are authored, administered, and delivered using iTester.</p>
<p>Oklahoma State Department of Education</p>	<p>In spring 2014, Oklahoma successfully completed field testing for the Common Core assessments in grades 6-8 math and ELA, testing approximately 115,000 test sessions using iTester. Oklahoma then tested approximately 108,000 online test sessions during the Winter/Trimester End-of-Instruction administrations, over 870,000 online test sessions in the Spring End-of-Instruction administrations, and over 626,000 online test sessions in the Spring Grades 6- 8 administrations. All tests are authored, administered, automatically scored (except writing prompts), and reported within the Oklahoma Core Curriculum Tests Portal, powered by iTester.</p>
<p>New Mexico Department of Education</p>	<p>eMetric has provided online assessment testing services for the New Mexico Standards Based Assessment (NMSBA) for Science since fall 2014. Both practice test and high stakes testing services for grade 4, 7, and High School are provided using eMetric’s online testing platform, iTester.</p>
<p>South Dakota Department of Education</p>	<p>South Dakota’s version of iTester, the South Dakota Assessment Portal (SDAP), houses End-of-Course, Benchmark, Formative, and District Secure assessments. All tests are authored, administered, automatically scored, and reported utilizing SDAP. Test items include both traditional and technology enhanced items. Students take their tests on desktops and laptops, as well Apple and Android tablets and Chromebooks. Tests can be administered with varying levels of security from browser mode to a locked-down kiosk mode. Approximately 71,000 students are assessed annually across 1,009 schools.</p>

D2.2 Project Management

The vendor will be responsible for the effective and efficient management of the project. The vendor’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 vendor’s response should address areas such as scheduling, communication (internal, with the states, with districts and schools), and coordination across tasks and parties.

Throughout this document, the terms “vendor” and “vendor(s)” are also assumed to include subcontractors where appropriate and applicable. If the vendor proposes to subcontract any part of the work, the vendor’s response must refer to the subcontractors where appropriate. Within the relevant requirements and specifications, a description of each proposed subcontractor’s role in the project, qualifications to perform that role, management structure, key staff assignments and qualifications of assigned staff shall be included.

If the vendor has discovered fault with a subcontractor named in this RFP, the vendor has the obligation to inform NH DOE immediately and the appropriate steps must be taken by either the

subcontractor or the vendor to correct the problem prior to that problem resulting in substandard performance or non-compliance. The vendor shall remain responsible for the performance of its subcontractors.

As a New Hampshire based company, Measured Progress is pleased to have worked with the Department of Education as part of the NECAP system of assessments over the past several years; previously on the ELA and Mathematics assessments, and currently on the NECAP science assessment. Our proposed content strategy for the NH assessment continues to bring our best solutions to the State. Our eMPower interim and summative ELA and Math product provide leading edge industry assessments. The primary responsibilities of our program management team will be to guide, oversee, coordinate, and monitor the planning, development, scheduling, progress, implementation, reporting, and quality of work from Measured Progress and our subcontractors. As the prime contractor for this project, our program management team will have the crucial responsibility of facilitating all communication between project team members (both internal and external) and guiding the timely completion of all project deliverables. This centralized approach ensures that all parties are performing the contracted work in line with specifications and that communication with NH DOE is consistent and timely. Our standard approach to project management means that the program management team will have access to additional resources as needed to meet all deliverables and timelines.

To be effective, our program management staff is trained in industry leading program management methodologies supported by the Program Management Institute [PMI] and thus, our team is knowledgeable about the fundamentals of assessment having have the management, organization, and communication skills to assist our clients. We are proud that 24 members of our program/project management staff are currently PMI certified and an additional 48 staff members are or have received training enabling them to prepare for the PMI certification exam. At Measured Progress, we work together with the client to offer seamless support. Our program management team will facilitate interaction between our organization, NH DOE, and New Hampshire educators. We are confident in the record and qualifications of our proposed team and our ability to meet or exceed all NH DOE expectations for program management. Should it become necessary to alter the composition of the team over the course of the contract for any reason, we will consult with NH DOE on such changes.

Our proposed plan for managing this program, and for providing the products and services requested by the NH DOE, reflects the basic principles that guide all our client relationships:

- Strict attention to quality control and documentation
- Adherence to professional and technical standards
- Cost-effective management of workflows and the overall contract budget
- Fluid communication and responsiveness
- Seamless collaboration between stakeholder groups and internal functional groups
- Creative consideration of multiple approaches and methods to meet unique client needs
- Forward-looking development and delivery of content
- Cost-effective management of scope changes and modifications

Problem-solving talent is required in the world of customized large-scale assessments, where constant change and anticipated and unanticipated challenges arise in day-to-day operations. No program will be successful without collaborative, creative, yet practical problem solving. As a not-for-profit corporation,

part of our mission is to help educators do what is best for the assessment program and the students. This results in more collaborative and timely problem resolution. Measured Progress takes pride in our ability to anticipate and respond to the challenges that inevitably occur in large, complex projects. We believe it is imperative that continuous communication occurs internally, with NH DOE, with other stakeholders within the state, and with our solution partners. Communication is vital to the success of this collaborative effort.

Planning the Work

Work will begin with the creation of a detailed project plan. Our program management team, led by Jimmy Hartman, will monitor the phases of the project—from initiation through planning, execution, control, and evaluation and close. Our program manager will be responsible for oversight of all activities related to planning, development, scheduling, and progress monitoring, implementing, reporting, and ensuring the quality of work conducted by Measured Progress as well as acting as the conduit between the NH DOE and eMetric to ensure a successful implementation of iTester, the proposed NH eMPower and Science online testing system. As the contractor for this project, Measured Progress's program management team will have the crucial responsibility for managing the overall program schedule and for communicating with the project team (both internal and external) and ensuring the completion of all project deliverables and timelines. This centralized approach ensures that all parties are performing the contracted work and that communication with NH DOE is consistent, timely, and meets all specifications set by the state.

Our program management team worked with our internal staff to create the preliminary work plan to address this RFP. The plan focuses on:

- Using the RFP to identify deliverables and create a detailed set of program requirements
- Developing a budget
- Determining staff roles
- Developing a master schedule in Microsoft® Project

Once we initiate the project, the team's primary focus will be to finalize the requirements, budget, roles, and schedule for the life of the project. Beginning with a carefully detailed scope document and schedule allows us to make continuous improvements to the project while controlling costs and monitoring project progress.

Executing the Work

The program management team will remain highly accessible throughout the life of the project. To monitor the work effectively and facilitate effective communication between NH DOE and our functional groups, we propose a work plan that will be iterative and interactive. Our program management staff will collaborate with NH DOE's leadership and authorized work groups, other contractors, and members of our proposed project team to capture the best ideas and document all decisions and phases in the development, implementation, and research cycles; facilitate effective communication across all internal and external groups; ensure that NH DOE staff, Measurement Services and Operations staff are fully apprised of project status, project changes, identified risks, and final decisions. Our process allows project team members to use input from NH DOE, Measurement Services, and Measured Progress Operations leadership to quickly address issues along the way to final deliverables.

The program management team will fulfill the following functions for this contract:

- Serve as a partner and primary contact for NH DOE and monitor internal progress toward completion of all project deliverables
- Organize the logistics, communication, scheduling, and budgeting for all required meetings—whether in person or virtual—to ensure participation by all appropriate participants and fiscal due diligence
- Prepare documentation for meetings to include agendas, invitations, hand-outs, meeting notes with decisions and action items clearly identified, and any requested follow-up materials
- Coordinate all contract-related work and ensure that deliverables are delivered in the manner NH DOE prescribes
- Manage program changes, as necessary, to ensure that the project remains within specified scope and within time, cost, and quality objectives
- Develop and submit an annual detailed scope document to the NH DOE for review and approval
- Maintain accurate, up-to-date information regarding the current status of all work on the project
- Schedule and facilitate quarterly review meetings and weekly conference calls
- Submit bi-weekly status reports electronically updating NH DOE on the current status of the project and progress that is being made in accordance with the detailed project plans and contractual requirements
- Ensure that all critical decision-makers within Measured Progress and the NH DOE are represented in planning and status meetings

Weekly Project Progress Meetings

Our program management team works very closely and has frequent communication with clients to keep them abreast of the status of all program activities. We maintain weekly and sometimes daily contact with clients. We provide weekly status reports that may include a summary of the details of meetings, trainings, and deliverables completed for the program, details about upcoming events, as well as summaries of shipping and receiving activities, scanning and scoring progress statistics, and upcoming activities planned for the subsequent month.

Our objective is to provide NH DOE staff with accurate and timely information regarding the overall program status, subcontractor activity and updates on all contracted deliverables. To facilitate this, we will hold a weekly project progress meeting via telephone or video conference calls or a Webinar.

Working in collaboration with the NH DOE, our program management team will:

- Schedule and facilitate the weekly project progress meetings with NH DOE staff to discuss program and contract topics
- Determine the timing, attendees, and agenda topics for all meetings, as appropriate
- Include essential personnel from Measured Progress's functional departments and subcontractors as needed (depending on each meeting's agenda items)
- Assume responsibility for preparing and disseminating agendas and detailed meeting notes from each meeting, including discussion points, important decisions, action items, and next steps

As a convenient communication avenue for the weekly project progress meetings, Measured Progress will arrange for a dedicated online meeting connection specifically to be used for these regularly scheduled meetings. We will provide NH DOE with a unique online connection, as well as a toll-free dial-in number and participant PIN to access these meetings. In between scheduled weekly project progress meetings, NH DOE can expect responsive communication with the program management team via telephone and email on an as-needed basis.

Status Reports and Issue Log

Measured Progress will provide a weekly status report that includes a current detailed listing of all work and activities completed and in progress with corresponding dates. The report will provide the current status for each deliverable, as well as summaries of upcoming activities planned for the subsequent month. These reports and summaries highlight due dates and action items and include a snapshot of the upcoming scheduled tasks, with critical work flagged and tracked. The status report will also clearly identify a list of all information needed from NH DOE to proceed with work, as well as other external dependencies. We will use this report to drive agenda topics for regular meetings and present how the project is doing against our baseline schedule.

Part of planning includes being prepared for unplanned problems or challenges. To do this, our program management team follows PMI principles. As a supplement to a weekly status report, an issue and risk-tracking and management log serves as a method to highlight open issues and escalate high-priority matters and action items on a regular basis. We will review these issues in both internal team meetings and contract management meetings with NH DOE. The log assigns each issue a unique identifier, along with a prioritization, an owner, a due date, and a running status. Issues and risks that have been closed will be archived but remain accessible as a record of previous decisions and actions.

Submission of Deliverables

All deliverables will be proofed for errors prior to submission for NH DOE review and approval timelines will be rigorously maintained. NH DOE expectations for all deliverables will be discussed and documented as early as the initial introductory kickoff meeting, and checkpoints will be made along the way at regular contract management meetings to ensure that we are working toward and ultimately meeting NH DOE's desired goals. This iterative review process ensures that work does not deviate from the project plan, and that issues are detected before they can negatively impact the schedule, quality, or delivery.

Our program management team will work collaboratively with NH DOE to determine review schedules that allow for on-time delivery. We will ensure that all deliverables and work products are provided to NH DOE in a manner that allows for easy access for review and approval. One of the methods for delivery that is currently used with NH DOE is a Secure File Transfer Protocol (SFTP) site. This secure site is password protected, and access can be restricted to specific NH DOE personnel. Measured Progress acknowledges that we will not release deliverables and work products without gaining NH DOE approval first.

Issue Escalation and Resolution

The program management team will closely monitor the project schedule and progress toward completion for each deliverable and will work closely with management to assess the adequacy of staffing resources to meet timelines. Should the team determine that a deliverable is in jeopardy of not being completed by

the due date, either due to an internal issue, or an external event that is out of the control of Measured Progress, additional resources may be assigned in consultation with NH DOE. The program management team will have daily access to senior management and have the authority to escalate any issue, should it become necessary to do so. During an escalation period or problem-solving event, daily update meetings will be held with participation from senior-level managers to ensure that needed resources are made available to the program management team. Our plan also allows for scaling up should additional staff be required.

Client Work Plan

We will, as a matter of policy, ensure that NH DOE, the Measured Progress program management team, and other advisors and stakeholders are in complete agreement over the particulars of contract deliverables by drafting and negotiating an annual Client Work Plan (CWP) document upon award of the contract. The starting point of the CWP will be the tasks and deliverables outlined in the RFP and our proposal responses. The CWP will include all deliverables, milestones, and expectations for the contract year. All people involved in the completion of any deliverable should be able to work with confidence, knowing that they are pursuing the desired outcome.

With more than 30 years in designing and delivering assessment programs, Measured Progress has developed an elaboration process that identifies the details and approaches needed for the delivery of a high-quality, low-risk measurement program. This process starts soon after award with the planning meeting and concludes when we have a mutually agreed-upon CWP with detailed program specifications. This process allows time for us to discuss program outcomes, identify best practices, and apply them to the program. We will listen carefully to NH DOE's needs and offer methods and suggestions that not only meet the goals of the program, but may also increase benefits to students and administrators. The CWP and specification eliminates or minimizes uncertainties and clarifies mutual expectations from the start. We have found that this elaboration process is critical to the success of every program. The initial CWP will be completed within one month of award of the contract; annual CWPs will be completed within one month of the beginning of each contract year and will be discussed as part of the annual planning meeting agenda.

Change Management

Controlling changes to the scope is critical to keeping our work on schedule and at a level of high quality, and as a responsible partner, we maintain tight control over the program budget and operational costs. While we strive to be as flexible as possible when change requests surface, some requests can significantly affect schedules and costs. In cases where the request exceeds the currently agreed-upon SOW, we will work with NH DOE to appropriately define the project's scope and timeline, and develop a pricing plan that is mutually agreed to.

Measured Progress employs the following program management procedures and methods for ensuring adherence to agreed-upon scope, budget, timelines, and quality objectives:

- **Clarity on expected deliverables** – We will ensure that all NH DOE stakeholders are in agreement over the particulars of contract deliverables. There will be no surprises.
- **Discipline and control over the project** – We use frequent, regimented checkpoints and review steps to ensure that work does not deviate from the plan, and that issues are detected before they can negatively impact the schedule, quality or delivery.
- **Documentation and record keeping** – A critical element in the coordination of our work is the collection and organization of documents and records of all decisions made during the project.

Over the course of the contract period and with the consent of the NH DOE, we will review and refine the schedule and project plans as needed, as they relate to minor tweaks and adjustments that do not cause considerable disruption to either party.

Topic 29 Management Team

The vendor shall provide a list of key staff, including but not limited to, the program manager, program coordinator, lead psychometrician, content development lead, content specific area lead, technology lead, special populations consultant, scoring manager(s), production manager(s), and publication staff, as well as all staff assigned 0.20 FTE or greater to each component. Each staff member's assigned responsibilities and time allocated to the project must be provided. Time expected to be allocated to other projects must also be indicated. In no case should an individual be assigned to more than one full-time equivalent position.

The vendor shall affirm in the response to this request for proposal that should the contract be awarded, all key personnel proposed shall be released from any concurrent responsibilities that would impede their availability to assume the work as proposed.

The vendor shall assign one person to function as the Program Manager. That person must be responsible for all activities required by the project and will serve as the main contact person between the vendor and NH DOE. The Program Manager shall have the authority to make decisions and commitments on behalf of the vendor, subject to NH DOE approval.

NH DOE requires that a Technology Consultant be identified. This individual shall be responsible for a number of tasks, including but not limited to, assisting NH DOE and the districts with the transition to assessment system; working with NH DOE information staff to ensure the accurate and efficient transfer of data to and from NH DOE; creating, defining and reviewing file layouts; providing assistance in the verification of demographic data; and assisting NH DOE and district assessment coordinators with the use of vendor websites and functionality.

NH DOE reserves the right to interview and approve all key staff including subcontractor staff. Throughout the life of this contract, and any extensions, changes to the assigned program manager, program coordinator, lead psychometrician, content development lead, content specific area lead, special populations consultant, and technology consultant, except for those resulting from separation of services, will require prior written consent by NH DOE. In the event that NH DOE requests removal of specific vendor personnel, the vendor shall provide acceptable replacement(s) with no impact to the project. Replacement(s) shall have qualifications which meet or exceed the original staff member proposed or the staff member holding the position previously and shall be approved by NH DOE.

All personnel who will work on-site at NH DOE or school sites may be required to be pre-approved for site access via a criminal background check paid for by the vendor.

Jimmy Hartman will serve as Program Manager for this contract. In this role, Mr. Hartman will oversee all aspects of the program and will serve as the primary liaison with NH DOE staff. Within Measured Progress Mr. Hartman reports to portfolio manager **David Knauer, Ph.D.**, who currently oversees the Maine DOE's eMPower-driven statewide assessment program for grades 3-8. **Margie Gaines McCaw, Ph.D.**, Vice President of Client Services, will have final authority and responsibility for the work outlined in the RFP and presented in the proposal. Of course, during an escalation period or problem-solving event NH DOE can be assured that Dr. McCaw and other senior-level leadership will be fully available to support both NH DOE and Measured Progress staff members.

Measured Progress will assign a business analyst to fulfill the NH DOE's expectations of a technology consultant. This individual, to be named, will report to Amada Chase, Technology Consultant. Said person will be responsible for assisting NH DOE and its districts with the transition to the eMetric iTester assessment platform. S/he will work with NH DOE information technology staff to ensure the accurate and efficient transfer of data to and from NH DOE, including the creation, definition, and review of required file layouts. The business analyst will be a collaborative partner with program management and our Data Reporting Services group in the verification of demographic data and will assist NH DOE and district assessment coordinators with the use of Measured Progress and eMetric websites and online applications.

Measured Progress is pleased to name staff members from across all relevant functional areas and subcontractors to fill the roles necessary to complete the scope of services for this program. Our team has extensive combined experience creating and administering assessments, as well as a record of advising states on issues central to assessment and standards development. Our approach to staffing key roles for the development of this program is to provide personnel who can ensure project success for the NH DOE through a combination of experience and capacity.

Each key staff member has been selected for their experience and ability to contribute substantively to the program and has a deep personal, professional, and institutional commitment to excellent operational performance and to the highest-quality technical work. We have outlined our staffing plan on the following pages, including name, title, percentage of time dedicated to this project, and a brief summary of their role on the project. We also have provided in this section an organizational chart showing our mid to higher management structure and a project organizational chart. CVs for individuals participating to this project are located in Appendix 1.

Measured Progress affirms that should the contract be awarded, all key personnel proposed shall be released from any concurrent responsibilities that would impede their availability to assume the work as proposed. We also acknowledge and understand that all staff who work on-site at NH DOE or school sites may be required to be pre-approved for site access via a criminal background check paid for by the vendor.

EXHIBIT 64: MEASURED PROGRESS STAFFING CHART

Department	Name	Title	Role	FTE Year1	FTE Year2	FTE Year 3	FTE Year 4
Client Services	Dave Knauer, Ph.D., PMP	Portfolio Manager	Dr. Knauer will be responsible for providing oversight of and guidance to the program management team, including overseeing the development of program management documents, such as the client work plan, component plans and requirements documents, and the program schedule.	20%	20%	20%	20%
Client Services	Jimmy Hartman	Project Manager	Mr. Hartman will be NH DOE’s single point of contact for program management.	50%	50%	30%	30%
Client Services	Christina Dunn	Project Coordinator	Ms. Dunn will be responsible for the program management of the New Hampshire assessments.	30%	30%	30%	30%
Information Technology	Amanda Chase	Technology Consultant	Ms. Chase will be responsible for assisting NH DOE and its districts with the transition to the eMetric iTester assessment platform. She will work with NH DOE information technology staff to ensure the accurate and efficient transfer of data to and from NH DOE, including the creation, definition, and review of required file layouts. Ms. Chase will be a collaborative partner with program management and our Data Reporting Services group in the verification of demographic data and will assist NH DOE and district assessment coordinators with the use of Measured Progress and eMetric websites and online applications.	50%	50%	50%	50%

Department	Name	Title	Role	FTE Year1	FTE Year2	FTE Year 3	FTE Year 4
Client Services	John Gardner	Customer Care Center Director	Mr. Gardner will be accountable for the performance of the Customer Care Center (CCC). He will ensure that Measured Progress contractual obligations with New Hampshire for call center are met.	5%	5%	5%	5%
Client Services	Justina Beaulieu	Customer Care Center Manager	Ms. Beaulieu will be responsible for the staffing of the CCC for the New Hampshire assessment program. She will oversee training and monitoring of performance metrics.	10%	10%	10%	10%
Client Services	To Be Determined	Event Planning Specialist	Our Event Planning Specialist, under the supervision of our Event Planning Manager, will be responsible for planning and performing administrative and logistical tasks for client meetings and events.	5%	8%	5%	
Content Design and Development (CDD)	Karen Paavola	Director Content Design and Development	Ms. Paavola will be responsible for the oversight of the overall test item development process and content development staff.	1%	1%	1%	1%
Content Design and Development	Karen Whisler	NGSS Solutions Leader	Ms. Whisler will oversee item specifications and cluster development.	2%	2%	2%	2%
Content Design and Development	David Harrison	CDD Group Manager for STEM	Mr. Harrison will be responsible for supervising the content development staff.	2%	2%	2%	2%
Content Design and Development	Karen Travers-Lynch, Ph.D.	Science Development Leader and Grade 5 Lead	Dr. Travers-Lynch will lead the overall item and test development activities for this contract, and serve as the lead content developer for Grade 5 science test items.	5%	5%	5%	5%

Department	Name	Title	Role	FTE Year1	FTE Year2	FTE Year 3	FTE Year 4
Content Design and Development	Nandita Dangoria, Ph.D.	Grade 11 Lead	Dr. Dangoria will serve as the lead content developer for grade 11 science items.	5%	5%	5%	5%
Content Design and Development	Paul Ritchie	Grade 8 Lead	Mr. Ritchie will be the lead content developer for grade 8 science test items.	5%	5%	5%	5%
Content Design and Development	John Rogers	ELA Lead	Mr. Rogers will lead the writing prompt development for the New Hampshire Statewide Assessments.	5%	5%	5%	5%
Psychometrics	Matthew Gushta, Ph.D.	Director		6%	5%	3%	3%
Psychometrics	Lei Yu, Ph.D.	Lead Psychometrician	Dr. Yu will provide psychometric and measurement expertise in support of the New Hampshire Statewide assessment program.	20%	20%	15%	15%
Psychometrics	Mike Nering, Ph.D.	Psychometrician / Research Scientist - Principal	Dr. Nering will provide psychometric and measurement expertise in support of the New Hampshire Statewide assessments.	5%	3%	3%	3%
Psychometrics	Rob Keller, Ph.D.	Psychometrician / Research Scientist - Senior	Dr. Keller will provide psychometric and measurement expertise in support of the New Hampshire Statewide Assessment program.	5%	3%	3%	3%
Content Design and Development	Veronica Zonick, Ph.D.	Content Specialist III	Dr. Zonick will be the lead developer for Science.	5%	5%	5%	5%
Data and Reporting Services	Amy Moody	Data Analysis Manager	Ms. Moody will oversee Data Analysis and supervise the DA staff.	5%	5%	5%	5%
Data and Reporting Services	Shawn Carey	Manager Reporting & Quality Assurance	Mr. Carey will oversee Reporting & Quality Assurance and supervise the Reporting & QA staff.	10%	10%	10%	10%

Department	Name	Title	Role	FTE Year1	FTE Year2	FTE Year 3	FTE Year 4
Data and Reporting Services	Woreen Bogle	Data Processing Manager	Ms. Bogle will oversee Data Processing and supervise the DP staff.	5%	5%	5%	5%
Psychometrics	Wonsuk Kim, Ph.D.	Psychometrician / Research Scientist - Senior	Dr. Kim will provide psychometric and measurement expertise in support of the New Hampshire assessment program.	40%	25%	20%	20%
Scoring Services	Aaron Wozmak	Scoring Project Manager	Mr. Wozmak will coordinate the activities of Scoring Services, to include hand scoring of writing prompts for AI calibration and verification, form reviews in all content areas, resource planning and scheduling, and coordination with the AI scoring partner.	10%	4%	4%	4%

EXHIBIT 65: EMETRIC STAFFING CHART

Department	Name	Title	Responsibilities
Business	Trystan Moss	Project Manager	Ms. Moss will work closely and collaboratively with Measured Progress’s designated New Hampshire program management team, overseeing every phase of the project to ensure that each deliverable is provided according to Measured Progress’s specifications, timelines, and quality expectations.
Technology	Rajeev Dasari	Technology Manager	Mr. Dasari constantly evaluates procedures and processes to better streamline development activities and operations, works within an Agile/scrum environment, and provides insight into emerging technologies to keep eMetric’s technologies current and innovative.
Business	Nathan Wall	Senior Research Scientist	Dr. Wall will oversee the data quality checks that are performed to ensure data are accurately reported and that the analytical functionality allows users to perform valid data analysis.

Department	Name	Title	Responsibilities
Business	Kaelee Harper	Support Center Manager	Ms. Kaelee Harper, Customer Support Manager, will oversee eMetric’s tier 2 and 3 technical support. Ms. Harper leads a team of technical support specialists responsible for providing client support including general and technical issue resolution for all eMetric applications.
Technology	Neil Gandhi	Technology Manager	Mr. Gandhi currently manages the eMetric iTester team in the execution of new development for the platform. His responsibilities include planning the development roadmaps, overseeing technical design of the platform, working with the development team on implementation and maintenance of the platform, and collaborating with quality assurance and engineering staff to develop the appropriate test plans.
Business	Jessica Brite	Business Analyst	Ms. Jessica Brite will provide analytical and strategic support of software development activities.

EXHIBIT 66: MEASUREMENT INCORPORATED STAFFING CHART

Department	Name	Title	Responsibilities
Project Management	Andrina Aragon	Project Manager	Ms. Aragon has two years of project management experience. As a Technical Project Manager, she oversees the planning, implementation, and administrative operations of AI scoring projects and online testing programs. She currently manages the Michigan and Wisconsin AI scoring projects. Ms. Aragon’s previous experience includes assessment development operations for CTB/McGraw-Hill and the Colorado Department of Education.
Assessment Technology	Tiwanna N. Bazemore, PMP	Vice President, Assessment Technology	Ms. Bazemore is a Certified Project Management Professional with over 12 years’ experience in the fields of technology, educational assessment, quality assurance, and project management. As Vice President of Assessment Technology, she oversees MI’s assessment technology initiatives, including online testing, artificial intelligence (AI) scoring, and web-based formative assessments. She provides strategic direction for MI’s online test delivery system, steering product requirements and the software development roadmap. In her previous position as the Director of Summative Assessments, Ms. Bazemore oversaw the quality assurance activities for online testing technologies, managed day-to-day operational aspects of online assessments, and acted as an advisor to the technical project managers. Under her direction the Connecticut State Department of Education successfully transitioned several assessments from paper and pencil to online administration. Currently Ms. Bazemore is working to transition

			Education Quality and Accountability Office (EQAO) from pencil assessments to an online administration.
Information Technology	Thomas Davis	PEG Artificial Intelligence Team Lead	Mr. Davis has 20 years of software engineering experience in architectural, development, quality assurance, and supervisory capacities in web, private-cloud, cluster, and stand-alone environments. He is experienced with each phase of the software development life cycle in both Agile (Scrum, XP) and classic Waterfall patterns, and has proven experience developing simultaneously in multiple languages, conducting proof-of-concept rapid R&D, interfacing with third parties, and managing priority queues. As the Lead of the PEG Artificial Intelligence (AI) Team, Mr. Davis provides leadership and oversight for software architecture, research, engineering, and implementation of MI's AI scoring system infrastructure, manages team logistics and personnel, and acts as liaison between customers and AI specialists.

Topic 30 Staff Qualifications and Experiences

Qualifications of all key personnel shall be presented in the vendor's proposal, including subcontractors. Supporting resumes outlining education/training, employment history, and experience in conducting work similar to what is expected under this contract shall be included as an appendix.

NH DOE requires a psychometric team that will not only execute routine functions, but will also be able to provide a sophisticated level of expertise to guide the psychometric decisions that will need to be made and re-evaluated as the program evolves. The expectation is that the team will be able to provide psychometric options with strengths and challenges and its recommendations along with rationale. In addition, especially in the event of unexpected challenges, the team must include someone with both extensive experience and psychometric knowledge, as well as the decision-making authority to quickly address and remedy the situation.

For all meetings involving educators, the vendor must indicate the qualifications of the facilitators. General qualifications for training and meeting facilitators must be included in the response to this request for proposals. Facilitators must be familiar with best practices, as well as state and federal laws, procedures and regulations concerning assessment. As applicable, facilitators must also be familiar with academic instruction of students and the educational and assessment landscape. Facilitators must be able to clearly articulate spoken English and create easily understood written materials and visual training aids. Facilitators must have demonstrated experience in leading large-group trainings including webinars and meetings as fit their responsibilities.

Organizational charts, including identification of Program Manager and key personnel, for the vendor as a whole and for the NH DOE project team specifically, including subcontractors where applicable, must be provided. The charts shall clearly indicate lines of authority and communication within and among the vendor's departments and subcontractors, where appropriate.

The vendor shall also describe its escalation process for resolving any vendor/client disagreements.

The Program Manager directly in charge of overseeing the NH project shall be identified. This manager shall be available both during and outside of normal business hours to assist with any urgent situations. Contact information for this individual shall be provided at the time of contract award.

Changes to the assigned Program Manager, except for those resulting from separation of services, require prior written consent by NH DOE. The replacement shall have qualifications which meet or exceed the original staff member proposed or the staff member holding the position previously and shall be approved by NH DOE.

Qualifications of key executive personnel must be presented. A supporting resume outlining education/training, employment history, and experience in conducting work similar to what is expected under this contract shall be included as an appendix. The vendor shall fulfill this requirement and all requirements listed in Appendix E and Appendix H

D2.3 Project Plan

The vendor shall describe the planned project management activities as they pertain to the three phases, planning, implementation, and operations. In addition to addressing the components listed in Appendix D2.3 Work Plan, the vendor shall provide an example of status reports prepared for another similar project. Names of the project and of any individuals involved may be removed.

Upon award program management team will author a Project and Work Plan based on the proposal and further discussions at the kick off meeting. These documents will be submitted to the NH DOE for review and approval 14 days after the initial kick off meeting. Annually each of these documents will be revised and submitted to the NH DOE one month prior to the annual project review meeting.

Planning the Work

Work will begin with the creation of a detailed project plan. Our program management team, led by Jimmy Hartman, will monitor the phases of the project—from initiation through planning, execution, control, and evaluation and close. Our program manager will be responsible for oversight of all activities related to planning, development, scheduling, and progress monitoring, implementing, reporting, and ensuring the quality of work conducted by Measured Progress as well as acting as the conduit between the NH DOE and eMetric to ensure a successful implementation of iTester, the proposed NH eMPower and Science online testing system. As the contractor for this project, Measured Progress's program management team will have the crucial responsibility for managing the overall program schedule and for communicating with the project team (both internal and external) and ensuring the completion of all project deliverables and timelines. This centralized approach ensures that all parties are performing the contracted work and that communication with NH DOE is consistent, timely, and meets all specifications set by the state.

Our program management team worked with our internal staff to create the preliminary work plan to address this RFP. The plan focuses on:

- Using the RFP to identify deliverables and create a detailed set of program requirements
- Developing a budget
- Determining staff roles
- Developing a master schedule in Microsoft® Project

Once we initiate the project, the team's primary focus will be to finalize the requirements, budget, roles, and schedule for the life of the project. Beginning with a carefully detailed scope document and schedule allows us to make continuous improvements to the project while controlling costs and monitoring project progress.

Executing the Work

The program management team will remain highly accessible throughout the life of the project. To monitor the work effectively and facilitate effective communication between NH DOE and our functional groups, we propose a work plan that will be iterative and interactive. Our program management staff will collaborate with NH DOE's leadership and authorized work groups, other contractors, and members of our proposed project team to capture the best ideas and document all decisions and phases in the development, implementation, and research cycles; facilitate effective communication across all internal and external groups; ensure that NH DOE staff, Measurement Services and Operations staff are fully

apprised of project status, project changes, identified risks, and final decisions. Our process allows project team members to use input from NH DOE, Measurement Services, and Measured Progress Operations leadership to quickly address issues along the way to final deliverables.

The program management team will fulfill the following functions for this contract:

- Serve as a partner and primary contact for NH DOE and monitor internal progress toward completion of all project deliverables
- Organize the logistics, communication, scheduling, and budgeting for all required meetings—whether in person or virtual—to ensure participation by all appropriate participants and fiscal due diligence
- Prepare documentation for meetings to include agendas, invitations, hand-outs, meeting notes with decisions and action items clearly identified, and any requested follow-up materials
- Coordinate all contract-related work and ensure that deliverables are delivered in the manner NH DOE prescribes
- Manage program changes, as necessary, to ensure that the project remains within specified scope and within time, cost, and quality objectives
- Develop and submit an annual detailed project plan and scope document to the NH DOE for review and approval
- Maintain accurate, up-to-date information regarding the current status of all work on the project
- Schedule and facilitate quarterly review meetings and weekly conference calls
- Submit bi-weekly status reports electronically updating NH DOE on the current status of the project and progress that is being made in accordance with the detailed project plans and contractual requirements
- Ensure that all critical decision-makers within Measured Progress and the NH DOE are represented in planning and status meetings

Topic 31 Work Plan

The State requires vendors to present a thorough project Work Plan in the proposal addressing all work offered in their proposal. The State will evaluate the proposed project Work Plan contained in the Proposal to determine how well it will serve the needs of State Project leaders.

The State sees a Work Plan as essential to reaching a comprehensive agreement with a vendor. Consequently, the State will seek to refine the proposed Work Plan during contract finalization with the selected vendor and to incorporate the refined Work Plan by reference into a contract. In addition, the State will require the selected vendor to update the Work Plan in consultation with the State during the term of the project.

Measured Progress has included a sample project work plan in Appendix 9 as an example of a guiding document for a current contract. We understand that the purpose and intent of a document drafted as part of the New Hampshire assessment program is to articulate an agreement between the NH DOE and Measured Progress and will become part of the final awarded contract. This New Hampshire Assessment Work Plan will be annually updated.

Topic 31.1 Preliminary Work Plan

Provide a preliminary Work Plan for the planning and implementation phases of the engagement. The vendor's preliminary proposed Work Plan includes a description of the schedule, tasks, deliverables (with pricing), major milestones, task dependencies, and a payment schedule. The Work Plan shall also address resource allocations (both State and vendor team members). Include sufficient detail that the State will be able to identify departures from the plan in sufficient time to seek corrective action. In particular provide information about staffing. Identify and discuss the following:

- All assumptions upon which the work plan is based;
- Descriptions of recommended roles by activity and time required for both State and vendor members of the project team;
- Assignments of members of the vendor's team identified by role to specific tasks; and
- Critical success factors for the project.

The vendor Work Plans should include information pertaining to resource allocation, update frequency, financial check points and a graphic overview.

A Work Plan may be found in Appendix 9 included as an example of a current client document and as requested.

Topic 31.2 Project Plan and Schedule

Proposals shall include a detailed schedule reflective of the Work Plans that describe how each of the requirements and specifications described in the proposal will be accomplished. The schedule shall at a minimum identify the tasks, subtasks, beginning date, end date and the party/functional group responsible for each step in the process. The schedule must be included as a separate attachment to the proposal. The proposed plans and schedule shall clearly identify and include:

- Key activities related to the field (ordering of materials, receipt of materials, test dates, return of materials, demographic clean-up window, release of individual student scores, final individual student, school and district score file release, and receipt of paper reports)
- Key transfer dates between the vendor and NH DOE related to development, production, shipping and receipt, administration (of paper-based and online assessments), scanning, scoring (human and artificial intelligence), data processing, reporting and psychometric activities.

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

Activities related to the development for the next year's assessment and reporting for the prior year's assessment must be clearly distinguishable from activities related to the current year's assessment.

Joint review of this schedule followed by NH DOE's approval for the first contract period should occur within two weeks of the contract award. The vendor and NH DOE shall mutually agree upon final dates. Joint monitoring of the schedule shall occur on an on-going basis. The vendor shall ensure that all schedule adjustments allow for final deliverable dates to be met. If necessary, timelines and schedules may be revised with prior approval of NH DOE and an executed contract amendment for all deliverables subject to liquidated damages.

A revision of a timeline on the part of the vendor exempts the vendor from meeting a contractual deadline only if (1) the vendor and NH DOE mutually agree upon and document through a contract amendment an extension of the deadline as executed through a contract amendment or (2) the

vendor is able to prove that the deadline was not met due to NH DOE's failure to meet a contractual deadline resulting in the vendor's inability to adhere to the schedule for delivery of products and services.

The vendor shall alert NH DOE as soon as it believes a deliverable subject to liquidated damages is at risk of not meeting its delivery date.

NH DOE must be notified whenever the New Hampshire contract is included in vendor's internal meetings focused on programs at-risk.

For the contract beginning after July 1, 2017, the review of the schedule should occur within the first two weeks of the initial contract. For each following contract year, by May 1, the vendor shall provide an updated detailed Work Plan and project schedule that specifies all activities leading to products or services deliverable to either NH DOE or local school districts for the following assessment year.

The development of the project plan and schedule will follow a review of the current project status and contract specifications by the vendor and NH DOE. 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.

Based on the information presented in the RFP our program management team has worked across the organization to create a preliminary project schedule for the statewide assessment program using Microsoft Project®. This schedule includes tasks, subtasks, and milestones, along with targeted completion dates. The schedule includes such activities as enrollment, online registration, system setup, training dates, recommended testing dates, the delivery and pick-up of test materials, score report and data file delivery dates. We have included our preliminary project schedule for this program as Appendix 2.

Upon contract award, we will:

- Within 14 calendar days of contract award, conduct a kick-off meeting to discuss and review our project schedule as submitted in this proposal. The meeting will also serve as an opportunity to exchange additional information necessary to proceed with the services of this program with additional staff available by conference call.
- Within 14 calendar days of the kick-off meeting, complete and submit a revised project schedule that is reflective of input, feedback, and requests from NH DOE during the kick-off meeting and subsequent correspondence.

The project schedule and related work plans will incorporate all activities necessary to fulfill the scope of the project. Our program management team will work closely with the NH DOE during the development of the schedule to ensure the feasibility of the work load of assigned tasks for the NH DOE staff. We typically plan client reviews of items or forms in batches over a period of time. The final project schedule will be created and verified by our program management team and distributed to each functional department within Measured Progress involved in the project. We will monitor critical handoffs by working with NH DOE to indicate the essential steps that will lead to successful completion of the project, including sign-offs, handoffs, reviews, or any other commitments necessary for NH DOE to fulfill to ensure successful administration of the assessment system. The backbone of this plan will include a detailed calendar that comprises initiation and completion dates, task responsibilities, and requirements for deliverables. Our staff will keep NH DOE well-informed of upcoming review cycles and NH DOE action items through regularly scheduled meetings, conference calls, and routine

correspondence. The format of the NH DOE schedule views and the “tickler” notices will be discussed at the kickoff meeting. We can provide examples of schedule status reports and upcoming task notifications that we have found to be successful with other clients.

On the basis of our experience with similar assessment projects, we realize some aspects of work plans remain firm, while other aspects are subject to change. We understand that NH DOE has the right to accept or reject our proposed project schedule. We will work collaboratively with Department staff to develop a mutually agreed-upon plan that meets the needs of the program for the current contract period and will be revised as needed. We understand that the NH DOE must be notified whenever the New Hampshire contract is included in vendor’s internal meetings focused on programs at-risk.

Once we initiate the project, the team’s primary focus is to manage the contracted work for the first contract year of the project which will include all identified tasks from July 1, 2017- June 30, 2018. Utilizing an annual review process in subsequent years then allows us to learn as we go and make continuous improvements to the project. We will also apply the knowledge and experience gained from previous and ongoing successful implementations. We will prepare an annual draft schedule by May 1st of each year.

Topic 32 Management Meetings

The vendor will be responsible for organizing and supporting regular management meetings with the NH DOE project management team. The vendor 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. Participants will include key vendor staff and State project leaders. This meeting will enable leaders to become acquainted and establish any preliminary project procedures.

Additional meetings shall include:

- **Status Meetings:** Participants will include project leaders from the vendor and the State. These meetings, which will be conducted at least twice monthly, will address overall project status and any additional topics needed to remain on schedule and within budget. A status report from the vendor will serve as the basis for discussion.
- **Special Meetings:** Need may arise for a special meeting with State leaders or project stakeholders to address specific issues.
- **In Year 1 of the project,** weekly phone calls between pertinent NH DOE staff and the vendor’s Program Manager and other key vendor staff shall be held between in-person project meetings to keep NH DOE current on project status, discuss issues as they arise, and to plan upcoming activities.
- **Exit Meeting:** Participants will include Project leaders from the vendor and the State. Discussion will focus on lessons learned from the Project and on follow-up options that the State may wish to consider.

The vendor shall include the following when describing the meeting process:

- **Timing, duration, recommended participants and agenda for the kickoff meeting;**
- **Frequency and standard agenda items for status meetings;**
- **Availability for special meetings; and**
- **Agenda for the exit meeting.**

The State expects the vendor to prepare agendas and background for and minutes of meetings. Background for each status meeting must include an updated Work Plan. Drafting of formal presentations, such as a presentation for the kickoff meeting, will also be a vendor responsibility. Vendor shall submit reports in accordance with the schedule and terms of the contract. All reports shall be prepared in formats approved by the State. The vendor's project manager shall produce reports related to project management as reasonably requested by the State. Vendor shall produce project status reports, which shall contain, at a minimum, the following:

- **Project status as it relates to Work Plan**
- **Deliverables status**
- **Accomplishments during weeks being reported**
- **Planned activities for the upcoming two (2) week period**
- **Future activities**
- **Issues and concerns requiring resolution**
- **Report and remedies in case of falling behind schedule**

We have read and acknowledge our acceptance of all in-person meetings required by the RFP, including a comprehensive planning meeting with NH DOE staff at the start of the contract in New Hampshire and subsequent meetings thereafter. We have planned and budgeted for expenses for appropriate Measured Progress staff, our subcontractors and NH DOE staff to attend identified meetings in New Hampshire. Our meeting budget assumptions are listed below. For all meetings, Measured Progress will work in collaboration with NH DOE to organize the logistics, scheduling, agenda topics, and adjustments to budgets as needed to ensure participation by all appropriate participants, and we will provide fiscal due diligence. Measured Progress will 1) prepare all materials, agendas, and/or presentations as requested, and 2) prepare and distribute detailed meeting notes from each meeting upon an agreed upon schedule.

The comprehensive initial planning meeting and subsequent annual planning meetings between Measured Progress and NH DOE will be critical touch-points to identify initial activities and risks and review activities and risks of the past year with an eye toward improvement. These meetings allow for in-person review of plans for the upcoming year's item development and test administration. As needed according to the agenda, Measured Progress will involve staff from subcontractors or functional divisions to provide expertise on our online systems, issues across functional groups, and to debrief on activities and risks identified in the past year.

The first comprehensive planning meeting will occur within 30 days of contract execution. We will submit the initial Client Work Plan and project schedule within 21 calendar days of the meeting for NH DOE review. Both the Client Work Plan and the project schedule will be baselined by a date mutually agreed upon by NH DOE and Measured Progress.

Measured Progress will be responsible for coordinating and providing project management services related to all meeting planning with the NH DOE. Working with the NH DOE, we will ensure that the meeting agenda addresses all required contract activities. It is our intent to discuss, for each assessment, the functional activities and deliverables. We will negotiate and finalize deliverables to ensure clarity.

Annual Planning Meetings

The Measured Progress program management team will provide the leadership required for a successful annual planning meeting. For Year 2 through the end of the contract we will include a 'lessons learned retrospective' as part of these meetings. We have budgeted for the following costs for the identified meetings:

- Travel for 3 members of the program management staff to attend a 3-day meeting including car, hotel, and meals not covered in the meeting budget.
- Meeting room at a suitable location in Concord for 3 days
- Breakfast and lunch for up to 10 (3 Measured Progress staff and 7 NH DOE staff) for 3 meeting days
- Audio conferencing lines and WebEx for each of the 3 days
- Miscellaneous reproduction costs

Weekly Status Meetings

Weekly status meeting will be conducted via telephone conference call or webinar. As part of the initial planning meeting, the program management team will collaborate with NH DOE staff to develop a standard agenda and meeting format that meets NH DOE's needs. This may include a rolling agenda based on a set of pre-defined topic areas related to the program. These may include status updates on key deliverables, schedules, risks, upcoming activities, short- and long-range planning. The program management team will capture notes during each meeting and distribute them within three business days of the meeting.

Topic 33 Project Communication

Effective and efficient communication is critical to the operation of the project. The vendor will propose a communication plan to ensure effective communication among key project stakeholders.

The Program Manager is the single point of contact for communication with the client and internal teams and stakeholders. The Program Manager is responsible for developing and updating a program-specific communication plan using the template included for reference. Measured Progress will proactively and transparently communicate with the NH DOE through weekly scheduled status meetings, as well as through as-needed telephone calls and emails.

Measured Progress proposes to communicate directly with schools and districts using a dedicated "Statewide New Hampshire Assessment Team" email address. The email will be used to communicate notices and reminders directly to the field once approved by the NH DOE. During testing season Measured Progress will send weekly emails sharing important information for testing, outlining the upcoming schedule and any approaching deadlines. Based on feedback from the field through our help desk, this email may also be used to clarify any common areas of confusion surrounding testing or packaging instructions. Important contact information will be embedded in the footer of each email.

All correspondence emailed to schools and districts will be provided to the NH DOE for prior approval.

We have found it extremely helpful to offer the field "one stop shopping" to find correspondence, important links, helpful documents and all non-secure publications. We propose to have a dedicated help and support web page where district and school test administrators can find the following information:

- CBT portal user and client install guides
- CBT student tutorial
- CBT student accommodations tutorial

- Practice test links
- Training presentations
- Test Coordination and Administration Manuals
- Help desk contact information

Other publications may be posted to the help and support site as appropriate and when requested by the NH DOE.

The help desk solution we describe in Topics 38 and 39 has staff trained to handle a wide range of New Hampshire-specific client support requests spanning from ordering additional testing materials to handling CBT technical issues. Having a dedicated New Hampshire help desk team allows districts and schools to have one efficient toll-free number to contact for all of their customer support needs. This service will operate Monday through Friday 7:00 AM through 5:00 PM, Eastern Time.

Topic 33.1 Ongoing Communication

Communication between the vendor and NH DOE personnel is essential. Telephone calls, telephone conference calls, emails, overnight courier service, facsimile correspondence, and other communication procedures will be at the vendor's expense.

Toll-free numbers shall be provided by the vendor for telephone communication including conference calls and webinars.

The vendor shall make all written communication or summaries of communications with any subcontractor(s) identified in this proposal available to NH DOE at its request. In addition, NH DOE expects to be able to participate during all appropriate and applicable meetings and trainings between the vendor and any subcontractor(s) identified in this proposal.

Our program management team works very closely and has frequent communication with NH DOE to keep them abreast of the status of all program activities. We maintain weekly and sometimes daily contact with clients. We provide bi-weekly status reports that may include a summary of the details of meetings, trainings, and deliverables completed for the program, details about upcoming events, as well as summaries of shipping and receiving activities, scanning and scoring progress statistics, and upcoming activities planned for the subsequent month.

Our objective is to provide NH DOE staff with accurate and timely information regarding the overall program status, subcontractor activity and updates on all contracted deliverables. To facilitate this, we will hold a weekly project progress meeting via telephone or video conference calls or via Webinar.

Working in collaboration with NH DOE, our program management team will:

- Schedule and facilitate the weekly project progress meetings with NH DOE staff to discuss program and contract topics
- Determine the timing, attendees, and agenda topics for all meetings, as appropriate
- Include essential personnel from Measured Progress's functional departments and subcontractors as needed (depending on each meeting's agenda items)

- Assume responsibility for preparing and disseminating agendas and detailed meeting notes from each meeting, including discussion points, important decisions, action items, and next steps

As a convenient communication avenue for the weekly project progress meetings, Measured Progress will arrange for a central conference call line specifically to be used for these regularly scheduled meetings. We will provide NH DOE with a toll-free dial-in number and participant PIN to access these meetings. In between scheduled weekly project progress meetings, NH DOE can expect responsive communication with the program management team via telephone and email on an as-needed basis.

Topic 33.2 Timeliness of Communication

The Program Manager shall return calls from NH DOE staff and respond to email messages within 24 hours. If the Program Manager is not available to take calls and return messages, NH DOE shall be notified in advance. In the event that the Program Manager is not available, the vendor shall notify NH DOE as to whom to contact in his or her absence, and shall provide contact information for such individual. The vendor shall confirm its agreement to meet this requirement. The vendor'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.

The NH DOE will have access to the Program Manager via telephone 24 hours a day, 7 days a week. After normal business hours, the project director will receive calls and messages on a smartphone or other mobile device. In the event the project director is unavailable for a period of time, the NH DOE will be notified and provided with an alternate contact on the program management team to contact in the event of an emergency.

The program management team will participate in weekly status meetings with the NH DOE in the form of a one hour Webinar. Measured Progress will provide a toll-free number for NH DOE members to access the status meetings. In addition, an agenda will be provided for all participants at least 24 hours in advance of the weekly status meeting; documentation of the meeting and action items will be provided within 48 hours of the meeting. At these meetings, Measured Progress will provide status updates for each core task. We will provide additional updates between scheduled calls as requested by the NH DOE, either by telephone, email, or conference calls.

Topic 33.3 Monthly Reports

The vendor shall provide a monthly report that summarizes actions taken, issues that arose, issue resolution that occurred, outstanding issues and when they will be resolved, upcoming deadlines, work that will occur in the next month and beyond, and so forth. These reports shall be sent monthly to NH DOE by the third business day of the following month.

Measured Progress will provide monthly status report that includes a current detailed listing of all work and activities completed and in progress with corresponding dates. The report will provide the current status for each deliverable, as well as summaries of upcoming activities planned for the subsequent month. These reports and summaries highlight due dates and action items and include a snapshot of the upcoming scheduled tasks, with critical work flagged and tracked. The status report will also clearly identify a list of all information needed from NH DOE to proceed with work, as well as other external dependencies. We will use this report to drive agenda topics for regular meetings and present how the

project is doing against our baseline schedule. The monthly report will be sent monthly to NH DOE by the third business day of the following month.

Part of planning includes being prepared for unplanned problems or challenges. To do this, our program management team follows PMI principles. As a supplement to a bi-weekly status report, an issue and risk-tracking and management log serves as a method to highlight open issues and escalate high-priority matters and action items on a regular basis. We will review these issues in both internal team meetings and contract management meetings with NH DOE. The log assigns each issue a unique identifier, along with a prioritization, an owner, a due date, and a running status. Issues and risks that have been closed will be archived but remain accessible as a record of previous decisions and actions.

Topic 34 Program Improvement Plans

For each phase of the program including development, production, shipping and receipt, administration (of paper-based and online assessments), scanning, scoring (human and artificial intelligence), data processing, reporting and psychometric activities, the vendor shall provide a report that addresses the relevant phase by detailing the activities completed and by providing recommendations for improvement for the next assessment cycle. The report shall also detail errors, problems and/or discrepancies by district and by school. The report will allow NH DOE to detect any patterns in the errors, problems, or discrepancies noted in the report and to use that information to clarify instructions in the Assessment Administration and/or Coordinator Manuals. This report shall be completed within one month of completing the relevant phase.

Each program phase will be defined within the work plan and will complete with an articulation of identified activities and, as appropriate, recommendations for phase improvements as the work plan is revised for the next assessment cycle. Errors, problems or discrepancies will be included and used to inform/clarify content within the Assessment Administration and/or Coordinator Manuals. The report will be prepared within one month of the close of each phase. Our program work begins with a detailed project plan with each phase articulated.

Topic 35 Risk Management and Quality Assurance

The vendor shall provide a detailed description of the proposed approach to timely identification and effective action on issues and risks.

Vendors shall specifically address timeline issues, risks, and mitigation and contingency plans for all aspects of the project. These plans should include:

- Description of the proposed approach to managing risks and issues.
- A sample tracking document.
- Methodology to ensure that the State staff is involved in the process.
- Description of known risks and proposed steps to mitigate them.

Additional details may be provided in the response to relevant requirements and specifications. The vendor should highlight its and its proposed subcontractors proven ability to document and enact risk management strategies – especially as they relate to the development, production, shipping and receipt, administration (of paper-based and online assessments), scanning, scoring (human and artificial intelligence), data processing, reporting and psychometric activities of high-visibility assessments.

The vendor should submit sample risk assessment documentation used in an existing program to demonstrate the comprehensiveness of its ability to conduct contingency planning for a variety of

conditions. This risk assessment documentation may be submitted as an attachment to the proposal. This documentation should also highlight internal procedures and protocols for quality assurance in all aspects of delivering large-scale, statewide assessments – including test development, production, shipping and receipt, administration (of paper-based and online assessments), scanning, scoring (human and artificial intelligence), data processing, and reporting.

Risk Management

A risk is anything that could potentially affect the outcome of the project or any project deliverables and could have an impact on scope, schedule, or budget. Risks can come from any of the following areas: unclear requirements, people, processes, management, schedule, budget, expectations, security, training, assumptions, reviews, and quality assurance. It is critical that risks be identified early and that planning for the mitigation of risks takes place once a risk has been identified. The Measured Progress program management team will manage the workflow of the project and oversee the work of all internal functional areas and proposed subcontractors to ensure early identification of any risks that may jeopardize the work of the project.

As each risk is identified, the probability and impact of the risk will be determined. We will further analyze each risk by identifying the worst, best, and most likely outcomes. Project leaders will work to understand how the project could be impacted if a risk event were to occur. We will then prioritize the risk with respect to other risks. Risks will be assigned a high, medium, or low probability and solutions or mitigation strategies will be developed by the team. We will then make a decision about how to address a risk—accept that the risk exists and agree to move forward without taking action, mitigate the risk by implementing a plan to lessen the impact or likelihood, or transfer the risk to others to solve. We will provide documentation of risk analysis and action to NH DOE leadership at regular intervals to be determined with NH DOE input.

Samples of the electronic risk documentation and tracking system used by program management staff is provided on the following pages. This illustrates our proven ability to document and enact risk management strategies for all aspects of a comprehensive assessment program. Measured Progress follows this protocol for all contracts and takes ownership and responsibility for identifying, monitoring, and mitigating risk.

EXHIBIT 67: RISK DOCUMENTATION

Risks - New Item

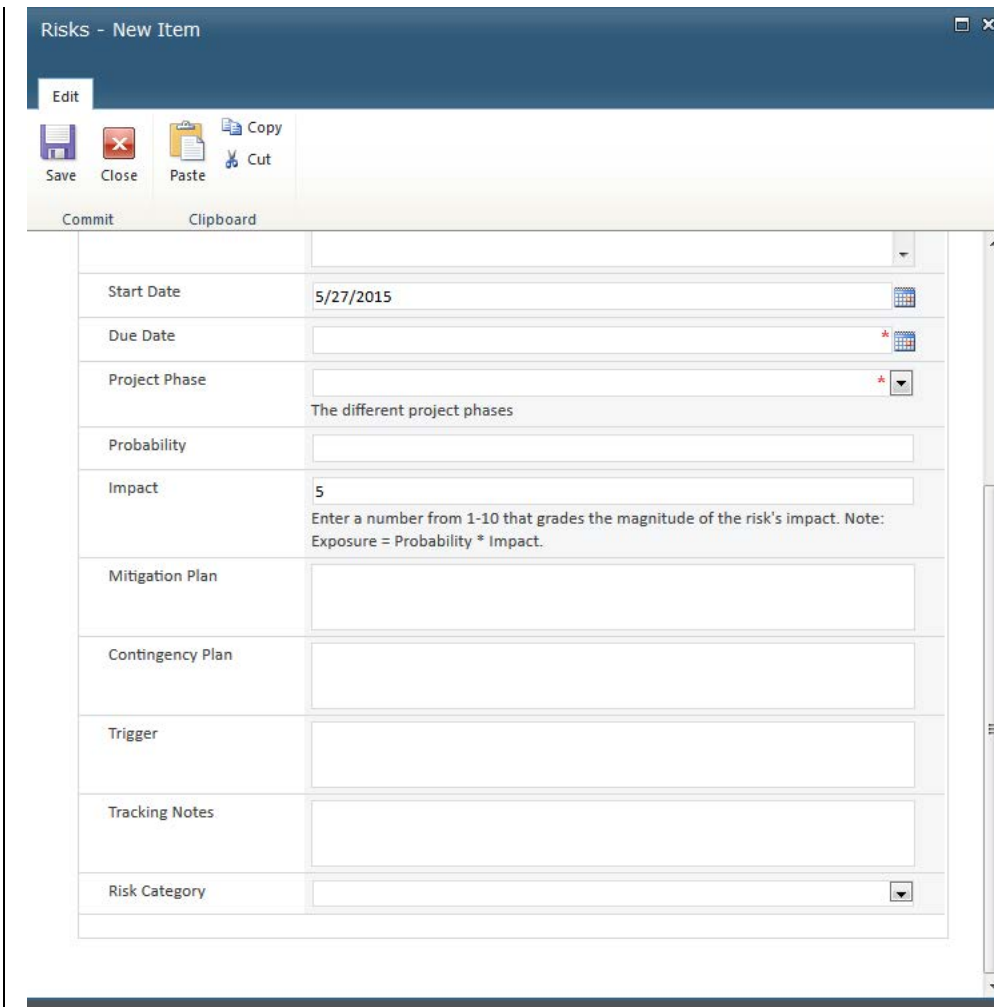
Edit

Save Close Paste Cut

Commit Clipboard

The content of this item will be sent as an e-mail message to the person or group assigned to the item.

Title	<input type="text"/>
Attachments	Click here to attach a file
Status	Not Started
Assigned To	<input type="text"/>
Description	<input type="text"/>
Start Date	5/27/2015
Due Date	<input type="text"/>
Project Phase	The different project phases
Probability	<input type="text"/>
Impact	5 Enter a number from 1-10 that grades the magnitude of the risk's impact. Note: Exposure = Probability * Impact.
Mitigation Plan	<input type="text"/>
Contingency Plan	<input type="text"/>



The screenshot shows a web-based form titled "Risks - New Item". At the top, there is a toolbar with buttons for "Save", "Close", "Paste", "Copy", and "Cut". Below the toolbar, the form contains several input fields:

- Start Date:** 5/27/2015
- Due Date:** (empty)
- Project Phase:** The different project phases
- Probability:** (empty)
- Impact:** 5. Below this field, there is a note: "Enter a number from 1-10 that grades the magnitude of the risk's impact. Note: Exposure = Probability * Impact."
- Mitigation Plan:** (empty)
- Contingency Plan:** (empty)
- Trigger:** (empty)
- Tracking Notes:** (empty)
- Risk Category:** (empty)

These have both been used as part of a prior contract engagement and satisfy the stated request.

Quality Assurance

Measured Progress currently manages large-scale general and alternate assessment programs for approximately 15 states. Measured Progress has been growing as a trusted assessment provider and partner for more than 30 years. This success would never have been possible had we not fully grasped the critical nature of quality-control concerns to our clients and responded with an outstanding record of accomplishment. We understand that ensuring security and quality are of paramount importance in maintaining the highest possible standards of perceived fairness, integrity, and public confidence in the NH DOE assessment program.

Quality Assurance is an area that is continuously being reviewed and enhanced. At Measured Progress, QC starts within program management. We encourage all project and program management personnel to become certified as Project Management Professionals (PMP) through the Program Management Institute (PMI). This demonstrates not only a commitment to standard processes but also to quality across the company. In addition to PMP certification, our program management team also focuses on documenting

and continually refining best practices across the management of large-scale accounts, in most instances States. We believe this shows a major commitment to managing quality within our contract efforts.

Central to our quality assurance approach is:

- Redundancy at each critical stage of the assessment cycle
- A myriad of electronic tracking and monitoring systems with human oversight
- Close monitoring of critical hand-offs
- In-depth review of procedures following each administration
- Multiple quality initiatives that run throughout the organization

Information Technology Quality Assurance

We have made a major investment and commitment within the technical areas to integrate ITIL (Information Technology Infrastructure Library) best practices as part of our ITSM (Information Technology Service Management) model build out. ITIL (<http://www.itil-officialsite.com>) is a public framework that codifies best practices that align information technology with core business processes and the service requirements of clients. The goal of ITIL is the continual measurement and improvement of the quality provided by any IT organization. Key members of our infrastructure group within information technology are ITIL-certified. In addition, all members of the information technology group have been trained on the ITIL framework.

ITIL focuses on four areas that underpin high availability, stability, and quick resolution of issues for customers. All of the following have been adopted by Measured Progress:

- **Incident:** The purpose of incident management is to restore normal service as quickly as possible, and to minimize the adverse impact on business operations. Incidents, fielded and documented by service centers/help desks, are typically resolved quickly and are fielded by service centers/help desks.
- **Problem:** Problems are categorized as repeatable and/or issues that follow patterns. Problems are categorized in a similar way to incidents, but include root cause analysis of persistent issues to bring them to permanent resolution.
- **Change:** Controlling change within production environments, to minimize impact to clients.
- **Release:** High quality, controlled production releases with stable, well-tested code.

Recent QA/QC Improvements

Over the past three years, Measured Progress has also incorporated or expanded on other foundations of ITIL including the use of the following including:

- **Key Performance Indicators (KPI):** KPI's include things like system availability, help desk availability, and other key metrics defined within a service level agreement.
- **Change Advisory Board:** Changes to production environments occur within the context of a formal change management process. Cross functional teams review potential changes to minimize customer impact.
- Measured Progress has been adding to its portfolio of advanced monitoring tools to ensure system quality and performance. Our software quality assurance group has incorporated testing software

from Selenium to implement full scale automated testing of applications. Application monitoring tools within our infrastructure are used to proactively monitor applications.

Similar quality-focused initiatives are underway in other functional areas within Measured Progress as well, including item development through shipping, scanning and scoring. You will find reference to quality focused initiatives in other sections throughout this proposal. All quality efforts are focused on providing the best product to our clients. This effort is part of the fabric of both Measured Progress and our partners.

Measured Progress maintains a reputation within the assessment industry of being very client focused. The program management team maintains oversight and is directly involved with many project efforts. This hands-on approach provides the NH DOE with insurance that the project will stay under control. In addition, it puts the client in close communication with all aspects of the project through their program management contacts.

Operational Services Quality Assurance

From gathering accurate enrollment data prior to printing of test materials to accounting for 100% of all secure test materials upon their return, test administration is one of the most complex and critical components in large-scale assessment. We ship and track more than 10,000,000 products in 250,000 custom packages, and create and manage an additional 100,000,000 images from returned student work. We developed our processes using Total Quality Management (TQM) techniques, and continue to hone them in a culture of continuous process improvement.

In our Operational Services area QA/QC is a major focus. The underlying philosophy at Measured Progress is that processes are designed with quality built into them. We routinely employ quality control procedures to ensure that:

- Machine-scannable documents are printed to the precise specifications required for optimal processing via optical or image scanning
- Printing of all other materials is 100% accurate and error-free
- All numbered test materials are properly matched to each other and that all packaging, shipping, and distribution is carried out according to the defined standards
- All secure materials and completed response documents are fully accounted for when each package is received
- Stringent process controls and precautions that we employ during scanning operations offer a scanning accuracy rate comparable to that of the National Assessment of Educational Progress, a longstanding national program
- Data are captured in the most reliable, accurate, and complete fashion
- Rigorous and standardized data quality control checks are completed for every data transfer
- All phases of performance assessment undergo quality control processes—from organizing constructed responses for hand-scoring, to rubric development and scorer quality control systems design, to ongoing inter-rater score monitoring
- All phases of scoring and reporting are exhaustively checked before production

Scoring Quality Assurance

Quality control of machine and artificial intelligence scoring begins before tests are administered to the students. During the test construction process, Scoring Services staff conduct an independent review of all test forms. During this review, Scoring Staff answer all of the questions on the test, compare their answers to the established keys that will be used to score student responses to all machine scorable items, review the distractors (for the multiple choice type items) to ensure that none of the non-keyed answers are legitimate answers to any of the questions, and compare the placement of the items in relationship to other items to see if certain questions help suggest the correct answers to other questions on the test. For Technology Enhanced Items that have more complicated scoring rules or look-up tables, Scoring Staff also conducts an independent review of these scoring rules to ensure that we do not find any missing correct answers that need to be included.

During testing, the student's answers to questions are compared against these keys to provide the student score. After testing, responses identified in Data Analysis as having a large number of students providing the same incorrect answer are again reviewed to ensure the keys are accurate in the testing and scoring platform.

For Artificial Intelligence scoring of writing prompts, quality assurance starts at the field testing of the items. Writing prompts are scored by humans in the field test process in order to develop a pool of responses to use in calibrating an AI engine. During this scoring, Scoring Team Leaders monitor scorer performance by conducting Read Behinds to ensure that they are in agreement with how the scorers are evaluating responses. For AI engine calibration, these field test responses are also scored independently by two different scorers, with Scoring Leadership reviewing responses where scorers are discrepant from each other. These quality control tools during scoring help ensure an accurate sample of scored student work is used to calibrate the AI engine.

During operational scoring of Writing Prompts, humans will continue to provide verification of the AI scored items. 10% of writing prompts will also be scored by humans, with Scoring Leadership in place to compare any disagreements between the AI engine and human scorers. If needed, correction of the AI engine can occur in the rare event problems are identified.

Data Analysis and Reporting Quality Assurance

As the first step in our data analysis quality control procedures, prior to receipt of any data (typically months in advance), we will work with the client to ensure we have a full, complete, and documented understanding of the contract's analysis and reporting requirements. This includes documenting issues on how special cases are to be handled, which recipients get which reports, into which reports the students are aggregated, etc. These decision rules are critically important in ensuring we deliver accurate reports in a timely fashion. We perform the following checks as part of our QA process:

- Check conformance of the data file to specifications—check that all expected data fields are in the data file and that each field is populated with valid values.
- Data editing and clean-up—locate discrepant records, identify cases requiring special resolution, and provide initial checks of merged data files.
- Conduct preliminary analysis—check and resolve apparently invalid records in initial data (e.g., blanks, missing scores, out-of-range scores, duplicate lithocodes).

- Complete data analyses—check that data analysis and psychometric programs are compliant with decisions rules. Check that the results of data analyses are accurate and complete.
- Produce report files and score reports—check numbers of schools/students; check minimum/maximum of scores, standard errors, ranges, etc.; check weighted means of scores; check samples of reports at every aggregate level; check that all computed variables represent valid and reasonable values.

In addition to rigorous software quality assurance, all report deliverables Measured Progress produces will be sampled and reviewed by our team before they are presented to the NH DOE for review. We take responsibility for ensuring the accuracy of all of the assessment reports we produce, and we have consistently maintained our record of error-free reporting while meeting or exceeding report delivery timelines.

Program Management Oversight

Measured Progress’s program management team will schedule reviews and document signoffs for all deliverables at mutually agreeable times and will make them available upon request. During contract performance, we will document the steps, timelines, and staff involved in the quality-control procedures for each phase and deliverable of the project. As appropriate, Measured Progress will perform root cause analyses on any issues deemed to have a significant negative effect on the program and develop a mitigation plan to prevent any recurrence.

Shortly after the completion of each phase of the testing program, Measured Progress will provide a report that details the activities completed and provides recommendations for improvement for the next assessment cycle. This report will also detail any errors, problems and/or discrepancies by district and by school. The report will allow us to detect any patterns in the errors, problems, or discrepancies noted in the report and to use that information to clarify instructions in the assessment administration and/or test coordinator manuals or to update training materials. These scheduled reports will prove to be extremely useful tools to both NH DOE and to Measured Progress. We will complete and deliver each report, each year, within one month of completing the relevant phase.

In summary, quality is built into our processes. Ultimately our goal as a company is to allow every student to have a positive testing experience. This requires that quality be pervasive throughout our processes. Measured Progress has the experience, expertise, and technically sophisticated systems and processes necessary to produce and deliver all NH DOE assessment materials within the timeframes indicated by the RFP. We can ensure accurate and on-time delivery of materials to and from our facilities using our integrated tracking system that allows us to track packages in real time and maintain full accountability for all assessment materials at every phase of the project.

Measured Progress has consistently maintained the highest levels of accuracy and reliability throughout our operations by adhering to rigorous quality control procedures, following industry best practices, and the use of innovative technology. Our record of success and client satisfaction places us in a strong position to meet the stringent requirements of the NH DOE.

D-3 PROJECT EXECUTION

D3.1 Implementation and Operation

The vendor shall provide a detailed description of the roles and responsibilities of vendor staff and State staff during pre-implementation, Implementation, and operational phases of the engagement. The description shall include the amount of time required of each staff member and when their time is needed during the implementation and operational phases of the project.

A detailed description of the roles for the vendor staff may be found in Topic 29.

Topic 36 Implementation Approach

The vendor shall provide one or more feasible implementation plans and user readiness. For each plan provided:

- Identify timeframes for major milestones.
- Discuss cost implications of the plan, including impact on maintenance fees; and
- Address the level of risk associated with the plan.

The Project Work Plan included and found in Appendix 9 presents an approach to an overall implementation plan. Upon contract award, Measured Progress will formalize the project schedule tied to each of the major milestones along with our Work plan. The alignment of these documents will define the approach we will take to execute each assessment. Both the Work Plan and schedule will be submitted and approved by the NH DOE.

As part of our budgeting process we have included all maintenance fees and have captured all associated costs and license fees as well for our eMPower interim and summative products, our science item bank and the eMetric platform.

As part of our weekly Program Management meetings we routinely identify and discuss risk associated with our clients. It is during these discussions where the NH DOE and Measured Progress will address, monitor and, if necessary, discuss alternative strategies and plans for an identified risk.

Topic 37 User Acceptance Testing

The vendor shall provide a detailed description of the support the vendor will supply to assist State during user acceptance testing of the configured System for New Hampshire.

State staff will conduct Acceptance Testing, but support from the selected vendor is required. To define the type of support that will be provided, address the following questions:

- Describe your testing methodology and include a proposed test plan.
- Include the time the State will need to complete User Acceptance Testing of a component.
- Include a description of the support will be provided to prepare State staff during Acceptance testing.
- Include the preparation required for testing the configured Software.
- Include the documentation that will be available to the testing team for the configuration.
- Include any defects likely to be encountered. This information should be based on previous experience and include metrics from other projects to support the response.
- Include time frames for investigation of planned or suspected defects.

- Include time frame for defect correction.
- Provide a sample User Acceptance Test Plan from a completed project as an appendix.

Testing Methodology

Quality is a characteristic that is often difficult to assess until after an investment decision is made. Impressive feature sets and competitive pricing are enticing, but ultimately product quality prevails. eMetric has developed a two pronged approach to quality assurance to complement our agile development process. Our strategy allows for efficient and effective testing and is the cornerstone of a successful test administration.

eMetric uses an agile methodology allowing for iterative development and quality assurance. Agile processes lend themselves to regular progress reports and feedback sessions both internally and in collaboration with our clients. Before beginning development we analyze RFP requirements, conduct detailed discussions with clients, and invoke our extensive summative testing experience to meticulously draft requirement specifications. These requirement specifications are used by eMetric’s development, project management, and quality teams to draft technical stories that result in detailed test cases.

eMetric’s two-pronged approach involves multiple teams working in parallel to ensure each iteration of the iTester platform is functional and reflective of client requirements. The acceptance team interacts meticulously with the complete platform executing test cases and confirming all required functionality. This team utilizes a matrix of device configurations based on the requirements and supported devices and configurations. The quality engineering team conducts automated testing. Automated testing allows for powerful, repetitive test cases to be executed in a timely manner. The executed test cases are both client specific and shared among all iTester platform users. Client specific scripts ensure the platform incorporates customized functionality seamlessly. Shared scripts are pulled from a robust library that supports all iTester summative clients and ensures that core functionality and logic perform reliably.

Software Delivery Process

eMetric has developed a build pipeline for updates to the iTester platform. Code is built in a “Developer Environment.” To ensure no other changes to the code are made, the pipeline copies the Developer Environment Workspace and creates a “Test Environment”, which is accessed by the QA team in order to perform testing validations. The build pipeline then pulls components into an artifact for deployment to UAT and/or Production environments. This ensures that only components that have been thoroughly tested by QA and signed off on are pushed to client-facing environments. The eMetric DevOps team then takes the artifact and deploys it onto UAT/PROD and updates the component with the updated file(s). This allows the QA team to access the changed environment(s) and perform targeted tests to validate specific functionality of the update and other dependencies connected to that functionality. After the specific functionality of the update is verified, the QA team runs an end-to-end check on the system to ensure no other functionality is deficient.

Acceptance Testing

Before delivering the system to the State and its stakeholders, the following activities are completed as part of acceptance testing:

- Complete end-to-end integration testing
- Aggressive load testing to ensure the overall performance meets the criteria set forth by the State

- Smoke-tests on the inputs and outputs of the various modules with different recommended data formats and standards

eMetric will deploy the system at least six weeks prior to the testing window, and the State will have five days to conduct and complete acceptance testing. The Measured Progress management team will help support the NH DOE during their user acceptance testing. All components of the iTester system will be available for review from a student, administrator and district technology support role perspective. We use an Agile Software Solution Framework for our product development process. During the product development phase, we will review the current status of the platform with the State and stakeholders on a regular, agreed-upon basis. Based on the feedback that we capture from stakeholders, we can adapt what we build next by grooming the requirements. This approach allows the State and stakeholders to review/test the features during the development phase instead of waiting until the end of the project.

Defect Management

eMetric will process any reported issues according to severity level which are qualified as described in the following table

INCIDENT RESPONSE TIME

Priority	Description	Response Time	Time to Create Resolution Action Plan After Initial Response
Critical	Issue impacting multiple sites; critical service impacted; system is down	30 minutes from when issue is reported to eMetric	60 minutes
High	Issue impacting a few sites; non-critical service impacted	30 minutes from when issue is reported to eMetric	4 business hours
Medium	Issue impacting one site; non-critical service impacted	60 minutes from when issue is reported to eMetric	2 business days
Low	Procedural question or request	60 minutes from when issue is reported to eMetric	3 business days

D3.2 Ongoing Operations

Topic 38 Help Desk Support

The vendor shall provide a detailed description of support available to the State to help them with the process of uploading and receiving files and other aspects of data validation and correction. The vendor shall:

- Describe support for the State to assist with the process of uploading files and receiving files. Include hours of operation, response times, problem classification, and escalation procedures.
- Describe your electronic problem tracking process and tools used.
- Describe how user account management will be handled.

- Describe how general support and maintenance skills are transferred to State technical support personnel for knowledge sharing.
- Describe how support and maintenance issues are tracked detailing methodology and if any additional software is required.
- Describe process for maintenance of the general knowledge base.
- Describe any particular procedures required to handle escalation and emergency calls.
- Detail the plan for preventive maintenance and for upgrade installations.
- Detail the types and frequency of support tasks required.

The Measured Progress Client Care Center [CCC] will be available to the NH DOE to support their data and file uploading. Discussion of the CCC is presented in Topic 39 including:

- Hours of operation and response times
- Problem tracking and tools supporting this effort
- Escalation process and emergency calls
- User account management
- How the general knowledge base is maintained
- Use of a knowledge data base assessable to NH DOE personnel

Maintenance Windows

Measured Progress and eMetric understand the need for the iTester assessment portal to be available during normal business and peak hours. eMetric will coordinate all updates and maintenance on the system with the Measured Progress and the NH DOE in advance and will ensure that these updates do not impact student testing during the normal school days. Please see Topic 9 for more detail.

Topic 39 Support Center

The vendor'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 vendor'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 vendor's plan for maintaining a support center must meet the requirements described below.

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

- 1. The vendor 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 NH DOE management team.**
- 2. The vendor 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 5:00 p.m. EST/EDT. This includes a dedicated technical support line for NH districts, schools, and state representatives.**

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

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

5. The vendor 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); and
- Change management.

The vendor 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 vendor 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.

Measured Progress Customer Care Center

Measured Progress will provide a professional Customer Care Center (CCC) to support the NH DOE and its educators who have questions about assessment materials, student reports, return shipping of materials test administration, online systems, and other topics related to the NH eMPower and Science assessments. The primary function of the CCC is to provide telephone and email support to schools and educators of New Hampshire. Our CCC representatives take complete ownership of all issues from beginning to end and ensure that staff members will not ask a caller to hang up and call another group/partner.

New Hampshire will benefit from our extensive knowledge of common assessment issues and the knowledge base we use to service issues so they may be resolved quickly and consistently. The CCC representatives actively reviews the NH eMPower and Science assessment materials to remain informed about the latest updates to the NH eMPower and Science assessments and their supporting systems. In addition, our CCC representatives respond to issues regarding online platform and paper-based testing as

well, such as the ordering of additional materials (labels, test materials), workshop signup, UPS pickup assistance, and discrepancies.

CCC Staffing

We will staff our CCC to meet the NH DOE's needs throughout the year. The CCC strategically monitors all service activities through daily, weekly, and monthly reports via a tiered-level approach for escalating and resolving each query quickly and efficiently. We will monitor the NH DOE's requirements throughout the year and will make adjustments as needed to ensure appropriate coverage.

Customer Care Center Availability

The Customer Care Center will provide a New Hampshire-specific toll-free customer support number and an email address to the NH DOE and its schools. Support will be provided for anyone who has questions about assessment materials, student reports, materials distribution and receiving, test administration, online applications, and other topics related to the NH eMPower and Science assessment. We will ensure that all CCC representatives who answer calls are trained on the NH eMPower and Science assessment. Representatives will answer support calls and handle each request as competently as possible.

Measured Progress will provide Customer Care Center availability to the NH DOE and its educators from Monday to Friday 7:00 a.m. – 5:00 p.m. Eastern Time.

Our Customer Care Center and support lines will be staffed year round. We will adjust our staffing during all system configuration events, field-testing events, and scheduled test administration periods and will work with the NH DOE to refine CCC hours if necessary.

During regular Customer Care Center hours, our representatives will answer calls received during regular hours. Callers may expect their calls to be answered by a live person. Should call volume exceed capacity—or for some other unforeseen reason—and a caller reaches the voicemail system, our Tier I CCC representatives will return calls to the originator no later than twenty-four hours (or one working day) after receipt of their initial contact (“off-peak”) or within two hours (“peak”) during test administrations. In the case of inquiries received over weekends or major holidays, we will respond as early as possible the next business day. Outside of the stated CCC hours, a voicemail system will be available for educators and other stakeholders to leave messages. In addition:

- The CCC will respond to after-hours inquiries within one business day. Incoming phone or email inquiries will be resolved live whenever possible. We will discuss this in more detail in the sections that follow.
- For Tier III (Level 3) technical issue service requests, as appropriate, either Measured Progress or eMetric will provide resolution or status update email and/or telephone call within two working hours of the original service request, and every 24 hours thereafter until a solution is found. Service requests related to administration irregularities will be forwarded to NH DOE staff for resolution.
- It is our policy that Measured Progress program management keeps the NH DOE informed of any Severity I issues that may be under review by information technology support services, project management, or the NH DOE itself.

Service Level Objectives

Measured Progress maintains the following cost-effective service level objectives with regard to phone and email/voicemail support, tied to average speed of answer and average response time respectively.

EXHIBIT 68: SERVICE LEVEL OBJECTIVES

Support	Measure	Description	Target
Phone	Average Speed of Answer	The average hold time for calls that are answered by a representative.	Two Minutes
Email/ Voicemail	Average Response Time	The average time it takes for a representative to reach out to the client. The measure starts when the email is received and ends when a rep first reaches out to the client.	Within 1 Business Day

Tiered Support Model

Measured Progress maintains a tiered support model within its CCC, as described below.

Tier I

- The service representative will be responsible for owning the support ticket from beginning to end while keeping Program Management updated every step of the way. He/she will respond to basic policy, materials, and procedure questions including password resets, administration procedure questions, ordering of additional materials (labels, test materials), workshop signup, UPS pickup assistance, and discrepancies.

Tier II

- The CCC representative will engage the caller with common mid-level technical questions such as local system set-up or data formatting, as well as solutions to other identified issues that may be more technical, but for which systems engineers have provided resolution methods. If necessary, the appropriate program management representative(s) will be contacted to assist with resolution and/or engage the NH DOE as needed. Policy questions will be forwarded to the NH DOE staff. Responses to Tier II issues will be documented in the knowledge base and service representatives will be trained so that such issues subsequently can be handled as Tier I.

Tier III

- These events often require Subject Matter Experts (SMEs) in a particular area such as development, systems engineers, and/or third party support. The CCC representative or the Program Manager will identify the necessary resource, make contact, and provide resolution to the caller as quickly as possible. The person to whom Tier III requests are escalated will provide resolution or status update via email response and telephone call within two working hours of the original service request, and every 24 hours thereafter until a solution is found.

Tier III Support from eMetric

Measured Progress will provide Tier I and Tier II support, with eMetric providing—if necessary—Tier III support for the online administration, assessment, and reporting modules that teachers and students will use. This tiered system will appear seamless to the caller, as they will call a single number for all levels of support.

Knowledge Base

We will add NH DOE-specific knowledge to our knowledge base and ensure that Customer Care Center representatives are familiar with all policies and procedures so that they will effectively and efficiently handle calls from the field. As we receive NH eMPower and Science assessment support calls from educators throughout the state, staff will identify answers to questions and collect them via our tracking tool. From that information, we will build and maintain an extensive knowledge base that is built in a content management system called Confluence. This tool allows us to address common issues and frequently asked questions (FAQs) about the NH eMPower and Science assessments for CCC representatives to use. The knowledge base can also store information about current activities and deadlines.

Issue Tracking and Reporting

The software at the heart of Measured Progress's Customer Care Center is ServiceNow *Geneva*. We utilize a 'Software as a Service' model with ServiceNow, which hosts and maintains the current version of the software for us. All calls to the CCC regarding the NH eMPower and Science assessments are tracked with ServiceNow to identify common issues. Measured Progress understands that the best way to solve an issue for a user is to fix it before it becomes an issue. We also know that call trends may indicate potential changes to the training manuals or interface that could reduce stress for educators of the NH DOE.

All inquiries to the Customer Care Center will be tracked using an Information Technology Infrastructure Library (ITIL) based tool suite. This software provides tracking number assignment, facilitates efficient incident escalation, and supports use of the tool suite's native feature set to, for each ticket, identify the relevant party's name(s) and organization(s), the nature of the inquiry, date/time, resolution summaries, CCC representative identity, the caller's name, and other information as needed.

The telecommunications systems employed by Measured Progress allow us to generate a variety of reports that track: number of calls, time on call, abandonment rates, answer time, etc., thus providing the NH DOE with complete transparency. Logs and reports will be provided to the NH DOE as expected, and the CCC will notify program management (who will notify the NH DOE) of any communication regarding sensitive or urgent issues. The CCC also tracks incoming call volume and adjusts resource allocation accordingly.

Support Escalation for Online Applications

For service calls related to issues concerning the various online technologies and processes that support both computer- and paper-based testing, the CCC representative will forward the call details to a product support specialist, as necessary. We will use the following tier-based issue escalation procedures for all received technology-related calls:

Severity III

- The service representative will usually resolve Severity III issues. This category encompasses all general user issues or administration questions not related to software defects or system outages.
- In the event that a service representative cannot provide resolution, the issue will be forwarded to the product support specialist for resolution or for priority code reassignment.

Severity II

- We will route Severity II issues to the product support specialist. If a known resolution exists, the product support specialist will forward the resolution to the service representative, who will then assist the issue originator.
- If there is no known resolution or workaround, we will forward the issue to the hosting or platform provider for verification. Once verified, the issue will be forwarded to our software development department for resolution. The resolution will be forwarded to the hosting or platform provider for verification that the resolution will work as intended. When the resolution is identified and verified, the resolution will be forwarded to the product support specialist, who will either contact the originator, or forward the resolution to a service representative to contact the originator.
- When possible, the service representative who received the contact will provide the resolution to the originator.

Severity I

- We will immediately route Severity I issues to the CCC manager for isolation and resolution. If the Severity I issue is a system outage, the CCC manager will isolate the issue and identify the resolution with assistance from the appropriate Tier III representative.
- Once the fix is applied and tested, the service representative will be notified and will contact the issue originator with an update. If the Severity I issue is a critical defect, we will forward information about the issue to the hosting provider for verification and resolution.
- When the resolution is identified, verified, and applied, the hosting provider will notify the CCC team, who will contact the issue originator.

Escalation Response Operations

Measured Progress will operate according to the service levels outlined in the table below. These service levels apply to each of the assessment's online software systems.

EXHIBIT 69: SERVICE LEVEL DESCRIPTIONS FOR MEASURED PROGRESS SYSTEMS

Priority/ Severity	Category	Target Time to Resolution	Time to First Response (Phone)	Time to First Response (Email)	Description
III	Planned/ Minor	< 48 hours	< 2 minutes	< 1 business day	A general inquiry, routine break/fix incident, of an error in documentation, or a recommendation for future product enhancement or modification.
II	Medium	< 24 hours	< 2 minutes	< 1 business day	An incident that significantly affects a system or service, causing business for end users, partners, or clients to function in a state of degraded performance or functionality. This issue involves partial non-use of services, where the service continues to function and has a workaround available.
I	Critical/ Major	< 8 hours	< 2 minutes	< 1 hour	An incident that critically affects a system or service, which halts business for end users, partners, or clients; presents a security risk or compromises data integrity.

Reporting System Outages

All system outages affecting online program services should be reported to the Customer Care Center. The CCC representatives will report all outages at schools received during support hours and log them within 15 minutes of receipt, and immediately assign them Severity I status. All Severity I issues will be escalated to the CCC manager and program management. The program manager will be notified via both telephone and email. A resolution will be identified and fixes applied according to service levels depending on the season (peak/off-peak). Upon resolution, the program manager and the party who reported the outage will be notified. We will respond to reports of system outages received via voice-mail or email after support hours at the start of the next business day.

It should be noted that a system outage might be defined as a state wide, district wide, regional, or school-based technical issue that may require local intervention to resolve. The CCC will assist local technology coordinators to the degree it can, to troubleshoot any interruptions in service. However, some connectivity or local network configuration issues are beyond the control of the CCC. If the State, its districts, or its schools experience protracted technology configuration challenges, the CCC will escalate through the Measured Progress project management group so that the NH DOE can be made aware of any issues.

Service Level Agreement Support Processes

Availability

eMetric designs systems and infrastructure to be as fault tolerant as technically possible. Web applications are designed using n-tiered architecture with load balancing services providing a very high degree of fault tolerance. eMetric will provide 99% availability between the hours of 6:00 a.m. and midnight Eastern Time, seven days per week for all web-based applications.

The clustered environment also allows a controlled application of critical security patches during production cycles without impacting production service levels. The fail-over facility is used to remove from production and patch one server at a time assuring proper functionality before deploying the production server back into the production configuration. This process further assures the failover function is working properly in an emergency.

Reliability

eMetric understands the responsibilities associated with administering assessments and prides themselves in staying up-to-date with industry standard best practices. They meticulously and thoughtfully plan for business interruption or disaster to ensure service delivery based on agreed SLA levels. eMetric utilizes Edge Hosting and Amazon Web Services. Both service providers are SAS70 compliant and offer PCI grade network configurations. These facilities have enterprise grade physical security controls to safeguard critical infrastructure. To ensure continuous power even in emergency situations, each facility has its own diesel generators. In the case of a power outage or fluctuation, the UPS (Uninterruptible Power Supply) systems will engage and provide power during the time required for the generators to begin to power the facility. The generator systems are tested on a regular basis by our service providers.

eMetric's philosophy is to build redundancy and fault tolerance in the design and implementation of their computing infrastructure and applications. This approach reduces the potential for serious downtime or interruption. They have multiple application servers, database servers, and network devices such as load balancers and switches configured to allow for operations to continue, should one resource fail. Their service providers maintain a supply of extra equipment that is available for immediate deployment. eMetric has negotiated with their providers for expedited services of any other technology that is needed.

For data backups, eMetric uses a combination of solutions across various environments including their headquarters, where most data processing operations and software development activities are conducted, and at data centers, where all of their applications are deployed and made available for the end-users. Their backup solutions are designed to offer reliability, flexibility, and redundancy. eMetric's data backup processes and procedures follow industry best practices.

Latency

iTester is compatible with both wired and wireless networks and eMetric has optimized the network interface of the software system to work reliably on high latency networks such as low signal wireless ranges and satellite broadband networks. The architecture of the software system offers predictable performance and an anxiety-free test experience for students. To account for the extreme conditions that exist in some schools across the country, iTester offers an optional caching module, Test Monitor, which is described in detail in Section 4.16.

Disaster Recovery Plan

Thorough disaster recovery plans, inclusive of hosting services, are maintained by Measured Progress and by eMetric, and are included in this response as Appendix 10.

Server Backup Plan

eMetric uses log shipping and mirroring features provided by Microsoft SQL Server technology to backup databases. All databases on the primary production database server are configured to ship/mirror to a secondary production grNH DOE database server that is always available on stand-by.

Most databases are configured for one hour log ship intervals while some databases that do not change on a day-to-day basis are configured for 24 hour intervals. Periodic audits are also conducted to track the activity of log shipping activity using email alerts to monitor stale and unsuccessful log ship attempts. eMetric is confident they can fail over to their stand-by database within an hour in case of major outage affecting the primary database server. All internal databases and mission critical virtual machines used for day-to-day business activities are backed up on a daily basis and archived at Amazon Web Services.

Recovery Point Objective

eMetric's approach to system design and implementation takes into consideration that at any point in the software development cycle or production operations, there may be a need to recover data. They have developed their approach to backups after a careful evaluation process to determine and classify critical data. This evaluation eliminates data duplication and improves efficiency of the overall backup process.

For all critical systems, they use RAID (Redundant Array of Independent Disks) volumes that offer redundancy and safeguard against hardware failures. These resources are also secured using industry standard ICISA certified firewall solutions. Critical data such as Application Source Code is backed up on a nightly basis. Other important data such as business requirements, specifications and documentation are stored on redundant cloud services with guaranteed SLA's. Secure information, such as student assessment data that falls under FERPA guidelines, are stored within a secure internal NAS solution. Access to the NAS is only assigned to designated employees.

Maintenance Windows

eMetric understands the need for the iTester assessment portal to be available during normal business and peak hours. eMetric and Measured Progress will coordinate all updates and maintenance on the system with the NH DOE in advance and will ensure that these updates do not impact student testing during the normal school days.

Topic 40 Technical Reporting

The vendor will produce and maintain adequate documentation of all technical processes, procedures, and analyses conducted on an ongoing basis throughout the registration, testing, and reporting cycles. 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 NH DOE and conveys useful information to the NH DOE about the technical quality of the assessment program.

Measured Progress is renowned for the quality of our technical reports. We have received four awards from Division H (School Evaluation and Program Development) of the American Educational Research

Association for our work in this area. Following each year's test administration and reporting cycles, we will develop and produce comprehensive technical reports for NH DOE, serving as the documents of record for the year's testing activities.

We have significant experience assisting our client states with preparations for peer review and in meeting the standards required under the U.S. Department of Education's (USED) Review Guidance for Evaluating Evidence of Final Assessments under Title I of the Elementary and Secondary Education Act. For example, for the state of Montana, in 2003, we began field-testing items and initiated operational testing in 2004. Around the time we entered into the contract, the state of Montana signed a Federal Compliance Agreement. The acceptance of the agreement meant that the state was required to submit quarterly compliance reports. In support of this endeavor, we assisted the state's assessment director in preparing for peer reviews by providing necessary testing data, packaging the data so that the state could perform AYP calculations, and provided related documentation. As a result of the state's peer review efforts, Montana was formally released of the Compliance Agreement in 2006. More recently, Measured Progress has provided assistance to the states of Maine, New Hampshire, and Florida ALT during the course of their peer reviews.

We will ensure that the tests we design for New Hampshire are designed in such a way as to ensure they accurately measure student proficiency and allow for the resulting data and reports to demonstrate the technical quality and validity of the assessments. The technical reports we produce may also be used as evidence of technical quality.

Topic 40.1 Technical Report

The vendor 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 NH assessments. As appropriate, the annual Technical Report must also provide evidence that the planned processes and procedures were implemented for the given year.

The Technical Report is one piece of evidence produced to demonstrate that each of the NH assessments and the assessment program as a whole serve their intended purposes and meet accepted professional standards for educational testing.

The NH DOE 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 NH 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 NH DOE 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 NH DOE in a digital format suitable for posting and distribution through the NH DOE website.

The vendor'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 vendor's response to fulfill this requirement.

Each year our psychometricians will provide NH DOE with a technical report that contains the necessary evidence to demonstrate that the assessments serve their intended purpose, are aligned to the standards,

fulfill the test specifications, and meet accepted professional standard for educational testing (AERA, APA, & NCME, 2014¹²). Here we provide a [link to the Massachusetts 2015 Technical Report](#) (MCAS & MCAS-ALT) to satisfy the requirement above as an example of our partnership with a long-time client.

Our psychometricians will gather the information required for the technical reports during the year and complete assembly of the document after the final reporting deliverable is released. The technical report will go through a series of internal reviews, followed by a pre-release review with NH DOE. Then we will do a final editorial review before releasing the technical report for publication.

The annual technical reports will provide the NH DOE with the necessary evidence to demonstrate that the assessments serve their intended purpose, are aligned with the New Hampshire academic standards, fulfill the test specifications (including accessibility criteria), and meet accepted professional standards for educational testing. The technical report will document all processes and procedures undertaken prior to, during, and after administration each year. The technical report will also provide comprehensive information related to statistical analyses, and will document the validity and reliability of the assessments while providing evidence of compliance with all state and federal regulations.

The technical report is intended for technical audiences and will include all of the information necessary for a reader to make an informed judgment about the technical quality of the program. Typically, the technical reports we produce for the program will provide information on the following broad topics: purpose; test blueprint; alignment of the test to the relevant content standards; test development procedures; reliability data; validity data; accommodations and testing of students with special needs; security; administration procedures and issues that arose during administration; scoring; psychometric analyses; IRT calibrations; equating and scaling; standard setting; opportunity to learn data; reporting procedures and formats; special studies; and appropriate use and interpretation of test data. The technical report will also include technical data required by the Standards and Assessment Peer Review by the Office of Student Achievement and School Accountability of the U.S. Department of Education.

We have built production and delivery of the New Hampshire Technical Report—per the NH DOE’s timing requirement—into the Project Schedule included with this proposal as Appendix 2. We confirm that we will deliver it in a format suitable for posting and distribution through the NH DOE website.

Topic 41 Technical Advisory Committee

The vendor will support two meetings per year of a NH Assessment System Technical Advisory Committee.

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

¹² American Educational Research Association, American Psychological Association, & National Council on Measurement in Education (AERA, NCME, & APA). (2014). *Standards for educational and psychological testing*. Washington, DC: American Educational Research Association.

The vendor 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.

Our clients rely on us for advice on topics regarding psychometric analysis and special studies. One of our strengths is our ability to help clients address technical needs in a way that meets professional standards, such as those set forth in the *Standards for Educational and Psychological Testing* or USDOE peer review guidelines. We will work with the New Hampshire Technical Advisory Council to provide NH DOE with valid, reliable, and defensible assessment programs.

We look forward to collaborating with New Hampshire's TAC two times per year. We will arrange for psychometric and program management staff assigned to the project to be attendance at these meetings, to be held in the Concord. Our budget reflects all travel arrangements and expenses for Measured Progress staff to attend these meetings. We will support the NH DOE in the preparation of material for the meeting, distribute the materials two weeks in advance of the meeting and organize all meeting logistics, including covering the costs of the meeting and TAC stipends and travel costs for 4 TAC members twice a year.

D-4 PRICING

Topic 42 Pricing Model

The vendor shall provide a detailed description of the Pricing Model for the proposed solution that addresses the following components:

- Fixed prices;
- Recurring prices;
- Price per transaction;
- Price per batch;
- Implementation pricing;
- Operations pricing;
- Transition services pricing; and
- Other applicable prices.

The vendor shall include all components found in Appendix F. and D-5 ASSURANCE AND TRANSITION.

See Section VII.

Topic 43 Quality Control and Sign-Offs

Reviews and signoffs for all deliverables shall be documented and available to NH DOE upon request. The vendor shall document the steps, timeline, and staff involved in the quality control procedures for each phase and deliverable of the project.

Each deliverable to be reviewed and signed off by NH DOE will be accompanied by clear instructions regarding scope of review, the key staff needed to review, a form for feedback and a schedule for receipt of feedback and final approval. All review comments and approvals will be archived and available to NH DOE upon request.

As part of our Quality Control process QC starts within program management. Our program management team documents as part of their areas of responsibility. We believe this shows a major commitment to managing quality within our contract efforts.

Central to our quality assurance approach is:

- Redundancy at each critical stage of the assessment cycle
- A myriad of electronic tracking and monitoring systems with human oversight
- Close monitoring of critical hand-offs
- In-depth review of procedures following each administration
- Multiple quality initiatives that run throughout the organization

As part of our project Work Plan we identify the quality review steps and include these control steps as part of our annual project schedule. Should the NH DOE wish to see the review sign-offs for project deliverables, Measured Progress will provide these.

Topic 44 Invoices

The vendor shall submit invoices according to the procedures and requirements set forth by NH DOE. It is expected that the payment schedule for this contract will be four quarterly and one final payment for the services performed and deliverables provided during each period. The fiscal year for the State of New Hampshire runs from July 1 to June 30. The last invoice for each fiscal year must be received by June 15. The final invoice for each assessment cycle must be provided by September 1.

Measured Progress is aware of and accepts NH DOE invoicing procedures (as defined below, which will be mutually agreed to once contract is awarded) and acknowledges fiscal year. We will create a payment schedule for the contract based on quarterly deliverables once contract is mutually agreed to.

“The vendor shall submit correct invoices to the State for all amounts to be paid by the State. All invoices submitted shall be subject to the State’s written approval, which shall not be unreasonably withheld. The vendor shall only submit invoices for services or deliverables as permitted by the contract. Invoices must be in a format as determined by the State and contain detailed information, including without limitation: itemization of each deliverable and identification of the deliverable for which payment is sought, and the acceptance date triggering such payment; date of delivery and/or installation; monthly maintenance charges; any other project costs or retention amounts if applicable.”

Topic 45 Transition

Proposals must include an end of service transition plan detailing the transfer of relevant assessment documents and materials. An organized transition that ensures the continuity of the state assessment program is of the essence. The Transition Plan must address the transfer of materials, both pre-existing and newly developed, from the vendor to NH DOE or another vendor upon termination or expiration of the contract.

The vendor shall assist NH DOE with all activities required to transfer all assessment documents and materials during the transition phase. Draft transition plans shall include procedures for the transition of documents and materials.

The vendor shall ensure that all relevant documents and materials, including but not limited to those identified in the following list are transferred efficiently among NH DOE, the current vendor, and NH DOE's future vendor(s):

- Test development - all critical documents and materials used in the test development process;
- Item and test specifications – all item format details, test map requirements, test blueprints, and technical reports;
- Test books –all paper and electronic test booklets and electronic answer documents from previous test administrations; test maps for each form from the previous year's administration with keys and metadata;
- Passages and artwork – all photocopies of the original passages with source documentation, copies of contracts, original electronic art files and applicable permission information;
- Item bank, item and test statistics – all item-level metadata and previous usage statistics, available test-level statistics, previous anchor range finding papers, rubrics, constructed-response materials such as training material protocols, previous operational and field test usage of each item year and form item position status;
- Program administration - all critical documents and materials used with the test administration process;
- General program documentation –all critical documents and materials used for general program documentation and summary reports;
- Reports –sample copies of all reports provided to districts and schools;
- Manuals/guides –sample copies of all guides and manuals (hard copy and electronic versions) for the operational test administrations, and copies of all electronic materials posted on the state website during the operational test administration;
- Scoring information - all critical documents and materials used in the scoring process;
- Scoring/reporting specifications – all documentation regarding scoring rules, aggregation rules, roll-up algorithms, and tables used to calculate student, school, district, and state results;
- Psychometric and related assessment information required for the program - all critical documents and materials used for psychometric analyses and related procedures;
- Professional development – all critical documents and materials used for professional development;
- Editing Specifications – all documentation that outlines how the state would like answer documents edited during the scanning process
- Equating data files –all documentation that outlines layouts for files including item statistics, master file, pre-id, school/district score data and state-level score data;
- Performance scoring specifications – all training papers, anchor sets, calibration papers, rubrics, and constructed-response scoring rules; previous year's score distributions for each item and historical reader agreement rates;
- Technical reports and other validity and reliability reports - all electronic copies of past technical reports produced by the previous vendor and electronic copies of any other reports that discuss the validity or reliability of the assessments;

- **Project plan** - all documents that outline the tasks/deliverables and corresponding schedule for those tasks/deliverables;
- **Schedules** - all previous project schedules containing dates/durations for the following tasks:
- **Developing items, forms, and materials**
- **Enrollment and pre-identification**
- **Receiving and scanning**
- **Scoring and reporting**
- **Packaging specifications** - all documentation concerning packaging algorithms and shipping points; and
- **Print specifications** - all spreadsheets detailing print specifications for test booklets, scannables, answer documents, labels, envelopes, and manuals.

Draft Transition Plans shall include procedures for the transition of documents and materials related to the following:

- **Program administration** - The vendor shall ensure that all critical documents and materials used with the test administration process are transferred efficiently between NH DOE and/or vendors.
 - **Test development** - The vendor shall ensure that all critical documents and materials used in the test development process are transferred efficiently between NH DOE and/or vendors.
 - **Scoring information** - The vendor shall ensure that all critical documents and materials used in the scoring process are transferred efficiently between NH DOE and/or vendors.
 - **Psychometric and related assessment information required for the program** - The Vendor shall ensure that all critical documents and materials used for psychometric analyses and related procedures are transferred efficiently between NH DOE and/or vendors.
 - **General program documentation** – The vendor shall ensure that all critical documents and materials used for general program documentation and summary reports are transferred efficiently between NH DOE and/or vendors.
 - **Professional development** – The vendor shall ensure that all critical documents and materials used for professional development are transferred efficiently between NH DOE and/or vendors.
- The vendor must describe the process for the safe handling of State data during the transition phase.

Transition of Contract

At the close of the contract term, Measured Progress will work closely with the NH DOE and their identified vendor to plan and execute the contract end of service transition activities. Measured Progress suggests that the NH DOE consider convening a 1 day meeting with the identified vendor, the NH DOE and Measured Progress to establish clear lines of communication and develop both a timeline and deadlines for all end-of-contract transition activities. This meeting could also discuss relevant topics that ensure a clear and common understanding of process and deliverables.

Below is a sample agenda for the suggested meeting:

Purpose
<ul style="list-style-type: none"> ■ Present overview of discussions with new vendor for clarification and approval ■ Establish roles and responsibilities ■ Establish communication protocols ■ Discuss best practices for program transition ■ Review draft schedule ■ Discuss need for further elaboration on existing contract processes, procedures and stated NH DOE expectation

<ul style="list-style-type: none"> ▫ Acceptance criteria and submittal process finalized ▫ Establish 'ground rules' for proceeding
Post Meeting Deliverables
<ul style="list-style-type: none"> ■ Transition project plan finalized including <ul style="list-style-type: none"> ▫ Communication plan ▫ Schedule ▫ Listing of program-specific deliverables and tracking chart identified by person/organization ▫ Risks ▫ Submittal and approval process ▫ Acceptance criteria for each of the transition deliverables which may include additional labor not currently budgeted ■ Meeting minutes

After transition activities have been discussed with Measured Progress, the identified vendors, and NH DOE staff roles and responsibilities should be understood. Measured Progress suggests that a transition plan be written documenting the activities and timeline within an agreed upon timeframe. The transition plan would include specific transition requirements/deliverables, data or information gathering activities, and handoff of files and their formats and a schedule for each of the identified deliverables. Once all the end of contract transition activities are understood Measured Progress will document activities specific to our role and prepare a change order for approval to support this last phase.

Transition Process

Measured Progress could lead and facilitate all transition activities in cooperation with specifically identified resources within both the new vendor organization and NH DOE. A transition team for the program could be formed comprising the following members:

- Chair and final decision maker – NH DOE contract lead
- Measured Progress contract lead
- New vendor contract lead (and leads of any other prime vendors)

It is the intent and goal of the transition team to minimize the impact on last year contract operations to the greatest extent possible. The overall transition plan will be guided by the Operational Best Practices for Statewide Large-Scale Assessment Programs copyright 2013 by the Chief State School Officers and the Association of Test Publishers, Washington, D.C.

Transition Plan—End of Service Contract

Measured Progress has worked with state agencies to transition large-scale assessment programs in the past, and knows that the key to a good transition will be full communication among the vendors, business partners, and the NH DOE. We take pride in our cooperative corporate mindset, especially our sense of urgency and our intensive focus on our clients’ needs. These attributes afford us a proven and outstanding track record in this area. Our ultimate goal during contractor transitions is the determination and focus on seamlessly continuing the meaningful and effective assessment of students but still taking into consideration agreement terms and conditions specifically related to ownership of assets including the eMPower Assessments and the Measured Progress Science item bank.

Transitions between testing vendors and clients may create challenges. Measured Progress is aware of the work involved in transition planning and execution beyond the usual day-to-day operations of an existing contract. NH DOE should have every expectation that the final plan will meet all stakeholder requirements.

Based on our experience, we realize that it is important to begin planning for transition before the expiration of the current contract. To that end, we have included in this section of our proposal a comprehensive list of deliverables and information necessary to facilitate the implementation process. This list was compiled with the assistance of our internal functional departments who are involved in the work. The draft list will form the basis for discussion of the transition.

Good communication between both vendors and the NH DOE will be essential to overcoming the known challenges of a contractor transition, and we will conduct and participate in transition discussions and action plans to facilitate communication. Best practices and lessons learned have led us to focus on transition plans during the initial transition planning meeting, as well as ongoing Weekly and Monthly Management Meetings with the NH DOE, as necessary. These meetings will focus on all the deliverables associated with each aspect of the contract and data transfer protocols and secure site location. We encourage the NH DOE to articulate its expectations for deliverables, process, and archival hand-offs so that the NH DOE's expectations are clear to all parties. Specifically, the meetings could include focus and discussion on relevant topics below:

- Ownership of assessment materials and data
- Overall transition management process and schedule
- Contract schedule of deliverables and timelines
- Program administration
- Test development
- Developing items, forms and materials
- Test books
- Passages and artwork
- General program documentation
- Reports
- Manuals/guides
- Scoring information
- Scoring and reporting specifications
- Psychometric and related assessment information
- Professional Development
- Editing specifications
- Equating data files
- Performance scoring specifications
- Technical reports and related validity and reliability reports

-
- Project plans
 - Schedules
 - Enrollment and pre-identification
 - Receiving and scanning
 - Scoring and reporting
 - Packaging specifications
 - Print specification
 - Task and item migration

We need to know specifically how each of the deliverables are needed to be handed off by us to provide a seamless transition. Each of these broad-level contract deliverables is composed of many smaller deliverables and process considerations. Our transition planning will include the use of our cutting edge tracking process to assure that every important detail is addressed. For example, the plan for “task and item migration” in the list above would detail the migration of data for tasks and items from our database to the NH DOE or a new vendor.

The following exhibit provides an illustration of deliverables and information that may be necessary to facilitate the end of contract transition. The exhibit includes the specific deliverables identified by each of Measured Progress’s functional areas, along with acceptable formats for a typical transition. This list will form the basis for further discussion once we have a better sense of the exact deliverables and assets to be transitioned and the timeframes. Materials owned by Measured Progress such as eMPower and the science items bank assets are not transferable.

EXHIBIT 70: ILLUSTRATION OF A TYPICAL CONTRACT TRANSITION REQUIREMENT

Measured Progress Functional Area	Deliverable needed from the NH DOE or current contractor	Acceptable format(s)	Approximate date for transfer by Measured Progress
Data Reporting Services	Student results file from the most recent operational and retest administrations. This data will be used to understand current reporting rules and to generate baseline performance results.	Must be the data file delivered by current vendor to the NH DOE. *.csv file	
	File layout for student results file. Must be the layout used by current vendor to create student results file delivered to the NH DOE.	Microsoft Excel	
	File layouts for student demographic files used for materials production/processing and reporting. This may be one file or two depending on how NH DOE wishes to process the data.	Format and content can be negotiated to meet NH DOE needs.	
	Live reports for each report in the contract that is currently created for NH DOE. Actual reports are needed to reconcile the student results data with the reporting business rules. The student names and any other confidential data can be redacted if this is a concern.	PDF	
Data Reporting Services (cont.)	Business rules used to analyze the student scores and generate the final reportable scores for students. Business rules for each report that describes how students are treated, how the reports are formatted, and how aggregations are computed. This is typically one document and is necessary for us to recreate the reports generated by current vendor.	Microsoft Word	
Operational Services / Information Technology	District/School data file, file to contain the following: District code, name, address, school code, name and address, principal name, test coordinator name Student enrollment data for the programs	Microsoft Excel	
	Current receiving and return process - detailed procedure for how the districts are currently receiving and returning material and confirmation as to preferences for these processes going forward.	Microsoft Word	
	Samples of test booklets, administration manuals, etc.	Hard copy	
	Teacher information for account registration on the online response capture tool.	Microsoft Excel	
Psychometrics	Cut scores (for all grades and content areas) on the theta, raw, and scaled score metrics.	*.csv file	

Measured Progress Functional Area	Deliverable needed from the NH DOE or current contractor	Acceptable format(s)	Approximate date for transfer by Measured Progress
	Table of all transformation constants (for all grades and content areas) used in scaling/equating.	*.csv file	
Psychometrics (cont.)	Detailed documentation of procedures used to construct the vertical scale, including any/all specific details not described in the technical report.	Microsoft Word or equivalent	
	Most recent standard-setting report.	Microsoft Word	
	All available item statistics such as CTT, IRT, DIF.	*.csv file	
Publishing	Final electronic versions of all Spring 2017 test booklets.	Packaged InDesign CS3 or CS4, and PDFs	
	Currently banked items.	Not yet in forms: Microsoft Word	
	Graphics Graphic file format(s) need to be specified so that we will be prepared to convert and load them into our system.	In forms: as part of packaged InDesign files	
Publishing (cont.)	Item Metadata Keys Curriculum frameworks Item statistics Form/Position information Vendor's unique item number Passages	Microsoft Access or Excel	
	Test Forms from last two years.	PDF and hard copy	
	Native graphic files for logos, state seals, initials or signatures of appropriate individuals	.eps, tif, or .ai	
	Native source files for test booklet forms, administration manuals, and other assessment-related documents.	InDesign or Quark	
	Test materials source documentation that describes the structure of data files: file hierarchy, naming conventions, file formats.	Microsoft Word or PDF	
	Graphics style guides/specification documents for development that articulate the creation requirements, design guidelines, guidelines about the use of color, and formatting rules applicable to the graphics content for each content area/grade being handed off.	Microsoft Word or PDF	

Measured Progress Functional Area	Deliverable needed from the NH DOE or current contractor	Acceptable format(s)	Approximate date for transfer by Measured Progress
	Graphics: Any stand-alone test content (i.e., math reference sheets, toolkits, paper manipulatives).	Source files and PDFs	
	Graphics: Documentation that conveys the relationship between art IDs and item IDs for the graphic files that are tied to test content.	Microsoft Word or PDF	
Publishing (cont.)	Graphics: Source graphics files for any items that have been developed and are owned by the NH DOE and considered part of the active item pool, which would not appear in the bundled source files for the test forms.	InDesign, Quark, Boardmaker, or similar as agreed	
	Permissions/acknowledgement information for any rights-managed or royalty-free passage and graphic content that is part of the active item pool. This includes, but is not limited to, all passages provided within the New Hampshire item bank, graphics that appear within reading selections, stock photos, or other types of licensed graphics content, passages/reading selections, graphs, and art.	Microsoft Excel or similar	
	Item IDs/Art IDs lookup table for the most recent usage of a piece of licensed graphics content and its corresponding permission/acknowledgement information.	Microsoft Excel or similar	
	Reading passage specification for all applicable grades (fonts, columns, size, line length).	Microsoft Word	
	Complete font list	Microsoft Word	
	List of any special plug-ins used in form production.	Microsoft Word	
	Individual passage files (for those that have not yet appeared in a test).	Microsoft Word	



Section V: Corporate Qualifications

APPENDIX E: STANDARDS FOR DESCRIBING VENDOR QUALIFICATIONS

Qualifications are important factors in selecting a vendor and accompanying implementation and follow on support services. To facilitate evaluation of vendor qualifications, the State seeks information about:

- (1) corporate qualifications of each vendor proposed to participate in the Project;
- (2) proposed team organization and designation of key staff;
- (3) individual qualifications of candidates for the role of Project Manager; and
- (4) individual qualifications of candidates for other key staff roles.

This appendix identifies specific information that must be submitted.

E-1 Required Information on Corporate Qualifications

Information is required on all vendors who will participate in the project. Vendors submitting a proposal must identify any subcontractor(s) to be used.

E-1.1 Vendor and Subcontractors

The vendor submitting a proposal to this project must provide the following information:

E-1.1.1 Corporate Overview

Identify the proposed role of the firm on the project. Describe the major business areas of the firm. Provide a high-level description of the firm's organization and staff size. Discuss the firm's commitment to the public sector, experience with this type of project implementation and experience in New Hampshire.

Measured Progress Qualifications and Capabilities

Originally incorporated in 1983 as Advanced Systems in Measurement and Evaluation, Inc., we began in a small suite in historic Portsmouth, New Hampshire with a staff of four. In 2000, we assumed our current name, Measured Progress, Inc., as well as not-for-profit 501(c) 3 status, and since then have grown to approximately 350 full time staff. We supplement this number with seasonal temporary staff to meet contractual obligations as required, which also assists with cost controls.

From the outset, we have specialized in providing the customized services required for criterion-referenced or standards-based large-scale assessment programs. This focus has shaped our organization—from staff to systems and processes—and enabled us to develop expertise in the broadest range of assessment instruments, scoring methods, and analytical techniques used in our industry. We have collaborated with more than 30 states across the nation, and many of our client relationships span over a decade. We currently manage programs for 15 states and provide contracted support services for other assessment organizations. Our work consists of a broad range of services including test development and

design, distribution and scanning, administration (computer- and paper-based), scoring, reporting, psychometric evaluation and standard setting, and professional development.

Our core values and mission compel us to:

- Develop the best possible assessments for students
- Carry out the most accurate, reliable, and informative scoring possible
- Perform revealing and technically sound analyses so that we produce meaningful reports and data that can make a difference in the classroom
- Help improve instruction through effective professional development
- Do our best to demystify the art and science of standards-based assessment for all stakeholders

Measured Progress Philosophy

As an organization committed to educational assessment, we believe our corporate and educational values should be consistent. Therefore, underlying our philosophy is the fundamental assumption that all individuals can achieve at high levels, especially when they understand what is expected of them and they operate in a supportive environment. In education, the goal is high academic performance; at Measured Progress, the goal is to provide high-quality products and services that make an impact and to create assessment programs that closely tie our clients' assessments with daily classroom instruction. To achieve these goals, either in the classroom or in the workplace, a collegial, collaborative, productive environment is a necessity.

Central to our philosophy is the principle that accountability for quality is shared. In our schools, administrators, teachers, parents, and students all have responsibility for the quality of teaching and learning. At Measured Progress, all employees have a sense of ownership and mutual pride in our products and services, and share the responsibility for the quality of our work.

Responsiveness and flexibility are also critical to the quality of our work and are the strategic hallmarks of client service for which we are known. Just as educational programs should be responsive to the individual needs and learning styles of students, Measured Progress is responsive to the unique needs of each client. Similarly, our employees share an appreciation of divergent needs and work styles. This understanding helps us best accomplish our mission and vision, and allows us to continue to serve education professionals and, ultimately, the students.

A Full Service Assessment Partner

Measured Progress is a full-service, standards-based general and alternate assessment company providing state-level assessment services while keeping clients' needs central to everything we do. Our services include all aspects of the assessment process, including test design, reporting, and everything in between. We operate from more than 400,000 square feet of office, processing center, and warehouse space in several locations, including Dover, New Hampshire, our headquarters.

We also have offices in Longmont, Colorado; Menands, New York; and processing facility in Lee, New Hampshire.

EXHIBIT 71: CURRENT MEASURED PROGRESS FACILITIES

Our highly experienced staff and the quality of our facilities provide us with the vital resources required to not only effectively manage the work that will result from this contract, but to excel in delivering a program that can serve as a model for other states and the consortia.

Our commitment to our clients, high standards, and to improving teaching and learning for all students has remained steadfast from day one. Clients can continue to expect stability in staffing and ready access to the designated project management team, our top executive management and technical leaders, and to our TAC.

Client-centered Approach

Client-centered customization is ingrained throughout our organization. Our systems, processes, and dedicated staff readily enable us to provide superior, tailored, client service. We collaborate with clients and provide informed advice as we jointly work to meet their unique needs and objectives.

For our clients as well as policy makers, the media, and other education stakeholders, we are also a resource on key education issues. We have a particularly well-founded perspective on the challenges educators face in light of ESSA as well as the pending reauthorization of the Individuals with Disabilities Education Act of 1997 (IDEA). In order to share our insights, we periodically publish topical papers, distribute an electronic newsletter, and participate in industry association meetings and conferences.

Some of our key differentiators include the following:

- From day one, all of Measured Progress’s assessment contracts have focused on customized, criterion-referenced/standards-based programs.
- We do not focus solely on any single part of the assessment cycle. Rather, we provide the full spectrum of services and deliverables to our clients across the country. Since the 1980s, we have integrated professional development as part of large-scale assessment programs in order to help promote teaching and learning.
- We have created and used a wide variety of measures, item types, and performance tasks including multiple-choice, short-answer, technology-enhanced, longer constructed-response items, portfolios, and individual and group performance events.
- All of our internal systems, processes, and applications have been developed with our clients’ needs in mind. Over time, we have converted most of our processes from manual to automated operation, but each one has enabled us to maintain, and in many cases enhance, the degree to which we can tailor our services for each client, without sacrificing quality or timeliness.

Despite our growth, we have remained focused on improving student learning.

A Commitment to Quality

At Measured Progress, quality means providing true solutions for our client; solutions that meet needs and have an impact. Quality also means accuracy, timeliness, and exceptional client service. In an increasingly high stakes testing environment, no state or testing contractor would dispute the importance of quality control in an assessment program. However, ensuring the actual delivery of accurate test materials and results requires a deliberate, focused, and consistent procedures and processes to ensure the highest possible quality.

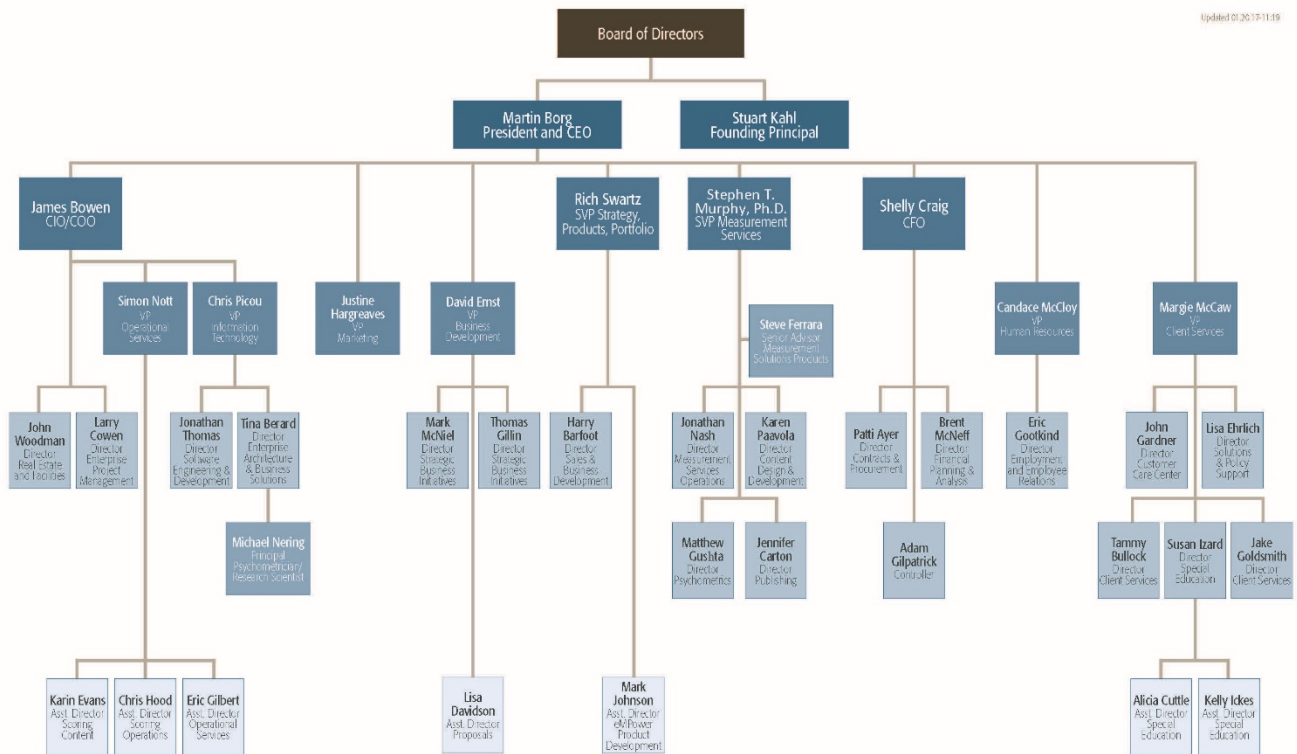
Our procedures and processes include such elements as redundancy at each critical stage of the assessment cycle, a myriad electronic tracking and monitoring systems with human oversight, and an in-depth review of procedures following each test administration. While some think there is little difference among assessment contractors in terms of quality and performance, we respectfully disagree. We know that despite the best systems, mistakes can arise from human error; yet our dedication to achieving the highest standards in customized assessment programs has earned us one of the best records for quality and accuracy in the industry.

Our performance reflects continuous monitoring of procedures; our development of automated systems, processes, and technologies based on a solid foundation of best practices in customized, standards-based assessment; and the skills and dedication of our staff. This high level of performance benefits our clients in numerous ways, not the least of which is enabling them to focus on their top priorities rather than attending to unnecessary issues.

Corporate Structure

Measured Progress is directed by a core team of executives with significant experience in large-scale assessment. Our executive team is committed to the success of each project, leading all of our employees by example, and fulfilling our vision of using the latest research and technology to transform K–12 assessment. The following exhibit provides a corporate-level organizational chart that identifies all of our key leadership and their direct reports.

EXHIBIT 72: MEASURED PROGRESS MID-TO HIGHER-MANAGEMENT ORGANIZATIONAL CHART



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Staff Resources

As described in detail earlier in this proposal, **Jimmy Hartman** will serve as Program Manager for this contract. In this role, Mr. Hartman will oversee all aspects of the program and will serve as the primary liaison with NH DOE staff. **Margie Gaines McCaw, Ph.D.**, Vice President of Client Services, will have final authority and responsibility for the work outlined in the RFP and presented in the proposal. Of course, during an escalation period or problem-solving event NH DOE can be assured that Dr. McCaw and other senior-level leadership will be fully available to support both NH DOE and Measured Progress staff members.

A significant percentage of our staff members are former educators, including many of our senior managers; many have advanced degrees. Our corporate environment is designed to encourage employees to spend their careers with us. We provide a mission-driven workplace, a supportive culture, and competitive compensation and benefits. Our employees play an active role in scholarly and collegial activities, frequently making presentations to trade and professional associations. Several of our employees are veteran researchers considered to be at the forefront of their respective fields. Some staff members serve on association and advisory panels and governing boards. We also advise legislators and other education policy makers, and serve as a resource to national media.

Because constant changes, as well as anticipated and unanticipated challenges, arise in day-to-day operations, large-scale assessment programs require problem-solving talent. No program will be

successful without collaborative, creative, yet practical problem solving. We address problems from the perspective of what is best for the program and the students. This results in more focused and timely problem resolution.

Functional Experience and Expertise

Program Management

Managing projects successfully and delivering tests and assessment results on time is critical to the success of any assessment program. Measured Progress program management staff act as the primary liaisons between the Measured Progress organization, business partners, and our clients. They schedule, oversee, and facilitate each phase of a contract, ensuring that all contract work is produced in accordance with program specifications. Program managers work collaboratively to maintain frequent communication with clients regarding the status of all program activities. We develop customized communication plans to ensure that our staff members are highly accessible and maintain transparency with our clients. If an issue needs to be escalated, senior management is accessible and available to clarify the concern and identify a course of action. We believe that the best outcomes depend upon true cooperation and teamwork. Throughout our history we have collaborated with our clients to introduce new statewide testing programs (e.g., Massachusetts, Montana, and New Hampshire) and to make dramatic changes to existing programs (e.g., Kentucky). One of our most noteworthy successes involved our close partnership with New Hampshire, Rhode Island, and Vermont, as they became the first states in the country to align their grade-level standards and create a common assessment program that meets both state and federal mandates. The New England Common Assessment Program (NECAP) required commitment and trust among all participants and was nationally recognized as a high-quality assessment program. In 2009, Maine joined NECAP as the fourth state in the program, (and is now a statewide user of eMPower Assessments by Measured Progress.

The Enterprise Project Management Office (EPMO) supports all program and project managers in applying best practices in project management throughout the company. Through oversight, governance, and project analytics, the EPMO helps to guarantee that all projects meet our exacting standards. The EPMO serves as the virtual “air-traffic control” system for all projects, monitoring our commitments and fostering collaboration throughout the company.

Measurement Services

The Measurement Services division of Measured Progress includes teams who specialize in content development, graphics, and permissions, publishing, psychometrics, data analysis, reporting, and item data base support.

Psychometrics and Data Analysis: A Team Approach

Our psychometric staff, working with our Data Analysis and Reporting (DRS) team, use a systematic approach to perform accurate item analyses, scoring, scaling, and equating analyses required to produce timely and accurate student-level and aggregated reports. Every work process focuses on efficiency, accuracy, high standards, and security. Statistical analyses include built-in QC checks and redundant cycles to ensure data accuracy. During all phases of a project, program management and technical staff compile documentation to support the quality of our services and products. We use the documentation to ensure replication of the analyses in subsequent years, to contribute evidence for validity arguments, and to support decision-making.

Measured Progress has made significant investments in developing software tools for data analysis and psychometric work. Psychometricians use a combination of commercially available software (e.g., WINSTEPS®, PARSCALE™, FlexMIRT®) and proprietary software to conduct all analyses. Automated psychometric software tools standardize the processes for conducting psychometric analyses, which has facilitated the efficient processing and analysis of our work for assessment programs.

Our psychometricians possess experience and expertise in a broad array of psychometric models. They are highly capable of supporting all of a client's assessment needs; including:

- Item field test analyses
- Operational data analyses
- Scaling
- Equating
- Reporting
- Standard setting
- Comparability and validity studies
- Technical consulting

Our psychometricians have varied research backgrounds and have significant experience conducting both operational analyses and psychometric research. Our psychometricians specialize in one or two areas within the field of psychometrics. This allows our psychometrics team to provide the best quality in both operational analyzes and problem solving. Although programs can have a designated lead psychometrician, we offer all clients the services and support of our entire psychometric team. In what follows, we describe our team-based psychometrics strategy.

How the Team-based Psychometric Model Works: When clients have a measurement issue or wish to consult with Measured Progress on an area related to measurement, they bring the issue or question to the assigned Program Manager. The program manager then works with our Director of Psychometrics and the program's lead psychometrician to identify the best pathway for addressing the issue or question. One or more psychometricians may be assigned to work internally with the Director and lead Psychometrician to develop a solution. Over the course of a multi-year contract, many of our Psychometricians may be engaged with work on the contract to resolve issues and develop strategies to improve the quality of the testing program; however, the lead Psychometrician will be the consistent and primary collaborator with the client.

Benefits of a Team Approach: Through this approach, our clients see far better resolutions to issues because the expertise of the entire psychometrics team can be brought to bear on generating the most effective strategies to improve measurement quality within testing programs while the line of communication is stable and consistent. Our approach has resulted in strong client satisfaction over the span of a multi-year contract.

Data and Reporting Services

Data and Reporting Services staff perform a variety of data-processing tasks as part of our redundant systems for ensuring accuracy of client data, including merging files from multiple sources. We use proprietary software systems to automate numerous data-processing tasks. We continuously enhance

these systems to improve efficiency and quality while reducing processing time and cost. Our analysis and reporting team is responsible for:

- Cleaning received data files
- Performing verification and quality-control checks of demographic data for standard setting and other processing-related work
- Conducting test item analysis and special studies
- Using the results of scaling and equating analyses to produce student-level and aggregated reports

DRS routinely generates classical and item response theory statistics for test items and performance tasks (including difficulty, discrimination, and options analyses). Item analysis statistics are computed for pilot testing, field testing, and operational testing, and all data are stored and tracked over time to monitor item parameter drift and to watch for potential changes item technical quality. We verify scoring keys and rubrics to ensure that all item/task data are correctly scored. We also conduct a broad range of differential item functioning analyses.

DRS also produces score reports—including individual student and aggregate reports—and we generate the student level and aggregate data files for our customers. Our report designs are fully customized; reports and data files are generated based on business rules and specifications specific to each customer. Extensive QC steps and redundant procedures ensure the accuracy of all reports and data files.

Content Development

Our content specialists have diverse backgrounds in education and extensive assessment expertise. Content specialists have spent time classrooms and have hands-on experience in student assessment. Many have studied educational measurement and statistics, and how measurement principles relate to developing quality test items and performance assessments. We pride ourselves on constructing items, performance assessments, and tests that precisely align with intended learning outcomes. The following are some of our key content development strengths:

- **Acceptance by state review committees:** More than 90 percent of items and performance tasks developed by Measured Progress are accepted during the customer review and approval process.
- **Educational experience of development staff:** The majority of our content specialists have direct teaching experience that enables them to develop tasks and items well aligned with the content standards and appropriate for students at that age/grade.
- **Collaboration with the client:** Our staff works to thoroughly understand the client’s expectations and uses this knowledge to develop item and test specifications so that we provide content suited to each program’s unique content requirements.
- **Iterative review processes:** All items are reviewed by multiple content specialists and senior editors for alignment to specifications and content standards and for item technical quality. All items are also reviewed by external panels for bias and sensitivity issues and content alignment.
- **Standards for development contractors:** To meet development demands, we may use expert assessment development contractors to supplement our permanent staff. Though many such contractors exist, only those that meet our exacting standards qualify for work. Prior to any contract for development work, contractors submit samples of items and tasks. We apply detailed criteria to judge the acceptability of samples. Once contractors are accepted, we review all items and tasks

against the detailed item/task quality criteria and refine them as needed before submitting materials to an external review.

- **State of the art test form development tools and processes:** Starting with test blueprints, Measured Progress applies state of the art test development procedures to combine item content and item statistical data to build tests that align with test blueprints and have desired psychometric properties.

Measurement Services Operations

The content development team collaborates with our Measurement Services Operations (MSO) team in the item/task and test development process. MSO manages graphics, permissions, and item data base management. Graphic artists create and revise graphics to align with content and style considerations mapped out by program specifications. The permissions team follows rigorous procedures to ensure that all permissionable materials are eligible for use. They scrutinize source documentation to support an efficient permissions process; copyright holders are contacted, permissions contract terms are negotiated and approved permissions are processed for payment. For some products and customers, we apply a stringent ‘fair use’ policy in the selection of reading passages. We rely on our Item Database Support team to manage our item and task data bases, including: ensuring the accuracy of all item and tasks, meta data, and scoring rubrics; importing items from client and vendor proprietary databases; and exporting items to online test delivery platforms.

Publishing

Measured Progress’s in-house Publishing department manages thousands of test-related documents and ancillary materials through a rigorous production and quality-control process each year. The Publishing department performs virtually all the steps needed to prepare test content for use in both online and print applications. A Production group within Publishing includes print professionals as well as staff with experience using a variety of online delivery systems. The Editorial group within Publishing has combined expertise in content editing, proofreading, and print and online test form production, process improvement, and documentation. Once items are chosen to appear on tests, Publishing staff step in and format those items, graphics, and passages into either Adobe InDesign™ for print forms or an online delivery system for computer-based tests (CBT). Publishing editors quality control (QC) check all items on both paper and screen, ensuring they are correct, have all the appropriate elements, are in the correct order, are correctly formatted and, for CBT, are rendering correctly. Publishing staff work closely with program management and content specialists to ensure forms are ready for client review and to prepare the materials for either a final handoff to a print vendor or for upload into an online testing platform. Publishing staff also create answer documents, manuals, released item documents, and other ancillary materials.

Information Technology

Our Information Technology (MPIT) group is responsible for providing technical development, delivery, and operational support for Measured Progress’s proprietary products, services, and tools. MPIT works closely with internal functional areas, clients, and business partners to document technical specifications, create system development plans, and deliver applications that meet each program’s technology needs. MPIT often facilitates key integration points between systems for efficient and secure data exchange. With our Information Security Officer, MPIT proactively approaches data security, compliance, and governance on a number of fronts to protect student information and ensure data integrity. For client- and contract-related projects, operational support, and system enhancements, MPIT employs teams composed of technical leads, software engineers, business analysts, system engineers, dev ops, and user experience designers as necessary. The staff evaluates program requirements and determines appropriate solutions

that deliver desired results for the most reasonable cost possible. In addition, our Customer Care Center representatives provide telephone and email support to districts, schools, and client representatives and use industry standards based on Information Technology Infrastructure Library (ITIL) practices for tracking around incidents, requests, and change management. These representatives have extensive knowledge of common assessment issues and use a knowledge base library to service issues that arise, allowing for fast and consistent resolution. Finally, our technical writers document the features and procedures of the assessment platform systems for our clients' understanding.

Following are some highlights of Measured Progress's accomplishments made possible by our technology tools and practices:

- Successful large-scale online testing delivery, such as a four-week spring administration in Oklahoma with more than 600,000 tests delivered to seven grades over eight content areas with eMetric's iTester 3
- More than 4 billion mark-up areas (35 million sheets and 2.7 million books) evaluated in ScanQuest
- More than 30 million responses (for roughly 2.3 million students) scored during the year
- Approximately 58 reporting releases for contracts with New Hampshire, Maine, Rhode Island, Massachusetts, Kentucky, Montana, Nevada, Mississippi, and New Mexico

Materials Processing

Operational Services is responsible for processing orders, shipping all test materials, tracking shipments, receiving return materials, logging in materials, reporting discrepancies, preparing materials for imaging, scanning answer documents, and warehousing and inventorying all materials. The department is also responsible for the long-term storage and eventual secure destruction of materials for our clients.

Operational Services uses multiple systems and technologies to accomplish its work. Proprietary software developed through years of experience ensures that all materials are picked and packed in the most efficient manner for each contract. Sophisticated processes and systems allow for prompt receipt, login, and scanning of all student work. Reconciliation of returned materials provides a proactive approach in ensuring that all student work and all test materials are accounted for when being returned from the client. Working with our Client Services Program Management teams, discrepancies are identified and quickly reconciled. On average, Operations Services ships and receives more than 200,000 parcels and scans more than 30 million sheets for more than 2.3 million students annually.

Hand Scoring

Measured Progress scores millions of student responses to constructed-response and extended-response items and performance tasks each year. In 2014, Measured Progress scored more than 35 million student responses and our historic peak is nearly 45 million responses. The rich variety of measurement tools we use calls for scoring approaches that combine human expertise with capacity-building technology. Our scoring infrastructure was built on our extensive experience in hand-scoring student responses to constructed-response items and offers an image-scoring system that greatly increases efficiency and capacity while maintaining outstanding quality control. In addition, we have considerable expertise in scoring portfolios, performance events, and other measurement instruments, both for large-scale assessment and alternate assessment work. Measured Progress has capacity and capability in both center-based and distributed human scoring. All scoring staff members meet exacting qualification requirements, and we carefully train and qualify scorers before they begin scoring each item. Throughout the process, we closely monitor scorer accuracy to ensure that our demanding standards are met. We also work closely

with clients, educators in client states, and staff from other groups within Measured Progress on benchmarking and rubric reviews. Our scoring institutes have helped thousands of teachers implement significant change in classroom instruction and student performance in many states.

Alternate Assessment

Since the passage of IDEA, Measured Progress has led the industry in providing a full range of alternate assessment services to a vast number of states. Before IDEA, standards were nonexistent for students with complex and significant cognitive disabilities. Likewise, there was no proven, technically sound means of measuring what these students knew and could do. In the wake of IDEA, the challenges were enormous. We have met and continue to meet these challenges with approaches that meet federal mandates and provide information to help improve the education of this student population.

E-1.1.2 Financial Strength

Provide at least one of the following:

- 1 The current Dunn & Bradstreet report on the firm; or**
- 2 The firm's two most recent audited financial statements; and The firm's most recent un-audited, quarterly financial statement; or**
- 3 The firm's most recent income tax return**

We have provided in Appendix 11 the following documents for NH DOE's examination:

- The current Dun & Bradstreet report on Measured Progress, and
- Our two most recent audited annual financial statements.

E-1.1.3 Litigation

Identify and describe any claims made by clients during the last ten (10) years. Discuss merits, current status and, if available, outcome of each matter.

Measured Progress has had no litigation claims brought against it in the past ten years. No legal suit has been brought before a court—either from or against any of our clients.

E-1.1.4 Prior Project Descriptions

Provide descriptions of no more than three (3) similar projects completed in the last three (3) years. Each project description should include:

- 1. An overview of the project covering type of client, objective, project scope, role of the firm and outcome;**
- 2. Project measures including proposed cost, actual project cost, proposed project schedule and actual project schedule;**
- 3. Names and contact information (name, title, address and current telephone number) for one or two references from the client; and**
- 4. Names and project roles of individuals on the proposed team for the New Hampshire project that participated in the project described.**

Maine Department of Education	
Program	Maine Educational Assessment Mathematics & English Language Arts/Literacy
Contract Length	November 1, 2016 – October 31, 2017
Students Tested	78,000
Program Overview	Measured Progress provides grades 3-8 mathematics and English language arts/literacy content through Measured Progress eMPower Maine. Tests are delivered online via eMetric's iTester system. High school mathematics and English language arts/literacy assessed through the SAT via the College Board.
Services Provided	eMetric and Measured Progress successfully partnered to deliver the 2016 and 2017 eMPowerMEA Maine summative assessment in Mathematics and English Language Arts (ELA)/Literacy testing. Students were tested in grades 3 through 8. Students take their tests on desktops and laptops, as well Apple tablets and Chromebooks. .
Contact Information	Charlene Tucker Director of Assessment and Accountability Maine Department of Education 23 State House Station, Augusta, ME 04333 Email: Charlene.Tucker@maine.gov Phone: 207-624-6827

Oklahoma State Department of Education	
Program	Oklahoma Core Curriculum Tests (3–8 and End of Instruction)
Contract Length	2014–2019
Students Tested	Approximately 295,000 students per year Grades 3–8. 389,609 EOI tests administered annually across 7 administrations (2 are retests)
Program Overview	We work with the Oklahoma State Department of Education to create test forms for the Oklahoma College and Career Ready Tests (OCCT) in grades 3–8 and End of Instruction that align to the Priority Academic Student Skills (PASS) standards. The OCCT assess English Language Arts and mathematics in all grades, Writing at grades 5 and 8, Science and Social Studies at grade 5, Geography at grade 7, Science and U.S. History at grade 8. EOI assessments include: Algebra I & II; Geometry; English II & III; Biology; U.S. History. eMetric, LLC, serves as a subcontractor for this program, providing the online platform for administration and reporting. The OCCT is given as a paper/pencil test in grades 3–5 and online in grades 6–8 with a paper form of the tests available as an accommodation for a small number of students.
Services Provided	<ul style="list-style-type: none"> ▪ Program management ▪ Test development and production of test materials ▪ Distribution ▪ Field and operational testing ▪ Paper and online administration ▪ Scoring, data analysis, and reporting ▪ Service center assistance devoted strictly to Oklahoma ▪ Regional workshops and training sessions

Oklahoma State Department of Education	
Contact Information	<p>Craig Walker Executive Director of State Testing Oklahoma State Department of Education Oliver Hodge Building 2500 North Lincoln Boulevard Oklahoma City, OK 73105 Phone: 405-521-3341 Email: walker.craig@sde.ok.gov</p>

New Mexico Public Education Department	
Program	New Mexico Standards Based Assessments (SBA) Science, SBA Spanish Reading, SBA Science Fall Retest, SBA Reading and Math Fall Retest (High School Graduation Assessment (HSGA), and New Mexico High School Competency Exam (HSCE)
Contract Length	2009–2016
Students Tested	Number of students tested per year: approximately 180,000 students in grades 3–8 and 11
Program Overview	Measured Progress provides the operational test administration of the New Mexico Standards Based Assessments for Science (March) and Spanish Reading, (late April early May), and the SBA Science Fall Retest, SBA Reading and Math Fall Retest, High School Graduation Assessment (HSGA), and New Mexico High School Competency Exam retests in fall and winter—2016 winter HSCE was the last of these administrations.
Services Provided	<ul style="list-style-type: none"> ▪ Test production <ul style="list-style-type: none"> ▪ English and Spanish forms, PBT and CBT for SBA Science Operational and SBA Science retest, 100% PBT for SBA Reading/Math Retest (HSGA), and HSCE ▪ Distribution and test administration logistics ▪ Scanning and scoring ▪ Data analysis ▪ Reporting ▪ Standard setting ▪ Program management ▪ District Test Coordinators trainings, fall and winter ▪ Development Committee Meetings (IRC, Bias, Range-Finding, Data Review) ▪ Local billing to individual schools and districts
Contact Information	<p>Gabe Martinez Deputy Director of Assessment New Mexico Public Education Department 300 Don Gaspar Avenue Santa Fe, NM 87501 Phone: 505-827-6509 Email: martinez.gabriel@state.nm.us</p>

E-1.1.4.1

Components that constitute the vendor’s proposed software suite must be fully implemented and operational in at least one (1) government entity comparable in size and complexity to the State of New Hampshire.

Measured Progress’s eMPower Assessments are in successful use in the state of Maine. The “eMPower Maine” program is now completing its first full school year, with work on the program having being started in spring of 2016. For more information about this program in Maine refer to our response to the prior section – E-1.1.4.1.

eMetric’s iTester assessment delivery system and its Data Interaction reporting portal are fully implemented in several states with size and complexity equaling or exceeding that of the state of New Hampshire. These states are listed shortly below.

E-1.1.5 Subcontractor Information

Vendors must provide information on any subcontractors proposed to work on this project. Required information shall include but not be limited to:

- 1. Identification of the proposed subcontractor and a description of the major business areas of the firm and their proposed role on the project;**
- 2. A high-level description of the subcontractor’s organization and staff size;**
- 3. Discussion of the subcontractor’s experience with this type of project;**
- 4. Resumes of key personnel proposed to work on the project; and**
- 5. Two references from companies or organizations where they performed similar services (if requested by the State).**

We provide, below, the required information for our two proposed subcontractors for the New Hampshire Statewide Assessments program—eMetric and Measurement Incorporated. WestEd is our consulting partner for this program—not a subcontractor.

eMetric

eMetric is a leading provider of technology solutions for the K-12 assessment industry with a strong track record of providing powerful, reliable solutions that empower educators and decision-makers at all levels – states, districts, schools, and classrooms. eMetric provides assessment delivery, reporting and data analytics, and statistical and psychometric services. eMetric will provide assessment delivery and reporting for the New Hampshire project.

eMetric has thoughtfully constructed a team consisting of 55 members with an impressive and extensive blend of skills and experience in technology, education, student assessment, program management, data management, and psychometrics; this team has enabled eMetric to advance beyond other technology providers in the educational assessment field and has positioned eMetric to lead the way in next generation online assessment and reporting systems. The eMetric technical team is comprised of experienced software developers, database analysts, system architects, and UI designers, all well-versed in current development languages and methodologies. eMetric’s capabilities are further strengthened by a strong operational team of quality assurance engineers, project managers, business analysts, and client support specialists. These teams work collaboratively to ensure the highest levels of reliability, usability, and client satisfaction for every contract.

eMetric’s powerful and intuitive platforms are built using the latest technology with a resolute commitment to quality. Quality is a characteristic that is often difficult to assess until after an investment decision is made. Impressive feature sets and competitive pricing are enticing, but ultimately product quality prevails. Our track record speaks volumes to eMetric’s dependability and commitment to excellence. We consider our record on contract performance to be superb and have earned our reputation as an easy to work with, technically advanced, dependable partner.

eMetric develops, customizes, and integrates test authoring, administration, delivery, scoring and reporting modules for online assessment. While we have developed these modules to integrate seamlessly, our core strength is customizing, integrating and licensing our robust, reliable online assessment platforms to leading K-12 assessment publishers and states. These platforms are being used to successfully service several statewide assessment programs. Our extensive technology capabilities, experience in K-12 assessment, proven collaborative abilities, and skilled team will provide Nebraska with a talented, committed partner.

To the best of our knowledge, iTester has never experienced an interruption that resulted in loss of student responses or testing shutdown. We have never had a cancellation or reduction of payment, a cancelled contract, or engaged in litigation.

Data Interaction™

eMetric has a solid track record of successfully delivering Data Interaction for both test publishers and state education agencies. Data Interaction has been adopted by several of the leading test publishers in the United States to report assessment results for statewide programs or norm-referenced assessments with nationwide sales. In several states, most notably Pennsylvania, Connecticut, Nevada, Alaska, and Texas, Data Interaction has been used as a single access point for each state to access reporting results of all major state assessments. Current Data Interaction clients are identified in the exhibit below.

EXHIBIT 73: DATA INTERACTION CLIENT LIST

Client	Project Overview
<p>Commonwealth of Pennsylvania Department of Education</p>	<p>eMetric has provided online assessment reporting services for the Pennsylvania System of School Assessment (PSSA) since 2004 via Data Interaction. Reporting for PSSA includes grades 3-8 and 11 in Mathematics, Reading, and Science (grades 4, 8, and 11). In addition to providing a data query tool, eMetric developed and hosts PSSA Summary Reports and Parent Letters within Data Interaction and provides a publically accessible website for federal accountability reporting. In 2012, the Keystone Exams replaced the grade 11 PSSA and eMetric incorporated the Keystone Exam data into Data Interaction so that Pennsylvania users only have to access a single reporting platform for all their assessment data. eMetric has also provided reporting services to Pennsylvania Department of Education for the ACCESS for ELLs data since 2009. All deliverables have been successfully completed on schedule.</p>
<p>Connecticut State Department of Education</p>	<p>eMetric has provided online assessment reporting services for the Connecticut Mastery Test (CMT) and Connecticut Academic Performance Test (CAPT) assessment programs since 2001 via Data Interaction. Reporting for CMT includes grades 3-8 in Mathematics, Reading, Writing, and Science (grades 5 and 8). Reporting for CAPT includes grade 10 Mathematics, Reading, Writing, and Science. In addition to providing a secure data query tool, eMetric hosts a publically accessible data query tool for CMT and CAPT reporting and a publically accessible website for federal accountability reporting. All deliverables have been successfully completed on schedule.</p>

<p>Nevada State Department of Education</p>	<p>eMetric has provided online reporting services for the Nevada Writing Program via Data Interaction for grades 5 and 8 from 2006 through 2012 and high school grades from 2006 to present. Services include providing a secure data query tool, predefined reports, and an online interface for state and district users to review and/or edit data. Since 2012, eMetric has also served as the service provider for the Nevada Longitudinal Data System which includes the reporting services for the Nevada School Performance Framework (NSPF) and the Nevada Report Card as well as data management services for the state data system. All deliverables have been successfully completed on schedule.</p>
<p>Alaska Department of Education and Early Development</p>	<p>eMetric has provided online assessment reporting services for the Standards Based Assessment (SBA) and High School Graduation Qualifying Exam (HSGQE) assessments since 2010 via Data Interaction. Reporting for SBA, now transitioned to the “Alaska Measures of Progress,” includes grades 3-10 in Mathematics and Reading, and grades 4, 8 and 10 in Science. HSGQE reporting includes grade 10 in Reading, Writing, and, Mathematics. eMetric has also provided reporting services for ACCESS for ELLs and WIDA Alternate Assessments test data since 2012, and DLM Alternate Assessments test data since 2015. In addition, eMetric worked closely with the state to incorporate participation rate data into the SBA and HSGQE reports. In 2011 Data Interaction was expanded to include data for the Alternate, English Language Proficiency (ELL), and TerraNova™ assessments. This enables Alaska users the ability to access assessment results from a single reporting platform. All deliverables have been successfully completed on schedule.</p>
<p>Texas Department of Education</p>	<p>eMetric designed, developed and hosts an assessment data portal that provides a gateway for education stakeholders to access student performance data for multiple state assessment programs. The portal consists of three major components: a parent/student site, a district/campus site, and a public site. Six assessment programs, including historical data, have been reported within the Data Interaction data portal since 2015.</p>

iTester™

eMetric’s end-to-end assessment delivery system, iTester, has been used for summative, interim/benchmark, and formative assessments in multiple states and districts, most notably in Maine, Oklahoma, New Mexico, South Dakota, as well as Arkansas, Indiana, Missouri, and Nevada. Each individual iTester implementation incorporates state specific business rules. In addition to providing a solid, reliable testing experience for students, we have proven to be quite nimble, working with the states as they reacted to legislative changes and mandates from state superintendents and boards. Current iTester clients are identified in the exhibit below.

EXHIBIT 74: ITESTER CLIENT LIST

Client	Project Overview
<p>Maine Department of Education</p>	<p>eMetric and Measured Progress successfully partnered to deliver the 2016 eMPowerMEA Maine summative assessment in Mathematics and English Language Arts (ELA)/Literacy testing. Approximately 550,000 students were tested in grades 3 through 8. Students take their tests on desktops and laptops, as well Apple tablets and Chromebooks. All tests are authored, administered, and delivered using iTester.</p>

<p>Oklahoma State Department of Education</p>	<p>In spring 2014, Oklahoma successfully completed field testing for the Common Core assessments in grades 6-8 math and ELA, testing approximately 115,000 test sessions using iTester. Oklahoma then tested approximately 108,000 online test sessions during the Winter/Trimester End-of- Instruction administrations, over 870,000 online test sessions in the Spring End-of-Instruction administrations, and over 626,000 online test sessions in the Spring Grades 6- 8 administrations. All tests are authored, administered, automatically scored (except writing prompts), and reported within the Oklahoma Core Curriculum Tests Portal, powered by iTester.</p>
<p>New Mexico Department of Education</p>	<p>eMetric has provided online assessment testing services for the New Mexico Standards Based Assessment (NMSBA) for Science since fall 2014. Both practice test and high stakes testing services for grade 4, 7, and High School are provided using eMetric’s online testing platform, iTester.</p>
<p>South Dakota Department of Education</p>	<p>South Dakota’s version of iTester, the South Dakota Assessment Portal (SDAP), houses End-of-Course, Benchmark, Formative, and District Secure assessments. All tests are authored, administered, automatically scored, and reported utilizing SDAP. Test items include both traditional and technology enhanced items. Students take their tests on desktops and laptops, as well Apple and Android tablets and Chromebooks. Tests can be administered with varying levels of security from browser mode to a locked-down kiosk mode. Approximately 71,000 students are assessed annually across 1,009 schools.</p>

Resumes

For eMetric key staff resumes, please see Appendix 1.

References

Reference 1

Business Name (Client): South Dakota Department of Education

Point of Contact Name / Title: Jan Martin, Director, Office of Assessment

Phone: (605) 773-3246

Email: jan.martin@state.sd.us

Summary of Work/Date(s) Performed: South Dakota's version of iTester, the South Dakota Assessment Portal (SDAP), houses their End-of-Course, Benchmark, Formative, and District Secure assessments. All tests are authored, administered, automatically scored, and reported utilizing SDAP. Test items include both traditional and technology enhanced items. Students take their tests on desktops and laptops, as well as Apple and Android tablets and Chromebooks. Tests can be administered with varying levels of security from browser mode to a locked-down kiosk mode. Approximately 71,000 students are assessed annually across 1,009 schools.

Reference 2

Business Name (Client): Maine Department of Education

Point of Contact Name / Title: Charlene Tucker/ Director of Assessment and Accountability

Phone: 207-624-6827

Email: Charlene.Tucker@maine.gov

Summary of Work/Date(s) Performed: eMetric and Measured Progress successfully partnered to deliver the 2016 eMPowerMEA Maine summative assessment in Mathematics and English Language Arts (ELA)/Literacy testing. Approximately 550,000 students were tested in grades 3-8. Students take their tests on desktops and laptops, as well as Apple tablets and Chromebooks. All tests are authored, administered, and delivered using iTester.

Reference 3

Business Name (Client): Oklahoma Department of Education

Point of Contact Name / Title: Craig Walker, Executive Director of State Testing

Phone: (405) 521-3341

Email: craig.walker@sde.ok.gov

Summary of Work/Date(s) Performed:

In Spring 2014, Oklahoma successfully completed field testing for the Common Core assessments in grades 6-8 math and ELA, testing approximately 115,000 test sessions using iTester. Oklahoma then tested approximately 108,000 online test sessions during the Winter/Trimester End-of-Instruction administrations, over 870,000 online test sessions in the Spring End-of-Instruction administrations, and over 626,000 online test sessions in the Spring Grades 6- 8 administrations. All tests are authored, administered, automatically scored (except writing prompts), and reported within the Oklahoma Core Curriculum Tests Portal, powered by iTester.

Measurement Incorporated

Measurement Incorporated (MI) is an employee owned, full-service assessment corporation specializing in the development, administration, scoring, and reporting of results for educational assessments and professional certification examinations. Dr. Henry Scherich, Ph.D. established MI in 1980 to provide performance assessment scoring services. Over the past three decades, MI has expanded its service offerings committed to provide a full range of educational support services and as well as research and analysis, program evaluation, and supplemental educational assistance. MI employs over 400 full-time and approximately 5,000 temporary employees in its headquarters in Durham, North Carolina and 13 locations nationwide. MI's mission is to benefit our clients, employees, community, and profession by providing Excellence in Assessment™.

For the New Hampshire Statewide Assessments, MI will provide an AI scoring solution for constructed responses. They have cultivated a depth of experience and expertise in both hand and AI scoring large-scale assessments, scoring more than 30 million tests annually. Their depth of experience in the scoring of large-scale assessments allows them to guarantee valid, reliable, and timely constructed response scoring. AI scoring will provide a benefit for the State with reduced cost over hand scoring and improvement in scoring turnaround time while maintaining the assurance of consistency and accuracy of the scoring. MI's essay scoring engine PEG™ has been used to provide tens of millions of scores to students in formative and summative writing assessments since 2005. Most recently in 2015 and 2016, PEG™ has been used to score large projects in Michigan, California, and SBAC states.

MI has cultivated a depth of experience and expertise in scoring large-scale assessments. MI currently scores more than 30 million tests annually. With over 4,000 scoring professionals across nine permanent scoring centers across the United States, their depth of expertise allows MI to meet even the most stringent project staffing requirements. In providing AI scoring support, MI will use existing staff in the Durham, NC headquarters in the Assessment Technology Group headed by Ms. Tiwana N. Bazemore, Vice President.

We are fully committed to our staff and our clients and bid only on projects we know we can complete with competence and professionalism. MI has analyzed the current scoring schedule for existing and projected projects along with the New Hampshire State Assessments and has determined that we have sufficient resources to meet the projected work load.

Key Personnel

Tiwanna Bazemore, Vice President, Assessment Technology

Ms. Bazemore oversees MI's assessment technologies initiatives, including online testing, machine scoring, and web-based formative assessment tools. She is a certified Project Management Professional and has been working in the fields of technology and educational assessment since 2002. Prior to becoming the VP of Assessment Technology, she provided strategic direction for MI's secure online test delivery system (MIST), managing product requirements and the software development schedule. Under her direction several large-scale assessments were transitioned from paper and pencil to online administrations. Ms. Bazemore's previous experience includes Project Management, Quality Assurance management and software testing. Ms. Bazemore received her Master of Business Administration degree from East Carolina University in Greenville, NC.

In her proposed role for the New Hampshire Statewide Assessments, Ms. Bazemore will oversee Assessment Technology and provide any necessary resources for AI scoring to Measured Progress and the client.

Andrina Aragon, Project Manager

Ms. Aragon has two years of project management experience at Measurement Incorporated. Ms. Aragon is currently the MI Project Manager for the Education Equality and Accountability Office (Ontario, CA) assessments. She oversees the planning, implementation, and administrative operations of paper testing, online testing, and scoring programs. Ms. Aragon has successfully managed the tasks, schedules, and resources required to modernize the current EQAO assessments by organizing and communicating EQAO plans to move from paper assessments to online assessments. Ms. Aragon’s previous experience includes item, test form, and assessment development operations for CTB/McGraw-Hill and summative assessment development for the Colorado Department of Education.

In her proposed role as Project Manager for the New Hampshire Statewide Assessments, Ms. Aragon will manage and implement AI scoring of the writing-prompt responses.

Thomas Davis, Technical Lead, Artificial Intelligence

Mr. Davis has 20 years of software engineering experience in architectural, development, quality assurance, and supervisory capacities. Since joining MI in 2013 he has served as the technical liaison providing logistical support for the AI team on the Smarter Balanced Assessment Consortium Pilot and Field Tests, several statewide summative assessments, and MI’s practice writing websites. Mr. Davis received his Bachelor of Science Degree in Mathematics and Computer Science from the University of North Carolina at Chapel Hill in 2001.

In his proposed role as Technical Lead for Artificial Intelligence, Mr. Davis will provide oversight and leadership for MI’s automated scoring system. Mr. Davis will serve as MI’s technical liaison with Measured Progress and the client for automated scoring projects, leading a team of software developers and designers to ensure AI systems meet client technical requirements. He will be responsible for developing AI scoring project plans, enforcing data integrity, monitoring project activities, maintaining deadlines, and communicating project progress.

As previously indicated, MI has provided AI scoring services supporting a variety of clients including the Smarter Balanced Assessment Consortium and the states of California and Michigan. Descriptions of these projects are found in Exhibit 75.

EXHIBIT 75. MEASUREMENT INCORPORATED’S SIMILAR PROJECTS AND REFERENCES

Project	
Smarter Balanced Assessment Consortium (SBAC) (services provided under subcontract to CTB/McGraw-Hill)	Smarter Balanced Assessment Consortium Pilot and Field Test 2013 – 2014 Through a subcontract with CTB/ McGraw-Hill, MI conducts rangefinding, handscoring, and AI engine training and evaluation for SBAC’s pilot and field tests. MI is responsible for developing approximately 1,500 ELA and Mathematics items for grades 3-5, including item annotations, metadata, and tagging. Item types include constructed response, performance task, and technology-enhanced (TE) items. MI’s TE items use innovative approaches to assessing students in ELA and mathematics, and items are configured to work in a variety of assessment delivery

	<p>systems, including CTB/ McGraw-Hill’s Distributed Delivery System and the American Institutes for Research’s I.T.S. Delivery System.</p>
<p>California (services provided under subcontract to Educational Testing Service)</p>	<p>California 2014-present</p> <p>Under a subcontract to ETS, MI provides human and Artificial Intelligence (AI) scoring for California’s Smarter Balanced-based portion of the California Assessment of Student Performance and Progress (CAASPP) System. The assessments are provided to 2,700,000 students (450,000 per grade) in grades 3-5 for Mathematics and grades 6-8 in English Language Arts. MI conducts the scoring training aligned to Smarter Balanced training procedures. MI conducts its handscoring using site-based and distributive readers. MI employs a flexible and secure online training interface for the scorer training in our scoring sites and with our distributive scorers. MI’s online training interface allows us to lead interactive training sessions that emulate the best characteristics of face-to-face training. Using these same systems, California is able to leverage State resources by engaging their staff to actively monitor all of our handscoring training and scoring activities without travel. MI conducts the California assessment handscoring efforts using our secure image based system, the Virtual Scoring Center™ (VSC™) - a complete electronic data-capture and image-based scoring solution. MI’s essay scoring engine PEG has been used to provide over ten million scores to students in formative and summative writing assessments over the past six years. PEG’s results are comparable to expert human scorers in terms of reliability and validity. Our results have been validated in independent third party studies and in research that we have conducted on behalf of our clients.</p>
<p>Michigan Department of Education - Michigan Educational Assessment Program (MEAP, MEAP-Access, MI-Access)</p>	<p>Michigan Department of Education - Michigan Educational Assessment Program (MEAP, MEAP-Access, MI-Access) 2008 - 2013 and 2013 - 2016</p> <p>Since 2008, MI has held a contract with Michigan to perform printing, distribution, and scoring of all materials related to these assessments for grades 3-8 English language arts, grades 3-8 math, grades 5 and 8 science, and grades 6 and 9 social studies. We printed, distributed, received, and processed all answer documents, scored multiple-choice items, scanned and provided images for all answer documents, conducted range-finding, trained scorers, and hand-scored the open-ended responses. We produced score reports and distributed them in cooperation with our subcontractor, HOVS. In 2008, MI also performed printing, distributing, scoring, and reporting for the MEAP-Access field test (Michigan’s alternate assessment program for modified standards), which included approximately 18,000 students. MI also performed psychometric services, including both pre- and post-equating analyses. All forms were constructed using, among other criteria, item parameters (both the Rasch and 3PL). Test information functions were examined when constructing test forms and preliminary score tables were generated. Following test administration, a key and post-equating check were undertaken in order to identify problem items and make necessary adjustments, i.e., allowed some item parameters to float. A history-of-use item bank was maintained with a record of all item statistics from every administration. Field test items were embedded in the operational forms in varying numbers each year and were analyzed and scaled following the operational work. Retained items were placed in the item bank.</p> <p>In the fall of 2012, Michigan used MIST—MI’s online assessment system—to deliver the MEAP Social Studies assessment for Grades 6 and 9 in a self-selected group of school districts.</p> <p>In 2012, Michigan released a competitive RFP in which MI won with the task to help transition the State from paper-and-pencil assessments to online testing over the next three years. MI holds the contract for the paper and pencil administration</p>

of MEAP, MEAP-Access, and MI-Access. We provide call center activities; constructed-response scoring deliverables, which include rangefinding, artificial intelligence scoring (AI), and handscoring; sampling plans for distribution; scanning; scoring; printing of parent reports and student labels for State assessment reporting; and print portions of the technical report.

Resumes

For Measurement Incorporated key staff resumes, please see Appendix 1.

References

Measurement Incorporated References:

2016-2017 PEG Streaming Scoring Services, providing automated AI scoring for Michigan (with DRC)

Andrew J. Middlestead, Director
Office of Standards & Assessment
Michigan Department of Education
P.O. Box 30008
Lansing, MI 48909
Office: (517) 241-2694
Mobile: (517) 643-2204

Education Records Bureau (ERB)
David Clune, Ph.D.
Education Records Bureau
470 Park Ave. S., New York, NY 10016
Office: (212) 672-9800
Email: dclune@erblearn.org

Section VI: Qualifications of Key Vendor Staff

E-2 Team Organization and Designation of Key Vendor Staff

Provide resumes of key personnel proposed to work on the project and an organizational chart depicting the vendor project team. This chart should identify key staff required from the vendor, any subcontractors, and the State.

Define the responsibilities and length of assignment for each of the roles depicted in the organizational chart. Identify the positions that should be designated key staff. Ensure that designation of key vendor staff includes subject matter experts in the following areas:

A single team member may be identified to fulfill the experience requirement in multiple areas

See Topic 29, and the resumes we have included in Appendix 1, for Measured Progress, eMetric, and Measurement Inc. staffing information.

E-2.1 State Staff Resource Worksheet

Append a completed State Staff Resource Worksheet to indicate resources expected of organization. Expected resources must not exceed those outlined in Section A 4.2. The required format follows.

State Role	Initiation	Configuration	Implementation	Close Out	Total
Project Manager	100%	80%	100%	75%	88.75%

We confirm that the time resources we will need from NH DOE Project Manager Julie Couch will be limited to the six bulleted types of work activity stated in RFP section A 4.2. The percentages above are estimates, which we will better define upon award and following a contract kickoff meeting.

E-3 Candidates for Project Manager

Although the State recognizes that staff availability is somewhat uncertain, qualifications of the Project Manager are particularly critical. Therefore, the State requires that the Project Manager be identified with some degree of certainty.

For the Project Manager candidate, provide a resume not to exceed five (5) pages in length addressing the following:

- The candidate’s educational background;
- An overview of the candidate’s work history;
- The candidate’s project experience, including project type, project role and duration of the assignment;
- Any significant certifications held by or honors awarded to the candidate; and

- **At least three (3) references, with contact information, that can address the candidate's performance on past projects.**

We have provided, in our Resumes section (Appendix 1), the required information about our proposed Project Manager, Mr. Jimmy Hartman.

E-4 Candidates for key vendor staff Roles

Provide a resume not to exceed 2 pages for each key vendor staff position on the project team. Each resume should address the following:

- **The individual's educational background;**
- **An overview of the individual's work history;**
- **The individual's project experience, including project type, project role and duration of the assignment;**
- **Any significant certifications held by or honors awarded to the candidate; and**
- **At least three (3) references, with contact information, that can address the individual's performance on past projects.**

We have provided, in our Resumes section (Appendix 1), the required information about other key vendor staff positions on our proposed project team.

Section VII: Pricing Model

Pricing

Our cost proposal represents the costs associated with each of the task areas identified in the Request for Proposal Solicitation, RFP 2017-073 DOE New Hampshire Statewide Assessments. We have carefully planned for, and delineated throughout our technical proposal, all program tasks and activities. Total costs are exhibited within the required Appendix F worksheets (F1 - F5).

As clarified at the vendor’s conference, we have included a budget for four years beginning in July 2017 and continuing through June 2021. Activities within this timeframe include operational field tests and operational tests for ELA, math, and science as shown in the table below. It includes item development, test construction, combination of paper and computer administration, hand scoring and AI scoring, reporting of results, standard settings and standards validations, and the provision of an annual technical report to support the validity and reliability of the assessment. We will provide summative and interim test administrations for ELA & Math for students in grades 3-8 and Science in grades 5, 8, and 11 for approximately 103,000 students.

	ELA and Math Summative	ELA and Math Interim	Science Summative	Science Interim
	eMPower with Direct Writing	eMPower	Secure Science Item Bank	Secure Science Item Bank
Operational Field Test	Spring 2018 <small>(Direct Writing Only)</small>		Spring 2018	Fall 2018
Operational Test	Spring 2018	Fall 2017	Spring 2019	Fall 2019

Measured Progress is pleased to provide a four-year budget of \$11,994,685; each year not to exceed \$3,000,000.

Budget Highlights

Administrations

For the ELA and math components of the NH program, we will provide our eMPower Assessments™. Three forms are available each school year: two interims (one administered in fall and the other in winter) and one summative (administered in spring). For the science interim and summative components, we will build tests using items from the Measured Progress Secure Science Item Bank.

Test Development/Construction

The Test Development budget includes all expenses related to test design (use of eMPower existing product), item development and review (writing prompts specifically for NH), item banking use (science

items from our Secure Science Item Bank), and test production. Each year of the contract includes a set of similar activities related to test development. Costs associated with the operational field tests are included in Year One.

eMPower Assessments™ for grades 3–8 are a suite of fixed-form assessments suitable as an interim/summative solution. For the direct writing assessment, the NH DOE will be able to select a prompt each year after we conduct an operational field test of multiple prompts in spring 2018. For the science interim and summative assessments, we are providing access to our science item banks for construction of custom test forms.

Test Administration

Test Administration includes the proposed use of eMetric’s end-to-end assessment delivery system iTester. iTester is a suite of robust applications for item and test authoring, scheduling and administering, test delivery, and machine scoring. Additionally, we have provided for paper-based administrations including test booklets, scannable answer documents, Braille, large print, test administrator and coordinator manuals, and the appropriate shipping, receiving, scanning activities associated with paper-based testing.

Scoring, Reporting, and Psychometrics

We propose automated scoring of the direct writing prompt that will be included as part of the ELA assessment. The successful application of Artificial Intelligence (AI) scoring hinges on the successful calibration of the AI platform to match human scoring of student responses to writing prompts. In order to ensure that all student responses are scored consistently and accurately, we propose using our established and proven methods for field testing items using human scoring in order to capitalize on AI scoring when the items are used operationally.

Our analysis and psychometric support will provide valid and reliable scores for use in state and local reporting as well as federal accountability. We will deliver to NH DOE, schools and districts, and families’ important and actionable information regarding student performance and growth. The components of this reporting system include:

- eMPower Static Reports
- Custom Direct Writing and Science Reports
- Data Interaction™ by eMetric

We will print one paper copy of each student report and ship that report directly to schools. In addition, we will provide student report data to eMetric so they can render a printable, digital version (HTML) of the student report in Data Interaction. Standard setting and standards validation will occur for both Writing and Science.

Cost Option: Parent/Student Portal

Measured Progress and eMetric propose an optional parent/student portal to be hosted under its own sub-domain and used exclusively for parent/guardian and student access. The parent/student portal will provide exclusive, on-demand access to individual student assessment performance data throughout the student's academic career.

Program Management

Our program management team will monitor the phases of the project—from initiation through planning, execution, control, and evaluation and close. Our program manager will be responsible for oversight of all activities related to planning, development, scheduling, and progress monitoring, implementing, reporting, and ensuring the quality of work conducted by Measured Progress and our business partners. Our program management team will have the crucial responsibility for managing the overall program schedule and for communicating with the project team (both internal and external) and ensuring the completion of all project deliverables and timelines.

Summary

We operate all client programs with efficiency in mind, and this cost proposal reflects our best efforts to meet or exceed expectations on services and deliverables, while remaining competitive. We look forward to continuing our partnership with New Hampshire leadership. We are confident that we can deliver a quality assessment program that meets the needs of New Hampshire's educators and students while being cost and time efficient.

Measured Progress stands ready to respond to any questions, requests for clarification, or to provide further detail if necessary.



F-1 Activities/Deliverables/Milestones Pricing Worksheet – Deliverables List

The vendor must include, within the not-to-exceed for IT service activities, tasks and preparation of required deliverables, pricing for the deliverables required based on the proposed approach, and methodology and tools. The following format must be used to provide this information. Please note: this information is for Year 1. **Please add rows** for activities, deliverables, or milestones not included in the table below. **Please add columns** if specific on-going costs, not covered by costs in Tables F4 and F5, should be included.

Table F-1: Activities/Deliverables/Milestones Pricing Worksheet

	Activity, Deliverable, or Milestone	Required			
		Deliverable Type	Projected Delivery Date	Projected Payment Date	Projected Year 1 Price
PLANNING AND PROJECT MANAGEMENT					
1	Conduct Project Kickoff Meeting	Non-Software	Summer	Q1	\$ 10,043
2	Project Status Reports	Written	monthly	Q1-4	\$ 6,700
3	Work Plan (includes program management, committee meetings & workshops)	Written	monthly	Q1-4	\$ 397,426
4	Infrastructure Plan, including Desktop and Network Configuration Requirements	Written	Fall	Q1	\$ 4,900
5	Security Plan	Written	Fall	Q1	\$ 4,900
6	Communications and Change Management Plan	Written	Fall	Q1	\$ 4,900
7	Requirements Trace Ability Matrix	Written	Fall	Q1	\$ 4,900
8	Software Configuration Plan	Written	Fall	Q1	\$ 4,900
9	Systems Interface Plan and Design/Capability	Written	Fall	Q1	\$ 4,900
10	Testing Plan	Written	Fall	Q1	\$ 4,900
11	Data Conversion Plan and Design	Written	Fall	Q1	\$ 4,900
12	Deployment and Roll-out Plan	Written	Fall	Q1	\$ 4,900
13	Comprehensive Training Plan and Curriculum	Written	Fall	Q1	\$ 3,400
14	End User Support Plan	Written	Fall	Q1	\$ 3,400
15	Business Continuity Plan	Written	Fall	Q1	\$ 3,400
16	Documentation of Operational Procedures	Written	Fall	Q1	\$ 3,400
INSTALLATION					
17	Provide Software Licenses, if needed	Written	Winter	Q2	\$ 8,700

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Table F-1: Activities/Deliverables/Milestones Pricing Worksheet

		Required			
	Activity, Deliverable, or Milestone	Deliverable Type	Projected Delivery Date	Projected Payment Date	Projected Year 1 Price
18	Provide Fully Tested Data Conversion Software	Software	Winter	Q2	\$ 83,100
19	Provide Software Installed, Configured, and Operational to Satisfy State Requirements	Software	Fall/Winter/Spring	Q1-4	\$ 513,894
TESTING					
20	Conduct Integration Testing	Non-Software	Fall/Winter	Q1-2	\$ 3,300
21	Conduct User Acceptance Testing	Non-Software	Fall/Winter	Q1-2	\$ 15,400
22	Perform Production Tests	Non-Software	Fall/Winter	Q1-2	\$ 7,300
23	Test In-Bound and Out-Bound Interfaces	Software	Fall/Winter	Q1-2	\$ 8,800
24	Conduct System Performance (Load/Stress) Testing	Non-Software	Fall/Winter	Q1-2	\$ 7,400
25	Certification of 3rd Party Pen Testing and Application Vulnerability Scanning	Non-Software	Fall/Winter	Q1-2	\$ 7,300
SYSTEM DEPLOYMENT					
26	Converted Data Loaded into Production Environment	Software	Fall/Winter/Spring	Q1-3	\$ 4,800
27	Provide Tools for Backup and Recovery of all Applications and Data	Software	Fall/Winter/Spring	Q1-3	\$ 6,300
28	Conduct Training	Non-Software	Fall/Winter/Spring	Q1-3	\$ 21,000
29	Cutover to New Software	Non-Software	Fall/Winter/Spring	Q1-3	\$ 3,300
30	NA				\$ -
31	Provide Documentation	Written	Fall/Winter/Spring	Q1-4	\$ 3,400
32	Execute Security Plan	Non-Software	Fall/Winter/Spring	Q1-4	\$ 3,400
OPERATIONS					
33	Ongoing Hosting Support	Non-Software	Fall/Winter/Spring	Q1-4	\$ 169,500
34	Ongoing Support & Maintenance	Software	Fall/Winter/Spring	Q1-4	\$ 65,600
35	Conduct Project Exit Meeting	Non-Software			\$ -
36	Test Administration	Non-Software	Fall/Winter/Spring	Q1-4	\$ 1,594,517
Totals					\$ 2,998,879

Add columns/rows as appropriate for proposal.

Cost Option: Parent Portal

\$ 194,000

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F-1 Activities/Deliverables/Milestones Pricing Worksheet – Deliverables List

The vendor must include, within the not-to-exceed for IT service activities, the deliverables required based on the proposed approach, and methods to provide this information. Please note: this information is for Year 1. Prices included in the table below. **Please add columns** if specific on-going costs are included.

Table F-1: Activities/Deliverables/Milestones Pricing Worksheet

	Activity, Deliverable, or Milestone	Projected Year 2 Price	Projected Year 3 Price	Projected Year 4 Price
PLANNING AND PROJECT MANAGEMENT				
1	Conduct Project Kickoff Meeting	\$ 9,803	\$ 10,418	\$ 10,503
2	Project Status Reports	\$ 6,828	\$ 6,942	\$ 6,942
3	Work Plan (includes program management, committee meetings & workshops)	\$ 553,743	\$ 454,712	\$ 381,384
4	Infrastructure Plan, including Desktop and Network Configuration Requirements	\$ 3,755	\$ 3,755	\$ 3,755
5	Security Plan	\$ 3,755	\$ 3,755	\$ 3,755
6	Communications and Change Management Plan	\$ 3,755	\$ 3,755	\$ 3,755
7	Requirements Trace Ability Matrix	\$ 3,755	\$ 3,755	\$ 3,755
8	Software Configuration Plan	\$ 3,755	\$ 3,755	\$ 3,755
9	Systems Interface Plan and Design/Capability	\$ 3,755	\$ 3,755	\$ 3,755
10	Testing Plan	\$ 3,755	\$ 3,755	\$ 3,755
11	Data Conversion Plan and Design	\$ 3,755	\$ 3,755	\$ 3,755
12	Deployment and Roll-out Plan	\$ 3,755	\$ 3,755	\$ 3,755
13	Comprehensive Training Plan and Curriculum	\$ 3,414	\$ 3,414	\$ 3,528
14	End User Support Plan	\$ 3,414	\$ 3,414	\$ 3,528
15	Business Continuity Plan	\$ 3,414	\$ 3,414	\$ 3,528
16	Documentation of Operational Procedures	\$ 3,414	\$ 3,414	\$ 3,528
INSTALLATION				
17	Provide Software Licenses, if needed	\$ 11,949	\$ 11,949	\$ 11,949

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Table F-1: Activities/Deliverables/Milestones Pricing Worksheet

	Activity, Deliverable, or Milestone	Projected Year 2 Price	Projected Year 3 Price	Projected Year 4 Price
18	Provide Fully Tested Data Conversion Software	\$ 104,241	\$ 104,468	\$ 104,696
19	Provide Software Installed, Configured, and Operational to Satisfy State Requirements	\$ 651,339	\$ 698,421	\$ 706,262
TESTING				
20	Conduct Integration Testing	\$ 2,162	\$ 2,276	\$ 2,276
21	Conduct User Acceptance Testing	\$ 13,315	\$ 13,542	\$ 13,770
22	Perform Production Tests	\$ 5,918	\$ 6,031	\$ 6,145
23	Test In-Bound and Out-Bound Interfaces	\$ 6,145	\$ 6,259	\$ 6,487
24	Conduct System Performance (Load/Stress) Testing	\$ 6,031	\$ 6,145	\$ 6,373
25	Certification of 3rd Party Pen Testing and Application Vulnerability Scanning	\$ 5,918	\$ 6,031	\$ 6,145
SYSTEM DEPLOYMENT				
26	Converted Data Loaded into Production Environment	\$ 2,504	\$ 2,504	\$ 2,617
27	Provide Tools for Backup and Recovery of all Applications and Data	\$ 2,731	\$ 2,845	\$ 2,959
28	Conduct Training	\$ 18,663	\$ 19,118	\$ 19,460
29	Cutover to New Software	\$ 2,162	\$ 2,276	\$ 2,276
30	NA	\$ -	\$ -	\$ -
31	Provide Documentation	\$ 3,414	\$ 3,414	\$ 3,528
32	Execute Security Plan	\$ 3,414	\$ 3,414	\$ 3,528
OPERATIONS				
33	Ongoing Hosting Support	\$ 192,436	\$ 193,346	\$ 194,370
34	Ongoing Support & Maintenance	\$ 58,607	\$ 59,745	\$ 60,769
35	Conduct Project Exit Meeting	\$ -	\$ -	\$ -
36	Test Administration	\$ 1,289,739	\$ 1,337,479	\$ 1,398,149
	Totals	\$ 2,998,517	\$ 2,998,791	\$ 2,998,498

Add columns/rows as appropriate for proposal. \$ 11,994,685

Cost Option: Parent Portal \$ 198,000 \$ 201,000 \$ 205,000

Measured Progress

F-2 Proposed Vendor Staff, Resource Hours and Rates Worksheet

Table F-2: Proposed Vendor Staff, Resource Hours and Rates Worksheet Year One FY 2018

Title	Name	Initiation	Implementation	Project Close out	Hourly Rate**	Hours X Rate
Project Manager	Jimmy Hartman	234	468	78	36	28,184
Technology Consultant	Amanda Chase	247	493	82	39	31,994
Portfolio Manager	Dave Knauer	95	189	32	58	18,228
Project Coordinator	Christina Dunn	142	284	47	21	10,143
Customer Care Center Director	John Gardner	25	50	8	68	5,443
Customer Care Center Manager	Justina Beaulieu	47	95	16	26	4,158
Event Planning Specialist	TBD	15	29	5	20	973
Director Content Design & Development	Karen Paavola	6	12	2	74	1,435
NGSS Solution Leader	Karen Whisler	10	19	3	53	1,681
CDD Group Manager	David Harrison	10	19	3	53	1,681
Development Leads	Travers-Lynch/Danagonia/Richie/Rogers	118	236	39	43	16,811
Director Psychometrics	Matthew Gushta	50	99	17	87	14,322
Lead Psychometrician	Lei Yu	177	355	59	67	39,400
Psychometrician Research Principal	Mike Nering	23	47	8	95	7,374
Psychometrician Research Senior	Rob Keller	23	47	8	67	5,200
Content Specialist III	Veronica Zonick	23	47	8	43	3,328
Data Analysis Manager	Amy Moody	23	47	8	46	3,578
Manager Reporting & QA	Shawn Carey	47	95	16	45	7,057
Data Processing Manager	Woreen Bogle	23	47	8	49	3,827
Psychometrician Research Senior	Wonsuk Kim	266	532	89	67	59,067
Scoring Project Manager	Aaron Wozmak	47	95	16	38	5,941
						0
TOTALS		1651	3302	550		270,027

Add rows as appropriate for proposal.

*This information is important and required so that the NH DOE can break down the costs for services

**Hourly rate represents salary wages only, no fringe/overhead

Measured Progress

F-3 Future Vendor Rates Worksheet

Table F-3: Future Vendor Rates Worksheet

Required				
Position Title	SFY 2018	SFY 2019	SFY 2020	SFY 2021
Project Manager	36	37	38	39
Technology Consultant	39	40	41	43
Portfolio Manager	58	60	61	63
Project Coordinator	21	22	23	23
Customer Care Center Director	68	70	73	75
Customer Care Center Manager	26	27	28	29
Event Planning Specialist	20	20	21	22
Director Content Design & Development	74	76	78	80
NGSS Solution Leader	53	54	56	57
CDD Group Manager	53	54	56	57
Development Leads	43	44	45	47
Director Psychometrics	87	89	92	95
Lead Psychometrician	67	69	71	73
Psychometrician Research Principal	95	97	100	103
Psychometrician Research Senior	67	69	71	73
Content Specialist III	43	44	45	47
Data Analysis Manager	46	47	49	50
Manager Reporting & QA	45	46	47	49
Data Processing Manager	49	51	52	54
Psychometrician Research Senior	67	69	71	73
Scoring Project Manager	38	39	40	41

Measured Progress

Table F-4: Software Licensing, Maintenance, and Support Pricing Worksheet

Required					
Software Name	Initial Cost	Maintenance Support and Upgrades			
		Year 1	Year 2	Year 3	Year 4
iTester		\$ 362,400	\$ 346,400	\$ 349,100	\$ 352,400
Data Interaction		\$ 126,300	\$ 166,000	\$ 166,100	\$ 166,300

Table F-5: Web Site Hosting, Maintenance, and Support Pricing Worksheet

Required					
HOSTED SERVICES	Year 1	Year 2	Year 3	Year 4	TOTAL
Web Site Hosting Fee	\$ 109,200	\$ 109,700	\$ 110,300	\$ 110,800	\$ 440,000
Technical Support and updates	\$ 33,600	\$ 33,800	\$ 33,900	\$ 34,100	\$ 135,400
Maintenance and Updates	\$ 25,200	\$ 25,300	\$ 25,500	\$ 25,600	\$ 101,600
GRAND TOTAL	\$ 168,000	\$ 168,800	\$ 169,700	\$ 170,500	\$ 677,000

Section VIII: Copy of the RFP and any Signed Addenda



Section IX: Appendices



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Appendix 1: Curricula Vitae





David Knauer, Ph.D., PMP
Program Manager III: Client Services

Summary of Qualifications	<p>Dr. David Knauer is a goal-oriented senior program manager and product developer with over 10 years of experience creating content, documenting requirements, analyzing metrics, forecasting budgets and improving processes. He is skilled in coordinating multiple workflows—content development, technology releases, customer UAT—to deliver a finished product on time and within budget.</p> <p>Dr. Knauer has overseen development of K–12 formative assessment programs for New York City, Tennessee, Los Angeles, Denver, Sarasota and Philadelphia. He has coordinated teams in content development, editorial QA, and publishing operations to deliver print, digital and computer-adaptive assessments for Grades K–12 in Math, Reading, Writing, Science and Social Studies.</p>
Education	<p>Ph.D., English, Northern Illinois University, DeKalb, IL</p> <p>M.A., English, University of Akron, Akron, OH</p> <p>B.A., English, University of Akron, Akron, OH</p>
Professional Experience	<p>2016–present Program Manager III, Client Services, Measured Progress, Inc., Dover, NH</p> <p>Dr. Knauer leads and manages a team focused on the design, planning and budgeting for the development, implementation and maintenance of state testing programs, including New York Scoring Audit and Maine Educational Assessments. Communicates design and objectives to personnel and provides training and reporting support to the client.</p> <p>2008–2015 Senior Project Manager, CTB/McGraw-Hill, Akron, OH</p> <ul style="list-style-type: none"> ▪ Led turnaround for New York City periodic assessments, raising first-review acceptance rates to 85% for 3K items and resulting in contract renewals for six years. ▪ Facilitated content development and delivery for hundreds of new formative assessments each year, including technology-enhanced item types. ▪ Facilitated content development and delivery for new high school equivalency assessment, Test of Adult Secondary Completion (TASC), now approved for use in eight states. ▪ Initiated quality assurance processes for translation of assessment content into Spanish and conversion for audio delivery, resulting in cost savings and increased accuracy. <p>2006–2008 Associate Vice President, K–12 Assessment, Princeton Review, New York, NY</p> <ul style="list-style-type: none"> ▪ Designed multi-year assessment blueprints that tracked growth, drove classroom instruction and predicted student performance on high-stakes tests. ▪ Created acceptance criteria and led presentations for onsite content reviews with customers to familiarize them with assessment blueprinting and item validity. ▪ Managed all assessment project budgets to within 10% variance. ▪ Developed and managed product release schedules to meet critical deadlines and avoid all rush fees and penalties.



David Knauer, Ph.D., PMP
 Program Manager III: Client Services

Certification(s)	Project Management Institute (PMI), Project Management Professional (PMP)
Professional References	<p>Charlene R. Tucker, Ed.D. Director of Assessment & Accountability Maine Department of Education 23 State House Station Augusta, ME 04333 (207) 624-6827 charlene.tucker@maine.gov</p> <p>Nancy Godfrey DOE Assessment Coordinator Maine Department of Education 23 State House Station Augusta, ME 04333 207-624-6775 nancy.godfrey@maine.gov</p> <p>Sarah J. Larson Research Director, Education & Workforce Development RTI International San Antonio, TX slarson2799@gmail.com</p>



Jimmy Hartman

Project Manager II: Client Services, Special Education

Summary of Qualifications	<p>Mr. Jimmy Hartman currently holds the position of Project Manager II for Measured Progress's Client Services-Special Education department. Mr. Hartman is an organized and solution-oriented manager with the ability to build strong relationships with his team, clients and business partners.</p> <p>He applies a creative and focused approach to improve efficiency and budget management while providing quality deliverables and services.</p>
Education	<p>B.S., Business, Finance; Risk Management and Insurance, University of South Carolina, Columbia, SC</p>
Professional Experience	<p>2015–present Project Manager II, Client Services, Special Education, Measured Progress, Inc., Dover, NH</p> <p>As Project Manager II, Mr. Hartman plans, manages, and schedules activities for large-scale alternate assessment contracts. He collaborates with internal and external subject matter experts to ensure activities deadlines are met and held to the highest quality assurance standards. In addition, during test administration, he facilitates weekly client meetings and teacher training webinars.</p> <p>2014–2015 Content and Licensing Coordinator, Permissions, Measured Progress, Dover, NH</p> <p>Mr. Hartman facilitated the onboarding of educational assessment stimuli and review for usability and feasibility for licensing. He developed relationships with publishers resulting in expedient resolution of licensing agreements within compressed timelines.</p> <p>2008–2013 Financial Center Manager, Fifth Third Bank, Concord/Midland, NC</p> <p>Mr. Hartman provided daily leadership and direction to multiple financial center teams, with emphasis on decision making, problem solving; client focused customer service and financial goals. He facilitated monthly regional training meetings and created strategies for daily appointment setting for bankers for consistent follow up with each client.</p> <p>2001–2008 General Manager, Consolidated Theatres, Charlotte, NC, Charleston, SC, and Ashburn, VA</p> <p>Mr. Hartman managed daily operations while increasing operational efficiency by developing consistent hiring practices and performance-driven training for management. He also created and standardized work plans and schedules.</p>
Honors and Awards	<p>2011 Financial Center Manager of the Year</p> <p>2010 President Circle Award Winner for top Financial Center performance</p>



Jimmy Hartman
Project Manager II: Client Services, Special Education

Professional
References

Sue Nay

Alternate Assessment & Accommodations Coordinator at the Maine Department of Education

23 State House Station, Augusta, ME 04333, Sue.Nay@maine.gov,
(207) 624-6774

Shanna Anderson

Senior Manager, Retail Coaching-Vice President for Fifth Third Bank

2001 Shiloh Church Rd., Davidson, NC 28036,

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(810) 348.5934

Susan Izard

Director of Special Education at Measured Progress

100 Education Way, Dover, NH 03820

izard.Susan@measuredprogress.org,

(603) 749-9102



Amanda Chase
Business Analyst: Information Technology

Summary of Qualifications	<p>Ms. Chase highly competent and motivated information technology professional, with direct experience in business analysis, software development, and program management. In her role as Business Analyst at Measured Progress, Ms. Chase work with business teams and clients to define software and report requirements and as a liaison between the business and IT in all phases of the Software Development Life Cycle. Ms. Chase creates process procedures and provides training to software end users. As part of her work, she writes functional specifications, test cases, and system documentation for new applications. Ms. Chase effectively communicates with customers, stakeholders, and technical teams to foster a productive work environment while routinely driving process improvements using Six Sigma tools and methodologies.</p>
Education	<p>Masters of Business Administration – Project Management - Southern New Hampshire University, Manchester, NH</p> <p>Bachelor of Science – Business Studies Southern New Hampshire University - Manchester, NH</p> <p>Associate of Science – Accounting - New Hampshire Community Technical College, Berlin, NH</p>
Professional Experience	<p>2014–present Business Analyst, Information Technology, Measured Progress, Inc., Dover, NH</p> <p>Ms. Chase meets with Product Owners, Subject Matter Experts, and clients to define and document software requirements for district and state assessment contracts. In this role, she creates user stories for new functionality and enhancements to existing applications as part of an internal agile team as well as for software development vendors. Ms. Chase participate in stand-ups, sprint planning, and story estimation meetings with developers, Quality Assurance, and technical leads. She collaborates with design group to create a consistent and intuitive User Interface. In addition, Ms. Chase assists with performance testing, and user documentation and develops project timelines, mitigates risks, and reprioritizes tasks to keep projects on schedule</p> <p>2009–2014 Project Manager, Merchants Fleet Management, Hooksett, NH</p> <p>Ms. Chase provided strategic consulting services and project management for the tenth largest automotive fleet leasing company in the United States. Ms. Chase managed the helpdesk as well as testing and implementation of reports and new website features for the customer platform. She triaged defects and change requests while working with internal developers and off shore consultants to drive tickets to resolution. Ms. Chase also developed concepts and wrote functionality and user experience requirements for new internal and client-facing business applications. Ms. Chase was also responsible for testing new releases prior to business engagement and managing the User Acceptance Testing and business approval for production releases.</p> <p>2008-2009 Product Marketing Engineer, Allegro Microsystems, Manchester, NH</p> <p>Ms. Chase managed customer accounts, created custom pricing for new business, and monitored margins and standard manufacturing costs. She also performed market analysis for major automobile manufacturers and reported and forecasted revenue.</p>
Professional Affiliations or Certifications	<p>Six Sigma Green Belt Certification, Expert Rating</p>



Amanda Chase
Business Analyst: Information Technology

Professional
References

Emily Candib
Manager, Strategic Projects
Merchants Fleet Management
(603) 703-9711
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Liberty Mutual
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Lei Yu, Ph.D.

Psychometrician / Research Scientist - Senior: Psychometrics

Summary of Qualifications

Dr. Lei Yu joined Measured Progress in 2016 as a Senior Psychometrician / Research Scientist and brought with her extensive experience in psychometric work of large scale, complex, state assessment programs. In her current role, she leads, designs, and performs psychometric analyses for next-generation assessments. She also advises and contributes to operational development and implementation of innovative assessment products. In addition, she develops proposal solutions.

Dr. Yu has over 15 years of practical experience and expertise in Item Response Theory, scaling and equating, research on testing innovations, and methodological studies. Her portfolio of state testing programs for which she served as the senior psychometrician prior to joining Measured Progress includes the complex, innovative English Language Proficiency Assessment for the 21st Century (ELPA21) led by a 10-state consortium, and Missouri Online End-of-Course Assessments when she worked at Questar Assessment, Inc., as well as the Washington Assessment of Student Learning (WASL), and California High School Exit Exam (CAHSEE) during her tenure at Educational Testing Service. Her range of knowledge and skills also encompasses testing on tablets and automated scoring. She frequently presents at technical advisory committee meetings and professional conferences.

Education

- **Ph.D., Research and Measurement, the University of Toledo, Toledo, Ohio.**
- **M.A., English Language and Linguistics, Henan University, Kaifeng, Henan, China**
- **B.A., English Language and Literature, Central China Normal University, Wuhan, Hubei, China.**

Professional Experience

2016–present Psychometrician / Research Scientist - Senior, Psychometrics, Measured Progress, Inc., Dover, NH

Dr. Yu leads, designs, and performs psychometric analyses for next-generation assessments. She also advises and contributes to the operational development and implementation of innovative assessment products. In addition, she develops proposal solutions.

2012–2015 Senior Psychometrician, Assessment Development and Psychometrics, Questar Assessment, Inc., Apple Valley, MN.

Dr. Yu led psychometric work on innovative and complex assessment programs including the English Language Proficiency Assessment for the 21st Century (ELPA21) led by a 10-state consortium, Missouri Online End-of-Course Assessments, and Idaho English Language Assessments. She worked closely with state agencies and their consultants, gathered requirements, and provided psychometric leadership and solutions. She also prepared statistical and psychometric procedures and implementation documents. She guided internal teams to ensure the health and quality of the testing programs, including test design, form assembly, technology implementation of innovative items and online forms, and scoring of technology-enhanced items. In addition, Dr. Yu assisted with the implementation of data forensics for a state and advised on related policy. She also conducted cog labs on tablet testing and evaluated comparability of scores between tablets and desktop/laptop computers.

2009–2012 Director, Center For Handscoring, Pacific Metrics Corporation, Monterey, CA.

As the Director, Center for Handscoring, Dr. Yu created the vision, structure, goals, and implementation process for the Center. She also developed technical requirements for the handscoring software system. Prior to that role, she engaged in business development activities, including RFPs and proposal work, and led the marketing initiative and management of the automated scoring engine. She also managed an enhanced assessment grant funded by the U.S. Department of Education that involved participation of four states to determine the utility of online mathematics constructed-response items. She joined the organization as a senior psychometrician and performed responsibilities in that role.

2001–2009 Senior Psychometrician, Educational Testing Service, Princeton, NJ

Dr. Yu oversaw, planned, coordinated, and conducted statistical and psychometric work required for score reporting and data interpretation for complex K-12 and other testing programs, including the Washington Assessment of Student Learning (WASL) and the California High School Exit Exam (CAHSEE), California State University, the Early Assessment Program (EAP) and Entry-Level Mathematics (ELM)/English Placement Test (EPT), and the SAT subject Tests. She assumed primary responsibility for designing, developing, and documenting psychometric and statistical procedures for assigned testing programs. She led a group of psychometricians and data analysts and ensured that all psychometric deliverables were produced on schedule, within budget, and error free. Dr. Yu also acted as a primary psychometric expert responding to internal and external requests for technical



Lei Yu, Ph.D.

Psychometrician / Research Scientist - Senior: Psychometrics

Recent Publications and Presentations

information. She proposed, co-proposed, and won several ETS Research and Development funding allocations. She frequently presented at the client and technical advisory group meetings and supervised junior staff and interns.

PUBLICATIONS

Puhan, G., Moses, T. P., Yu, L. & Dorans, N. J. (2009). *Using Log-linear smoothing to improve small-sample DIF estimation*. *Journal of Educational Measurement*, 46(1), 59-83.

Liu, Y., Shulz, M. E., & Yu, L. (2008). Standard error estimation of 3-PL IRT true score equating with MCMC method. *Journal of Educational and Behavioral Statistics*, 33(3), 257-277.

Yu, L., Moses, T., Puhan, G., & Dorans, N. (2008). *DIF Detection with small samples: Applying smoothing techniques to frequency distributions in the Mantel-Haenszel procedure*. ETS Research Report (RR-08-44). Princeton, NJ: Educational Testing Service.

Puhan, G., Moses, T. P., Yu, L. & Dorans, N. J. (2007). *Small-sample DIF estimation using log-linear smoothing: A SIBTEST application*. ETS Research Report (RR-07-10). Princeton, NJ: Educational Testing Service.

Dorans, N., Yu, L., & Guo, F. (2006). *Evaluating scale alignment for a broad-ranged admissions test*. ETS Research Memorandum (RM-06-04). Princeton, NJ: Educational Testing Service.

Yu, L. (2004). Reporting the incidence of school violence across grade levels in the U.S. using the Third International Mathematics and Science Study (TIMSS). *Journal of Applied Measurement*, 5(3), 287-300.

Yu, L., Livingston, S., Larkin, K., & Bonnet, J. (2004). *Investigating Differences in Examinee Performance on Computer-Based and Handwritten Essays*. ETS Research report (RR-04-18). Princeton, NJ: Educational Testing Service.

Professional Affiliations and Certifications

- National Council of Measurement in Education (NCME)
- American Educational Research Association (AERA)

Professional References

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Christina Dunn
 Program Coordinator: Client Services

Summary of Qualifications	<p>Ms. Dunn highly competent and motivated professional with over 20 years of experience working in both commercial and academic settings. Ms. Dunn has the proven ability to coordinate and support complex and time sensitive projects while using sound judgment in each task with respect to confidential material. Ms. Dunn is approachable team player able to establish good working relationships with a range of different people while always working to generate innovative solutions. Ms. Dunn has demonstrated the ability to manage multiple priorities and meet tight deadlines without compromising quality. Ms. Dunn also has experience with human resource operations and staffing coordination.</p>
Education	<p>Associate of Science, Business Science & Paralegal Studies, McIntosh College, Dover, NH</p>
Professional Experience	<p>2014–present Program Coordinator, Client Services Measured Progress, Inc., Dover, NH</p> <p>Ms. Dunn performs day-to-day clerical tasks such as scheduling and preparing for meetings; drafting of internal and external agendas, memorandums, and correspondence; preparing forms; maintaining files and/or drafting contracts. Ms. Dunn also organizes staff schedules, travel arrangements and coordinates special events and project. In this role, Ms. Dunn also frequently communicates with clients, internal staff, and vendors with ability to interact with people from all layers of authority within the company and tailors conversations to the group being addressed.</p> <p>2011–2014 Human Resource Assistant, Measured Progress, Inc., Dover, NH</p> <p>In this role, Ms. Dunn managed calendars, organized meetings for HR staff members, and arranges complex travel plans by producing detailed itineraries and compiling all needed documents for travel. Ms. Dunn also prepared confidential correspondence, reports, and financial documents for the department and all Board of Director meetings. Ms. Dunn also served as program administrator for all verifications and acted as a liaison between various temporary staffing agencies to ensure the company is supplied with any additional staff needed.</p> <p>2005–2011 Human Resources Administrative Coordinator, Measured Progress, Inc., Dover, NH</p> <p>Ms. Dunn was responsible for supervising one part-time and two full-time receptionists, ensuring the correct completion of all day-to-day office activities. In addition, Ms. Dunn integrated, scheduled, and prepared large scoring orientation meetings for incoming personnel, in addition to developing and maintaining scoring databases and rosters, monitoring changes daily.</p> <p>2003–2004 Word Processing Assistant, Ransom Environmental Consultants, Newburyport, MA</p> <p>In this role, Ms. Dunn accurately and efficiently proofread and edited documents including reports, letters, memos, and presentations. In addition production of site plans copies, property drawings, and plot plans using a large-scale plotter/copier were part of Ms. Dunn’s responsibilities. She also assisted in the preparation and acquisition of documents needed for environmental reports for submission to the state for final approval.</p>





John Gardner
 Director Customer Care Center: Client Services

Summary of Qualifications	<p>Mr. John Gardner assumes the role of Director of Measured Progress's Customer Care Center. As such, he manages the Customer Care Center team including: recruiting, training, managing, mentoring, and motivating talent, while creating a positive environment of continuous improvement through coaching and development. He ensures the team provides an exceptional overall client experience using time-sensitive, mission critical applications. He also works collaboratively to solve complex conceptual and implementation problems; negotiate strategies and plan both short- and long-term goals with senior-level internal management staff and external clients.</p> <p>Mr. Gardner is a proactive, results-driven Contact/Call Center Operations Director with more than twenty years of progressive experience in customer service contact center roles. He has an outstanding track record of successfully building, launching and improving large call centers; developing and implementing new programs, processes and platforms that improve productivity, reduce costs and accelerate profitability. Mr. Gardner has a keen understanding of business priorities; proven ability to manage multi-site operations and outside vendors; contribute to business development and revenue-producing initiatives, as well as easily collaborate cross-functionally and expertly manage key client relationships.</p>
Education	<p>B.S., Business Administration, Fitchburg State College, Fitchburg, MA</p>
Professional Experience	<p>2016–present Director Customer Care Center, Client Services, Measured Progress, Inc., Dover, NH</p> <p>As Director of the Customer Care Center, Mr. Gardner is responsible for developing standards and implementing best practices in the delivery of the highest quality client and product support services across all business segments. This includes supporting over \$100 million (+/-) in annual revenue from major, complex customized educational assessment programs. Customer Care Center services include providing shared services support to program management teams in addition to call center direct services to Measured Progress clients. As part of his current role, he designs and delivers distinctive, high value solutions that maintain, extend, and differentiate the Measured Progress's products, services and impact. Mr. Gardner collaborates with cross-functional departments to represent Measured Progress's client needs and perspectives, as well as to provide information critical to developing timely and effective solutions.</p> <p>2005–2016 Director, Operations Support, Aspire, Boston, MA</p> <p>Mr. Gardener built and oversaw workforce management solution; created capacity models in multi-site environment for 600-1K seat operation with 2500-5K calls per month. He actively managed relationships with 1-30 key clients; report productivity, contractual compliance and performance. Led 23-60 direct reports responsible for scheduling, quality, traffic and operations management; managed 38-40 Team Leaders. Mr. Gardner managed scheduling, forecasting, productivity, budget creation, financial forecasting; vetting and implementing technology investments. He administered budgets of \$43M-\$76M; partner with 2 Site Directors and 10 Service Delivery Managers to design and execute strategies.</p>



John Gardner
 Director Customer Care Center: Client Services

2000–2004 Director, Workforce Management, Pegasus Communications, Bala Cynwyd, PA

Mr. Gardner implemented workforce solutions; drove productivity, efficiency and scalability across 8 contact centers with 12M calls per year. Managed \$70M annual customer relationship management budget. Led outsourcing efforts with several partners, Alliance Data Systems, Sykes Enterprises, Hoosier Tel Com Inc. and Direct Communications, an additional ~400 seats, as well as technical support vendors, Sitel Corp. and VAC Service Corp. Created standardized systems, processes, metrics and programs, such as hiring models, incentive programs, and KPIs.

2000–2001 Senior Manager, Capacity Planning, Pegasus Communications, Bala Cynwyd, PA

Mr. Gardner oversaw all forecasting, staffing, scheduling and capacity planning for build-out and operation of three 24/7 U.S. call centers with ~850 employees through ~35 Workforce Managers, Forecasting & Scheduling Analysts and Traffic Professionals for DirecTV reseller with 1.6M subscribers.

1999–2000 Senior Manager, Workforce, AT&T (formerly known as Cellular One/Southwestern Bell), Boston, MA

Mr. Gardner oversaw workforce management for 3 Northeastern U.S. call centers in MA and CT. Established productivity measurements, call quality standards, operational best practices, IVR scripting and automation tracking. He was also charged with technology procurement, installation and queue management; churn analyses, reporting and budget development.

1997–2000 Manager, Workforce, AT&T (formerly known as Cellular One/Southwestern Bell), Boston, MA

Mr. Gardner led call volume forecasting, staffing and productivity efforts for 250+ representatives across 5 disciplines. Negotiated and managed trafficking of outsourced call volume to outside vendors.

Professional Affiliations and/or Certifications

- Call Center Planet member**
- Worldwide Contact Center Professionals member**
- U.S. Call Center Executive Network member**



Justina Beaulieu
 Manager: Customer Care Center

Summary of Qualifications	<p>Ms. Beaulieu is responsible for the Customer Care Center staffing and hiring. She oversees training and monitors performance metrics.</p> <p>Prior to this role, Ms. Beaulieu worked as a service center representative and a program assistant at Measured Progress. Both positions required Ms. Beaulieu to act in a customer facing role, fielding calls from school administrators during test administrations and was level II support for districts and schools regarding test materials.</p>
Education	<p>Diploma, Mountain Valley High School, Rumford, ME</p>
Professional Experience	<p>2017–present Manager, Customer Care Center, Measured Progress, Inc., Dover, NH</p> <p>Ms. Beaulieu is responsible for the Customer Care Center staffing and hiring. She oversees training and monitors performance metrics.</p> <p>2013–2017 Program Assistant II, Measured Progress, Inc., Dover, NH</p> <p>Ms. Beaulieu acted as Level II support for districts/schools regarding test materials. She participated in weekly internal and external meetings and recorded and distributed meeting minutes. Ms. Beaulieu tracked all orders placed, shipped and received back at Measured Progress, and followed up with schools on materials not received. Ms. Beaulieu was also responsible for assisting with the creation of contract schedules, client work plans, and statements of work.</p> <p>Service Center Representative, Measured Progress, Inc., Dover, NH</p> <p>Ms. Beaulieu fielded calls from administrators during test administration and reporting. She provided prompt, accurate responses to inquiries via phone and email, and researched and documented requests for information. Ms. Beaulieu was also responsible for investigating and resolving testing discrepancies.</p> <p>2010–2013 Data Operations Specialists, Gorham Savings Bank, Gorham, ME</p> <ul style="list-style-type: none"> ▪ Received and processed domestic and foreign wires ▪ Accurately processed customer ACH transactions through the Federal Reserve ▪ Entered automatic transfers to and from customer accounts on the computer system ▪ Honored customer requests for specific stop payments on accounts by entering information correctly on the computer system ▪ Provided back up assistance to the Deposit Operations department ▪ Provide customer support to branch personnel <p>2005–2010 Deposit Operations Specialist, Gorham Savings Bank, Gorham, ME</p> <ul style="list-style-type: none"> ▪ Retrieved and monitored daily and monthly reports ▪ Processed requests for account verifications ▪ Ensured receipt of paperwork for new accounts and account maintenance ▪ Promptly responded to legal processes such as levies, writs of execution and subpoenas





JOB DESCRIPTION

Date: December 14, 2016

Title: Event Planning Specialist

FLSA Status: Non-Exempt

EEO Category: Administrative Support

Job Group: Admin Support Workers

JOB SUMMARY:

In direct conjunction with the Event Planning and Program Management teams, the Event Planning Specialist is responsible for performing planning, administrative and logistical tasks for client meetings and events. As the liaison with clients, vendors, and Program Management, the Event Planning Specialist is responsible for carrying out administrative and logistical activities required for and related to high quality, successful client meetings and events. Provides customer service to internal and external clients and builds, sustains, and enhances relationships with clients and vendors.

PRINCIPAL ACTIVITIES:

- Serves as primary point of contact with the Program Management team and internal or external clients to gather requirements for client events and meetings, including timing, location, facilities, participants, materials and supplies, and support services.
- Prepare annual calendar of client events based on program schedules; assist Manager of Event Planning in creation of detailed event planning schedules in Microsoft Project and maintain and update schedules.
- Research and evaluate options for event/meeting facilities based on requirements and financial best value.
- In conjunction with the Program Management team, create and disseminate event/meeting communications and briefs per the schedule and communication plan, providing relevant information to internal and external stakeholders, vendors, suppliers and participants.
- Manage outgoing and incoming client correspondence related to events and meetings via email, fax/phone, and/or digital applications.
- Communicate with event/meeting facilities and other vendors related to meeting logistics (e.g., meeting space, lodging, catering, materials).
- Inform key stakeholders of progress and changes in event and meeting logistics.
- Create, design and set-up event materials such as nametags, rosters, non-disclosure agreements, travel and expense reimbursement forms, session materials, notebooks, packages, gift bags, seating cards and signage, participant welcome packets, registration, travel arrangements, scheduling, client packets, food and beverages, client dinners, etc. within budget requirements.
- Coordinate preparation of meeting materials with internal stakeholders and vendors; track printing, shipping, delivery of printed materials; arrange for return shipment or secure destruction of materials after events.
- Assist with managing on-site meetings as needed and as assigned.
- Perform related or unrelated tasks as necessary that require the same or similar skills and experience.

ADDITIONAL DUTIES:

- With a sense of innovation and resourcefulness, actively seek opportunities to improve meetings and events and identify opportunities for operational efficiencies.
- Responsible for the security of all meeting and event materials and equipment, including appropriate storage, disposal and/or shredding of documents per policies and procedures.
- Manage client event registration via iRegister and onsite sign-in, which may include occasional travel to regional and national events.
- Process invoices and reimbursement forms and track expenses for event budget reconciliation.
- Prepare event/meeting client satisfaction evaluation surveys, analyze results and prepare reports.

MINIMUM QUALIFICATIONS:Education and/or Experience:

High School Diploma or GED. Minimum of one (1) year of related customer service or meeting planning experience required.

Other Qualifications:

- Strong written and verbal communication and listening skills.
- Ability to work in a team environment, communicate effectively with others, and express ideas.
- Ability to accomplish projects with little supervision.
- Ability to multi-task, manage multiple workloads, take accountability, and deliver results to meet competing priorities.
- Enjoy working directly with the public.
- High energy, positive, professional attitude and take pride in the work.
- Basic technical aptitude and intermediate proficiency in Microsoft Office, including Word, Excel, PowerPoint, Visio, and Project. Ability to learn Measured Progress proprietary business applications.

PHYSICAL JOB REQUIREMENTS:

- Ability to remain in a stationary position for an extended period of time, continuous repetitive motion, frequent typing and some light lifting under 15 pounds.
- Manipulate a PC mouse and/or keyboard, see and read PC screens, read fine and/or normal size type print.
- Exposure to moderate noise (examples: business office with computers and printers, light traffic) is typical for the office work environment of this job.
- Limited local or national travel which may include client sites, state departments of education, remote scoring centers, meetings, seminars, training, partner meetings, corporate headquarters or other Measured Progress locations. (0-10%)

MENTAL JOB REQUIREMENTS:

- Ability to compose materials such as detailed reports, work-related manuals, publications, etc.
- Ability to organize and prioritize assigned work.
- Use Microsoft Office suite of products proficiently including Word, Excel, Outlook, and Power Point to accomplish daily tasks.

<p>Summary of Qualifications</p>	<p>Ms. Paavola is responsible for Content Design and Development of Custom Assessments, Business to Business Assessments including PSAT and Accelerator, and Common Core and Next Generation Science Standards groups. This includes overseeing the designing and implementing the day-to-day item and test development functions and processes of current and new product offerings.</p> <p>Assessment experience ranges from item and test design to developing score reports, parent brochures, study guides, technical manuals, and ancillary materials. Responsible for supervising multi-content program teams providing leadership for all facets of the item and test development process including item development, test construction, performance assessment scoring processes, performance level descriptor development, standard setting, range-finding, and facilitating item, data forms committee reviews, and alignment studies.</p>
<p>Education</p>	<p>M.Ed. emphasis in Technology, National Louis University, Evanston, IL B.S. Special Education, University of Wisconsin, Whitewater, WI</p>
<p>Professional Experience</p>	<p>2014–present Director, CDD, Measured Progress, Inc., Dover, NH</p> <p>Responsible for the content and assessment design for all content areas including overall design of assessments, development of content and development of other test development deliverables including performance level descriptors, teacher review committees, and training of Measured Progress staff and teacher meetings for assessments in a variety of media formats (online and paper and pencil) for states, consortia, and district clients.</p> <p>2014–2004 Test Development Director, Data Recognition Corporation, Maple Grove, MN</p> <p>Responsible for senior-level test development coordination across all projects, quality control of items and tests across all content areas, proposal development for test development which includes writing proposal text in response to state specific requirements for RFPs and developing costs. Includes supervision of direct reports and project reports.</p> <p>2002–2004 Director of Mathematics, ETS, San Antonio, TX</p> <p>Provided supervision of all aspects of mathematics test development which included the training of the mathematics team from on-site employees to telecommuters. Managed the distribution of the team’s workload to meet deadlines for error-free high-quality assessments. The team produced high quality, error-free test items through an internal review system and achieved an item content review acceptance rate of over 95%. Supervised the development of field-test and operational tests to meet client specifications while developing ancillary materials such as Teacher Guides, Directions for Administration, Item Specifications, Instructions for Item Writers, and Released Items. Facilitated state meetings and interacted with clients weekly to monitor program progress. Directed and managed the development of shelf products to be used nationally or customized for states or districts to meet the requirements of No Child Left Behind.</p> <p>2000–2002 Manager of Mathematic/Social Studies, Riverside Publishing, Itasca, IL</p> <p>Managed the development of mathematics and social studies assessments based on test and item specifications. Conducted training sessions for new hires and the Custom Assessment department and led project development teams. Developed and reviewed item specifications, test designs, and item and labor costs.</p> <p>1997–2000 Mathematics Test Development Specialist, Riverside</p>

	<p style="text-align: center;">Publishing, Itasca, IL</p> <p>Supervised several project teams of multi-content areas while developing assessments of high quality, keeping deliverables on time, and staying within project budgets. Created mathematics test blueprints and test and item specifications. Developed and reviewed items and performance assessments. Facilitate content review meetings for state projects.</p> <p>1990–1997 Adult Education Instructor, Wright Junior College, Chicago, IL</p> <p>Provided instruction, selected materials, and performed formal and informal assessments to students of varied abilities and ages. Content areas included mathematics, grammar, vocabulary, and writing.</p> <p>1987–1997 Middle Grades Mathematics Teacher, St. Pascal School, Chicago, IL</p> <p>Provided middle grades mathematics instructions and developed grade appropriate materials and assessments. Acted as liaison between faculty and principal, facilitated mathematics curriculum meetings and faculty and school board in-services, and coordinated the implementation of the new mathematics series. As technology coordinator, provided computer lab/classroom instruction for grades pre-K through 8; collaborated with classroom teachers for technology integrations in the classroom; initiated school-wide technology/ curriculum integration; and developed a technology needs assessment with recommendations and current research trends.</p>
<p style="text-align: center;">Relevant Publications and Presentations</p>	<p>Paavola, K., Courtney, K, and Selisky, J. (2013) Smarter Item Writer Training (ELA and Mathematics). Boise, Idaho</p> <p>Paavola, K (2013). Iowa Alignment Study Findings Presentation. Des Moines, Iowa.</p> <p>Paavola, K (2012). California Modified Assessment Alignment Study TAC Presentation.</p> <p>Paavola, K., Wang, X. (2008). A Practical Guide and Hands-On Experience in Aligning Expectations/Goals with Assessment. ATP Conference, Dallas TX.</p> <p>Paavola, K., Durette, D. (2008). Test Cheating Methods. DRC, Maple Grove, MN.</p> <p>Paavola, K., Campbell, H. (2007). Alignment Study Process. DRC, Maple Grove, MN.</p> <p>Paavola, K. (2006-2013) Idaho Standard Achievement Tests Item Review Process and Forms Approval Trainings and Biology and Chemistry End-of-Course Assessments. Boise, Idaho</p> <p>Paavola, K. (2005). Alaska Alignment Study Presentation. Anchorage, Alaska</p> <p>Paavola, K. (2006). Item and Test Development Process. Georgia High School Graduation Tests Pre-Assessment Workshops.</p> <p>Paavola, K. (2006, 2005). Georgia High School Graduation Tests TAC Presentations. Atlanta, Georgia</p>
<p style="text-align: center;">Honors and Awards</p>	<ul style="list-style-type: none"> ▪ 1997 STAR AWARD–Riverside Publishing ▪ 2000 Team Award–Riverside Publishing ▪ 2003 All Star Recognition–ETS
<p style="text-align: center;">Professional Affiliations and Certifications</p>	<ul style="list-style-type: none"> ▪ National Council Teachers of Mathematics (NCTM)



Karen Whisler

Next Generation Science Standards Solution Leader: Content Design and Development (CDD)

Summary of Qualifications

Ms. Whisler serves as the Next Generation Science Standards Solution Leader at Measured Progress, and, as such, is responsible for leading the company's initiatives and solutions for NGSS large-scale assessment. In this role, Ms. Whisler provides training and supports staff expertise in the NGSS. She spearheads solution planning and implementation related to NGSS item specifications, test blueprints, and large-scale assessment program proposals, as well coordinates solutions with internal NGSS product development staff. Additionally, Ms. Whisler presents on the NGSS at state and national conferences and participates in professional science organizations addressing NGSS needs and developments.

Prior to becoming the Next Generation Science Standards Solution Leader, Ms. Whisler served as the Science Group Manager for the Content Design and Development department at Measured Progress. In that role she was responsible for managing science assessment development across large-scale summative programs, alternate assessments, interim assessments, and formative programs, building off of her 11 years of experience as a science content specialist. Ms. Whisler's entry into the assessment industry was preceded by teaching in a variety of educational settings including public high school, public middle school, and elementary science camp. Ms. Whisler is a certified teacher in biology and general science, and her practical teaching experience is supported by education and science degrees from Ivy League institutions.

Education

M.Ed., Teaching and Curriculum, Harvard University, Cambridge, MA
B.S., Biological Science, Cornell University, Ithaca, NY

Professional Experience

2015–present Next Generation Science Standards Solution Leader, Content Design and Development, Measured Progress, Inc., Dover, NH

Provides content-specific leadership and manages initiatives focused on the Next Generation Science Standards (NGSS) and large-scale assessment solutions. Supports NGSS training and the development of NGSS item specifications, assessment blueprints, and program proposals. Coordinates across external client and internal product NGSS initiatives, including Measured Progress's work on an NGSS alternate assessment product. Presents on NGSS and NGSS solutions at conferences.

2012–2015 Group Manager, Science, Content Design and Development, Measured Progress, Inc., Dover, NH

Managed science content specialists working on deliverables for numerous assessment contracts, including large-scale summative programs (MA, ME, NECAP, MT, NM), alternate assessments (FL, MS, WA), interim assessments (RI), and formative programs and pilots (OH), across both traditional paper/pencil and online assessment modes. Monitored the quality of work, including development and testing of constructed response items, scenarios, technology-enhanced items, and performance tasks, as well as planned for future changes and needs in science assessment, including consideration of the Next Generation Science Standards (NGSS). Developed, reviewed, and monitored schedules, budgets, and workflows for ongoing contracts and new work, and participated in planning and solution-finding for projects. Planned and collaborated on grant proposals with the Measured Progress Innovation Lab and external educational organizations.

Relevant Publications and Presentations

Whisler, K. (Nov. 2016). *Understanding and including the crosscutting concepts in NGSS instruction*. National Science Teachers Association Area Conference on Science Education, Portland, Oregon.

Whisler, K. (Nov. 2016). *Unraveling NGSS implementation: key points and discussion*. National Science Teachers Association Area Conference on Science Education, Portland, Oregon.

Whisler, K. (Oct. 2016). *Tools to support next-generation science unit planning*. New Hampshire Science Teachers Association Fall Conference, Meredith, New Hampshire.

Whisler, K. (Mar. 2016, Nov. 2015, Oct. 2015). *Framing classroom instruction to best*



Karen Whisler

Next Generation Science Standards Solution Leader: Content Design and Development (CDD)

support next-generation science learning. National Science Teachers Association National Conference on Science Education, Nashville, Tennessee (Mar. 2016; *proposal accepted, presented by colleague*). New Hampshire Science Teachers Association Fall Conference, Meredith, New Hampshire (Nov. 2015). Maine Science Teachers Association Annual Conference, Gardiner, Maine (Oct. 2015).

Whisler, K., Roussos, L., and Paavola, K. (Jan. 2016). **Using cognitive labs to inform next generation science assessment development.** Webinar Presentation for Council of State Science Supervisors.

Whisler, K. (Nov. 2015, Oct. 2015). **The next generation of science investigations.** New Hampshire Science Teachers Association Fall Conference, Meredith, New Hampshire. Maine Science Teachers Association Annual Conference, Gardiner, Maine (Oct. 2015).

Whisler, K. (Apr. 2015, Oct. 2014). **NGSS Practices in use: how to plan meaningful learning activities and assessments.** New Hampshire Science Teachers Association K-12 Spring Science Symposium, Derry, New Hampshire (Apr. 2015). Maine Science Teachers Association Annual Conference, Gardiner, Maine (Oct. 2014).

Whisler, K. and Tierney, S. (Mar. 2015, Dec. 2014). **Features and models of quality performance tasks for the NGSS.** National Science Teachers Association National Conference on Science Education, Chicago, Illinois (Mar. 2015; *proposal accepted, presented by colleague*). National Science Teachers Association Area Conference on Science Education, Long Beach, California (Dec. 2014).

Whisler, K., Hess, K., Colby, R., Freeda, S., Chamberlain, J., and Jean, S. (Mar. 2014). **Panel: the new face of assessment in education.** New Hampshire Science Teachers Association K-12 Spring Science Symposium, Derry, New Hampshire.

Whisler, K. and Shea, G. (Mar. 2014). **Moving towards NGSS – challenges and opportunities in getting started.** New Hampshire Science Teachers Association K-12 Spring Science Symposium, Derry, New Hampshire.

Whisler, K. and Tierney, S. (Mar. 2014). **Formative assessments as meaningful tools for NGSS instruction.** New Hampshire Science Teachers Association K-12 Spring Science Symposium, Derry, New Hampshire.

Whisler, K. and Farrington, D. (Nov. 2013, Oct. 2013). **Integrating NGSS Practices with the Common Core and classroom formative assessment.** New Hampshire Science Teachers Association Fall Conference, Meredith, New Hampshire (Nov. 2013). Maine Science Teachers Association Annual Conference, Gardiner, Maine (Oct. 2013).

Whisler, K. (2013). **High-school NGSS unit, “The Haber-Bosch Process.”** In Bybee, R. *Translating the NGSS for Classroom Instruction*. NSTA Press.

DeGroat, K. M. (1997). **Inducible defenses of the marine bryozoan *Membranipora membranacea* in high-competition, high-predation environments.** Undergraduate Honors Thesis, Cornell University, Ithaca, New York.

Honors and Awards

1997 National Science Foundation Graduate Research Fellowship. Elite graduate fellowship program to directly support graduate students in STEM fields. (Declined to pursue graduate degree in education.)

1997 Cornell University Merrill Presidential Scholar. Award for top Cornell undergraduates prior to graduation. Only 36 scholars, approximately 1 percent of the graduating class, are named by the deans of Cornell's undergraduate colleges each year to receive this honor



David Harrison
Manager, STEM: Content Design and Development (CDD)

Summary of Qualifications

Mr. David Harrison recently joined Measured Progress, assuming the role of STEM Manager within our Content Design and Development department. Mr. Harrison is an education leader and manager with international experience in curriculum design and delivery, and assessment.

Prior to joining Measured Progress, Mr. Harrison's role focused on developing K-12 science assessments and supporting teachers with the delivery of state standards and preparation for the transition to the Next Generation State Standards. As a national adviser in the UK Mr. Harrison's key responsibilities included commissioning research on science teaching and the subsequent development of guidance to support schools and teachers across England; providing science subject expertise to the UK national tests and qualifications team; and preparing and presenting oral and written advice to schools, regional bodies, national bodies and the UK government. Mr. Harrison began his career as a middle school and high school science teacher before leaving the classroom to support and coach teachers in developing, teaching, and assessing their curricular.

Education

M.Sc., Science (Open), The Open University, Milton Keynes, UK
Post Graduate Certificate of Education, Secondary Science, University of Worcester, Worcester, UK
Bachelor of Science (Hons), Zoology, Upper Second, University of Leeds, Leeds, UK

Professional Experience

2016–present Manager, STEM, Content Design and Development, Measured Progress, Inc., Dover, NH

Mr. Harrison is responsible for managing the performance of salaried and freelance test developers and completion of all STEM-related test development activities for assigned contracts.

2010–2016 Curriculum and Assessment Specialist, The Learning Institute, Hot Springs, AR

- Provided expert knowledge of standards and pedagogy in teaching and learning for The Learning Institute.
- Liaised closely with school districts to provide tailored assessments and resources.
- Developed K-12 science curriculum and assessment materials which addressed state standards and the Next Generation Science Standards, and supported teachers in ensuring student progression and preparation for state assessments.
- Prepared and delivered professional development materials to support teachers in teaching effectively to help ensure students could maximize their learning.
- Managed contracts with external vendors for the development of high quality test items and curriculum resources.
- Created and organized social media content to inform educators about education policy, the services provided by TLI, and supported teachers with effective instruction of their state standards.

	<p>2009–2010 Curriculum Adviser, Qualifications & Curriculum Development Agency (QCDA), Coventry, UK</p> <ul style="list-style-type: none"> ▪ Provided project leadership for commissioning of research and the subsequent development of guidance to support schools and teachers across England. ▪ Provided subject expertise to QCDA in the development of national tests and qualifications. ▪ Worked closely with national organizations, schools and colleges, and communities to capture stakeholder views and share good practice in curriculum design and delivery. ▪ Prepared and presented oral and written advice summaries, plans, reports and evaluations to a range of audiences, including the QCDA executive board, the UK Government’s Department for Children, Schools and Families (DCFS), communities, and schools. ▪ Represented QCDA as an ambassador and deliver speeches and presentations at national events and speaking engagements. <p>2004–2009 Science Manager (Education), Gloucestershire County Council, Gloucester, UK</p> <ul style="list-style-type: none"> ▪ Supported the improvement of teaching and learning quality in Science, and to act as the professional lead for the county. ▪ Devised, led and oversaw the Science business plan and subsequent training programs. ▪ Led and directed the activities of the Science team. ▪ Advised school staff, the authority and its partner agencies on appropriate interventions when schools and other children’s settings experience difficulties. ▪ Assumed the role of Radiation Protection Officer for the county. <p>2002–2004 Science Consultant, Four S Ltd/VT Four S Ltd, Leatherhead, UK</p> <p>1999–2002 Head of Science, Broadwater, Godalming, UK</p> <p>1997–1999 Head of Biology, Evesham High School, Evesham, UK</p> <p>1994–1997 Science Teacher / Assistant Head of Year 11, Byng Kenrick Central School, Birmingham, UK</p>
<p>Honors and Awards</p>	<p>Reviewer for the IB Environmental systems and societies DP Course Guide (First assessment 2017)</p> <p>Reviewer for the IB MYP Next Chapter (Sciences Guide)</p> <p>Reviewer: Science Scope (NSTA’s Middle School Journal) since May 2011.</p> <p>Project Lead: Assessing Pupil Progress (APP) in Primary Science, Department for Children, Families & Schools, UK Government. (2009)</p> <p>Reviewer: e-Bug – An educational resource, Health Protection Agency, UK (2008)</p> <p>Contributor/Reviewer: Teaching Triple Science subject publications (2007)</p> <p>Contributor: Croners Heads of Science Manual – Curriculum Section Revisions (2003–2004)</p>
<p>Professional Affiliations and Certifications</p>	<p>National Science Teachers Association (NSTA)</p> <p>Arkansas Science Teachers Association (ASTA)</p> <p>National Advisers and Inspectors Group for Science (NAIGS), UK April 2002–2010</p>



Karen Travers Lynch, Ph.D.

Content Specialist III, Science: Content Design and Development (CDD)

Summary of Qualifications

Dr. Travers Lynch is a senior content specialist working in Measured Progress Content Design and Development group (CDD). Dr. Travers Lynch leads content development for several large-scale alternate and general education science assessment programs including Florida Alternate Assessment, NeCAP, and New Mexico. She also participates in shaping NGSS development plans internally. Dr. Travers Lynch joined the group in January 2012, moving from her position in scoring as the Scoring Content Manager in science. She has worked at Measured Progress since 2008, working first as a reader before her rise to the position of scoring content manager and chief reader for science assessment.

Dr. Travers Lynch's background includes extensive work in classrooms, from elementary school through college, as a teacher, an enrichment coordinator, and a supervisor of student teachers. She has also worked as an educational consultant for a major publisher, developing and presenting professional development programs. She has authored papers focusing on the preparation of elementary science teachers to teach science.

Education

Ph.D., Teaching and Teacher Education, Minor: Science Education, University of Arizona, Tucson, AZ

M.Ed., Curriculum and Instruction Elementary Education, University of Lowell, Lowell, MA

B.S., Business Administration, Concentration: Management Information Systems, University of Lowell, Lowell, MA

Professional Experience

2012–present Content Specialist III, Science, CDD, Measured Progress, Inc., Dover, NH

Dr. Travers Lynch is responsible for the test development activities for one or more large-scale assessment programs. This includes developing and/or revising multiple-choice, short-answer, and constructed-response items with rubrics according to state curriculum frameworks and individual state standards. She is also responsible for creating performance tasks, analyzing field test results for committee review, facilitating content advisory committees and presenting assessment materials for committee review. Other development responsibilities include internal review of developers' item sets, test construction, and participating in scoring activities. Lead developer responsibilities include creating contract-specific item and test specifications; preparing feedback for freelancers; and communicating effectively with various departments involved with the contract. Recent development includes assessment materials for New Mexico (lead developer), NECAP (New Hampshire, Vermont, and Rhode Island) (lead developer), Florida Alt (lead developer) and Montana.



Karen Travers Lynch, Ph.D.

Content Specialist III, Science: Content Design and Development (CDD)

2010–2012 Scoring Content Manager, Science, Scoring Services, Measured Progress, Inc., Dover, NH

Provided supervision of chief readers, quality assurance coordinators, and readers distributed across multiple scoring sites; assign, train, and evaluate all scoring personnel under supervision; review, critique, and help revise all training materials including development of committee reviewed responses (CRRs); assist with reader assignments and monitoring of reader accuracy and productivity; monitor and record progress of scoring projects; develop, revise, and implement new procedures and protocols; write and edit portions of proposals and technical reports; monitor quality control and iScore workflow processes and procedures; generate post-scoring reports for content area and other reports as required; issue written and oral instructions, assign duties and examine work for conformance to Scoring/Measured Progress policies and procedures; work cooperatively with clients, Scoring Project Managers, and other departments within Measured Progress to facilitate scoring services.

In her capacity as Chief Reader in the multiple contracts assigned, she was also responsible for overseeing the preparation of training materials as well as scoring. She participated in and facilitated benchmarking sessions and professional development workshops, monitored accuracy of scoring, reviewed test booklets and scoring guides, worked with program managers in planning and completing various scoring projects, and provided support to Curriculum and Assessment as needed.

Relevant Publications and Presentations

Presenter: (2016, April). *Framing Classroom Instruction to Best Support Next Generation Science Learning*, NSTA National Conference, Nashville, TN.

Invited presenter: (2015, March). *Next Generation Science Standards*, Measured Progress, Dover, NH.

Invited participant: (2014, February). *Understanding and Using Next Generation Science Learning Goals* workshop, AAAS, Washington, DC.

Invited participant: (2013, May). *Developing and Using Assessments Aligned to Science Learning Goals* workshop, AAAS, Washington, DC.

Travers Lynch, K.A. submitted (2011). *Learning to teach science during the methods semester: Perceptions of pre-service teachers*. Journal of Science Teacher Education.

Travers, K.A., (2008). *Elementary pre-service science teacher preparation: contributions during the methods semester*. Doctoral Dissertation, University of Arizona, Tucson, AZ.

Travers, K.A., Harris, C.J., (2008). *Contributions of the mentor teacher: opportunities for pre-service science teacher learning during the methods semester*. National Association for Research in Science Teaching Annual Meeting, Baltimore, MD.

Professional Affiliations and Certifications

National Science Teachers Association

NH Highly Qualified Educator

NH Experienced Educator– 1811 (Elementary Education K-8)

Management Training Program: Leadership on the Line. Bruce Mast and Associates, Exeter, NH



Nandita Dangoria, Ph.D.
Content Specialist III: Content Design and Development (CDD)

Summary of Qualifications	<p>Dr. Dangoria has worked closely with multiple state DOEs and assessment companies developing formative and summative assessments aligned to the Next Generation Science Standards.. She has facilitated meetings, trained teachers on curriculum, formative and summative assessments, content, bias as well as alignment to content standards and data reviews after field tests.</p> <p>Dr. Dangoria was an assessment editor with CTB/McGraw-Hill, she successfully advanced within the organization throughout her tenure. She was CTB Senior Science Manager for 5 years working on science assessments with multiple states, as well as internationally. Between 2005 and 2010, Dr. Dangoria was part of the core team working on science assessments in Qatar, alongside psychometricians and General Certificate of Secondary Education (GCSE) curriculum experts. All this time, she was also involved in science alternate assessments as states transitioned from IEP to standardized testing for this particular student population.</p>
Education	<p>Post-Doctoral Fellowship; Children’s Hospital Research Foundation, Cincinnati, OH</p> <p>Ph.D., Cell Biology, University of Massachusetts, Amherst, MA</p> <p>B.S., Microbiology, University of Massachusetts, Amherst, MA</p>
Professional Experience	<p>2017 (March) Content Specialist II(, CDD, Measured Progress, Inc., Dover, NH</p> <p>2016–2017 Test Development Manager, Science, American Institutes for Research (AIR)</p> <p>2015–2016 Content Specialist II, CDD, Measured Progress, Inc., Dover, NH</p> <p>Developed content for high school biology summative test aligned to the NGSS. Provided content development support for a state summative alternate assessment in science.</p> <p>2014–2015 Education and Assessment Specialist</p> <p>Worked with leading Test Development companies to develop assessments and item banks aligned to the Next Generation Science Standards (NGSS).</p> <p>2002–2014 CTB/McGraw-Hill, Monterey, CA</p> <p>Item Development Director, Smarter Balanced</p> <ul style="list-style-type: none"> ▪ Managed and coordinated all item development activities for CTB, and 4 partners for the Performance Tasks and Computer-Adaptive Test across multiple test development activities. ▪ Managed multiple simultaneous weekly deliverables over several months for a project with very challenging timelines. ▪ Facilitated several webinars and face to face meetings with educators, teachers, project partners and Smarter Balanced Directors. <p>Senior Content Development Manager, Science</p> <ul style="list-style-type: none"> ▪ Managed a team of Science Assessment Editors, Content Development Lead and Principal Assessment Editor with responsibility for all science custom contracts and shelf projects. ▪ Responsible for all science related product development, content

	<p>development, staff and teacher training, monitoring budgets and schedules.</p> <ul style="list-style-type: none"> ▪ Responsible for all resource and personnel issues related to science staff. ▪ Worked closely with the Proposal team, Publishing Leadership Team and Budget Analyst to respond to RFPs and support proposal efforts. <p>Development Manager, Science</p> <ul style="list-style-type: none"> ▪ Ensured successful fulfillment for test design and delivery of customer contracts, requiring resource management and a high degree of customer interaction. ▪ Responsible for project coordination across disciplines. ▪ Developed and implemented budget for all aspects of customer contracts. <p>Project Manager</p> <ul style="list-style-type: none"> ▪ Monitored development and production budgets, worked with program management and customers to resolve issues, planned review meetings and clarified the scope, schedules and deliverables. ▪ Planned and implemented workshops, developed specifications and items, and managed overall test development for some of the first standardized assessment for students with severe cognitive and physical disabilities to win peer review by the USDOE (West Virginia APTA, Wisconsin WAA-SwD).
<p>Selected Publications</p>	<p>Dangoria, Nandita S., DeLay, Monica L., Kingsbury, Daniel J., et al. HLA-B27 misfolding is associated with aberrant intermolecular disulfide bond formation (dimerization) in the endoplasmic reticulum. <i>Journal of Biological Chemistry</i> (2002) 277, 23459-23468</p> <p>Dangoria, Nandita S., Breau, Walter C., Anderson, Howard, A., Cishek, Dawn M. and Norkin, Leonard C. Extracellular SV40 induces an ERK/MAP kinase independent signaling pathway that activates primary response genes and promotes virus entry. <i>Journal of General Virology</i> (1996) 77, 2173-2182.</p> <p>Pixley, Sarah K., Dangoria, Nandita S., Odoms, Kelli K., and Hastings, Lloyd. Effects of Insulin-like Growth Factor I on olfactory neurogenesis in vitro and in vivo. <i>Annals of The New York Academy of Science</i> (1998) 855, 244-247</p>
<p>Honors and Awards</p>	<p>Graduated Cum Laude and with Dean’s List Honors, University of Massachusetts</p> <p>Recipient of the National Achievement Academy Award, University of Massachusetts</p> <p>Recipient Children’s Hospital Research Foundation Fellowship for Post-Doctoral Research</p>



Paul Ritchie

Content Specialist II, Science: Content Design and Development (CDD)

Summary of Qualifications

Mr. Paul Ritchie currently develops formative and summative assessment science content for several state assessment projects at grade levels 4-12. Mr. Ritchie works on a variety of content and grade levels due to his diverse experience with many assessment projects over the course of his career. His content expertise ranges from elementary to secondary and spans the branches of science to include physical, life, earth/space, and agriculture. He is adept at item creation and editing, as well as test design, curriculum integration, and performance task construction. Mr. Ritchie has spent the last three years working intensively with NGSS to develop formative and summative assessments as well as authoring item specifications and designing test blueprints for NGSS. Mr. Ritchie also has a wealth of experience in developing content for special populations through alternative assessments, such as interactive technology-enhanced items, cluster design, and individual and group performance tasks.

Mr. Ritchie's career experience includes service with honors in the US Air Force as a cryptographic technician, agriculture labor and supply, secondary classroom teaching, independent assessment consulting, and science content development at Measured Progress and ETS. His range of assessment experiences includes item scoring, item writing, internal review, test design, standards evaluation and construction, blueprint design, ancillary materials authoring, curriculum evaluation, performance task content design, special population content development, national testing program content consulting, performance task design and field testing, and integration of innovative assessment technology. Mr. Ritchie embraces Measured Progress' expanding role in the assessment industry by providing innovative ideas, advanced item development expertise, and accurate test development in support of improving learning for all students through quality assessment and curriculum.

Education

B.S., Agronomy (cum laude), Northwest Missouri State University, Maryville, MO

Professional Experience

2013–present Content Specialist II, Science, Content Design and Development, Measured Progress, Inc., Dover, NH

Mr. Ritchie develops science content for New England Cooperative Assessment Program, Maine Educational Assessment, and Oklahoma state testing programs. Co-taught Item Writer Training Basics course. Authored item specifications for NGSS and state programs. Developed summative and formative NGSS performance assessments.

2011–2013 Independent Educational Assessment Consultant, Seguin, TX

Created and edited educational assessment products and professional writing.

2011 Specialist, Content Design and Development, Measured Progress, Inc., Dover, NH

Developed science content for New England Cooperative Assessment Program and Nevada Alternative Assessment. Edited submissions, ordered graphics, and coordinated production steps.

2007–2011 Independent Educational Assessment Consultant, Seguin, TX

Created, evaluated, and edited test items for educational assessments.



Paul Ritchie

Content Specialist II, Science: Content Design and Development (CDD)

	<p>2006–2007 Assessment Specialist II, Educational Testing Service, San Antonio, TX</p> <p>Science Team Lead and team member on CA and TX projects. Authored test items, standards, specifications, and blueprints. Facilitated highly effective item writer training workshops.</p> <p>2001–2006 Independent Educational Assessment Consultant, San Antonio, TX</p> <p>Created and edited educational assessment products for clients. Cooperatively authored Biology I exit examination for a school district.</p> <p>2000–2001 Test Scorer/Development Assistant, Randstad, Inc., San Antonio, TX</p> <p>Placed with Harcourt Educational Measurement as a test scorer. Promoted to test development duties within two months. Contracted to write test items independently within three months.</p> <p>1996–2000 Teacher, Northside Independent School District, San Antonio, TX</p> <p>Science teacher grades 9-12 at Northside Alternative High School. Taught all district science course offerings. Created and managed a successful cross-curricular garden laboratory project. Attained gifted and talented instructor credentials. Served on district committee to develop Chemistry standards.</p> <p>1980–1984 Electronic Cryptographic Communications Systems Technician, United States Air Force, Carswell Air Force Base, TX</p> <p>Maintenance of Top Secret secured electronic communication systems. Held Top Secret SBI Security Clearance. Served on Carswell AFB Honor Guard in 1983. Attained rank of E-4 with honorable discharge.</p>
<p>Relevant Publications and Presentations</p>	<p>Ritchie, P. (2002). <i>TAKS Grade 8 Study Guide</i>. Pearson</p> <p>Ritchie, P. (2007). <i>Novelty and Creativity in Item Writing</i>. Special presentation for ETS Item Writing Workshop</p> <p>Ritchie, P. (2007). <i>CAPA Item Writing Training</i> for ETS</p> <p>Ritchie, P. (2014). <i>Science Item Writing Basics</i> course presentation for Measured Progress item writer training</p> <p>Ritchie, P. (2016). <i>Lessons Learned in Implementing Technology-Enhanced Items</i> departmental training presentation</p>
<p>Honors and Awards</p>	<p>1984 Honor graduate NCO Leadership Course</p> <p>1988–1989 Agriculture Department Scholar, Northwest Missouri State University</p> <p>1986–1989 Dean’s List, Northwest Missouri State University</p> <p>1988–1989 Delta Tau Alpha Agriculture Honor Society, Chapter Vice-President</p> <p>1989 Senior Agronomy Student Award, Northwest Missouri State University</p> <p>1999–2000 Selected to District Science Standards Committee, Northside ISD</p> <p>2007 Outstanding Performance Award, Educational Testing Service</p> <p>2014 Achievement Bonus, Measured Progress</p>
<p>Professional Affiliations and Certifications</p>	<p>Texas Provisional Secondary Composite Science Teacher Certification (lifetime)</p> <p>Educator certification, University of Texas, San Antonio, TX</p> <p>NSTA (2014-2016)</p>



John Rogers

CDD Specialist II–English Language Arts & Social Studies: Content Design and Development (CDD)

Summary of Qualifications	<p>Mr. John Rogers currently works as CDD Specialist II– English Language Arts (ELA) and Social Studies. Mr. Rogers brings to the position experience in expository and analytic writing, assessment and academic editing, collaborative problem-solving, and teaching.</p> <p>Before joining Measured Progress as a copyeditor/proofreader, Mr. Rogers specialized in non-profit communications and arts writing for general audiences. He was a fifth-grade English teacher and an assistant elementary- and middle-school-level librarian, focusing curricula on literary appreciation, research skills, and identifying age-appropriate reading material.</p>
Education	<ul style="list-style-type: none"> ▪ B.A., History, Oberlin College, Oberlin, OH
Professional Experience	<p>2013–present CDD Specialist II, ELA/Social Studies, CDD, Measured Progress, Inc., Dover, NH</p> <p>Mr. Rogers develops statewide ELA and Social Studies assessments for Grades 3–12. In addition to writing selected response, evidence-based selected response, constructed response, prose-constructed response, and technology-enhanced items, Mr. Rogers has developed classroom-based formative performance assessments for Maryland (ELA, Grades 9–11) and Massachusetts (History and Social Studies [pilot], Grades 4 and 9).</p> <p>Mr. Rogers’s development responsibilities include selecting grade-appropriate and discipline-specific passages; writing, reviewing, and revising items for state-wide summative assessments; and conceptualizing and realizing performance assessments;</p> <p>Mr. Rogers has developed ELA assessments for Oklahoma (Grades 6–8 and High School), Massachusetts Comprehensive Assessment System, and Rhode Island Interim Assessment, and technology-enhanced ELA items for a formative assessment bank tied to the Common Core State Standards for Grades 3–12. He was also Writing Lead for the Measured Progress eMPower™ Interim-Summative assessment (Grade 3–8).</p> <p>For both Massachusetts and Maryland, Mr. Rogers facilitated numerous multi-session committee meetings, reviewing passages, items, and forms, and workshopping and refining performance assessments. He has also worked with representatives from the Massachusetts and Oklahoma departments of education to benchmark constructed-response item responses, using content standards and scoring rubrics to identify exemplar student responses for a range of score-points.</p> <p>2012–2013 Copyeditor/proofreader, Publishing, Measured Progress, Inc., Dover, NH</p> <p>Under rigid deadlines, used contract-specific style guides to copyedit and proofread student assessment materials, such as print and electronic tests, answer documents, and teacher instruction manuals, at every stage from development through final production. Leveraged both traditional and paperless workflow procedures to collaboratively produce and punctually deliver Utah’s Core Criterion-Referenced Test for spring 2013; edited items for syntax, clarity, and accuracy; checked materials through multiple revision loops with client, test developers, and program managers; quality tested each assessment on a range of operating systems.</p> <p>2012 Project Manager 2011-2013 Annual Report, Children’s Museum of New Hampshire, Dover, NH</p> <p>Selected, researched, and wrote content for the 2011-2012 Annual Report of New Hampshire’s largest children’s museum, in collaboration with Executive Director and Director of Marketing. Convened, led, and presented vision and progress at staff meetings; and interviewed a range of Museum</p>

John Rogers

CDD Specialist II—English Language Arts & Social Studies: Content Design and Development (CDD)

patrons, supporters, staff, and community and creative partners for profiles and pull-quotes to personalize the institution's programs and successes. Worked with graphic design firm to harmonize content and presentation.

2011–2012 Writer and Editor, Isabella Stewart Gardner Museum, Boston, MA

Developed and wrote Report of Activities and Giving, covering three fiscal years, summarizing exhibition and departmental reports for general readership, trustees, and donors, and reconciling disparate and idiosyncratic voices from five distinct curatorial perspectives. Wrote and edited monthly e-newsletter stories leading up to and covering the opening of the Museum's new wing, soliciting ideas from curatorial staff and Museum administrators and collaboratively shaping them for a readership of over 10,000. Developed and edited press releases publicizing the opening of the new wing, including inaugural exhibitions, special features of the building extension, and celebratory public events. Wrote, with Director of Marketing, speeches for Museum Director and Board President for donor, press, and public events announcing and celebrating the opening of the new wing.

2009–2012 Communications Coordinator/Consulting Writer, Providence Preservation Society, Providence, RI

Wrote, edited, and collaboratively conceptualized all print and digital communications for stalwart architectural preservation advocacy non-profit. Updated and edited organization website using both a proprietary CMS and HTML; assisted department coordinators with Web site functions; and worked with off-site programmer to improve website aesthetics and functionality. Researched, wrote, edited, and formatted monthly Constant Contact e-newsletter, curated social media content, and managed all aspects of semiannual print newsletter, including all writing, editing, design oversight, printing, and mailing. Drafted and edited press releases announcing upcoming events and preservation initiatives.

2006–2012 Freelance Writer and Editor, Providence, RI

Worked with a range of clients to refine graduate-level research papers, dissertation chapters, and journal submissions. Conducted research for and wrote reviews of vibrant local theatre productions, both for independent and self-funded Web site and for state-wide arts monthly, Motif magazine. Led weekly writing classes for guests at McAuley House, a house of hospitality (soup kitchen and safe haven) in South Providence. Participants brought a range of experiences and aptitudes to composition of plays, memoirs, poems, and short personal sketches, several of which were published in Street Sights, Providence's paper focusing on issues of homelessness, inequality, and injustice.

2003–2005 English Teacher/Assistant Librarian, St. Albans School, Washington, D.C.

As an English teacher (2003-2004), created and guided classes for 5th-grade students in reading, literary appreciation, and expository and creative writing. Developed original curricula using a combination of new and department-selected novels, stories, and poems. Guided students from basic understanding of character, setting, and plot to sophisticated comprehension of and, in their own writing, use of literary techniques such as foreshadowing and irony. As an assistant librarian (2003-2005), devised and led classes in research skills, literary appreciation, and miscellaneous topics of interest (from the Iditarod to modern architecture) for 4th–8th-grade students, emphasizing age-appropriate media and methods.



Veronica Zonick, Ph.D.
CDD Specialist III, Science: Content Design and Development (CDD)

Summary of Qualifications

Dr. Veronica Zonick is a Content Design and Development Specialist II in science. She joined the content development group in March 2014. Dr. Zonick has worked with Measured Progress since 2005 as both a consultant and as an assessment content development specialist. As an assessment specialist she has developed items, constructed tests and worked with teachers to review materials aligned to the special education access points for the Florida Science Next Generation Sunshine State Standards and has served as lead developer for Oklahoma assessment aligned to the new generation science standard assessing three dimensions.

Dr. Zonick started her career in science as an undergraduate researcher in biology and biochemistry laboratories completing two undergraduate research fellowships before progressing to graduate research in plant cellular and molecular biology. She then advanced to the high school classroom, and to her current passion of science assessment. Her strong background in both the content and the practice of science has helped her to kindle a passion for science in both teachers and students. Dr. Zonick’s experience in education is diverse. It includes teaching students from grades 3 through adult across the socio-economic spectrum, developing IEPs, formative and summative assessments for students with moderate to severe cognitive disabilities, and mentoring students participating in science fair and Lego robotics competitions. She has developed curriculum used in traditional science classrooms as well as in enrichment programs, she has provided technical assistance to teachers implementing NSF-funded science curricula, and she has worked with teachers in public and private schools to analyze and articulate school-wide curricula. She has developed and reviewed thousands of science items used in traditional and adaptive testing, developed NGSS-aligned assessment blueprints and worked with teachers to write and review items and rubrics aligned to the multiple dimensions of the NGSS. Additionally, she has presented on designing curriculum-embedded performance assessments at the 2015 NSTA National Conference.

Education

Ph.D., Cellular and Molecular Biology, University of Missouri, Columbia, MO
B.S., Biology, magna cum laude, University of Dallas, Irving, TX

Professional Experience

2016–Present CDD Specialist III, Science, Content Design and Development, Measured Progress, Inc., Dover, NH

2014–2016 CDD Specialist II, Science, Content Design and Development, Measured Progress, Inc., Dover, NH

Responsible for the test development activities for multiple large-scale assessment programs. This includes developing and/or revising multiple-choice, short-answer, and constructed-response items with rubrics according to state curriculum frameworks and the Next Generation Science Standards. Dr. Zonick is also responsible for creating performance tasks, analyzing field test results for committee review, facilitating content advisory committees and presenting assessment materials for committee review. Other development responsibilities include internal review of developers’ item sets, test construction, and participating in scoring activities. Lead developer responsibilities include creating contract-specific item and test specifications; preparing feedback for freelancers; and communicating effectively with various departments involved with the contract. Recent development includes assessment materials for Oklahoma, Florida Alternate Assessment, New Mexico, Montana, Mississippi, Rhode Island, and the New England Common Assessment Program.



Veronica Zonick, Ph.D.

CDD Specialist III, Science: Content Design and Development (CDD)

Relevant Publications and Presentations

Zonick, V., and Tierney, S. (2015) ***Features and Models of Quality Performance Assessment for the NGSS/Three-Dimensional Learning*** Chicago, IL: National Science Teachers Association 2015 National Conference

Zonick, V., and Christopher, D. (2006-2007) ***NWEA Adaptive Tests (Aligned to each of fifty states) for General Science and Unifying Concepts and Processes of Science, grades 3-10*** Lake Oswego, Oregon: Northwest Evaluation Association

Zonick, V. (2003-2007) ***NWEA Adaptive End of Course Tests for Biology, Chemistry and Physics***. Lake Oswego, Oregon: Northwest Evaluation Association

Zonick, V. (2006) ***General Science Content and Unifying Concepts and Processes of Science***. In: DesCartes: A Continuum of Learning. Lake Oswego, Oregon: Northwest Evaluation Association

Zonick, V. and Bryce, K. (2003) ***Sustaining Environmental Education Through Oregon Benchmarks***. Environmental Education Association of Oregon Annual Conference, Eugene, Oregon.

Zonick, V. (1998) ***Spin This***. In: PBS/IBM Olympic Cyberschool. Online: <http://ocs.pbs.org>

Zonick, V. (1997) ***A Mystery Unfolds: Protein Structure and Function***. In: National Teacher Training Institute for Math, Science and Technology, 1996-1997. Corpus Christi/New York: Corporation for Public Broadcasting/KEDT/Thirteen WNET

Zonick, V. (1996) ***Mysteries of Mitosis***. In: National Teacher Training Institute for Math, Science and Technology, 1995-1996. Corpus Christi/New York: Corporation for Public Broadcasting/KEDT/Thirteen WNET

Zonick, V. (1996) ***The Hijacker: How a Virus Spreads***. In: National Teacher Training Institute for Math, Science and Technology, 1995-1996. Corpus Christi/New York: Corporation for Public Broadcasting/KEDT/Thirteen WNET

Counihan, V.P., Phillips, T.E, and Walker, J.C. (1995) ***Immunocytochemical Localization of Receptor Protein Kinases in Plants***. In: Methods in Plant Cell Biology, , Volume 49 San Diego: Academic Press

Counihan, V.P. (1993) ***Immunocytochemical Localization of Receptor Protein Kinases in Plants***. Doctoral Dissertation, University of Missouri

Professional Affiliations and Certifications

National Science Teachers Association
Northwest Science Expo Judge



Matthew M. Gushta, Ph.D.
Director: Psychometrics

Summary of Qualifications	<p>Dr. Matthew Gushta recently joined Measured Progress as Director of the Psychometrics department. As such, he is providing leadership and overall supervision of all contractual psychometric activities.</p> <p>Dr. Gushta was previously the Director of Research and Psychometrics of Amplify (a technology-focused educational company based in New York City) where he was responsible for Amplify’s assessment and intervention (mCLASS and Burst) program research, psychometrics and analytics, as well as management responsibility for departmental staff and budget.</p>
Education	<p>Ph.D., Education (Educational Measurement, Evaluation, and Statistics) University of Maryland, College Park, MD</p> <p>M.Ed., Educational Psychology (Educational Measurement and Evaluation) University of Alberta, Edmonton, Canada</p> <p>B.A., Psychology (Industrial Internship Program), University of Alberta, Edmonton, Canada</p>
Professional Experience	<p>2016–present Director, Psychometrics, Measured Progress, Inc., Dover, NH</p> <p>Dr. Gushta develops and implements psychometric analysis for testing programs as well as the execution of research studies. He is responsible for overseeing the psychometrics department to ensure accurate and timely statistic findings to management and clients.</p> <p>2012–2016 Director of Research and Psychometrics, Amplify, Brooklyn, NY</p> <p>Identified departmental objectives, and plans, coordinates, conducts, and reports on research projects, psychometric analyses, and other ad-hoc analyses. Oversaw psychometrics and research related to assessment product development & improvement, ad-hoc/customer-specific analyses, and support knowledge management across the organization.</p> <p>2011–2012 Psychometrician, Wireless Generation (now Amplify), Brooklyn, NY</p> <p>Planned, coordinated, and conducted advanced statistical analyses in the development of and reporting on large-scale formative/diagnostic educational assessments.</p> <p>Provided psychometric guidance and represented the organization's position on technical issues to clients.</p> <p>2004–2011 Research Analyst/Psychometrician, American Institutes for Research, Washington, D.C.</p> <p>Primary psychometric analyst on two large-scale statewide educational assessment programs, focused on Alternate Assessments. Designed and conducted advanced statistical studies, validation studies; contributed to instrument design/revision and research and technical reporting. Responded to client requests for psychometric and research services.</p> <p>2001–2003 Graduate Research Assistant, Centre for Research in Applied Measurement and Evaluation, University of Alberta, Edmonton, Canada</p> <p>Provided statistical and test development consultation services and maintained and updated the CRAME website</p>

Relevant Publications and Papers, Peer Reviewed Journals	1999–2000 Research Assistant, Academic Technologies for Learning, University of Alberta, Edmonton, Canada
	Collaborated on a variety of evaluation projects at the institutional, provincial, and national level, performing quantitative and qualitative data analysis. Facilitated focus groups and interviews. Lead author in the development of an institutional center for evaluation, instruction, innovation, and research.
	2000–2001 Associate Director, Student Distress Centre, University of Alberta, Edmonton, Canada
	Maintained community referral information, ensured availability of the service through volunteer recruitment and scheduling, and coordinated and participated in various volunteer developments and training activities.
	<p>Tractenberg, R. E., Gushta, M. M., & Weinfeld, J. M. (2016). <i>The Mastery Rubric for Evidence-Based Medicine: Institutional Validation via Multidimensional Scaling</i>. <i>Teaching and Learning in Medicine</i>, 28(2), 152-165.</p> <p>Tractenberg, R. E., Gushta, M., Mulroney, S., & Weissinger, P. (2013). <i>Multiple choice questions can be designed or revised to challenge learners' critical thinking</i>. <i>Advances in Health Sciences Education</i>, 18(5), 945-961.</p> <p>Rupp, A. A., Gushta, M., Mislevy, R. J., & Shaffer, D. W. (2010). <i>Evidence-centered design of epistemic games: Measurement principles for complex learning environments</i>. <i>Journal of Technology, Learning, and Assessment</i>, 8(4).</p> <p>Varnhagen, C. K., Gushta, M., Daniels, J., Peters, T. C., Parmar, N., Law, D., Hirsch, R., Sadler Takach, B., & Johnson, T. (2005). <i>How Informed is Online Informed Consent?</i> <i>Ethics & Behavior</i>, 15 (1).</p> <p>Estabrooks, C. A., Floyd, J. A., Scott-Findlay, S., O'Leary, K. A., & Gushta, M. (2003). <i>Individual determinants of research utilization: a systematic review</i>. <i>Journal of Advanced Nursing</i>, 43(5), 506-520.</p>
Honors and Awards	2003 Alberta Learning Graduate Student Scholarship
	2003 Faculty of Education Travel Grant
	2003 Mary Louise Imrie Graduate Student Award
	2000 Lambda Chi Alpha Educational Scholarship
Professional Affiliations	National Association of School Psychologists National Council on Measurement in Education American Educational Research Association



Wonsuk Kim, Ph.D.

Psychometrician / Research Scientist - Senior: Psychometrics

Summary of Qualifications	<p>Dr. Wonsuk Kim currently serves as a Senior Psychometrician / Research Scientist. In this position, Dr. Kim utilizes psychometric methods of analysis such as classical test theory analysis, item response theory, Rasch model analysis, structural equation modeling, multivariate analysis using statistical packages, and multilevel data analysis. Dr. Kim provides technical information regarding these analyses to a variety of audiences.</p> <p>Dr. Kim cultivated these psychometric skills in various academic research positions at the Pennsylvania State University. He conducted program evaluation, comparability research, and psychometric analysis for a variety of projects related to educational measurement.</p>
Education	<p>Ph.D., Educational Psychology and Measurement, Pennsylvania State University, University Park, PA</p> <p>M.A., Learning and Instruction and Educational Research Methodology, Seoul National University, Seoul, South Korea</p> <p>B.A., Education and Social Science Education, Seoul National University, Seoul, South Korea</p>
Professional Experience	<p>2003–present Psychometrician / Research Scientist - Senior, Psychometrics, Measured Progress, Inc., Dover, NH</p> <p>Involved in the oversight and implementation of a variety of psychometric procedures for educational testing programs, including scaling and equating, psychometric systems development, standard setting, and other projects. Also provides technical information, both verbally and in writing, to a variety of audiences. Applies IRT models to statewide assessment systems. Utilizes operational equating procedures. Explores new methods of equating and scaling. Develops and applies drifting item detection method. Participates in technical advisory committee meetings.</p> <p>2002 Research Assistant, College of Engineering, Pennsylvania State University (various locations)</p> <p>Conducted a program evaluation using the multiple-observation data analysis of an entrepreneurship minor program using web-based survey system.</p> <p>2002 Internship, Educational Testing Services, Princeton, NJ</p> <p>Conducted comparability research of TOEFL CBT essay prompts for gender groups by using the logistic discriminant function analysis.</p> <p>2001–2002 Research Assistant, Methodology Center, Pennsylvania State University, various locations</p> <p>Conducted power analysis of hierarchical linear modeling. Performed Polytomous DIF analysis for affective test for the NIDA project.</p> <p>2001–2002 Research Assistant, Pennsylvania State University, Various locations</p> <p>Conducted psychometric analysis for Parents' Observation of Infants and Toddlers (POINT) an early childhood screening test. This project was sponsored by First Point, Inc., located in Arizona.</p>



Wonsuk Kim, Ph.D.

Psychometrician / Research Scientist - Senior: Psychometrics

	<p>1999–2000 Research Assistant, Department of Educational Psychology, Pennsylvania State University (<i>various locations</i>)</p> <p>Conducted an evaluation of staff development workshop based on telecommunication technology for the standards for curriculum, instruction, and assessment in Pennsylvania. This project was sponsored by the Tuscarora Intermediate Unit.</p> <p>1996–1998 Teaching and Research Assistant, Department of Education, Seoul National University, Seoul, South Korea</p> <p>Served as an executive committee member for the fiftieth anniversary of the Department. Managed two entrance examinations for the department in Seoul National University.</p>
<p>Relevant Publications and Presentations</p>	<p>Finkelman MD, Kim W, He Y, Lai AM (2013). Item ordering in stochastically curtailed health questionnaires with an observable outcome. <i>Journal of Computerized Adaptive Testing</i>, 1, 38-66.</p> <p>Finkelman MD, Smits N, Kim W, Riley B (2012). Curtailment and stochastic curtailment to shorten the CES-D. <i>Applied Psychological Measurement</i>, 36, 632-658.</p> <p>Finkelman MD, He Y, Kim W, Lai AM (2011). Stochastic curtailment of health questionnaires: A method to reduce respondent burden. <i>Statistics in Medicine</i>, 30, 1989-2004.</p> <p>Sukin, T., Dunn, J., Kim, W., & Keller, R. (2010). A balancing act: Common items nonequivalent groups (CINEG) equating item selection. National Council for Measurement in Education, Denver, CO.</p> <p>Finkelman, M., Kim, W., & Roussos, L. A. (2009). Automated test assembly for cognitive diagnosis models using a genetic algorithm. <i>Journal of Educational Measurement</i>, 46, 273–292.</p> <p>Finkelman, M., Kim, W., He, Y., Hooker, G., Gandek, B., Keller, R...Gibbons, R. D. (2009). Computerized adaptive testing to predict an observable outcome. Cognitive Diagnostic Models Working Group, Statistical and Applied Mathematical Sciences Institute. Research Triangle Park, NC.</p> <p>Raju, N. S., Fortmann, K. Kim, W., Nering, M. L., & Oshima, T. C. (2009). The item parameter replication method for detecting differential functioning in the polytomous DFIT framework. <i>Applied Psychological Measurement</i>, 33, 133-147.</p> <p>Pei, L. K., Kim, W., & Roussos, L. A. (2009). Comparison of raw score and diagnostic model-based methods for profile analysis. Presented at annual meeting of the National Council on Measurement in Education, San Diego, CA.</p>
<p>Professional Affiliations Certifications</p>	<ul style="list-style-type: none"> ▪ American Educational Research Association (AERA) ▪ National Council on Measurement in Education (NCME)



Michael Nering, Ph.D.
 Psychometrician / Principal Research Scientist: Psychometric Tools

Summary of Qualifications	<p>Dr. Michael Nering serves as the Principal Research Scientist at Measured Progress. He is responsible for overseeing enterprise level psychometric solutions. Drawing upon years of psychometric experience, Dr. Nering provides psychometric support and initiates process improvement. Dr. Nering also stays current within the psychometric community by presenting at industry conferences and publishing various articles and books.</p> <p>Dr. Nering’s research interests include person fit, item response theory, computer-based testing, and equating. He has presented and published numerous articles on a wide range of psychometric topics, and he is actively involved in the research community in various capacities.</p> <p>Dr. Nering is a member of the National Council of Measurement in Education, American Educational Research Association, American Psychological Association, and the Psychometric Society. For the AERA 2005 conference he was a program chair for Division D – Measurement and Research Methodology. He has also served as treasurer of the Psychometric Society. In addition, Dr. Nering has served as reviewer for several peer journals, including the <i>Journal of Educational Measurement</i>, <i>Applied Psychological Measurement</i>, <i>Psychometrika</i>, and the <i>Journal of Experimental Education</i>.</p>
Education	<p>Ph.D., Psychology-Psychometric Methods, University of Minnesota, Minneapolis, MN</p> <p>B.A., Psychology, Kent State University, Kent, OH</p>
Professional Experience	<p>2013–present Principal Research Scientist, Psychometric Tools, Measured Progress, Inc. , Dover, NH</p> <p>Currently oversees development of all psychometric tools that are used operationally by psychometricians at Measured Progress. Also responsible for the development of new tools, which use state-of-the-art psychometric models and concepts.</p> <p>2012–2013 Vice President, Research and Analysis, Measured Progress, Inc. Dover, NH</p> <p>2010–2012 Assistant Vice President, Research and Analysis, Measured Progress, Inc. Dover, NH</p> <p>Oversees the daily operations of psychometric functions of the Psychometric, Research and Analysis department. These responsibilities include providing psychometric support and spearheading process improvement.</p> <p>2005–2010 Director, Psychometrics, Research and Analysis, Measured Progress, Inc., Dover, NH</p> <p>1999–2005 Psychometrician, Psychometrics, Research and Analysis, Measured Progress, Inc., Dover, NH</p> <p>Provided psychometric expertise and support for the application of quantitative methodologies to state assessment contracts as part of the Research and Analysis department. Primary psychometrician for several assessment programs including the Rhode Island Statewide Health and Writing assessments and the New Hampshire Educational Improvement and Assessment program. Conducted scaling and equating analyses, and provides analysis systems for standard setting activities for the Georgia Criterion Referenced Competency Tests.</p>



Michael Nering, Ph.D.

Psychometrician / Principal Research Scientist: Psychometric Tools

	<p>20XX–20XX Position title, Company, Location Brief description of role in paragraph format.</p> <p>20XX–20XX Position title, Company, Location Brief description of role in paragraph format.</p>
<p>Relevant Publications and Presentations</p>	<p>Ostini, R., Finkelman, M., & Nering, M. L. (in press). Selecting Among Polytomous IRT Models. Book chapter in: Handbook of Item Response Theory Modeling: Applications to Typical Performance Assessment (Eds. Reise, S. P., & Reveck, D. A.)</p> <p>Kim, D., De Ayala, R.J., Ferdous, A., Nering, M., (2011) The Comparative Performance of Conditional Independence Indices. <i>Applied Psychological Measurement</i>, 35: 447-471</p> <p>Logsdon, M. C., Usui, W., & Nering, M. L. (2010). Validation of Edinburgh postnatal depression scale for adolescent mothers. In M. Steiner (Ed.), <i>Archives of Women’s Health</i> (pp. 433-440). New York, NY: Springer.</p> <p>Ostini, R. & Nering, M. L. (2010). Handbook of polytomous item response theory models. Philadelphia, PA: Taylor & Francis Publications.</p> <p>Finkelman, M., Roussos, L., & Nering, M. L. (2009). A conditional exposure control method for multidimensional adaptive testing. <i>Journal of educational measurement</i>, 46(1), 84-103.</p> <p>Raju, N. S., Fortmann, K. Kim, W., Nering, M. L., & Oshima, T. C. (2009). The item parameter replication method for detecting differential functioning in the polytomous DFIT framework. <i>Applied Psychological Measurement</i>, 33, 133-147.</p>
<p>Honors and Awards</p>	<p>1995 Recipient of the American Psychological Association Dissertation Research Award.</p> <p>1995 Project Minnemac Award Recipient. Awarded two computers for World Wide Web page development for the Psychology Department at the University of Minnesota.</p> <p>1994 Awarded University Instructional Equipment Grant. \$17,000 awarded for the purchase of equipment and software to develop University of Minnesota Psychology Department Multimedia Laboratory.</p> <p>1990 Fredrick E. Davidson Outstanding Research Award in Psychology</p>
<p>Professional Affiliations or Certifications</p>	<p>Psychometric Society National Council for Measurement in Education American Educational Research Association Applied Psychological Association</p>



Robert R. Keller, Ph.D.
 Psychometrician / Research Scientist: Psychometrics Tools

Summary of Qualifications	<p>Dr. Robert Keller joined Measured Progress in 2007 as a psychometrician. Dr. Keller designs and implements psychometric and statistical analyses and research studies, especially as related to issues surrounding large scale testing programs. He is well versed in both classical and IRT analyses, including item and test level analysis, differential item functioning, IRT item calibration, classical and IRT based equating methodologies, using statistics to inform test construction, scaling, and the scoring and scaling of student level data.</p> <p>Prior to joining Measured Progress, Dr. Keller studied at the University of Massachusetts and focused on research in equating issues, item response theory issues and applications, and computerized-adaptive testing. He has numerous papers in these and other areas of study under review for publication and has presented at both national and international conferences. Additionally, Dr. Keller served as a teaching assistant for several well-respected professors and also participated in several internships, including one with Measured Progress.</p>
Education	<p>Ph.D., Education in Psychometric Methods, University of Massachusetts, Amherst, MA.</p> <p>B.S., Mathematics, University of Massachusetts, Amherst, MA.</p>
Professional Experience	<p>2007–present Psychometrician, Psychometrics, Measured Progress, Inc., Dover, NH</p> <p>Responsibilities include development of analysis and automation software, overseeing and implementing psychometric procedures for educational testing programs, assuring the veracity of data, analytical methods and results, independently designing, planning, and completing research studies to support operational contracts and clients’ needs. Additional responsibilities include designing, overseeing, and performing classical and IRT item analyses, equating studies, validity studies, sampling plans, and special statistical analyses; accurately analyzing, interpreting, and clearly communicating test results to state department of education officials, school personnel, parents, and students within specified deadlines, providing educational workshops for state departments of education and Measured Progress personnel; working with state officials to ensure the correct implementation of educational testing programs; contributing to proposal writing; working with Curriculum and Assessment Specialists in developing of tests and test items.</p> <p>2007 Teaching Assistant, University of Massachusetts, Amherst, MA</p> <p>Provided instruction and support to graduate students in Multivariate Statistics including topics in Linear Algebra and SPSS Syntax Programming.</p> <p>20XX–20XX Position title, Company, Location</p> <p>Brief description of role in paragraph format.</p>
Relevant Publications and Presentations	<p>Keller, L. A., Keller, R. R. & Parker, P. A. (2011). The examination of the classification of students into performance categories. <i>Journal of Experimental Education</i>, 79(1), 30-52.</p> <p>Keller, L. A. & Keller, R. R. (2011). The long-term sustainability of several item response theory scaling methods. <i>Educational and Psychological Measurement</i>, 71, 362-379. doi:10.1177/0013164410375111</p>

Keller, L. A. & Keller, R. R. (Accepted). **Item response theory observed score equating and true score equating methods: A new criterion for evaluation.** *Journal of Educational Measurement.*

Sukin, T., Dunn, J. L. Kim, W., & Keller, R. R. (2010). **A balancing act: common items nonequivalent groups (CINEG) equating item selection.** National Council on Measurement in Education, Denver, CO.

Keller, L. A., Keller, R. R. & Parker, P. A. (2011). **The examination of the classification of students into performance categories.** *Journal of Experimental Education*, 79(1), 30-52.

Keller, L. A. & Keller, R. R. (2011). **The long-term sustainability of several item response theory scaling methods.** *Educational and Psychological Measurement*, 71, 362-379. doi:10.1177/0013164410375111



Amy E. Moody
Project Manager II: Psychometrics

Summary of Qualifications	<p>Ms. Amy Moody is currently Project Manager II with Measured Progress Psychometrics department. She is responsible for establishing appropriate methods through project planning, analysis, development, and implementation to achieve effective solutions and meet objectives and priorities of typical company or departmental projects. She assigns tasks to project team(s) and monitors team(s) activity and works on problems which require abstract or creative reasoning to define facts and possible alterations for resolution. Work is defined within corporate policies and procedures to develop tasks and projects to meet goals. Under management direction, she determines methods and procedures on new assignments and may act as project leader/manager for a specific project.</p> <p>Prior to joining Measured Progress, Ms. Moody was a Production Editor at Scholastic, Inc. where she managed the book production process from delivery of final manuscript to printed product. This included working with the author(s), acquisitions editor, copyeditor, proofreader, designer, and manufacturing to ensure that the project was finished on time and within budget.</p> <p>Previous experience also includes being an Editorial Assistant at a large publishing firm. In this position, Ms. Moody supported the editorial team by preparing project proposals for circulation, solicited proposal reviews, participated in project launch meetings, and prepared manuscripts for production, ensuring that the manuscript was complete.</p>
Education	<ul style="list-style-type: none"> ▪ B.A., Communication, University of New Hampshire, Durham, NH ▪ (2014) Project Management Institute, completed an eight week project management training
Professional Experience	<p>2013–present Project Manager II, Psychometrics, Measured Progress, Inc., Dover, NH</p> <ul style="list-style-type: none"> ▪ Responsible for developing project plans and schedules for all operational psychometric activities, including requirements, tasks, work assignments, resources, and milestones ▪ Coordinate communication across multiple functional groups throughout the project lifecycle ensuring that all stakeholders are aware of project status ▪ Represent the Psychometrics department at internal and external meetings as needed ▪ Problem solve as issues arise to keep projects on track ▪ Establish cross functional process standards and ensure adherence ▪ Oversee technical report production ▪ Assist in proposal development including creation of project schedules and coordinating psychometric writing responsibilities <p>2010–2013 Report Production Specialist, Psychometrics, Measured Progress, Inc., Dover, NH</p> <ul style="list-style-type: none"> ▪ Created and maintained the technical report production schedule ▪ Pre-production planning of all aspects of technical reports ▪ Prepared and distributed information to update key personnel on project status ▪ Collaborated with internal and external resources to ensure that project milestones were known and completed on time and to contract/department specifications ▪ Scheduled and ran meetings to meet project goals, assigned tasks/responsibilities, and performed follow-up. ▪ Performed document work on technical reports

2006–2010 Production Editor & Editorial Coordinator, Scholastic Teaching Resources, New York, NY

- Managed the book production process from delivery of final manuscript to printed product (included working with the author, acquisitions editor, copyeditor, proofreader, designer and manufacturing to ensure that the project was finished on time and within budget)
- Prepared manuscripts for production: reviewed manuscripts for potential permissions issues and queried the author and editor; organized student samples and other art by creating an art chart and folder; created permissions chart and secured permissions, if needed; alerted the author about missing components
- Created tracking system for book proposals and the evolution of book titles, ensuring that all team members were kept up-to-date
- Management of an author interview videotaping session for the website. This included: Working with the authors to craft questions; setting the schedule for the day; interviewing authors at Scholastic's headquarters in New York City; travel arrangements
- Attended book proposal and "title clinic" meetings via teleconference, offering my opinion as well as taking notes and distributing them to the team after the meeting
- Assisted acquisitions editors with special projects: Prepared book Fact Sheets; prepared book P&L forms; Internet research

**2004–2006 Heinemann Publishing, Portsmouth, NH
Editorial Projects Coordinator**

- Based on recommendations from acquisitions editor, conducted pre-proposal research to answer questions related to form, function and pricing for each project.
- Worked with acquisitions editor, associate editorial director, video producer and editorial assistant to bring projects through proposal to turnover processes.
- Developed and maintained project record in Tracker database in collaboration with editorial assistant.
- Worked with acquisitions editor and/or video producer to create project cost sheets, schedules and budgets.
- Coordinated and administered work of outside suppliers and consultants, related to editorial and production stages of product development.
- Served as an additional resource to acquisitions editor and video producer, solving problems as they arose, stepping in as needed on all parts of project.
- Oversaw permissions as required by project.
- Maintained and kept project team informed of the "big picture" of project, including status of all parts in relation to stage of development, schedule and budget.



Shawn Carey, PMP

Manager Reporting and Quality Assurance: Data and Reporting Services (DRS)

Summary of Qualifications

In his current role, Mr. Carey leads the data reporting and quality assurance teams, and is responsible for all report design, development, and production activities, as well as data quality assurance. Mr. Carey directly manages a dedicated team of statistical analysts, report developers, and data quality assurance specialists to ensure that all data files and reporting products meet client specifications, are released on time, and are free of errors. Mr. Carey also provides overall support for the organization's next generation reporting activities and continues to maintain existing reporting platforms and applications across the organization's portfolio.

Mr. Carey's previous positions have afforded him a comprehensive and diverse understanding of project management best practices and methodologies. Past experiences include designing and implementing a variety of traditional (waterfall), agile (Kanban and scrum), and hybrid project management solutions, in a variety of business settings, focused on the timely delivery of high quality end products. Mr. Carey also has extensive experience leveraging technology and primary data to solve problems and improve efficiencies.

Education

Master of Business Administration (MBA), Southern New Hampshire University, Hooksett, NH

Master of Science (M.S.), Organizational Leadership, Southern New Hampshire University, Hooksett, NH

Master of Science (M.S.), Marketing, Southern New Hampshire University, Hooksett, NH

Bachelor of Science (B.S.), Business Administration/Information Technology, Southern New Hampshire University, Hooksett, NH

Professional Experience

2016–present Manager Reporting and Quality Assurance, DRS, Measured Progress, Inc., Dover, NH

Oversees the end-to-end design, development, and production of all reporting products; manages the maintenance and operations of all existing reporting platforms and applications, including online static and interactive reporting delivery systems; designs and maintains the quality assurance process and methodologies used to test and validate data and reporting products and services; supports strategic planning and direction for next generation reporting efforts; collaborates with multiple internal and external stakeholders to gather, refine, and implement project requirements; manages and directly supervises team members in the roles of statistical analyst, report developer, and quality assurance specialist.

2016 Interim Manager Data Quality Assurance, DRS, Measured Progress, Inc., Dover, NH

Designed and maintained the quality assurance process and methodologies used to test and validate data and reporting products and services; trained and mentored quality assurance staff; supervised quality assurance staff; coordinated report product testing with information technology teams; educated internal and external stakeholders with regard to quality assurance plans and methodologies; ensured the timely and accurate release of all reporting products and deliverables, including leading deployment efforts with multiple partners, as well as executing releases utilizing the organization's reporting platform.

2012–2016 Research and Analysis Project Manager, DRS, Measured Progress, Inc., Dover, NH

Responsible for the delivery of complex, large-scale data and reporting projects for federal, state, and district clients; managed all phases of projects,

Shawn Carey, PMP

Manager Reporting and Quality Assurance: Data and Reporting Services (DRS)

from initiation, through planning, development, production, and release; established formalized project management processes, including those related to scheduling, communications, and change management; established and managed project scope, schedule, communications, and risks; tracked, monitored, and communicated project progress against approved project plans, budget, requirements, quality measured, standard process, timeliness, and milestones; administered and maintained project and workflow management software applications across the Research & Analysis division; delivered all assigned projects within budget, schedule, and quality constraints.

2010–2012 Project Manager, SilverTech, Manchester, NH

Managed multiple concurrent web and software application projects, from initiation through launch, with a specialization in e-commerce projects, ranging in typical budget from \$25k - \$250k; gathered business requirements and created functional project specifications for client and internal development teams; led dedicated team of designers, front end developers, and back end developers, to deliver all assigned projects in accordance with approved scope, schedule, budget, and quality measures; conducted post-launch client training after each project completion; designed and implemented project management best practices and maintained the internal project management application for the organization.

2009–2010 Associate Project Manager, Millennium Medical Information Systems, Hampton, NH

Strategically managed clinical affairs specialists, journalists, web and application developers, and an off-shore team, to execute project requirements and deliver project products; created and managed all project schedules, resource planning, budgets, and acceptance criteria; recruited faculty experts and national thought leaders to provide complex subject matter; managed web content for all live sites, using Drupal CMS, and provided post-launch user support and training.

2007–2008 Corporate Trainer and Implementation Specialist, BID2WIN Software, Portsmouth, NH

Conducted on-site, off-site, and Internet-based user training for current clients; coordinated the installation and deployment of applications for new clients; managed and created digital assets and technical documentation related to product training and implementation services; led interactive training classes and created supporting content for new and existing software users at annual user conference, presenting in front of large audiences.

2005–2007 Technology Coordinator, Trombly Commuter Lines, Dracut, MA

Devised and implemented strategies to apply to existing operational activities to improve efficiency; facilitated and championed the use of technology by all employees; provided direct hardware and software support; performed peripheral installations, software application services, and microcomputer support; developed and maintained network procedures; maintained software library and hardware inventory/asset tracking; updated and maintained external website and intranet; implemented SharePoint instance.

Professional
Affiliations and
Certifications

Project Management Professional (PMP) #1976073



Woreen-Ann Bogle
 Project Manager: Data and Reporting Services (DRS)

Summary of Qualifications	<p>Ms. Woreen-Ann Bogle is currently Project Manager for Measured Progress Data and Reporting Services. As such, she currently oversees the Data Processing and Reporting team. She is responsible for defining and implementing the data processing and reporting processes to support all data and reporting products and services. She works with managers from other departments to communicate data processing and reporting methodologies and provide guidance and support to the implementation of data processing and reporting efforts throughout the company.</p> <p>Ms. Bogle has a strong academic background, as well as extensive experience in database management. Since joining the organization, she has contributed to enhancing the student data processing flow resulting in streamlining tasks and ensured consistent procedures across contracts.</p>
Education	<p>M.S., Mathematics, minor Statistics, Georgia State University, Atlanta, GA B.S., Computer Science and Mathematics, University of the West Indies, Kingston, Jamaica</p>
Professional Experience	<p>2012–present Project Manager, Data and Reporting Services, Measured Progress, Inc., Dover, NH</p> <p>Ms. Bogle provides leadership for contract work across all functions in Data and Reporting Services. These functions include Data Processing, Statistical Analysis, and Quality Assurance. She acts as a liaison with our program management division and single point of contact for specific contracts. She contributes to the creation of project schedules in collaboration with our Enterprise Program Management Office (EPMO). She ensures timely delivery of contract-related work and performs requirements gathering for contracted deliverables. She also monitors the progress of deliverables across contracts.</p> <p>2007–2012 Data Analyst II, Data and Reporting Services, Measured Progress, Inc. Dover, NH</p> <p>Ms. Bogle served as a mentor to newly recruited DRS staff members. She managed process improvement activities and projects and performed all the duties of a Data Analyst I.</p> <p>2001–2007 Data Analyst I, Data and Reporting Services, Measured Progress, Inc., Dover, NH</p> <p>As Data Analyst I, Ms. Bogle primary responsibilities were data management and data analyses to provide data files to be used for item statistics and reporting. These activities involved data verification, programming in SAS (a <i>software suite developed by SAS Institute for advanced analytics, multivariate analyses, business intelligence, data management, and predictive analytics</i>), and transferring assessment-related data to SQL server. Additional responsibilities included: providing input regarding the data cleaning process, creating file layouts for incoming and outgoing data. Working with program management and clients to determine and document decision rules to be used in the analysis of the data.</p> <p>2000 Graduate Research Assistant, Georgia State University Department of Mathematics and Statistics, Atlanta, GA</p> <p>Ms. Bogle conducted research for consulting purposes. She developed programs using FORTRAN language to simulate data. She articulated findings in a thesis.</p>



Woreen-Ann Bogle

Project Manager: Data and Reporting Services (DRS)

	<p>1991–2000 Graduate Laboratory Assistant, Georgia State University Department of Mathematics and Statistics, Atlanta, GA</p> <p>As Graduate Laboratory Assistant, Ms. Bogle graded student work. She created and updated class roster and grade records using Microsoft Excel.</p> <p>1999 Student Assistant, Georgia State University Department of Educational Policy Studies, Atlanta, GA</p> <p>As Student Assistant, Ms. Bogle answered telephones and directed calls, as well as responded to queries about the programs in the department.</p> <p>1995–1998 Student Assistant, University of the West Indies, Department of Computer Science and Mathematics and the Bursary, Kingston, Jamaica</p> <p>Working for the Department of Computer Science and Mathematics, Ms. Bogle lectured and tutored preliminary mathematics to teachers in a Ministry of Education-sponsored workshop. She served as a part-time tutor in calculus and pre-calculus, and conducted research.</p>
Relevant Publications and Presentations	<p>Bogle, W. & Y. Hsu. (2002). Sample Size Determination in Comparing Two Population Variances with Paired-data: Application to Bilirubin Tests. <i>Biometrical Journal 44: 594-602</i></p>
Professional Affiliations or Certifications	<p>Phi Beta Delta Honor Society for International Scholars, Georgia State University</p> <p>National Council on Measurement in Education (NCME)</p> <p>New England SAS Users Group</p>



Aaron Wozmak
Scoring Project Manager: Scoring Services

Summary of Qualifications

Mr. Aaron Wozmak has over nine years of scoring experience with Measured Progress, having been employed at various levels in the department. Starting as a reader, he learned the basics of the scoring process through scoring writing and mathematics responses. As a senior reader, he became involved in the quality control process, as well as some involvement in the preparation of materials for use in training. After becoming a Quality Assurance Coordinator (QAC) he worked on the math portions of the test for all of the states that Scoring Services work with, as well as some work on the Writing portion of some of the tests. In this capacity, he developed his training and public speaking skills through repeated training of large groups of scorers on items. This position also afforded him the opportunity to gain exposure to multiple contracts, and learn the various scoring standards for each of them. After becoming a Chief Reader for mathematics, he continued to have some level of involvement in all of the contracts that the math group was responsible for, and became the lead person for the Kentucky and Montana contracts. He has developed items for the Georgia High School Graduation Test and for the Georgia End of Course Test. He has trained and advised on benchmarking procedures and facilitated meetings for the Nashua, NH, and Gallup, NM school districts, when they were administering district level assessments. In addition, he has been involved with the New Mexico contract, working on the math portion of the statewide test, and planning and conducting professional development seminars related both to the math and science contents, to include both in-person seminars recorded training modules. As Scoring Project Manager, he is responsible for projects in four states.

Outside of Measured Progress, he was involved with tutoring students in 8th–11th grade in math, which afforded him first hand exposure to the current curriculum being taught in schools, and the students’ understanding of it.

Prior to joining Measured Progress, Mr. Wozmak was involved in providing security services to a wide range of clients. This position was instrumental in developing his skills in managing a large group of people, as well as experience developing and working with budgets and contracts, and working effectively and calmly in high stress situations. In addition, general management skills that were initially developed as an operations manager for a small company in California were enhanced by applying them in a large corporate environment.

Education

M.A., Forensic Psychology, University of North Dakota, Grand Forks, ND
B.A., Criminal Justice, Franklin Pierce University, Concord, NH

Professional Experience

2013–present Scoring Project Manager, Scoring Services, Measured Progress, Inc., Dover, NH

Manage multiple aspects of the scoring portion of contracts. This includes oversight of all quality control measures related to scoring, for all content areas, across all scoring locations. Responsible for planning and scheduling.

2007–2013 Chief Reader Mathematics, Measured Progress, Inc., Dover, NH

Oversaw math portions of open response and short answer question on tests. Reviews and prepares existing materials on operational scoring items in preparation for scoring. Identify and train scoring leadership candidates for the scoring of the items, including Quality Assurance Coordinators and Senior Reader; manage selection of sample student responses for use in benchmarking meetings to establish scoring standards; facilitate the benchmarking meetings between the Department of Education, Scoring Services, and Content Design and Development; Prepare scoring materials of field test items, and identify leadership staff to work on the scoring of those projects. Oversee various aspects of the scoring process to ensure all quality control measures are being achieved, and that all deadlines will be met. In advance of test administration, also involved in the review of test materials for content, to prevent potential errors or issues on the final test book.

2006–2008 Math Tutor, Club Z In-Home tutoring, Goffstown, NH

Tutored students in junior high and high school in algebra, geometry, and algebra 2 classes.

2005–2007 Quality Assurance Coordinator (QAC), Measured Progress, Inc., Dover, NH

Prepared training materials, and trained scorers on the proper way to score open response items for various state contracts. Ensured that quality control measures were being met during the scoring process. While work was primarily on math items, also did some work for the writing portion of tests.

2005 Senior Reader, Measured Progress, Inc., Dover, NH

Provided the first line of quality control on the scoring of open response math items on assessment tests. Conducted read behinds on a small groups of readers (8–12) to ensure that their scoring was consistent with training and established scoring standards.

2001–2004 Investigator, Atlantic Investigative Services, Stratham, NH

Conduct investigations into suspected cases of insurance fraud and employee theft, to include assessment regarding the likelihood of fraud, surveillance of individuals, and gathering of evidence to indicate the existence of fraud. Additionally, provided testimony at administrative hearings regarding the findings of the investigation. Also involved in researching court and public records, and serving subpoenas as needed.

Professional
Affiliations and
Certifications

American Psychological Association

eMetric Staff Curriculum Vitae

Name: Trystan Moss

Title: Project Manager II

CURRENT RESPONSIBILITIES:

Ms. Moss has been responsible for overseeing the operations and project management of a number of eMetric's online testing contracts and data warehousing and reporting contracts. Additional responsibilities include new product development, managing user training, providing Level 3 support, and acting as an SME for her projects. She serves as the main point of contact for state personnel and corporate partners.

RELEVANT SKILL SET:

- Gathering and understanding project requirements
- Writing detailed project specification documentation
- Developing and overseeing project schedules
- Managing required human resources
- Facilitating communication between team members
- Identifying potential risk and resolving issues
- Itemizing and overseeing project deliverables
- Project life cycle
- PMP processes and Agile methodologies

iTESTER EXPERIENCE:

Ms. Moss has worked with the iTester platform for six years, the previous five as a Project Manager. She has collaborated with partners and clients in Maine, Indiana, Arkansas, Missouri, Michigan, and South Dakota resulting in successful implementations of iTester for statewide summative assessments.

EDUCATION:

B.A. Communication, University of Texas at San Antonio, San Antonio, Texas, 2010

SIGNIFICANT ACCOMPLISHMENTS:

Beginning in 2011, Ms. Moss has worked closely with business partners to orchestrate the successful implementation of five concurrent state-wide online testing systems. State projects that Ms. Moss has managed include Indiana, Arkansas, Missouri, Michigan, and South Dakota.

From 2013-2016, Ms. Moss collaborated with clients to oversee the creation of and manage a Common Core aligned item bank that was built into two separate online portals. These portals were marketed to and used by school districts throughout the United States at the formative level. Ms. Moss managed the entire project life-cycle from initiation to closure.

In addition to the state projects listed above, Ms. Moss is currently serving as the Project Manager for the Maine Educational Assessments online testing system. She has held this position since the project's inception in 2015.

eMetric

eMetric Staff Curriculum Vitae

Name: Rajeev Dasari

Role: Technology Manager - Service Delivery

CURRENT RESPONSIBILITIES:

Rajeev Dasari is a Technology Manager at eMetric. He leads a team of software engineers responsible for the development and delivery of eMetric's online assessment and reporting system, iTester. He manages the day-to-day activities of the software development team within an Agile/Scrum environment and works closely with the software engineers and developers to design the systems and development approach. Mr. Dasari provides strategic and tactical management by prioritizing deliverables using the available resources and maintains a high-level perspective on the project to ensure that quality software is delivered on schedule. Additionally, Mr. Dasari constantly is evaluating procedures and processes to better streamline development activities and operations and provides insight into emerging technologies to keep eMetric's technologies current and innovative.

RELEVANT SKILL SET:

- 15 years of experience in Product Life Cycle Management, Pair Programming, test driven development, system integration and other development and QA methodologies
- Extensive experience managing mission critical projects, culturally diverse and cross-functional technical teams
- Experience in driving business driven IT wide Agile (Scrum) and Kanban (Lean) implementations
- Recognized expert in ERP and asset management
- Hands on experience using Microsoft technologies including .Net and web technologies including HTML5
- Software development experience with strong qualifications in architecting, designing, building and supporting software solutions
- Experience in designing, implementing and administering integrated data stores
- Proven experience in finding the right solution for enterprise wide complex problems

EDUCATION:

M.S. Management Information Systems, Boston University, Boston, Massachusetts, 2007

B.E. Mechanical, Karnataka University, Bhatkal Karnataka, India 1995

SIGNIFICANT ACCOMPLISHMENTS:

Mr. Dasari worked in technical leadership at Hewlett-Packard Financial Services (HPFS) for the last 14 years. He was instrumental in a global rollout of an asset management system (ERP) in a record timeframe of under one year. Today, this system is responsible for generating a quarter of HPFS revenues. He led IT standardization and globalization efforts for end of lease processes reducing maintenance cost by 35%. He helped increase HPFS visibility and penetration into the available global market space by integrating HPFS with the HP sales analytics system. Since joining eMetric, Mr. Dasari has led efforts to further establish the Agile/Scrum framework and define agile best practices.

While at eMetric, Mr. Dasari worked on initial rollouts of iTester for the states of Oklahoma, New Mexico, and Maine.

OTHER PERTINENT INFORMATION:

- Certified Scrum Product Owner, 2015
- BPMP Certified Product Manager, 2014
- Six Sigma Green Belt, Villanova University, 2013
- Certified Scrum Master, 2012
- Microsoft Certified Professional, 1999

eMetric

eMetric Staff Curriculum Vitae

Name: Jessica Brite

Title: Business Analyst

CURRENT RESPONSIBILITIES:

Ms. Brite provides assistance and guidance to the support and project management teams. She supports project managers in the development of user guides, project specifications, and training documentation.

RELATIVE SKILL SET:

- 5 years experience working with U.S. Department of Education under the Regional Education Laboratory Southwest contract
- 4 years experience in development of academic and psychological assessments
- In depth knowledge of state assessment programs, reporting, and standards

EDUCATION:

M.S. Psychology, The University of Texas at San Antonio, San Antonio, Texas, 2003

B.A. Psychology, The University of Texas at San Antonio, San Antonio, Texas, 2001

SIGNIFICANT ACCOMPLISHMENTS:

Ms. Brite has extensive experience working with districts, state departments of education, and the US Department of Education in the areas of data collection, standards development, standards alignment, and student assessment. In her work with Denver Public Schools, Ms. Brite was an active member of a team who provided recommendations around assessment gaps and capability of assessment use in value added models for teacher performance. Ms. Brite provided technical assistance to the Commission for College Ready Texas, a team tasked with providing content guidance for the development of Texas' College and Career Readiness standards. Under the Regional Educational Laboratory Southwest contract, funded by the U. S. Department of Education, she actively participated in standards alignment studies including state assessment standards to national standards sets and national college and career readiness assessment standards. Her experience ranges from work in education to development of academic and psychological assessments.

eMetric

eMetric Staff Curriculum Vitae

Name: Swati Cherukuri

Role: Manager, Quality Assurance

CURRENT RESPONSIBILITIES:

As a quality assurance manager at eMetric, Ms. Cherukuri is responsible for customer requirements gathering, developing test and verification plans, testing applications, and maintaining the quality of the products released by eMetric. In this role, she has developed and implemented several QA procedures at all phases of the software development cycle for eMetric products. She is proficient in applying manual testing as well as using the automated tools.

RELEVANT SKILL SET:

- Experience with automated tools such as QTP, Win Runner, Test Director, and Selenium
- Experience in programming and database languages such as Java, C++, and SQL
- Knowledge of statistical programming (SAS)
- Experience working with ERP packages, SAP BIW and SAP ABAP

EDUCATION:

B.B.S. Computer Science, Pondicherry University, India, 2005.

SIGNIFICANT ACCOMPLISHMENTS:

Since joining eMetric in 2008 Ms. Cherukuri has led the eMetric quality assurance team and managed the quality assurance work for all eMetric's online assessment and reporting products. She has established a set of testing procedures which are instrumental to the successful product roll-out and delivery for state and corporate clients.

eMetric

eMetric Staff Curriculum Vitae

Name: Neil Gandhi

Role: Technology Manager - Platforms

CURRENT RESPONSIBILITIES:

Mr. Gandhi is the Technology Manager of eMetric's iTester platform, managing and leading a team in the execution of new development for the platform. His responsibilities include planning the development roadmaps, overseeing technical design of the platform, and working with the development team on implementation and maintenance of the platform. Mr. Gandhi is also responsible for managing the platform releases, ensuring that development is completed effectively and in a timely manner, and works with operations staff to plan and execute deployments successfully. He also collaborates with quality assurance and engineering staff to develop the appropriate test plans.

RELEVANT SKILL SET:

- Software development in server-side programming languages C#, Java, PHP, Ruby (12 years)
- ASP .NET frameworks including WebForms, MVC, and Web API (12 years)
- Database design and development using SQL Server, MySQL (11 years)
- Web development skills including HTML5, CSS, Javascript (9 years)
- Analysis of systems with functional & behavioral models in UML (4 years)
- Deployment and build techniques with Jenkins, MSBuild and the .NET framework (8 years)
- Management and delivery of large-scale software projects (7 years)
- Source code management with SVN & Git (12 years)
- Software development in scripting programming languages Python (2 years)

EDUCATION:

M.S. Information Technology, University of Texas at San Antonio, San Antonio, Texas

B.S. Computer Science, University of Texas, Austin, Texas

SIGNIFICANT ACCOMPLISHMENTS:

Mr. Gandhi has performed development on a number of applications for high-stakes reporting including the Connecticut Mastery Test and Alaska state assessments among others. He has successfully managed to oversee the concurrent development and delivery of multiple applications throughout the year, ensuring they are released to the highest level of quality and in a timely manner. He also played a key role in migrating eMetric's Data Interaction platform from a primarily server-based architecture to a service-oriented architecture with an emphasis on HTML5 for delivery of front-ends on multiple form factors. More recently, he has played a significant role in developing a robust strategy for maintaining a growing codebase across a diverse portfolio of customers for the iTester platform and streamlining delivery and operations for it. The iTester platform codebase is successfully used to deliver high-stakes summative assessments across multiple states including Oklahoma, Maine, New Mexico, and South Dakota.

OTHER PERTINENT INFORMATION:

- Business Foundations Certificate, University of Texas, Austin, Texas

eMetric

ANDRINA ARAGON

Project Manager

Expertise

Ms. Aragon has two years of project management experience. As a Technical Project Manager, she oversees the planning, implementation, and administrative operations of AI scoring projects and online testing programs. She currently manages the Michigan and Wisconsin AI scoring projects. Ms. Aragon's previous experience includes assessment development operations for CTB/McGraw-Hill and the Colorado Department of Education.

Professional Experience

MEASUREMENT INCORPORATED, Durham, NC

Project Manager, 2014–present

In collaboration with the primary contract vendor, operates as a reliable, professional liaison for a high-profile customer. Coordinates all activities related to the implementation and support of AI scoring.

- Maintain active lines of communication and information exchange between the customer and all key team members so that issues, questions, and updates are provided on an hourly/daily/weekly basis. Readily available to help guide collaboration efforts regarding mitigation strategies and efficiently monitor team progress.
- Organize the development of customer-requested materials.
- Work with key team members to schedule out all supporting activities and implement them into a master project plan. Gather weekly updates regarding current activities and potential risks/issues, and report back to leadership committees. Document all out-of-scope requests for review/approval.
- Schedule, create agendas, facilitate, and attend various project-level and internal team meetings, while also compiling/distributing all meeting minutes. Travel to customer meetings, as needed.

CTB/McGRAW-HILL, Monterey, CA

Senior Assessment Editor, Science, 2010–2014

Led the development of content and supporting assessment materials for one or more state programs, ensuring adherence to the publishing process. Applied content expertise to ensure that items and test materials conformed to specifications and quality standards. Frequent interaction with customers and multiple vendors to support and guide the creation of superior content. Experience leading a content development team for a large-scale testing program with an extremely aggressive schedule due to a late contract award. Successfully supported and directed the content team through the development of 83 newly selected operational forms for Math, Reading, Science, Social Studies, Geography, U.S. History, and Writing, in addition to 38 online forms, 24 repurposed forms, 59 Braille and Large Print test forms, and various ancillaries. All work was completed in less than three months and on time to meet the customer's testing window. Took on the role of interim manager for the Science content team for a period of 5 months, while continuing to successfully perform all regular job responsibilities. Provided

leadership and guidance to 9 direct reports as several new projects started and team members transitioned to new roles. Received a “Breakthrough Achievement” performance rating in 2012.

COLORADO DEPARTMENT OF EDUCATION
OFFICE OF STANDARDS AND ASSESSMENTS, Denver, CO
Principal Consultant, 2008–2010

Supervised existing assessment development operations for the summative state assessment program. Conducted ongoing policy research regarding best national and international assessments. Coordinated with various units in the department to meet the requirements of assessment per state and federal law, including standards support. Took over management of the assessment unit’s Postsecondary and Workforce Readiness Assessment pilot. Supported districts and assessment stakeholders in the coordination and administration of the state summative assessments for Mathematics, ELA, Writing, and Science for both grades 3-8 and high school. Reviewed, edited, and approved all newly developed assessment items, reading passages, test pages, ancillaries, etc., while working directly with the contracted assessment vendor. Participated in, provided content for, and presented at multiple stakeholders meetings designed to guide the development of a new state assessment system.

CTB/McGRAW-HILL, Indianapolis, IN | Albuquerque, NM | Centennial, CO
Science Assessment Editor/Item Writer, 2004–2008

Operated as a content lead for multiple custom programs in Science and at various grade levels (K-12). Wrote, reviewed, edited, and produced assessment materials (both items and test forms) on time and of the highest quality. Trained and provided item-specific feedback to item writers. Organized and prepared materials for customer review meetings, and participated as a facilitator while working side-by-side with teachers and Department of Education staff. After leaving the company in 2005, and while working for the University of New Mexico, was frequently contacted by CTB to develop test items as an independent contractor. Stepped back into the role of a part-time Science Assessment Editor during this period.

UNIVERSITY OF NEW MEXICO
DEPARTMENT OF BIOLOGY, Albuquerque, NM
Introductory Laboratory Technician, 2005–2007

Maintained, prepped, and assisted in the operation of approximately 60 labs per semester. Ordered supplies for each lab every week. Maintained current descriptions and notes for the layout of each lab, including specimens, solutions, equipment, models, and posters needed. Set up and tore down labs. Maintained laboratory equipment, including but not limited to, microscopes, spectrophotometers, electronic balances, and computers. Contributed to the collaboration of new laboratory experiments. Involved in writing and developing lab manuals, teaching assistant materials, and student activities.

Education

- M.S.** Biology, University of New Mexico, Albuquerque, NM 2003
- B.S.** Biology, University of New Mexico, Albuquerque, NM 1999

TIWANNA N. BAZEMORE, PMP

Vice President, Assessment Technology

Expertise

Ms. Bazemore is a Certified Project Management Professional with over 12 years' experience in the fields of technology, educational assessment, quality assurance, and project management. As Vice President of Assessment Technology, she oversees MI's assessment technology initiatives, including online testing, artificial intelligence (AI) scoring, and web-based formative assessments. She provides strategic direction for MI's online test delivery system, steering product requirements and the software development roadmap. In her previous position as the Director of Summative Assessments, Ms. Bazemore oversaw the quality assurance activities for online testing technologies, managed day-to-day operational aspects of online assessments, and acted as an advisor to the technical project managers. Under her direction the Connecticut State Department of Education successfully transitioned several assessments from paper and pencil to online administration. Currently Ms. Bazemore is working to transition Education Quality and Accountability Office (EQAO) from pencil assessments to an online administration.

Professional Experience

MEASUREMENT INCORPORATED, Durham, NC, 2002–present

Vice President, Assessment Technologies, 2015–present

Set direction for the Assessment Technologies staff in the evolution of online assessment technologies. Provide management oversight of 60+ full-time employees engaged in developing and supporting custom-designed and off-the-shelf testing and scoring solutions. Maintain communications and sustain relationships with contracting agencies, monitor contract obligations, assign and supervise project management and technical staff. Maintain department budget and handle contract invoicing for online assessment programs. Develop comprehensive responses for requests for proposals including technical and costs components.

Director of Summative Online Assessments, Online Test Delivery Systems, 2014–2015

Monitor the activity of state-led consortia to stay abreast of emerging technologies, education standards, interoperability requirements and test delivery system features. Gather requirements from state clients and internal customers. Collaborate with the software development team and MI leadership to prioritize requirements and establish development schedules. Participate in planning meetings and perform product demonstrations.

Senior Technical Project Manager, 2007–2014

Manage online formative and summative assessment projects. Develop project plans and schedules, monitor project activities, maintain deadlines, and communicate project progress. Serve as the technical liaison between MI and the client to ensure that the client needs are met with the online assessment systems. Direct and coordinate online implementation activities, including online test formatting, technical readiness evaluations, import and export of roster and student response data, and development of administration and training materials. Maintain quality assurance of testing applications and test materials, provide oversight for software QA, prepare the Call Center for online testing support, conduct training and product demonstrations for clients, facilitate project meetings, and approve project documentation and reports. Projects have included:

- Connecticut Benchmark Assessment, 2008-2014
- Connecticut Modified Assessment, 2010-2014
- Connecticut School Technology Readiness Survey, 2008-2014
- Connecticut Text Reader Study, 2008-2009
- Connecticut Typed Response Assessment, 2008-2014
- Professional Meeting Planners Network CMMM Online Assessment, 2009
- Questar Assessment, Inc. eDRP Online Assessments, 2007-2014

Project Manager, 2005–2007

Monitored production and quality assurance for the online assessment system. Acted as quality assurance manager of a three-member team of testers. Served as the technical liaison between MI and the client, working directly with developers to ensure that the client needs for Mathematics, Reading and Writing assessments were met. Projects have included:

- Connecticut Formative Assessment, 2007
- Connecticut School Technology Readiness Survey, 2006-2007
- Danya International, Inc. Head Start Monitoring Support Project Online Assessment, 2007
- Professional Meeting Planners Network Medical Meeting Manager Certification, 2006
- Questar Assessment, Inc. eDRP Online Assessments, 2005-2007

EXECUTIVE STAFFING, Raleigh, NC

Administrative Assistant, 1997–1998

Developed databases with Microsoft Access. Maintained and updated existing databases. Prepared Microsoft Power Point presentations.

NORTH CAROLINA STATE UNIVERSITY, Raleigh, NC

Project Designer, 1996–1997

Designed and fabricated a full size prototype of a powered indoor infant swing. Worked with Working Model to design animated simulations and used AutoCAD to complete the drawings.

RALEIGH-DURHAM AIRPORT AUTHORITY, Raleigh, NC

CAD Operator, June–August 1996

Digitized maps; developed and updated drawings with AutoCAD. Critiqued specifications for development plans.

Education

M.B.A. Business Administration, East Carolina University, Greenville, NC, 2009

B.S. Biological Engineering; North Carolina State University, Raleigh, NC, 1997

Certification Project Management Professional, Project Management Institute, 2013-2019

Technical Skills

Visual Basic, Visual C++, Microsoft Office, SQL, Oracle 8, SQL Server 2008, Java, Quick Test Pro, Windows Vista/XP/2000; MAC OS X, Linux Ubuntu/Debian, AutoCAD

Leadership, Professional Affiliations, and Awards

- Golden Key International Honor Society, 2009
- Senior PharmAssist, Board Member 2012-present

THOMAS DAVIS

PEG Artificial Intelligence Team Lead

Expertise

Mr. Davis has 20 years of software engineering experience in architectural, development, quality assurance, and supervisory capacities in web, private-cloud, cluster, and stand-alone environments. He is experienced with each phase of the software development life cycle in both Agile (Scrum, XP) and classic Waterfall patterns, and has proven experience developing simultaneously in multiple languages, conducting proof-of-concept rapid R&D, interfacing with third parties, and managing priority queues. As the Lead of the PEG Artificial Intelligence (AI) Team, Mr. Davis provides leadership and oversight for software architecture, research, engineering, and implementation of MI's AI scoring system infrastructure, manages team logistics and personnel, and acts as liaison between customers and AI specialists.

Mr. Davis' previous experience includes designing long running software to meet high demand public safety requirements, optimizing high performance calculations in clustered and parallel distributed environments, representing multi-dimensional data for large corporate business analytics, and satisfying stringent privacy and federal security standards in educational, medical, and law enforcement deployments.

Professional Experience

MEASUREMENT INCORPORATED, Durham, NC

PEG Team Lead, 2016–present

Manage and oversee the PEG Artificial Intelligence Team and provide leadership for MI's PEG™ automated scoring systems. Participate in customer and partner interactions. Implement architecture and design patterns to ensure systems scale well to meet future demands. Oversee research projects requested by internal and external clients and team members. Work with proposal writers to provide updated proposal text for RFP responses. Write and send client communications related to current and future projects. Oversee the technical direction of various AI scoring projects and services.

Projects include:

- California Assessment of Student Performance and Progress (CAASPP), 2015–present
- 2016–2017 PEG Streaming Scoring Services, providing automated AI scoring for:
 - Michigan (with DRC)
 - Wisconsin (with DRC)
 - Louisiana (with DRC)
 - South Dakota (with AIR)
 - Vermont (with AIR)
- Practice Writing Websites (PEG Writing, NC Write, Utah Write, Connecticut Benchmark Writing Assessment), 2015–present

MEASUREMENT INCORPORATED, Durham, NC

Technical Lead, Artificial Intelligence, 2013–2016

Provide oversight and leadership for MI's automated scoring system, PEG™. Assist in architectural and engineering processes, including design, maintenance, and updating of the AI scoring platform for short answer, constructed response, and extended response items. Lead a team of software developers and designers to ensure AI systems meet client technical requirements. Serve as the technical liaison between development teams, with clients, and with business partners for automated scoring projects. Develop AI scoring project plans, enforce data integrity, monitor project activities, maintain deadlines, and communicate project progress. Projects include:

- California Assessment of Student Performance and Progress (CAASPP), 2015
- Smarter Balanced Assessment Consortium Pilot and Field Test, 2013-2014
- Utah Direct Writing Assessment (DWA), 2014–present
- Practice writing websites (PEG Writing, NC Write, Utah Write, Connecticut Benchmark Writing Assessment), 2013–2015

CONTRACTOR (INDEPENDENT AND AGENCY SUBCONTRACTOR)

Senior Software Engineer, 2009–2013

Led multiple development projects on a range of contracts in the power, ecology, human resources, insurance, financial, and public safety industries. Contributed significantly to production applications used by a number of Fortune 500 companies, power utilities, US federal departments, state and municipal governments, and international regulatory and public safety agencies. Experience includes a from-scratch scalable, cloud-deployable high-performance Geocoder/Location Validator supporting wildcard and phonetic algorithms, as well as order-of-magnitude improvements to an existing statistical pattern oriented modeling (POM) simulator deployed across a High Performance Computing cluster for modeling and forecasting the populations of endangered species. Additional experience includes internet and intranet based, data-driven, business intelligence relational and multi-dimensional database storage projects.

PUBLIC CONSULTING GROUP, Boston, MA

Software Engineer, 2008–2009

Developed Internet software for Learning Tools International, handling both ongoing client customization of an established, international web application, and developed a custom Medicare module. Roles included 5% of all US IEP (Individualized Education Program) students initially, and after acquisition by PCG, expanded to control approximately 15% of this market.

Education

B.S. Mathematics/Computer Science; University of North Carolina at Chapel Hill, Chapel Hill, NC, 2001

Technical Skills

Software architecture, C#, Python, SQL, C++, AJAX, Java, SQLServer, Windows services, Microsoft development tools, Agile software development, Web services, Linux services, JetBrains and open source development tools.

Appendix 2: New Hampshire Statewide Assessments Project Schedule



ID	Task Name	Duration	Baseline Start	Baseline Finish
0	NH Statewide Assessments: ELA & Math Gr 3-8, Science Gr 5,8 & 11 Writing Gr 3-8 2017-2018	849 d?	NA	
1	START - NH Statewide Assessments: ELA, Math, Science & Writing 2017-2018	0 d		
2	CLIENT SERVICES ACTIVITIES 2017-2018	848 d		
3	Contract Onboarding			
4	Contract Startup	1 d		
5	Contract Awarded/Signed	1 d	7/10/17	7/10/17
6	Customer Meetings	465 d		
7	Startup & Schedule Planning Meetings	33 d		
8	Conduct Startup Meeting	2 d	7/12/17	7/13/17
9	Complete Operational Schedule	1 d	8/25/17	8/25/17
10	Technical Advisory Committee Meetings	376 d		
11	Conduct Meeting #1 - 2017	2 d	11/14/17	11/15/17
12	Conduct Meeting #2 - 2018	2 d	5/15/18	5/16/18
13	Conduct Meeting #1 - 2018	2 d	11/14/18	11/15/18
14	Conduct Meeting #2 - 2019	2 d	5/14/19	5/15/19
15	Project Operations Exit Meeting	1 d		
16	Conduct Meeting	1 d	6/29/18	6/29/18
17	Program Management Meetings	370 d		
18	Meetings 2017-2019	370 d	7/11/17	12/28/18
19	Fall Interim 2017 Test Administration	242 d	NA	NA
20	TEST FORM CONSTRUCTION GR 3-8 ELA & Math Fall Interim	1 d		
21	Handoff to Production	1 d	7/14/17	7/14/17
22	COMPUTER BASED TEST FORM PRODUCTION (CBT) -GR 3-8 ELA & Math Fall Interim	39 d		
23	Grade 3-8 ELA & Math CBT Test Form	37 d		
24	Upload Constructed Sets to Online Test Delivery System	32 d	7/17/17	8/29/17
25	Courtesy Client Review	5 d	8/30/17	9/6/17
26	CBT Final Form Extracts & Dry Run	7 d		
27	Notify Online Testing Vendor Forms are Ready for Form Extract	1 d	8/30/17	8/30/17
28	Extract Forms for Production to Online Test Delivery System	5 d	8/31/17	9/7/17
29	Mark Tests Ready for Scheduling on Production	1 d	9/8/17	9/8/17
30	MANUALS & ANCILLARY PRODUCTION	1 d		
31	Test Coordinator & Test Administrator Manual Interim Fall	1 d		
32	Post Final PDFs to Online	1 d	8/21/17	8/21/17
33	iSERVICES	19 d		
34	iServices Preparation	1 d		
35	Conduct Kickoff Meeting for iServices	1 d		
36	iServices Password Generation & Delivery	5 d		
37	Receive Password Memo from Client & Deliver to iCore	1 d		
38	Run Script to Generate New Passwords	1 d		
39	Post PDFs of Merged Password Memos to FTP & Inform Client	1 d		
40	Print and Send Merged Password Memos	2 d		
41	Online Enrollment - Fall Interim	13 d		
42	Activate (external, internal or both)	1 d		
43	Application Window	10 d		
44	Deactivate (external)	1 d		
45	Deactivate (internal)	1 d		
46	ADMINISTRATION TRAINING	23 d		
47	System Training - Interim Fall	16 d		
48	Registration	16 d		
49	Setup Registration Site	5 d	8/7/17	8/11/17
50	Registration Window	10 d	8/14/17	8/25/17
51	System Training Webinar	1 d	8/28/17	8/28/17
52	Assessment Administration- Test Coordinator Training - Iterim Fall	16 d		
53	Registration	16 d		
54	Setup Registration Site	5 d	8/16/17	8/22/17
55	Registration Window	10 d	8/23/17	9/6/17
56	Assessment Administration- Test Coordinator Training Webinar	1 d	9/7/17	9/7/17
57	SERVICE CENTER SUPPORT	241 d	NA	NA
58	Service Center Support for Fall Interim	241 d	NA	NA
59	Service Center Call Window	241 d	7/17/17	6/28/18
60	TEST ADMINISTRATION & Results Fall Interim 2017	77 d		
61	Practice Test Window Fall Interim 2017	77 d	8/28/17	12/15/17
62	Interim Testing Window Fall Interim 2017	68 d	9/11/17	12/15/17
63	Winter Interim 2017 Test Administration	246 d	NA	NA
64	TEST FORM CONSTRUCTION GR 3-8 ELA & Math Winter Interim-Forms in December	1 d		
65	Handoff to Production	1 d	9/1/17	9/1/17
66	COMPUTER BASED TEST FORM PRODUCTION (CBT) - GR 3-8 ELA & Math Winter Interim	79 d		
67	GR 3-8 ELA & Math CBT Test Form	72 d		
68	Upload Constructed Sets to Online Test Delivery System	32 d	9/5/17	10/18/17
69	Courtesy Client Review	5 d	7/10/17	7/14/17
70	CBT Final Form Extracts & Dry Run	7 d		
71	Notify Online Testing Vendor Forms are Ready for Form Extract	1 d	10/19/17	10/19/17
72	Extract Forms for Production to Online Test Delivery System	5 d	10/20/17	10/26/17
73	Mark Tests Ready for Scheduling on Production	1 d	10/27/17	10/27/17
74	MANUALS & ANCILLARY PRODUCTION	1 d		
75	Test Coordinator & Test Administrator Manual Winter Interim	1 d		

ID	Task Name	Duration	Baseline Start	Baseline Finish
76	Post Final PDFs to Online	1 d	7/17/17	7/17/17
77	iSERVICES	19 d		
78	iServices Preparation	1 d		
79	Conduct Kickoff Meeting for iServices	1 d		
80	iServices Password Generation & Delivery	5 d		
81	Receive Password Memo from Client & Deliver to iCore	1 d		
82	Run Script to Generate New Passwords	1 d		
83	Post PDFs of Merged Password Memos to FTP & Inform Client	1 d		
84	Print and Send Merged Password Memos	2 d		
85	Online Enrollment - Winter Interim	13 d		
86	Activate (external, internal or both)	1 d		
87	Application Window	10 d		
88	Deactivate (external)	1 d		
89	Deactivate (internal)	1 d		
90	ADMINISTRATION TRAINING	30 d		
91	System Training - Interim Winter	16 d		
92	Registration	16 d		
93	Setup Registration Site	5 d	10/20/17	10/26/17
94	Registration Window	10 d	10/27/17	11/9/17
95	System Training Webinar	1 d	11/10/17	11/10/17
96	Assessment Administration- Test Coordinator Training - Interim Winter	16 d		
97	Registration	16 d		
98	Setup Registration Site	5 d	11/9/17	11/15/17
99	Registration Window	10 d	11/16/17	12/1/17
100	Assessment Administration- Test Coordinator Training Webinar	1 d	12/4/17	12/4/17
101	SERVICE CENTER SUPPORT	242 d	NA	NA
102	Service Center Support for Interim Winter	242 d	NA	NA
103	Service Center Call Window	242 d	7/14/17	6/28/18
104	TEST ADMINISTRATION & Results - Winter Interim 2017	89 d		
105	Practice Test Window - Winter Interim 2017	89 d	11/13/17	3/23/18
106	Interim Testing Window - Winter Interim 2017 - ELA & Math	71 d	12/11/17	3/23/18
107	Spring Summative	465 d?	NA	NA
108	NH Statewide Assessments: Writing 2017-2018 - Test Design	35 d		
109	TEST DESIGN - NH Statewide Assessments: Writing 2017-2018	17 d	NA	NA
110	Test Design Meeting with Client 2018	2 d	7/12/17	7/13/17
111	Test Design Drafted & Approved by Client	10 d	7/21/17	8/3/17
112	TEST BLUEPRINT	18 d	NA	NA
113	Test Blueprint Drafted	5 d	8/4/17	8/10/17
114	Test Blueprint Initial Review by Client	5 d	8/11/17	8/17/17
115	Incorporate Client Edits	3 d	8/18/17	8/22/17
116	Test Blueprint Final Client Signoff	5 d	8/23/17	8/29/17
117	ITEM SPECIFICATIONS	5 d	8/1/17	8/28/17
118	Creation of Item Specifications	5 d	8/4/17	8/10/17
119	STYLE GUIDE	18 d	NA	NA
120	Style Guide Drafted	5 d	8/4/17	8/10/17
121	Style Guide Initial Review by Client	5 d	8/11/17	8/17/17
122	Incorporate Client Edits	3 d	8/18/17	8/22/17
123	Style Guide Final Client Signoff	5 d	8/23/17	8/29/17
124	CONTENT DEVELOPMENT GR 3-8 Writing Prompts Spring Summative	114 d		
125	Prompt & Passage Development Planning	114 d		
126	Prompt & Passage Development Planning	10 d	8/11/17	8/24/17
127	Creation of Prompt & Passage Specifications	10 d	8/25/17	9/8/17
128	Passage Development	52 d		
129	Passage Writing	40 d	9/11/17	11/3/17
130	Passage Review Meeting	2 d	11/6/17	11/7/17
131	Passage Review Meeting Revisions	5 d	11/8/17	11/14/17
132	Final Client Signoff	5 d	11/15/17	11/21/17
133	Prompt Development	42 d	NA	NA
134	Prompt Writing	30 d	11/22/17	1/8/18
135	Prompt Review Meeting	2 d	1/9/18	1/10/18
136	Prompt Review Meeting Reconciled	5 d	1/11/18	1/18/18
137	Final Client Signoff of Prompts	5 d	1/19/18	1/25/18
138	TEST FORM CONSTRUCTION GR 3-8 Writing Summative Spring	19 d		
139	Initial Test Pull	5 d	1/26/18	2/1/18
140	Client Review	5 d	2/2/18	2/8/18
141	Update Test Pull Based on Client Review	3 d	2/9/18	2/13/18
142	Client Signoff	5 d	2/14/18	2/21/18
143	Handoff to Production	1 d	2/22/18	2/22/18
144	Grade 3-8 Writing CBT Test Form	12 d		
145	Upload Constructed Sets to Online Test Delivery System	5 d	2/23/18	3/1/18
146	Client Review	5 d	3/2/18	3/8/18
147	Reconcile Client Review Edits	2 d	3/9/18	3/12/18
148	Grade 3-8 Writing CBT Final Form Extracts & Dry Run	7 d		
149	Notify Online Testing Vendor Forms are Ready for Form Extract	1 d	3/13/18	3/13/18
150	Extract Forms for Production to Online Test Delivery System	5 d	3/14/18	3/20/18
151	Mark Tests Ready for Scheduling on Production	1 d	3/21/18	3/21/18
152	TEST FORM Construction -Summative Spring	1 d		
153	Grade 5, 8 & 11 Science Test Form Construction	1 d	NA	NA

ID	Task Name	Duration	Baseline Start	Baseline Finish
154	Handoff to Production	1 d	10/2/17	10/2/17
155	Grade 3-8 ELA & Math Test Form Construction	1 d	NA	NA
156	Handoff to Production	1 d	10/2/17	10/2/17
157	PRINT BASED TEST FORM PRODUCTION (PBT)-Summative Spring	65 d		
158	Gr 3-8 ELA & Math & Gr 5, 8 & 11 Science Testbook	65 d		
159	Form Production	60 d	10/3/17	12/28/17
160	Courtesy Client Review	5 d	12/29/17	1/5/18
161	Post Final PDFs to Standard Print Vendor	1 d	12/29/17	12/29/17
162	COMPUTER BASED TEST FORM PRODUCTION (CBT) -Summative Spring	263 d?		
163	Grade 3-8 ELA & Math CBT Test Form	80 d		
164	Upload Constructed Sets to Online Test Delivery System	75 d	1/2/18	4/18/18
165	Courtesy Client Review	5 d	4/19/18	4/25/18
166	Grade 3-8 Math, ELA & Gr 5, 8 & 11 Science CBT Final Form Extracts & Dry Run	7 d		
167	Notify Online Testing Vendor Forms are Ready for Form Extract	1 d	4/19/18	4/19/18
168	Extract Forms for Production to Online Test Delivery System	5 d	4/20/18	4/26/18
169	Mark Tests Ready for Scheduling on Production	1 d	4/27/18	4/27/18
170	Answer Document Production - Summative Gr 4-8 ELA & Math & Science	83 d		
171	Grade 3-8 Math, ELA & Gr 5, 8 & 11 Science Answer Document	83 d		
172	Page Composition	75 d	9/5/17	12/20/17
173	Client Review	5 d	12/21/17	12/28/17
174	Reconcile Client Review Feedback	2 d	12/29/17	1/2/18
175	Post Final PDFs to Print Vendor	1 d	1/3/18	1/3/18
176	Released Item Documents (RIDs)-	80 d?	NA	NA
177	Grade 3-8 Math, ELA & Gr 5, 8 & 11 Science RID	80 d?	NA	NA
178	CS provides list of release items to CDD and Scoring	1 d	5/29/18	5/29/18
179	CS hands off score guides, student sample responses	1 d	5/30/18	5/30/18
180	IDS creates group in NTS and hands off to COMP	2 d	5/31/18	6/1/18
181	COMP desktops test forms and hands off to ED	4 d	6/4/18	6/7/18
182	ED 1st read	3 d	6/8/18	6/12/18
183	To CS/Product for review	2 d	6/13/18	6/14/18
184	To CDD Specialist for review	2 d	6/15/18	6/18/18
185	To IDS/GR/COMP/ED revision loop	3 d	6/19/18	6/21/18
186	Client Review	5 d	6/22/18	6/28/18
187	GR/COMP/ED revision loop	1 d?	6/29/18	6/29/18
188	To ED for final QC	3 d	7/2/18	7/5/18
189	COMP creates print-ready PDFs	1 d	7/6/18	7/6/18
190	To ED for final PDF QC	3 d	7/9/18	7/11/18
191	Final PDFs posted to print vendor and/or CS	49 d	7/12/18	9/19/18
192	MANUALS & ANCILLARY PRODUCTION	33 d		
193	Test Coordinator & Test Administrator Manual Summative Spring	33 d		
194	Create & Mark-up Manuscript	20 d	12/29/17	1/29/18
195	Client Review	5 d	1/30/18	2/5/18
196	Reconcile Client Review Feedback	2 d	2/6/18	2/7/18
197	Client Review & Final Signoff	5 d	2/8/18	2/14/18
198	Post Final PDFs to Online	1 d	2/15/18	2/15/18
199	Post Final PDFs to Print Vendor	1 d	2/15/18	2/15/18
200	PURCHASING-Summative Spring	52 d		
201	Gr 3-8 ELA & Math & Gr 5, 8 & 11 Science Testbook	25 d		
202	PDF Release Available	0 d	12/29/17	12/29/17
203	Vendor Prints & Ships to MP Warehouse	25 d	1/2/18	2/6/18
204	Gr 3-8 ELA & Math & Gr 5, 8 & 11 Science Answer Document	20 d		
205	PDF Release Available (from COMP)	0 d	1/3/18	1/3/18
206	Vendor Prints & Ships to Measured Progress Warehouse	20 d	1/4/18	2/1/18
207	Test Coordinator & Test Administrator Manual	20 d		
208	PDF Release Available	0 d	2/15/18	2/15/18
209	Vendor Prints & Ships to Measured Progress Warehouse	20 d	2/16/18	3/16/18
210	PACKAGING / DISTRIBUTION - Summative Spring	21 d		
211	Test Coordinator & Test Administrator Manual Packaging / Distribution	7 d		
212	Test Coordinator & Test Administrator Manual Shipment	7 d		
213	Package & Ship	5 d	3/19/18	3/23/18
214	In-site for Districts/Schools	1 d	3/27/18	3/27/18
215	Gr 3-8 ELA & Math & Gr 5, 8 & 11 Science Testbook Packaging / Distribution	6 d		
216	Gr 3-8 ELA & Math & Gr 5, 8 & 11 Science Testbook Shipment	6 d		
217	Package & Ship	5 d	4/9/18	4/13/18
218	In-site for Districts/Schools	1 d	4/16/18	4/16/18
219	iSERVICES	127 d		
220	iServices Preparation	1 d		
221	Conduct Kickoff Meeting for iServices	1 d	11/30/17	11/30/17
222	iServices Password Generation & Delivery	5 d		
223	Receive Password Memo from Client & Deliver to iCore	1 d	12/1/17	12/1/17
224	Run Script to Generate New Passwords	1 d	12/4/17	12/4/17
225	Post PDFs of Merged Password Memos to FTP & Inform Client	1 d	12/5/17	12/5/17
226	Print and Send Merged Password Memos	2 d	12/6/17	12/7/17
227	Online Enrollment - Summative Spring	13 d		
228	Activate (external, internal or both)	1 d	12/8/17	12/8/17
229	Application Window	10 d	12/11/17	12/22/17
230	Deactivate (external)	1 d	12/26/17	12/26/17
231	Deactivate (internal)	1 d	12/27/17	12/27/17

ID	Task Name	Duration	Baseline Start	Baseline Finish
232	UPS Pickup - Summative Spring	13 d		
233	Activate (external, internal or both)	1 d	5/15/18	5/15/18
234	Application Window	10 d	5/16/18	5/30/18
235	Deactivate (external)	1 d	5/31/18	5/31/18
236	Deactivate (internal)	1 d	6/1/18	6/1/18
237	ADMINISTRATION TRAINING	84 d		
238	System Training - Summative	16 d		
239	Registration	16 d		
240	Setup Registration Site	5 d	3/2/18	3/8/18
241	Registration Window	10 d	3/9/18	3/22/18
242	System Training Webinar	1 d	3/23/18	3/23/18
243	Assessment Administration- Test Coordinator Training - Summative Spring	16 d		
244	Registration	16 d		
245	Setup Registration Site	5 d	2/26/18	3/2/18
246	Registration Window	10 d	3/5/18	3/16/18
247	Assessment Administration- Test Coordinator Training Training Webinar	1 d	3/19/18	3/19/18
248	Reporting Workshop - Summative Spring	16 d		
249	Registration	16 d		
250	Setup Registration Site	5 d	6/1/18	6/7/18
251	Registration Window	10 d	6/8/18	6/21/18
252	Reporting Workshop Training Webinar	1 d	6/22/18	6/22/18
253	SERVICE CENTER SUPPORT	368 d	NA	NA
254	Service Center Support for Summative Spring	368 d	NA	NA
255	Service Center Call Window	368 d	7/14/17	12/31/18
256	TEST ADMINISTRATION	45 d		
257	Practice Test Window - Summative Spring 2018	45 d	3/26/18	5/25/18
258	Operational Summative Testing Window - Spring 2018 - ELA, Math, Science & Writing	20 d	4/30/18	5/25/18
259	RECEIVING / LOG-IN - Summative Spring	14 d		
260	Receiving & Log-in	8 d		
261	UPS Pickup Window	1 d	5/31/18	5/31/18
262	Answer Document Log-in	7 d	6/1/18	6/11/18
263	Inventory Discrepancy	8 d		
264	Test Booklet Login	7 d	6/8/18	6/18/18
265	Deliver Final Secure Material Discrepancy Report to Client	1 d	6/19/18	6/19/18
266	SCANNING- Summative Spring	7 d		
267	Production Scanning	7 d		
268	Scanning Window	7 d	6/4/18	6/12/18
269	Deliver Scanned Data to Data Processing	0 d	6/12/18	6/12/18
270	SCORING	57 d		
271	Computer Based Tests (CBT) Extracts - Summative Spring-Writing Prompt	5 d		
272	Admin Extract Final to Measured Progress from Online Testing Vendor	2 d	5/29/18	5/30/18
273	Admin Extract Final Image Conversions / File Transfers	2 d	5/31/18	6/1/18
274	Admin Extract Final Images Loaded into iScore	1 d	6/4/18	6/4/18
275	Benchmarking/Field Test (FT) scoring prep-Writing Prompt	36 d		
276	Create Benchmarking Packs	7 d	6/13/18	6/21/18
277	Deliver Field Test Benchmarking Materials to Client	1 d	6/22/18	6/22/18
278	Benchmarking (Field Test) Meetings	18 d	7/2/18	7/26/18
279	Create and Approve Final FT Training Packs	5 d	7/27/18	8/2/18
280	Update Scoring Guides	2 d	7/27/18	7/30/18
281	Field Test (FT) Scoring- Writing Prompt	13 d	NA	NA
282	FT Scoring Window	10 d	7/31/18	8/13/18
283	FT Scoring Clean-up Window	1 d	8/14/18	8/14/18
284	Deliver Field Test Hand Scored Data to Data Processing	1 d	8/15/18	8/15/18
285	Hand off Data to AI Vendor	1 d	8/16/18	8/16/18
286	STANDARD SETTING - Science	66 d		
287	Achievement Level Descriptors (ALDs)	63 d	NA	NA
288	Develop Draft ALDs	25 d	5/31/18	7/5/18
289	Format & QC Draft ALD PDFs	3 d	7/6/18	7/10/18
290	Handoff: CDD to CS, Psychometrics & DRS (Draft ALDs)	0 d	7/10/18	7/10/18
291	Client Reviews & Approves ALD Revisions from Standard Setting	5 d	8/17/18	8/23/18
292	Format & QC Final ALD PDFs	3 d	8/24/18	8/28/18
293	Handoff: CDD to CS, Psychometrics & DRS (Final ALDs)	0 d	8/28/18	8/28/18
294	Standard Setting Preparation & Meeting	36 d		
295	Plan Workshop & Prepare Materials	33 d	6/27/18	8/13/18
296	Conduct Standard Setting Meeting	3 d	8/14/18	8/16/18
297	Standard Setting Report	11 d		
298	Write Report	5 d	8/17/18	8/23/18
299	Create Final PDF & Post for Customer	1 d	8/24/18	8/24/18
300	Customer Reviews & Approves Report	5 d	8/27/18	8/31/18
301	Report Pre Production GR 3-8 ELA & Math	30 d		
302	Define Decision Rules	10 d	4/2/18	4/13/18
303	Customer Review & Approval of Decision Rules	5 d	4/16/18	4/20/18
304	Run Pre Production Reports	10 d	4/23/18	5/4/18
305	Customer Review & Approval of Pre Production Reports	5 d	5/7/18	5/11/18
306	Report Production Gr 3-8 ELA & Math	32 d		
307	Data Clean Up	10 d	6/13/18	6/26/18
308	Data Analysis & QA	10 d	6/27/18	7/11/18

ID	Task Name	Duration	Baseline Start	Baseline Finish
309	Hand off Data to Online Reporting Vendor	1 d	7/12/18	7/12/18
310	Run Final Reports	7 d	7/12/18	7/20/18
311	Client Review & Approval of Final Reports	5 d	7/23/18	7/27/18
312	Online Report Generation and Distribution - Summative - GR 3-8 ELA & Math	7 d		
313	Post Reports to Online Reporting Vendor	1 d	7/30/18	7/30/18
314	Upload Reports to Online Reporting System	5 d	7/31/18	8/6/18
315	Notify Districts Online Reports Posted	1 d	8/7/18	8/7/18
316	Print Report Generation and Distribution - Summative - GR 3-8 ELA & Math	22 d		
317	Post Reports & Labels to Print Vendor	1 d	7/30/18	7/30/18
318	Print Reports & Labels	10 d	7/31/18	8/13/18
319	Deliver Reports & Labels to Measured Progress Warehouse	4 d	8/14/18	8/17/18
320	Pack & Ship Reports & Labels	5 d	8/20/18	8/24/18
321	Reports Delivered to Districts	1 d	8/28/18	8/28/18
322	PSYCHOMETRIC DATA ANALYSIS - Science Spring Summative	10 d		
323	Science Data Available	10 d	6/13/18	6/26/18
324	TECHNICAL REPORT - Fall & Winter Interim & Spring Summative	179 d		
325	Assemble Document	60 d	8/29/18	11/21/18
326	Customer Reviews & Approves Report	5 d	11/26/18	11/30/18
327	END - NH Statewide Assessments: ELA, Mathematics, Science 2017-2018	1 d		
328	END - NH Statewide Assessments: ELA , Mathematics, Science 2017-2018	0 d		

Appendix 3: Measured Progress Sample Items



New Hampshire Statewide Assessments

Science Sample Items

Grades 5, 8, and 11

Solicitation Number: RFP No. 2017-073



It's all about student learning. Period.

Grade 5

Sample Type: Stand-Alone Item**Next Generation Science Standards Description**

PE: 3-LS4-2. Use evidence to construct an explanation for how the variations in characteristics among individuals of the same species may provide advantages in surviving, finding mates, and reproducing. [Clarification Statement: Examples of cause and effect relationships could be plants that have larger thorns than other plants may be less likely to be eaten by predators; and, animals that have better camouflage coloration than other animals may be more likely to survive and therefore more likely to leave offspring.]

SEP: Constructing Explanations and Designing Solutions: Use evidence (e.g., observations, patterns) to construct an explanation.

DCI: LS4.B: Natural Selection: Sometimes the differences in characteristics between individuals of the same species provide advantages in surviving, finding mates, and reproducing.

CCC: Cause and Effect: Cause-and-effect relationships are routinely identified and used to explain change.

Item Type: Inline Choice – Multiple Choice

Depth of Knowledge: 3

Points: 2

Key: NA

Source:

<http://www.jstor.org/stable/2408316>

Sample Type: Stand-Alone Item

Guppies are a type of small fish. Guppies are full-grown and can reproduce at three months old. They may reproduce as often as once every month. Each male guppy may have a different number of spots on its body.

Scientists added guppies to two ponds. One pond had a predator and the other pond did not. The scientists counted the number of spots on the guppies at the beginning of the investigation and again 20 months later. The data table shows the results.

Changes in the Average Number of Spots on Male Guppies

Type of Pond	Average Number of Spots per Guppy at the Beginning	Average Number of Spots per Guppy after 20 Months
Pond with no predator	10	13
Pond with a predator	10	9

Part a

Select the choice that explains how the number of spots on male guppies affects their survival.

Guppies that have [fewer spots, more spots] than other guppies may be less likely to be eaten by predators.

Part b

Which statement describes the evidence and reasoning for the explanation in Part a?

- (A) The guppies surviving in the pond with a predator have fewer spots, and having fewer spots makes the guppies less visible to predators and more likely to survive.
- (B) The guppies surviving in the pond with a predator have fewer spots, and having fewer spots makes the guppies stronger and more likely to survive.
- (C) The guppies surviving in the pond without a predator have more spots, and having more spots makes the guppies larger and more likely to survive.
- (D) The guppies surviving in the pond without a predator have more spots, and having more spots makes the guppies more frightening to predators and more likely to survive.

Scoring Key

Part a

Guppies that have [fewer spots, more spots] than other guppies may be less likely to be eaten by predators.

Part b

A

Distractor Analysis

Part b

- A **Key. The guppies surviving in the pond with a predator have an average of 9 spots. The guppies without a predator have an average of 13 spots. Spots are visible to predators, so this is the best explanation given the data available.**
- B The guppies surviving in the pond with a predator have fewer spots, but there is no data linking the number of spots to strength.
- C The guppies surviving in the pond without a predator have more spots, but there is no data linking the number of spots to guppy size.
- D The guppies surviving in the pond without a predator have more spots, but there is no data linking the number of spots to the ability to frighten away predators.

Sample Type: Cluster

Next Generation Science Standards Description

PE: 5-ESS1-2. Represent data in graphical displays to reveal patterns of daily changes in length and direction of shadows, day and night, and the seasonal appearance of some stars in the night sky. [Clarification Statement: Examples of patterns could include the position and motion of Earth with respect to the Sun and selected stars that are visible only in particular months.]

[Assessment Boundary: Assessment does not include causes of seasons.]

SEP: Analyzing and Interpreting Data: Represent data in graphical displays (bar graphs, pictographs and/or pie charts) to reveal patterns that indicate relationships.

DCI: ESS1.B: Earth and the Solar System: The orbits of Earth around the Sun and of the Moon around Earth, together with the rotation of Earth about an axis between its north and south poles, cause observable patterns. These include day and night; daily changes in the length and direction of shadows; and different positions of the Sun, Moon, and stars at different times of the day, month, and year.

CCC: Patterns: Similarities and differences in patterns can be used to sort, classify, communicate and analyze simple rates of change for natural phenomena.

Cluster Overview: Investigating Shadows

Item	Item Type	Alignment
1	Graphing	5-ESS1-2: SEP, CCC
2	Multi-Select – Multiple Choice	5-ESS1-2: DCI, CCC
3	Multiple Choice	5-ESS1-2: DCI, CCC
4	Inline Choice – Multiple Choice	5-ESS1-2: SEP, DCI, CCC

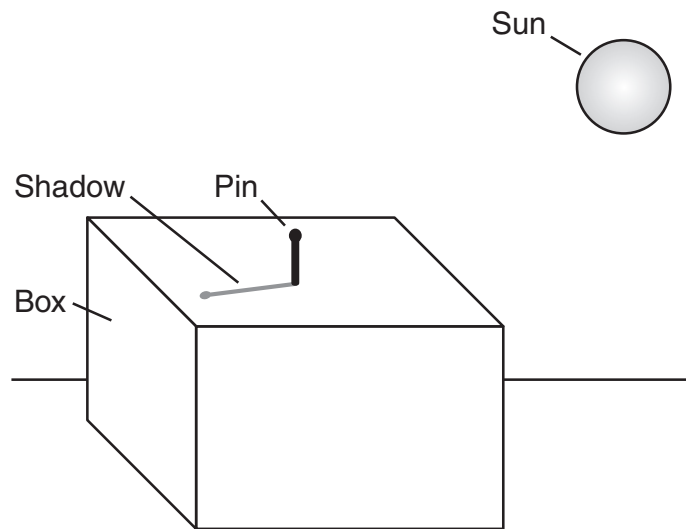
Source:

Measured Progress CDD data collection, Dover, NH, February 2015

Sample Type: Cluster, Stimulus

Investigating Shadows

A student sees that the length of her shadow changes during the day. She wants to find out whether there is a pattern for how her shadow changes. To test this, she pierces a pin through the top of a box and measures the length of the pin's shadow several times on a mostly sunny winter day. This diagram shows the pin and the box at 9:00 a.m. The data table shows the lengths of the shadow at different times during the day. At 10:00 a.m., the sky was cloudy and there was no shadow.



**Winter Day
Pin Shadow Length**

Time	Length (mm)
9:00 a.m.	45
10:00 a.m.	no shadow
11:00 a.m.	29
12:00 p.m.	27
1:00 p.m.	32
2:00 p.m.	39

Sample Type: Cluster, Item 1**Next Generation Science Standards Description**

PE: 5-ESS1-2. Represent data in graphical displays to reveal patterns of daily changes in length and direction of shadows, day and night, and the seasonal appearance of some stars in the night sky. [Clarification Statement: Examples of patterns could include the position and motion of Earth with respect to the Sun and selected stars that are visible only in particular months.]

[Assessment Boundary: Assessment does not include causes of seasons.]

SEP: Analyzing and Interpreting Data: Represent data in graphical displays (bar graphs, pictographs and/or pie charts) to reveal patterns that indicate relationships.

CCC: Patterns: Similarities and differences in patterns can be used to sort, classify, communicate and analyze simple rates of change for natural phenomena.

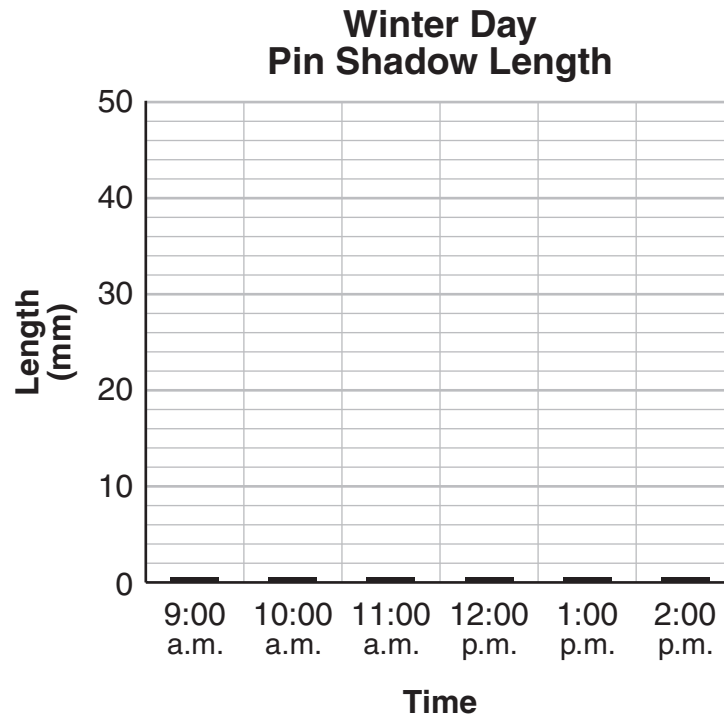
Item Type: Graphing

Depth of Knowledge: 2

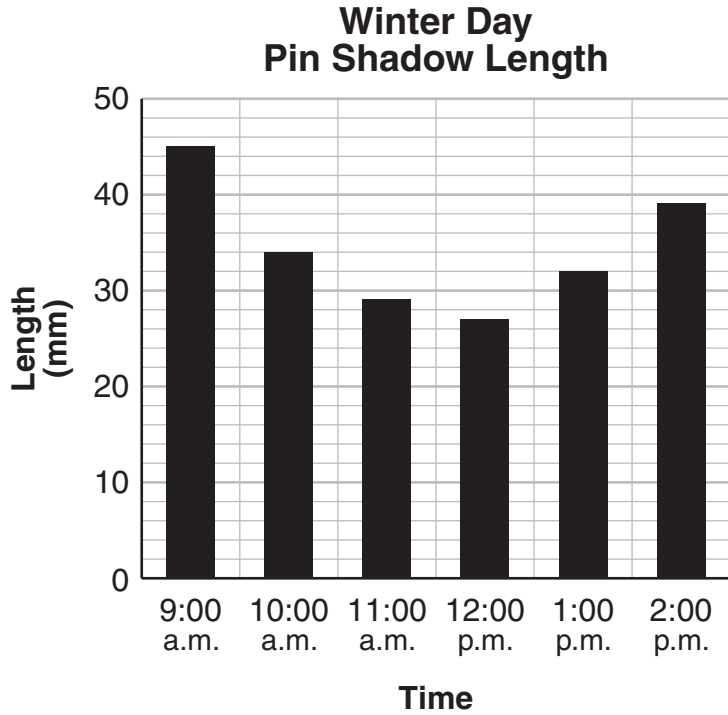
Points: 1

Key: NA

- Complete the bar graph to show the length of the pin's shadow each hour from 9:00 a.m. to 2:00 p.m. Include an estimate for 10:00 a.m. Drag each bar to the correct value to change the heights of the bars.



Scoring Key



Note: For 10:00 a.m., any value from 31 mm to 43 mm is acceptable for credit.

Sample Type: Cluster, Item 2**Next Generation Science Standards Description**

PE: 5-ESS1-2. Represent data in graphical displays to reveal patterns of daily changes in length and direction of shadows, day and night, and the seasonal appearance of some stars in the night sky. [Clarification Statement: Examples of patterns could include the position and motion of Earth with respect to the Sun and selected stars that are visible only in particular months.]

[Assessment Boundary: Assessment does not include causes of seasons.]

DCI: ESS1.B: Earth and the Solar System: The orbits of Earth around the Sun and of the Moon around Earth, together with the rotation of Earth about an axis between its north and south poles, cause observable patterns. These include day and night; daily changes in the length and direction of shadows; and different positions of the Sun, Moon, and stars at different times of the day, month, and year.

CCC: Patterns: Similarities and differences in patterns can be used to sort, classify, communicate and analyze simple rates of change for natural phenomena.

Item Type: Multi-Select – Multiple Choice

Depth of Knowledge: 2

Points: 2

Key: Part a: B, C; Part b: C

2. Part a

Which statements describe the pattern of change in the length of the pin's shadow?

Select all that apply.

- Ⓐ The length of the shadow increased and decreased in the morning.
- Ⓑ The length of the shadow decreased in the morning and increased in the afternoon.
- Ⓒ The length of the shadow changed less during the middle of the day than during the early morning or late afternoon.
- Ⓓ The length of the shadow changed by the same amount each hour.

Part b

What causes the pattern of change in the length of the pin's shadow during a winter day?

- Ⓐ Earth orbits the Sun.
- Ⓑ The Sun orbits Earth.
- Ⓒ Earth rotates on its axis.
- Ⓓ The Sun rotates on its axis.

Distractor Analysis

Part a

- A The length of the shadow decreased but did not increase in the morning as the Sun moved away from the horizon.
- B Key. The length of the shadow decreased in the morning and increased in the afternoon as the Sun's apparent position in the sky changed from east to west.**
- C Key. The length of the shadow changed less during the middle of the day because the Sun is almost directly overhead, so the shadows are relatively shorter at this time.**
- D The length of the shadow changed more in the early morning and the late afternoon when the Sun is closest to the horizon.

Part b

- A Earth orbiting the Sun causes a change in the shadow's length slowly over a period of many days, but not in the pattern of change in the shadow's length on one day.
- B The Sun does not orbit Earth.
- C Key. Earth's rotation is the cause of the Sun's apparent position moving across the sky and the resulting pattern of change in the shadow's length.**
- D The rotation of the Sun does not impact the appearance of shadows on Earth.

Sample Type: Cluster, Item 3**Next Generation Science Standards Description**

PE: 5-ESS1-2. Represent data in graphical displays to reveal patterns of daily changes in the length and direction of shadows, day and night, and the seasonal appearance of some stars in the night sky. [Clarification Statement: Examples of patterns could include the position and motion of Earth with respect to the Sun and selected stars that are visible only in particular months.]

DCI: ESS1.B: Earth and the Solar System: The orbits of Earth around the Sun and of the Moon around Earth, together with the rotation of Earth about an axis between its north and south poles, cause observable patterns. These include day and night; daily changes in the length and direction of shadows; and different positions of the Sun, Moon, and stars at different times of the day, month, and year.

CCC: Patterns: Similarities and differences in patterns can be used to sort, classify, communicate, and analyze simple rates of change for natural phenomena.

Item Type: Multiple Choice

Depth of Knowledge: 2

Points: 1

Key: C

3. The student observed that the Sun's position in the sky appeared to move over the time she recorded her data. What other pattern could she observe to provide evidence of this?
- Ⓐ The position of the box shifted as time passed.
 - Ⓑ The height of the pin decreased as time passed.
 - Ⓒ The direction of the pin's shadow changed for each measurement.
 - Ⓓ The thickness of the pin's shadow increased for each measurement.

Distractor Analysis

- A The position of the box would remain constant throughout the day.
- B The pin height would remain constant throughout the day.
- C Key. The direction of the shadow would move towards the opposite horizon in the afternoon.**
- D The thickness of the shadow would not increase throughout the day.

Sample Type: Cluster, Item 4**Next Generation Science Standards Description**

PE: 5-ESS1-2. Represent data in graphical displays to reveal patterns of daily changes in length and direction of shadows, day and night, and the seasonal appearance of some stars in the night sky. [Clarification Statement: Examples of patterns could include the position and motion of Earth with respect to the Sun and selected stars that are visible only in particular months.]

[Assessment Boundary: Assessment does not include causes of seasons.]

SEP: Analyzing and Interpreting Data: Represent data in graphical displays (bar graphs, pictographs and/or pie charts) to reveal patterns that indicate relationships.

DCI: ESS1.B: Earth and the Solar System: The orbits of Earth around the Sun and of the Moon around Earth, together with the rotation of Earth about an axis between its north and south poles, cause observable patterns. These include day and night; daily changes in the length and direction of shadows; and different positions of the Sun, Moon, and stars at different times of the day, month, and year.

CCC: Patterns: Similarities and differences in patterns can be used to sort, classify, communicate and analyze simple rates of change for natural phenomena.

Item Type: Inline Choice – Multiple Choice

Depth of Knowledge: 3

Points: 2

Key: NA

4. Six months later, the student repeats her measurements of the length of the pin's shadow on a sunny summer day. She compares the shadow lengths from the winter day with those from the summer day.

Part a

Identify what the measurements of the pin's shadow from the summer day will most likely be.

**Summer Day
Pin Shadow Length**

Time	Length (mm)
9:00 a.m.	[38, 45, 55]
10:00 a.m.	[26, 43, 60]
11:00 a.m.	[21, 29, 64]
12:00 p.m.	[19, 27, 66]
1:00 p.m.	[24, 32, 62]
2:00 p.m.	[31, 39, 53]

Part b

Which statement explains the pattern of change in the length of the pin's shadow during a summer day compared to a winter day?

- Ⓐ The Sun appears higher in the sky during summer because Earth is tilted on its axis and orbits the Sun.
- Ⓑ The light from the Sun is brighter during summer because Earth is tilted on its axis and closer to the Sun.
- Ⓒ More sunlight reaches Earth during summer because Earth rotates toward the east at this time of year.
- Ⓓ The Sun shines on Earth for a longer time each day during summer because Earth rotates more slowly at this time of year.

Scoring Key

Part a

**Summer Day
Pin Shadow Length**

Time	Length (mm)
9:00 a.m.	[38, 45, 55]
10:00 a.m.	[26, 43, 60]
11:00 a.m.	[21, 29, 64]
12:00 p.m.	[19, 27, 66]
1:00 p.m.	[24, 32, 62]
2:00 p.m.	[31, 39, 53]

Part b

A

Distractor Analysis

Part b

- A **Key.** Because Earth is tilted on its axis toward the Sun in the Northern Hemisphere in summer, the Sun shines from a higher angle and casts shorter shadows.
- B Earth is closer to the Sun during winter in the Northern Hemisphere, and a difference in brightness alone would not affect shadow lengths, so this cannot be the cause of the phenomenon.
- C Earth rotates in the same direction throughout the year, so a change in rotation patterns cannot be the cause of the phenomenon.
- D Earth rotates at relatively the same speed throughout the year, and rotation speed alone would not affect shadow lengths, so dissimilar rotation speeds cannot be the cause of the phenomenon.

Grade 8

Sample Type: Stand-Alone Item**Next Generation Science Standards Description**

PE: MS-ESS2-3. Analyze and interpret data on the distribution of fossils and rocks, continental shapes, and seafloor structures to provide evidence of the past plate motions. [Clarification Statement: Examples of data include similarities of rock and fossil types on different continents, the shapes of the continents (including continental shelves), and the locations of ocean structures (such as ridges, fracture zones, and trenches).] [Assessment Boundary: *Paleomagnetic anomalies in oceanic and continental crust are not assessed.*]

SEP: Analyzing and Interpreting Data: Analyze and interpret data to provide evidence for phenomena.

DCI: ESS1.C: The History of Planet Earth: Tectonic processes continually generate new ocean seafloor at ridges and destroy old seafloor at trenches.

DCI: ESS2.B: Plate Tectonics and Large-Scale System Interactions: Maps of ancient land and water patterns, based on investigations of rocks and fossils, make clear how Earth's plates have moved great distances, collided, and spread apart.

CCC: Patterns: Patterns in rates of change and other numerical relationships can provide information about natural systems.

Item Type: Inline Choice – Multiple Choice

Depth of Knowledge: 2

Points: 2

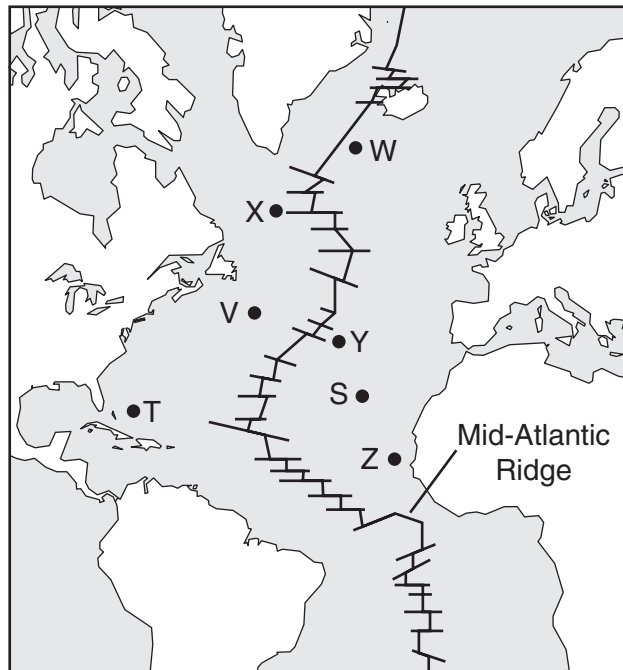
Key: NA

Sources:

<https://www.ngdc.noaa.gov/mgg/geology/dsdp/data/41/367/index.htm>

Sample Type: Stand-Alone Item

Some scientists collected volcanic rock samples from different locations on the ocean floor near the Mid-Atlantic Ridge. Then they tested these rocks to determine their age. The diagram below shows where each rock sample was collected.



The table shows some of the data the scientists collected, but the table is incomplete.

Ages of Rock Samples

Rock Sample Location	Age of Rock (in millions of years)
S	104
T	153
V	117
W	12
X	1
Y	?
Z	?

Part a

Select the **most likely** ages of rock samples Y and Z.

The rock sample at location Y is most likely [3, 40, 80, 140] million years old.

The rock sample at location Z is most likely [3, 40, 80, 140] million years old.

Part b

What conclusion does the pattern in the ages of the rocks at locations Y and Z support?

- Ⓐ New crust formed at the Mid-Atlantic Ridge and pushed the plates farther apart.
- Ⓑ One plate slid beneath another at the plate boundary close to the rock sample at location Z and recycled older crust.
- Ⓒ Waves constantly wore away the crust in the area near the rock sample at location Z and replaced it with new rock.
- Ⓓ Both underwater eruptions at the Mid-Atlantic Ridge and sedimentation at the coastline formed new crust.

Scoring Key

Part a

The rock sample at location Y is most likely [3, 40, 80, 140] million years old.

The rock sample at location Z is most likely [3, 40, 80, 140] million years old.

Part b

A

Distractor Analysis:

Part b

- A **Key.** The sample from location Y is very close to the Mid-Atlantic Ridge, suggesting it is young, and the sample from location Z is extremely far from the ridge, suggesting that it has moved slowly from its original location at the Mid-Atlantic Ridge.
- B While rock is recycled in this way, the plate boundaries shown here are divergent, not convergent. The edge of the landmass is not a plate boundary.
- C While erosion does occur, this does not give an adequate explanation for the age of the rock close to the Mid-Atlantic Ridge. As this rock is newly formed, it should date to a very young age.
- D This ignores the fact that both rock samples are identified as volcanic.

Sample Type: Cluster

Next Generation Science Standards Description

PE: MS-PS3-4. Plan an investigation to determine the relationships among the energy transferred, the type of matter, the mass, and the change in the average kinetic energy of the particles as measured by the temperature of the sample. [Clarification Statement: Examples of experiments could include comparing final water temperatures after different masses of ice melted in the same volume of water with the same initial temperature, the temperature change of samples of different materials with the same mass as they cool or heat in the environment, or the same material with different masses when a specific amount of energy is added.] [Assessment Boundary: Assessment does not include calculating the total amount of thermal energy transferred.]

SEP: Planning and Carrying Out Investigations: Plan an investigation individually and collaboratively, and in the design: identify independent and dependent variables and controls, what tools are needed to do the gathering, how measurements will be recorded, and how many data are needed to support a claim.

DCI: PS3.B: Conservation of Energy and Energy Transfer: The amount of energy transfer needed to change the temperature of a matter sample by a given amount depends on the nature of the matter, the size of the sample, and the environment.

CCC: Scale, Proportion, and Quantity: Proportional relationships (e.g., speed as the ratio of distance traveled to time taken) among different types of quantities provide information about the magnitude of properties and processes.

PE: MS-PS4-2. Develop and use a model to describe that waves are reflected, absorbed, or transmitted through various materials. [Clarification Statement: Emphasis is on both light and mechanical waves. Examples of models could include drawings, simulations, and written descriptions.] [Assessment Boundary: Assessment is limited to qualitative applications pertaining to light and mechanical waves.]

SEP: Developing and Using Models: Develop and use a model to describe phenomena.

DCI: PS4.B: Electromagnetic Radiation: When light shines on an object, it is reflected, absorbed, or transmitted through the object, depending on the object's material and the frequency (color) of the light.

CCC: Structure and Function: Structures can be designed to serve particular functions by taking into account properties of different materials, and how materials can be shaped and used.

PE: MS-ETS1-2. Evaluate competing design solutions using a systematic process to determine how well they meet the criteria and constraints of the problem.

SEP: Engaging in Argument from Evidence: Evaluate competing design solutions based on jointly developed and agreed-upon design criteria.

DCI: ETS1.B: Developing Possible Solutions: There are systematic processes for evaluating solutions with respect to how well they meet the criteria and constraints of a problem.

Cluster Overview: Solar Heating

Item	Item Type	Alignment
1	Hot Spot	MS-PS3-4: SEP, DCI, CCC
2	Multiple Choice	MS-PS3-4: SEP, DCI, CCC
3	Inline Choice – Multiple Choice	MS-ETS1-2: SEP, DCI
4	Multiple Choice	MS-PS4-2: SEP, DCI, CCC

Sources:

<http://www.nmsea.org/lib/ThermalStorageWallDesignManual.pdf>

https://www.researchgate.net/publication/257548238_Trombe_walls_A_review_of_opportunities_and_challenges_in_research_and_development

https://www.researchgate.net/publication/228678835_Heat_gain_through_Trombe_wall_using_solar_energy_in_a_cold_region_of_Turkey

<http://jarchitecture.webs.com/trombewallexperiment.htm>

Sample Type: Cluster, Stimulus

Solar Heating

A student sees some new houses being built. Each house has a large window in a room that points south. Some of these rooms have a concrete wall behind the window; others do not. The student does some research about the purpose of these rooms and learns the following:

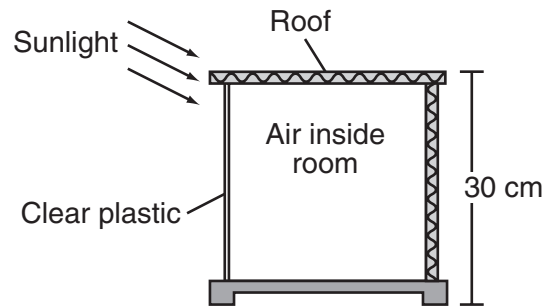
- In one type of these rooms—called a sunroom—the room receives direct sunlight through the window in winter, allowing the sunlight to heat the air in the room.
- The other type of these rooms —called a Trombe wall room—has a concrete wall behind the window. This Trombe wall is made of a sheet of glass or plastic, trapped air, and a concrete wall. In the winter, sunlight heats the concrete wall, which then transfers heat to the air in the room.

The student decides to test scale models to evaluate whether a sunroom or a Trombe wall room more efficiently uses sunlight to heat the room. He decides on the following criterion for efficiency.

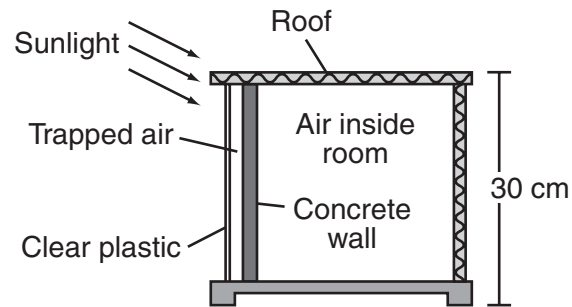
The more efficient design will keep the air inside the room above 20°C for a longer time.

The student makes the models using clear plastic to represent the windows. The two models are the same size and have the same volume of air inside. He places the models outside at the same location pointing south on a sunny winter day and records the air temperature inside and outside both models every hour. The diagrams show the models.

Sunroom Model



Trombe Wall Room Model



Sample Type: Cluster, Item 1**Next Generation Science Standards Description**

PE: MS-PS3-4. Plan an investigation to determine the relationships among the energy transferred, the type of matter, the mass, and the change in the average kinetic energy of the particles as measured by the temperature of the sample. [Clarification Statement: Examples of experiments could include comparing final water temperatures after different masses of ice melted in the same volume of water with the same initial temperature, the temperature change of samples of different materials with the same mass as they cool or heat in the environment, or the same material with different masses when a specific amount of energy is added.] [Assessment Boundary: Assessment does not include calculating the total amount of thermal energy transferred.]

SEP: Planning and Carrying Out Investigations: Plan an investigation individually and collaboratively, and in the design: identify independent and dependent variables and controls, what tools are needed to do the gathering, how measurements will be recorded, and how many data are needed to support a claim.

DCI: PS3.B: Conservation of Energy and Energy Transfer: The amount of energy transfer needed to change the temperature of a matter sample by a given amount depends on the nature of the matter, the size of the sample, and the environment.

CCC: Scale, Proportion, and Quantity: Proportional relationships (e.g., speed as the ratio of distance traveled to time taken) among different types of quantities provide information about the magnitude of properties and processes.

Item Type: Hot Spot

Depth of Knowledge: 2

Points: 2

Key: NA

1. The student knows that many different factors can affect the heating of materials when energy is transferred to them.

Part a

Select all the factors that affect the heating of any material.

type of material
starting temperature of material
amount of material in sample
magnetic nature of material
amount of energy supplied to material
hardness of material

Part b

Select the **one** variable that the student is specifically investigating to compare the efficiency of the sunroom and Trombe wall room designs.

type of material
starting temperature of material
amount of material in sample
magnetic nature of material
amount of energy supplied to material
hardness of material

Scoring Key**Part a**

type of material
starting temperature of material
amount of material in sample
magnetic nature of material
amount of energy supplied to material
hardness of material

Part b

type of material
starting temperature of material
amount of material in sample
magnetic nature of material
amount of energy supplied to material
hardness of material

Sample Type: Cluster, Item 2**Next Generation Science Standards Description**

PE: MS-PS3-4. Plan an investigation to determine the relationships among the energy transferred, the type of matter, the mass, and the change in the average kinetic energy of the particles as measured by the temperature of the sample.

[Clarification Statement: Examples of experiments could include comparing final water temperatures after different masses of ice melted in the same volume of water with the same initial temperature, the temperature change of samples of different materials with the same mass as they cool or heat in the environment, or the same material with different masses when a specific amount of energy is added.] [Assessment Boundary: Assessment does not include calculating the total amount of thermal energy transferred.]

SEP: Planning and Carrying Out Investigations: Plan an investigation individually and collaboratively, and in the design: identify independent and dependent variables and controls, what tools are needed to do the gathering, how measurements will be recorded, and how many data are needed to support a claim.

DCI: PS3.B: Conservation of Energy and Energy Transfer: The amount of energy transfer needed to change the temperature of a matter sample by a given amount depends on the nature of the matter, the size of the sample, and the environment.

CCC: Scale, Proportion, and Quantity: Proportional relationships (e.g., speed as the ratio of distance traveled to time taken) among different types of quantities provide information about the magnitude of properties and processes.

Item Type: Multiple Choice

Depth of Knowledge: 2

Points: 1

Key: D

2. Which statement **best** explains why the student's investigation steps can help him evaluate which design is more efficient?
- Ⓐ He measures the volume of air inside each model and can therefore fairly compare the two designs because each model has different materials transferring energy to the air inside.
 - Ⓑ He measures the amount of sunlight that enters each model and can therefore fairly compare the two designs because both models contain the same amount of air and were placed in the same location.
 - Ⓒ He measures the difference between the air temperatures inside and outside each model and can therefore fairly compare the two designs because both models receive only a small amount of sunlight on winter days.
 - Ⓓ He measures the air temperatures in each model over many hours and can therefore fairly compare the two designs because both models contain the same amount of air and receive the same amount of sunlight.

Distractor Analysis

- A The volume of the air inside each model is a controlled variable and is therefore the same for the two models over the course of the investigation.
- B Specific amounts of sunlight entering each model are not being directly measured and analyzed in this investigation. Total light (energy) input is the same for both models.
- C The difference between the inside and outside temperatures can be calculated based on raw data, but it is the comparison between the inside temperatures of the two models that is the critical data analysis.
- D **Key. Because the amount of sunlight and amount of air in each model are controlled, the evaluation of the amount of time each model is able to keep the air temperature above 20°C will be fair.**

Sample Type: Cluster, Item 3**Next Generation Science Standards Description**

PE: MS-ETS1-2. Evaluate competing design solutions using a systematic process to determine how well they meet the criteria and constraints of the problem.

SEP: Engaging in Argument from Evidence: Evaluate competing design solutions based on jointly developed and agreed-upon design criteria.

DCI: ETS1.B: Developing Possible Solutions: There are systematic processes for evaluating solutions with respect to how well they meet the criteria and constraints of a problem.

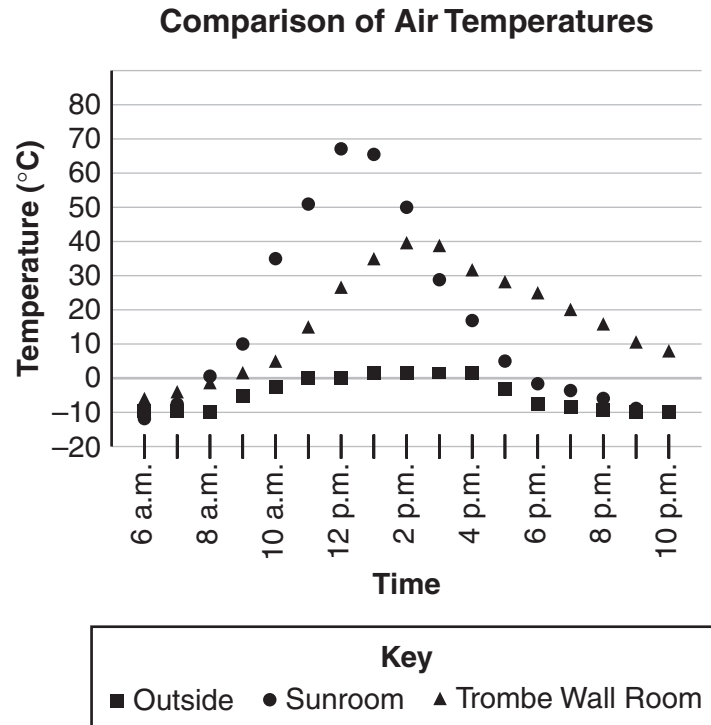
Item Type: Inline Choice – Multiple Choice

Depth of Knowledge: 3

Points: 2

Key: NA

3. This graph shows the temperature data the student recorded during the investigation. He will use the data to determine which room design is more efficient.



Part a

Select the more efficient design based on the data and the criterion.

The [sunroom, Trombe wall room] is the more efficient design.

Part b

Which evidence **best** supports this claim?

- Ⓐ The rate of increase in temperature was more gradual in the Trombe wall room than in the sunroom.
- Ⓑ The peak temperature was reached in the sunroom at 12:00 p.m. and in the Trombe wall room at 2:00 p.m.
- Ⓒ The sunroom stayed above 20°C for about 6 hours and the Trombe wall room stayed above 20°C for about 7.5 hours.
- Ⓓ The maximum temperature of the sunroom is approximately 30°C higher than the maximum temperature of the Trombe wall room.

Scoring Key

Part a

The [sunroom, Trombe wall room] is the more efficient design.

Part b

C

Distractor Analysis

Part b

- A Both rooms have increased above 20°C during this time period, so rate of increase is not relevant.
- B This information by itself cannot explain why one room is more efficient than the other.
- C Key. The criterion for efficiency is the number of hours above 20°C.**
- D This shows that the sunroom reached a higher temperature, but it does not give information as to whether or not the room stayed warmer longer.

Sample Type: Cluster, Item 4**Next Generation Science Standards Description**

MS-PS4-2. Develop and use a model to describe that waves are reflected, absorbed, or transmitted through various materials. [Clarification Statement: Emphasis is on both light and mechanical waves. Examples of models could include drawings, simulations, and written descriptions.] [Assessment Boundary: Assessment is limited to qualitative applications pertaining to light and mechanical waves.]

SEP: Developing and Using Models: Develop and use a model to describe phenomena.

DCI: PS4.B: Electromagnetic Radiation: When light shines on an object, it is reflected, absorbed, or transmitted through the object, depending on the object's material and the frequency (color) of the light.

CCC: Structure and Function: Structures can be designed to serve particular functions by taking into account properties of different materials, and how materials can be shaped and used.

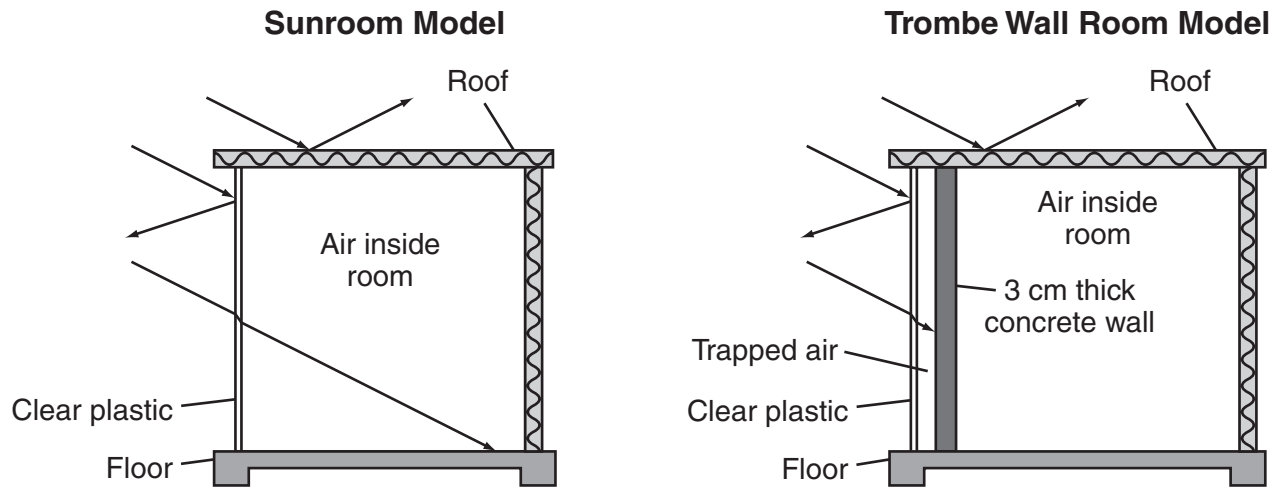
Item Type: Multiple Choice

Depth of Knowledge: 3

Points: 1

Key: D

4. The student wants to explain why these two types of rooms differ in efficiency. He draws arrows on his models of the sunroom and Trombe wall room to show how the various parts of the models affect the path of the incoming light waves and how they transfer energy into the room.



What do the models show that helps explain the difference in the heating efficiency of the two rooms?

- Ⓐ The models show that the floor of the sunroom absorbs every ray of light, and as a result the sunroom heats up very quickly.
- Ⓑ The models show that the roofs reflect light, and in the Trombe wall room design, the concrete wall transfers additional energy to the roof.
- Ⓒ The models show that clear plastic reflects some light and transmits some light, and the percentage of light that is transmitted compared to the percentage that is reflected is greater for the sunroom.
- Ⓓ The models show that while clear plastic transmits light, concrete absorbs light, and as a result the energy absorbed by the concrete wall is steadily transferred to the air in the Trombe wall room over a longer period of time.

Distractor Analysis

- A The sunroom floor would not absorb every ray of light, and the efficiency is about the heating of the air, not the floor.
- B Adding energy to the roof would not help explain the difference in the heating efficiency, as the efficiency is about the heating of the air inside the room; if anything, transfer of heat to the roof may increase heat loss.
- C The percentage of light transmitted versus the percentage of light that is reflected would not help explain the difference in the heating efficiency, and there is no evidence about the relative percentages of light transmitted versus reflected.
- D **Key. The concrete wall absorbs light and then steadily transfers that absorbed energy to the air in the room, causing the room to heat up and cool down more slowly, leading to greater efficiency.**

Grade 11

Sample Type: Stand-Alone Item**Next Generation Science Standards Description**

PE: HS-PS1-1. Use the periodic table as a model to predict the relative properties of elements based on the patterns of electrons in the outermost energy level of atoms. [Clarification Statement: Examples of properties that could be predicted from patterns could include reactivity of metals, types of bonds formed, numbers of bonds formed, and reactions with oxygen.] [Assessment Boundary: Assessment is limited to main group elements. Assessment does not include quantitative understanding of ionization energy beyond relative trends.]

SEP: Developing and Using Models: Use a model to predict the relationships between systems or between components of a system.

DCI: PS1.A: Structure and Properties of Matter: The periodic table orders elements horizontally by the number of protons in the atom's nucleus and places those with similar chemical properties in columns. The repeating patterns of this table reflect patterns of outer electron states.

CCC: Patterns: Different patterns may be observed at each of the scales at which a system is studied and can provide evidence for causality in explanations of phenomena.

Item Type: Hot Spot – Multiple Choice

Depth of Knowledge: 2

Points: 2

Key: NA

A student learns that magnesium (Mg) and oxygen (O) react to form magnesium oxide (MgO), an alkaline (basic) compound. The student wonders what other elements will form alkaline compounds when they react with oxygen. The student uses the periodic table to make a prediction.

Part a

The locations of magnesium, oxygen, and four other elements are shown on the periodic table. Click the element that will react with oxygen in a way that is most similar to the way magnesium reacts with oxygen.

H																	
													O			Ne	
	Mg												S				
	Ca																

Part b

Which pattern in the structure of the periodic table should the student use to make the prediction?

- (A) Elements in the last column are the least stable.
- (B) Elements arranged in rows have increasing atomic masses.
- (C) Elements are arranged in order of increasing number of protons.
- (D) Elements in the same column have the same number of outer shell electrons.

Scoring Key

Part a

H																	
													O		Ne		
	Mg												S				
	Ca																

Part b

D

Distractor Analysis

Part b

- A This would mean the student chose the highlighted square in the last column, but these are noble gases and are the least reactive.
- B This is a correct trend, but it has nothing to do with how the elements react with O.
- C This is a correct trend, but it has nothing to do with how the elements react with O.
- D **Key. The outer shell electrons on Ca are the same as on Mg, so CaO will form.**

Sample Type: Cluster

Next Generation Science Standards Description

PE: HS-LS2-1. Use mathematical and/or computational representations to support explanations of factors that affect carrying capacity of ecosystems at different scales. [Clarification Statement: Emphasis is on quantitative analysis and comparison of the relationships among interdependent factors including boundaries, resources, climate, and competition. Examples of mathematical comparisons could include graphs, charts, histograms, and population changes gathered from simulations or historical data sets.] [Assessment Boundary: Assessment does not include deriving mathematical equations to make comparisons.]

SEP: Using Mathematics and Computational Thinking: Use mathematical and/or computational representations of phenomena or design solutions to support explanations.

DCI: LS2.A: Interdependent Relationships in Ecosystems: Ecosystems have carrying capacities, which are limits to the numbers of organisms and populations they can support. These limits result from such factors as the availability of living and nonliving resources and from such challenges as predation, competition, and disease. Organisms would have the capacity to produce populations of great size were it not for the fact that environments and resources are finite. This fundamental tension affects the abundance (number of individuals) of species in any given ecosystem.

CCC: Scale, Proportion, and Quantity: The significance of a phenomenon is dependent on the scale, proportion, and quantity at which it occurs.

PE: HS-LS2-6. Evaluate the claims, evidence, and reasoning that the complex interactions in ecosystems maintain relatively consistent numbers and types of organisms in stable conditions, but changing conditions may result in a new ecosystem. [Clarification Statement: Examples of changes in ecosystem conditions could include modest biological or physical changes, such as moderate hunting or a seasonal flood; and extreme changes, such as volcanic eruption or sea level rise.]

SEP: Engaging in Argument from Evidence: Evaluate the claims, evidence, and reasoning behind currently accepted explanations or solutions to determine the merits of arguments.

DCI: LS2.C: Ecosystem Dynamics, Functioning, and Resilience: A complex set of interactions within an ecosystem can keep its numbers and types of organisms relatively constant over long periods of time under stable conditions. If a modest biological or physical disturbance to an ecosystem occurs, it may return to its more or less original status (i.e., the ecosystem is resilient), as opposed to becoming a very different ecosystem. Extreme fluctuations in conditions or the size of any population, however, can challenge the functioning of ecosystems in terms of resources and habitat availability.

CCC: Stability and Change: Much of science deals with constructing explanations of how things change and how they remain stable.

Cluster Overview: Wolves in the Taiga Ecosystem

Item	Item Type	Alignment
1	Multiple Choice	HS-LS2-1: SEP, DCI, CCC
2	Multi-Select	HS-LS2-6: SEP, DCI, CCC
3	Matching	HS-LS2-6: SEP, DCI, CCC
4	Inline Choice – Multiple Choice	HS-LS2-6: SEP, DCI, CCC

Sources:

<http://journals.plos.org/plosone/article?id=10.1371/journal.pone.0102330>

http://www.carnivoreconservation.org/files/thesis/hebblewhite_2000_msc.pdf

<https://www.nps.gov/yell/learn/nature/bearfoods.htm>

<http://www.yellowstonenationalpark.com/coyote.htm>

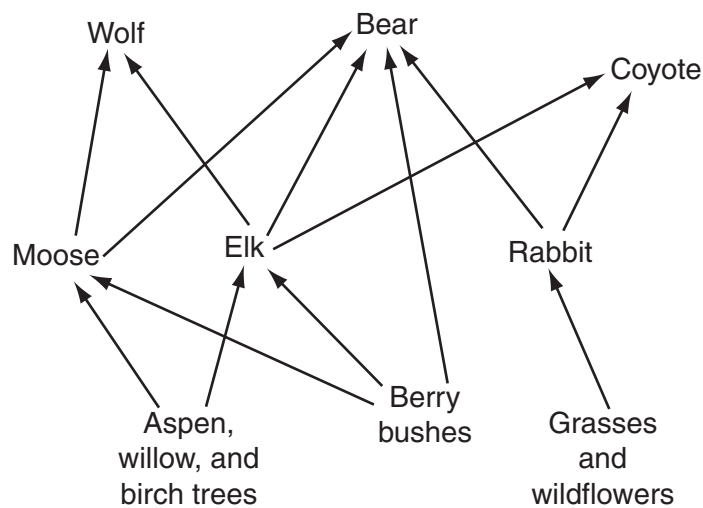
<http://www.bitsofscience.org/wolf-yellowstone-predators-forests-4492/>

<http://ir.library.oregonstate.edu/xmlui/bitstream/handle/1957/25603/RippleWilliam.Forestry.TrophicCascadesYellowstone.pdf?sequence=3>

Sample Type: Cluster, Stimulus

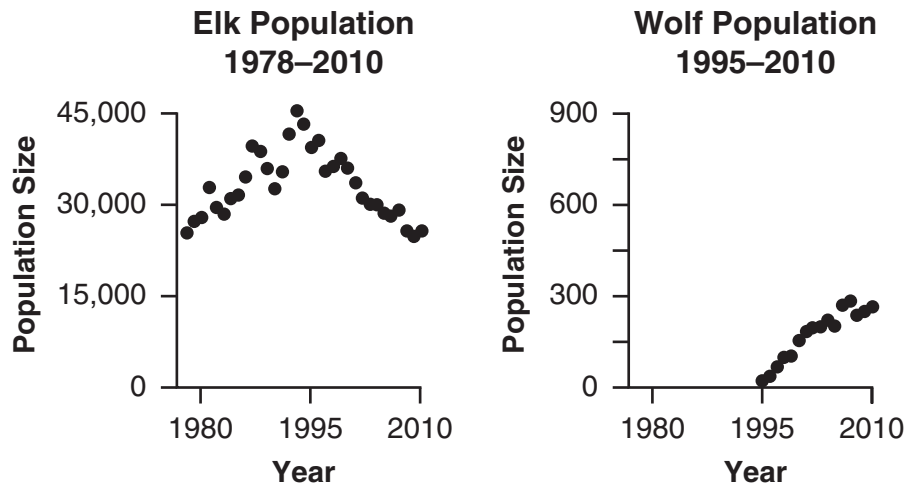
Wolves in the Taiga Ecosystem

The gray wolf, *Canis lupus*, once lived across most of North America in taiga ecosystems. Taiga ecosystems exist in cold regions of mostly evergreen forest. Humans removed the wolves from many of these ecosystems in the early 1900s. In the ecosystems where the wolves were removed, elk populations increased significantly. The food web below shows some of the relationships between wolves, elk, and other organisms in a taiga ecosystem.



Scientists wanted to restore some of the stability lost in the taiga ecosystems when the wolves were removed. They studied the interactions of the different organisms, and among the conclusions they made, they claimed that wolves play a key role in maintaining the ecosystem’s stability. Based on this, wolves were reintroduced into some of the taiga ecosystems where they had previously lived. As part of this project, wolves were reintroduced to Yellowstone National Park in 1995.

These graphs show the populations of wolves and elk in Yellowstone National Park before and after the wolves were reintroduced in 1995.



To further study their claims, the scientists also wanted to evaluate how the wolves' presence impacted other relationships in the ecosystem. One type of data they collected was for trees in several study areas in Yellowstone National Park from 1997 to 2006. This table shows some of the data for aspen and willow trees.

Average Young Tree Heights in Study Areas

Aspen		Willow	
1998	2006	1997	2003
<50 cm	>200 cm	<50 cm	>250 cm

Sample Type: Cluster, Item 1**Next Generation Science Standards Description**

PE: HS-LS2-1. Use mathematical and/or computational representations to support explanations of factors that affect carrying capacity of ecosystems at different scales. [Clarification Statement: Emphasis is on quantitative analysis and comparison of the relationships among interdependent factors including boundaries, resources, climate, and competition. Examples of mathematical comparisons could include graphs, charts, histograms, and population changes gathered from simulations or historical data sets.] [Assessment Boundary: Assessment does not include deriving mathematical equations to make comparisons.]

SEP: Using Mathematics and Computational Thinking: Use mathematical and/or computational representations of phenomena or design solutions to support explanations.

DCI: LS2.A: Interdependent Relationships in Ecosystems: Ecosystems have carrying capacities, which are limits to the numbers of organisms and populations they can support. These limits result from such factors as the availability of living and nonliving resources and from such challenges as predation, competition, and disease. Organisms would have the capacity to produce populations of great size were it not for the fact that environments and resources are finite. This fundamental tension affects the abundance (number of individuals) of species in any given ecosystem.

CCC: Scale, Proportion, and Quantity: The significance of a phenomenon is dependent on the scale, proportion, and quantity at which it occurs.

Item Type: Multiple Choice

Depth of Knowledge: 3

Points: 1

Key: C

1. Due to various factors in the taiga ecosystems, elk populations have significantly changed over time. Based on the data showing the changes in elk population size the scientists observed between 1978 and 2010 in Yellowstone National Park, which statement explains a factor affecting the elk carrying capacity?
- Ⓐ As food availability increased, the carrying capacity of elk increased; therefore, the decrease in carrying capacity was independent of the density of aspen.
 - Ⓑ As disease increased, the carrying capacity of elk decreased; therefore, the decrease in carrying capacity was independent of the density of elk.
 - Ⓒ As wolf predation increased, the carrying capacity of elk decreased; therefore, the decrease in carrying capacity was dependent on the density of wolves.
 - Ⓓ As competition from other herbivores increased, the carrying capacity of elk increased; therefore, the increase in carrying capacity was dependent on the density of herbivores.

Distractor Analysis

- A Food availability increased between 1997 and 2006, but no data about changes in the density of these plant populations are provided.
- B Disease tends to affect populations in a density-dependent manner. However, no evidence about the effect of disease on this population is presented.
- C **Key. As the population of wolves increases in number within the confines of Yellowstone, the carrying capacity of elk decreases.**
- D Competition from other herbivores should decrease the availability of food for elk in a density-dependent manner; therefore, elk carrying capacity should decrease.

Sample Type: Cluster, Item 2**Next Generation Science Standards Description**

PE: HS-LS2-6. Evaluate the claims, evidence, and reasoning that the complex interactions in ecosystems maintain relatively consistent numbers and types of organisms in stable conditions, but changing conditions may result in a new ecosystem.

[Clarification Statement: Examples of changes in ecosystem conditions could include modest biological or physical changes, such as moderate hunting or a seasonal flood; and extreme changes, such as volcanic eruption or sea level rise.]

SEP: Engaging in Argument from Evidence: Evaluate the claims, evidence, and reasoning behind currently accepted explanations or solutions to determine the merits of arguments.

DCI: LS2.C: Ecosystem Dynamics, Functioning, and Resilience: A complex set of interactions within an ecosystem can keep its numbers and types of organisms relatively constant over long periods of time under stable conditions. If a modest biological or physical disturbance to an ecosystem occurs, it may return to its more or less original status (i.e., the ecosystem is resilient), as opposed to becoming a very different ecosystem. Extreme fluctuations in conditions or the size of any population, however, can challenge the functioning of ecosystems in terms of resources and habitat availability.

CCC: Stability and Change: Much of science deals with constructing explanations of how things change and how they remain stable.

Item Type: Multi-Select

Depth of Knowledge: 2

Points: 1

Key: A, D

2. The scientists had recognized that there are many relationships that may contribute to the overall stability of the taiga ecosystem.

Based on the food web, which conditions would the scientists claim **most likely** contribute to the stability of taiga ecosystems? Select all that apply.

- Ⓐ bears and coyotes providing some competition to gray wolves preying on elk and moose
- Ⓑ large populations of bears and coyotes preying on many moose and elk but very few rabbits
- Ⓒ most young aspen trees being eaten by moose and elk, so few aspens reach maturity
- Ⓓ moose, elk, and bears eating parts of the berry bushes, but most of the berry bushes surviving and growing
- Ⓔ grasses and flowers greatly outnumbering berry bushes and young trees

Distractor Analysis

- A Key. Competition between the key predators helps provide a variety of checks to keep populations limited, allowing all the relationships in the ecosystem to be sustained.**
- B Large populations of main predators and a large imbalance in herbivore populations indicate that some relationships aren't supporting stability.
- C Few aspens reaching maturity indicates that overgrazing is occurring, which negatively impacts all the relationships that depend on aspens.
- D Key. When all the consumers that depend on the berry bushes are able to utilize the food source but not negatively affect it, all the relationships can be supported.**
- E When one group of plants becomes dominant over the others, the ecosystem has more difficulty sustaining all the different relationships within it.

Sample Type: Cluster, Item 3**Next Generation Science Standards Description**

PE: HS-LS2-6. Evaluate the claims, evidence, and reasoning that the complex interactions in ecosystems maintain relatively consistent numbers and types of organisms in stable conditions, but changing conditions may result in a new ecosystem.

[Clarification Statement: Examples of changes in ecosystem conditions could include modest biological or physical changes, such as moderate hunting or a seasonal flood; and extreme changes, such as volcanic eruption or sea level rise.]

SEP: Engaging in Argument from Evidence: Evaluate the claims, evidence, and reasoning behind currently accepted explanations or solutions to determine the merits of arguments.

DCI: LS2.C: Ecosystem Dynamics, Functioning, and Resilience: A complex set of interactions within an ecosystem can keep its numbers and types of organisms relatively constant over long periods of time under stable conditions. If a modest biological or physical disturbance to an ecosystem occurs, it may return to its more or less original status (i.e., the ecosystem is resilient), as opposed to becoming a very different ecosystem. Extreme fluctuations in conditions or the size of any population, however, can challenge the functioning of ecosystems in terms of resources and habitat availability.

CCC: Stability and Change: Much of science deals with constructing explanations of how things change and how they remain stable.

Item Type: Matching

Depth of Knowledge: 3

Points: 2

Key: NA

3. Scientists used the Yellowstone National Park data to evaluate their claim about the specific importance of wolves in the taiga ecosystem. The scientists used two key pieces of reasoning to argue that their claim was supported.

Match each piece of reasoning with the evidence that **directly** supports it. Each piece of reasoning may have either one or two pieces of direct supporting evidence.

Reasoning

1. Wolves reduce the populations of primary consumers in the ecosystem.

2. The reintroduction of wolves allows more energy from producers to be stored in the ecosystem.

Supporting Evidence

Wolves were removed from Yellowstone National Park in the early 1900s.

The elk population increased between 1980 and 1995.

The elk population decreased between 1995 and 2010.

The height of aspen and willow trees both increased between 1997 and 2006.

Scoring Key

Reasoning

1. Wolves reduce the populations of primary consumers in the ecosystem.

2. The reintroduction of wolves allows more energy from producers to be stored in the ecosystem.

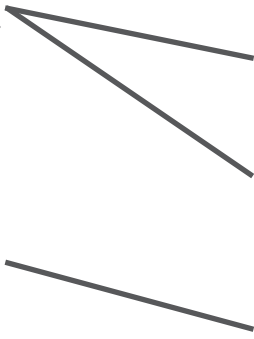
Supporting Evidence

Wolves were removed from Yellowstone National Park in the early 1900s.

The elk population increased between 1980 and 1995.

The elk population decreased between 1995 and 2010.

The height of aspen and willow trees both increased between 1997 and 2006.



Sample Type: Cluster, Item 4**Next Generation Science Standards Description**

PE: HS-LS2-6. Evaluate the claims, evidence, and reasoning that the complex interactions in ecosystems maintain relatively consistent numbers and types of organisms in stable conditions, but changing conditions may result in a new ecosystem.

[Clarification Statement: Examples of changes in ecosystem conditions could include modest biological or physical changes, such as moderate hunting or a seasonal flood; and extreme changes, such as volcanic eruption or sea level rise.]

SEP: Engaging in Argument from Evidence: Evaluate the claims, evidence, and reasoning behind currently accepted explanations or solutions to determine the merits of arguments.

DCI: LS2.C: Ecosystem Dynamics, Functioning, and Resilience: A complex set of interactions within an ecosystem can keep its numbers and types of organisms relatively constant over long periods of time under stable conditions. If a modest biological or physical disturbance to an ecosystem occurs, it may return to its more or less original status (i.e., the ecosystem is resilient), as opposed to becoming a very different ecosystem. Extreme fluctuations in conditions or the size of any population, however, can challenge the functioning of ecosystems in terms of resources and habitat availability.

CCC: Stability and Change: Much of science deals with constructing explanations of how things change and how they remain stable.

Item Type: Inline Choice - Multiple Choice

Depth of Knowledge: 3

Points: 2

Key: NA

4. Based on their claim about the key role of wolves in maintaining ecosystem stability, the scientists expected that the removal of wolves would cause many changes in the taiga ecosystem, the increasing elk populations being only one of those changes. The scientists had to evaluate other changes that may or may not have been caused by the absence of wolves prior to 1995.

Part a

Complete the statement to show an example of the reasoning for how different bear population changes may or may not have been caused due to the absence of wolves.

The bear population may have increased due to a decrease in [competition with wolves, territory available without wolves] or due to [disease in rabbit populations, mild weather conditions].

Part b

Which statement **best** explains how the reasoning in Part a relates to evaluating the scientists' original claim that wolves provide more stability for the taiga ecosystem?

- Ⓐ The populations of other members of the ecosystem without wolves indicate the way wolves directly interact with those organisms.
- Ⓑ The relationships in the ecosystem without wolves provide a basis for measuring the impact of the wolves after their reintroduction.
- Ⓒ The response of the ecosystem after the wolves were removed shows how the ecosystem will respond to their reintroduction.
- Ⓓ The survival of other organisms in the ecosystem in the absence of wolves determines whether wolves can provide stability when they are reintroduced.

Scoring Key

Part a

The bear population may have increased due to a decrease in [competition with wolves, territory available without wolves] or due to [disease in rabbit populations, mild weather conditions].

Part b

B

Distractor Analysis

Part b

- A The relationships in Part a show that populations may be affected by factors other than wolves, so effects other than direct relationships may have an impact on stability.
- B Key. Comparing the different factors in the ecosystem without wolves to the ecosystem after the wolves are returned will offer many insights into how wolves may contribute to stability.**
- C The relationships shown in Part a demonstrate that the ecosystem may respond in different ways because of many factors, and the return of the wolf after a long absence may have other unpredictable stability consequences.
- D The survival of organisms without wolves may be due to factors not related to wolves as shown in Part a, so survival is not solely a good indicator of what will happen to stability when the wolves are reintroduced.

New Hampshire Statewide Assessments

Mathematics, Reading, and
Writing & Language Sample Items

Grades 4 and 7

Solicitation Number: RFP NO. 2017-073



It's all about student learning. Period.

Item SAMPLER



GRADE 4

Mathematics

Reading

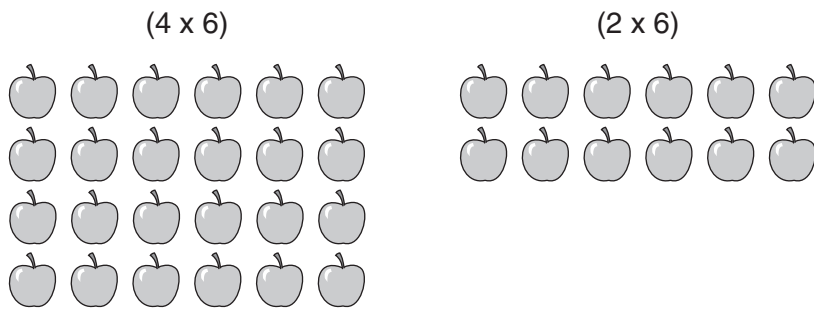
Writing & Language

Alignment

STANDARD: 04.OA.01.01

KEY: B

1. Each of these models represents a product.



Which statement is true about the product of 4×6 ?

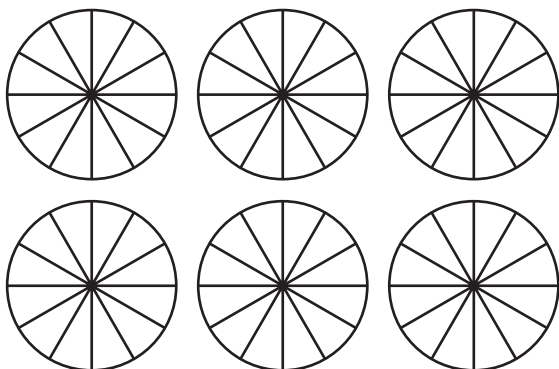
- A It is half of the product of 2×6 .
- B It is double the product of 2×6 .
- C It is equal to the product of 2×6 .
- D It is 2 less than the product of 2×6 .

Alignment

STANDARD: 04.NF.02.04.c

KEY: C

2. You may use these pictures to help answer the question.



A coach brought 6 pizzas to a team party. The team ate $\frac{2}{3}$ of all the pizza.

How many pizzas did the team eat in all?

- A 2 pizzas
- B 3 pizzas
- C 4 pizzas
- D 5 pizzas

Use the problem below to answer questions 3 and 4.

Look at this problem.

Jeremiah plans to mow lawns during the summer to earn money. His goal is to earn a total of \$700.

- He earns \$25 for each lawn he mows.
- He plans to mow 3 lawns every week.
- He plans to mow lawns for a total of 9 weeks.

Will Jeremiah reach his goal?

Alignment

STANDARD: 04.OA.01.03

KEY: B

- 3.** What is the main problem that must be solved to learn whether Jeremiah will reach his goal?
- A** What is the number of lawns Jeremiah mowed?
 - B** What is the amount of money Jeremiah earned?
 - C** What is the price Jeremiah charges to mow a lawn?
 - D** What is the number of weeks Jeremiah mowed lawns?

Alignment

STANDARD: 04.OA.01.03

KEY: C

4. Jeremiah did this work to find out if he will reach his goal.

$$25 \times 3 = 75$$

$$75 \times 9 = 765$$

Which statement is true?

- A Jeremiah will reach his goal, because $25 \times 3 = 75$.
- B Jeremiah will reach his goal, because $25 \times 3 \times 9 = 765$.
- C Jeremiah will **not** reach his goal, because $75 \times 9 < 700$.
- D Jeremiah will **not** reach his goal, because he should have added $25 + 3$.

Alignment

STANDARD: 04.NF.01.01

KEY: N/A

5. There are 4 boys and 8 girls in Francine’s art class.

Write two different fractions that show the part of Francine’s class that is boys. Use words or numbers to explain your answer.

Concepts and Procedures Scoring Rubric

Score	Description
2	The student earns 2 points.
1	The student earns 1 point.
0	Response is incorrect or contains some correct work that is irrelevant to the skill or concept being measured.
Blank	No response

Training Notes

2 points for two equivalent fractions that correctly represent the given situation, $\frac{4}{12}$, $\frac{1}{3}$, with sufficient explanation to show understanding of finding equivalent fractions

OR

1 point for sufficient explanation to show understanding of finding equivalent fractions; fractions may be incorrect or missing

or

for two equivalent fractions that do not correctly represent the given situation but show some relationship to the situation (e.g., $\frac{4}{8}$, $\frac{1}{2}$); explanation may be incomplete or missing

Mathematical Practices Scoring Rubric

Score	Description
1	The student earns 1 point.
0	Response is incorrect or contains some correct work that is irrelevant to the skill or concept being measured.
Blank	No response

Training Notes

1 point for constructing an argument (sufficient explanation for why the two fractions are equivalent)

Exemplary Response

$\frac{4}{12}$, $\frac{1}{3}$; There are 12 children in the class, 4 of them are boys so that's how I got my first fraction $\frac{4}{12}$. To find my second fraction, I thought of an array with 3 rows, 4 children in each row. That makes 1 row a row of boys so 1 out of 3 rows is $\frac{1}{3}$.

Alignment

STANDARD: 04.NF.02.03.b

KEY: B

6. Alicia and two of her friends used a total of $\frac{9}{12}$ of a spool of ribbon for an art project.

Which set of fractions shows the amount of the spool of ribbon each girl could have used?

A $\frac{1}{12}, \frac{1}{12}, \frac{1}{12}$

B $\frac{2}{12}, \frac{3}{12}, \frac{4}{12}$

C $\frac{2}{4}, \frac{3}{4}, \frac{4}{4}$

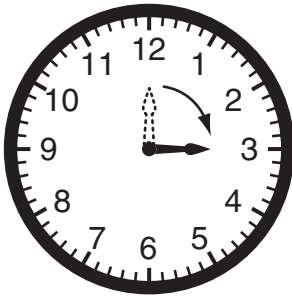
D $\frac{3}{4}, \frac{3}{4}, \frac{3}{4}$

Alignment

STANDARD: 04.MD.03.05

KEY: D

7. Koko was setting the time on her clock. The hour hand was pointing to 12 o'clock. She turned the hour hand clockwise one-quarter of the way around the clock to 3 o'clock, as shown on this clock.



How many degrees did Koko turn the hour hand?

- A 3°
- B 15°
- C 60°
- D 90°

Alignment

STANDARD: 04.G.01.02

KEY: C

8. A mirror has four sides of equal length. The opposite sides of the mirror are parallel, but the mirror has no right angles.

What shape is the mirror?

- A a hexagon
- B a rectangle
- C a rhombus
- D a square

Alignment

STANDARD: 04.MD.01.03

KEY: N/A

9. A closet floor is in the shape of a rectangle. It has an area of 64 square feet.
- What could be the length **and** the width, in feet, of the closet floor? Use words or numbers to explain your answer.
 - Use the measurements you wrote for part (a) to find the perimeter, in feet, of the closet floor. Use words or numbers to explain your answer.
 - What could be a length and a width, in feet, of the closet floor that are different from the measurements you wrote for part (a)? Use words or numbers to explain your answer.

Concepts and Procedures Scoring Rubric

Score	Description
4	The student earns 6 points.
3	The student earns 4 or 5 points.
2	The student earns 2 or 3 points.
1	The student earns 1 point.
o	Response is incorrect or contains some correct work that is irrelevant to the skill or concept being measured.
Blank	No response

Training Notes

- Part a 2 points for correct answer, **length = 8 (feet), width = 8 (feet) or any factor pair for 64**, with sufficient work or explanation to show understanding of applying the area formula for rectangles to solve problems
- OR
- 1 point for correct answer with insufficient or no work or explanation
or
for appropriate strategy that shows understanding of applying the area formula for rectangles with incorrect or no answer
- Part b 2 points for correct answer, **32 (feet) or perimeter that matches measurements given in part (a)**, with sufficient work or explanation to show understanding of applying the perimeter formula for rectangles to solve problems
- OR
- 1 point for correct answer with insufficient or no work or explanation
or
for appropriate strategy that shows understanding of applying the perimeter formula for rectangles with incorrect or no answer
- Part c 2 points for correct answer, **length = 16 (feet), width = 4 (feet) or any factor pair for 64 that is different from pair given in part (a)**, with sufficient work or explanation to show understanding of applying the area formula for rectangles to solve problems
- OR
- 1 point for correct answer with insufficient or no work or explanation
or
for appropriate strategy that shows understanding of applying the area formula for rectangles with incorrect or no answer

Mathematical Practices Scoring Rubric

Score	Description
2	The student earns 2 points.
1	The student earns 1 point.
o	Response is incorrect or contains some correct work that is irrelevant to the skill or concept being measured.
Blank	No response

Training Notes

- 1 point for abstracting a given situation [correctly finds the perimeter of the closet in part (b)]
- 1 point for using quantitative reasoning (correctly finds two different factor pairs for 64 to represent the length and width of the closet)

Exemplary Response

- Length = 8 (feet) Width = 8 (feet) (or any factor pair for 64); Since the area of the floor is 64 square feet, I have to find two numbers that equal 64 when you multiply them. $8 \times 8 = 64$
- 32 (feet) [or perimeter that matches dimensions given in part (a)]; $8 + 8 + 8 + 8 = 32$
- Length = 16 (feet) Width = 4 (feet) [or factor pair for 64 that is different from the pair given in part (a)]; $16 \times 4 = 64$

Passage 1
The Three Brothers

retold by Pat Betteley

- 1 **Narrator 1:** There once was an old farmer who had three sons. The oldest son was named Hans. Fritz was the middle son, and the youngest was called Kurt. The farmer loved his boys dearly and they worked beside each other every day doing the endless chores that needed to be done on the farm.
- 2 **Hans:** My jobs require great skill with animals. I milk the cows, shear the sheep, and feed the pigs.
- 3 **Fritz:** I am a plant specialist. I plow the fields, sow the seed, and reap the harvest.
- 4 **Kurt:** I do all the jobs that are left. I churn the butter, wash the clothes, and make the candles. Blech!
- 5 **Narrator 2:** Sometimes Kurt longed to help his older brothers.
- 6 **Farmer:** Boys, gather around. I have finally figured out a fair way to choose which of you will inherit my farm. Here is my plan. We will pick one day. Each of you will have a turn to fill up the old barn before that day is done. Whoever can accomplish this task will have the farm.
- 7 **Hans:** But what shall we use to fill it?
- 8 **Farmer:** Whatever you choose. Does that sound fair?
- 9 **Hans, Fritz, Kurt:** Yes, Father.
- 10 **Narrator 2:** As the boys went about their chores that day, each thought about how he would fill the barn.
- 11 **Hans:** With my skills with the animals, I cannot lose.
- 12 **Fritz:** No one knows more about crops than I. Soon this farm will be mine.
- 13 **Kurt:** I have no good ideas. I must not get discouraged though, or I will never win the farm. I have to keep thinking.
- 14 **Narrator 3:** At last the day of the contest arrived. Everyone was up at dawn.
- 15 **Hans:** Of course, since I am oldest, I will go first. Stand aside everyone.
- 16 **Narrator 1:** And with great skill, Hans packed every last farm animal into the barn. There was not enough room for even one more chicken on the barn floor that was packed full of horses, cows, sheep, pigs, and cats.
- 17 **Hans:** It looks like the farm will be mine, brother Fritz.

- 18 **Fritz:** We shall see. First, I will lead all the animals out of the barn. And now, hand me a pitchfork, Kurt.
- 19 **Narrator 2:** And Fritz proceeded to fill the barn to the rafters with hay.
- 20 **Fritz:** Now who do you think will win the farm, older brother?
- 21 **Father:** Fritz, you have certainly filled the barn more than Hans did, but don't forget about Kurt. We must give your younger brother his chance.
- 22 **Narrator 3:** The three boys cleared all the hay out of the barn. By the time they had finished, night had fallen.
- 23 **Hans:** Your turn, baby brother.
- 24 **Fritz:** Let us see what you can do in the time that's left.
- 25 **Narrator 1:** Kurt spoke not a word. He simply reached into the pocket of his overalls. He pulled out a candle and lit it. Immediately, light filled the barn. It reached past the beams and rafters to the roof and spilled out the windows and doors.
- 26 **Hans:** Amazing!
- 27 **Fritz:** I cannot believe it. You did it!
- 28 **Father:** There is no doubt, Kurt. You have won the farm!
- 29 **Kurt:** Thank you, Father. I am very grateful. But I don't want to live on this big farm all by myself. I want to shear the sheep and reap the harvest with my brothers. And I want my brothers to wash the clothes and churn the butter with me. Agreed?
- 30 **Narrator 2:** So the three brothers agreed to share the farm and housework and they lived happily together on the farm for the rest of their lives.

"The Three Brothers" by Pat Betteley, from *Faces Magazine*, October 2013. Copyright © 2013 by Carus Publishing Company d/b/a Cricket Media.

Passage 2

The King's Journey

by Betsy Serman

- 1 There was once a king who ruled over vast lands. Every spring he journeyed round his kingdom to visit his people.
- 2 A long, hard journey it was.
- 3 At the end of one such trip, he sighed and said, "Oh, what a fine reward I would give to anyone who could shorten my journey."
- 4 Sir Highfeather Bragg, the vainest man in the kingdom, pictured himself wearing a great glittering medal.
- 5 "What you need is a new coach, Sire," he said. "I will have one made for you."
- 6 The following April, Sir Highfeather drove an elegant open carriage to the palace.
- 7 "This is the swiftest carriage in all the land," Sir Highfeather said proudly. "A dozen men worked a dozen months to make speed its very name. It will surely shorten your journey, Sire."
- 8 Before long the wheels spun out of control on the rutted road. The carriage overturned, and Sir Highfeather and the king were tossed to the ground. The horses broke from their harnesses and ran off before the king and Sir Highfeather could brush the dust from their eyes.
- 9 The king stumbled back to the palace and once more set off in the slow but safe royal coach. For many days he jolted round his kingdom until he arrived back at the palace, aching and weary.
- 10 "Ohhh," he groaned. "What a great reward I would give to anyone who could shorten my journey."
- 11 Lord Puffpurse, the richest man in the kingdom, pictured himself surrounded by great piles of gold. "What you need is a new road, Sire," he said. "I will have one built for you."
- 12 The next spring Lord Puffpurse announced that the grand new road was ready. "It slashes through forests, slices through hills, and leaps over streams," he said. "This road will certainly shorten your journey, Sire!"
- 13 The journey began pleasantly, but before long the bright day turned into a scowling storm. The coach lurched wildly, for now there were no sheltering trees to block the wind or stop piles of mud from sliding down bare hillsides. The bridges were in ruins, their planks ripped apart and their ropes whipping in the wind.
- 14 "Turn back!" the king shouted to his coachman, and they continued the journey on the old road.

- 15 When at last the weary king reached the palace, he moaned, "Ohhh, can this journey never be shortened for me?"
- 16 Now at this time and in this place, there lived a boy named Jack. He was shabby and plain, with clothes full of patches and a stomach pinched with hunger. But his eyes shone with a merry light, and he had a smile that crept into every corner of his face.
- 17 When the next April came, up stepped Jack, leading an old brown horse. "Come with me, Sire," he said with a smile. "Together we will make the shortest journey you have ever had."
- 18 As soon as they left the palace, Jack began to tell a story. A small story it was, but so funny that the king laughed and asked for another. On they went, with the king leaning close to hear Jack's voice. Each day, in calm weather or storm, Jack had stories to tell.
- 19 And one day, just as a story ended, Jack stopped.
- 20 "Look, Sire," he said, pointing. "Your own palace lies ahead. You have reached the end of your journey!"
- 21 "So soon?" cried the king.
- 22 Jack only smiled, and as the truth dawned on him, the king began to laugh.
- 23 "What a wise lad you are!" he said. "You have shortened my journey with words! I will give you a fine medal and as many bags of gold as your horse can carry!"
- 24 "Thank you, Sire," Jack said. "But I need no honors or riches."

"The King's Journey" by Betsy Sterman, from *Spider Magazine*, January 2008. Copyright © 2008 by Carus Publishing Company d/b/a Cricket Media.

Alignment

STANDARD: RL.04.03

KEY: D

1. Read paragraph 13 from Passage 1.

Kurt: I have no good ideas. I must not get discouraged though, or I will never win the farm. I have to keep thinking.

What does paragraph 13 **mostly** show about Kurt?

- A He is giving.
- B He is skillful.
- C He is truthful.
- D He is hopeful.

Alignment

STANDARD: RL.04.04

KEY: C

2. In Passage 2, what does the name “Sir Highfeather Bragg” **most likely** show about the character?
- A He is richer than other people.
 - B He expects people to help him.
 - C He wants people to admire him.
 - D He is friendlier than other people.

Alignment

STANDARD: RL.04.03

KEY: B

3. In paragraph 24 of Passage 2, what do Jack’s words to the King **mainly** show about Jack?
- A He is thankful.
 - B He is humble.
 - C He is brave.
 - D He is joyful.

Alignment

STANDARD: RL.04.01

KEY: A, B

This question has two parts. Be sure to answer both parts of the question.

4. In Passage 2, what is the **main** problem the King tries to solve?

- A** It takes too long to travel through his lands.
- B** The roads are not fit for traveling.
- C** His subjects do not amuse him.
- D** He knows very few people.

Which detail from the passage **best** supports the answer to the question above?

- A** “‘This is the swiftest carriage in all the land,’ Sir Highfeather said proudly.”
- B** “‘Ohhh,’ he groaned. ‘What a great reward I would give to anyone who could shorten my journey.’”
- C** “‘The bridges were in ruins, their planks ripped apart and their ropes whipping in the wind.’”
- D** “‘A small story it was, but so funny that the king laughed and asked for another.’”

Alignment

STANDARD: RL.04.05

KEY: D

5. In what way is Passage 1 told differently than Passage 2?

- A** Passage 1 has more stanzas.
- B** Passage 1 is written using rhyme.
- C** Passage 1 has several characters.
- D** Passage 1 is written using only dialogue.

Grade 4 | Reading

Alignment

STANDARD: RL.04.02

KEY: N/A

6. Describe a lesson that can be learned from Passage 1. Use details from the passage to support your answer.

Rubric

Score	Description
3	The response is a clear, complete, and accurate description of a lesson that Passage 1 teaches. The response contains important details from the passage.
2	The response is a somewhat clear or partial description of a lesson that Passage 1 teaches. The response includes limited details from the passage and may include misinterpretations.
1	The response is a minimal description of a lesson that Passage 1 teaches. The response contains few or no details from the passage and may include misinterpretations. OR The response relates minimally to the task.
0	The response is incorrect or irrelevant or contains insufficient information to demonstrate comprehension.
Blank	No response

Scoring Notes

A description of a lesson that can be learned from Passage 1 may include, but is not limited to, discussions of fairness, cleverness, or taking care of family. Relevant details may include, but are not limited to:

Fairness

- Kurt identifies the unfairness of his role on the farm by explaining, “I do all the jobs that are left. I churn the butter, wash the clothes, and make the candles. Blech!”
- The farmer shows fairness by creating a contest as a way to bequeath his farm to one of his sons. The contest requires each of them to use skills other than those learned on the farm in order to win. Additionally, when the farmer presents this contest to his sons he asks, “Does that sound fair?”
- Later in the story, after Fritz has filled the barn with hay, the farmer shows fairness again when he stops Fritz from declaring himself the winner by saying, “We must give your younger brother his chance.” Kurt then wins the contest. The farmer honors the win by giving Kurt the farm. Kurt shows fairness when he accepts the farm but only under the condition that his brothers stay and they all work alongside each other.

Cleverness

- Rather than present the farm to one of his sons, or split it among the three of them, the farmer devises a competition that allows the sons to prove who is worthy of owning and running the farm. This shows that the farmer is clever.
- Kurt lights a match in the barn to fill it. He does not fill the barn with tangible objects like his brothers did. This is a clever solution to the farmer’s challenge.

Taking Care of Family

- The farmer wants to leave the farm to his sons, which shows that he wants to help them in the future by continuing their livelihood.
- Kurt will only take the farm if his brothers join him. This shows that it is important to take care of family, rather than turning them out into the world.
- Kurt wants everyone to take care of each other—each doing his part.

Other interpretations are acceptable if supported by relevant details from the text.

Alignment

STANDARD: RL.04.09

KEY: N/A

7. You have read two passages about solving problems.

Write a paragraph comparing the ways that Kurt and Jack solve problems. In your paragraph, be sure to

- Describe the problems that each character needs to solve.
- Explain how the solutions are alike.
- Use details from **both** passages to support your answer.

Rubric

Score	Description
3	The student responds to the prompt; provides an accurate analysis of what the sources say explicitly and/or inferentially; refers to ideas or details in both sources to support the analysis; shows basic understanding of central ideas expressed in the sources.
2	The student responds to all or part of the prompt; provides a generally accurate analysis of what one or both sources say explicitly; may not refer to ideas from both sources to support the analysis; shows some understanding of central ideas expressed in the sources.
1	The student responds to the topic of the prompt; shows some comprehension of what one or both sources say by referring to ideas in the sources; shows limited understanding of the central ideas expressed in the sources.
0	The response is incorrect or irrelevant or contains insufficient information to demonstrate comprehension.
Blank	No response

Scoring Notes

A description of the problems that Kurt and Jack face includes:

- In Passage 1, Kurt does the work that his brothers do not want to do. The text suggests that Kurt's labor does not require skill or expertise. He says, "I do all the jobs that are left. I churn the butter, wash the clothes, and make the candles. Blech!" Kurt has the opportunity to "win" the farm; the problem he must solve is how to fill the barn.
- In Passage 2, Jack tries to solve the king's problem, which is how to make the journey through the kingdom shorter.

A description of the ways that Kurt and Jack solve problems in the same way may include, but is not limited to:

- In both passages, the characters are given an opportunity to achieve beyond their current lots in life by solving problems that require each to be clever. Kurt shows that he is clever by filling the barn with light: "Immediately, light filled the barn. It reached past the beams and rafters to the roof and spilled out the windows and doors." "There is no doubt, Kurt. You have won the farm!" In "The King's Journey," Jack shortens the king's long journey with humorous stories. "'What a wise lad you are!' he said. 'You have shortened my journey with words!'"
- Additionally, the stories of Jack and Kurt end similarly when both act selflessly. Kurt wins the farm but wants his brothers to run the farm with him, fairly and equally. Given the opportunity to be greedy, Kurt chooses to share. "Thank you, Father. I am very grateful. But I don't want to live on this big farm all by myself. I want to shear the sheep and reap the harvest with my brothers. And I want my brothers to wash the clothes and churn the butter with me." Likewise, Jack is offered all the riches the king can give, and he turns them down. "'Thank you, Sire,' Jack said. 'But I need no honors or riches.'"

Other interpretations are acceptable if supported by relevant details from the text.

Great Aunt Lily's Attic

Characters

a lamp

a photo album

a rocking chair

Great Aunt Lily

Sara, Aunt Lily's niece

Jackson, Aunt Lily's nephew

Setting

1. The scene is Great Aunt Lily's attic. 2. An old photo album lies on the seat of the chair.
3. An old lamp with a glass colorful shade rests nearby on the floor.
4. **Album:** (addressing the chair) Who was here and left the window shade up?
5. **Chair:** It was Great Aunt Lily's niece and nephew, Sara and Jackson. 6. I felt them walk across the floor as I was asleep. 7. That got me rocking, and I woke up.
8. **Lamp:** (crying) Since we've been stuck in the attic, all we do is sleep.
9. **Chair:** I know it! 10. Do you recall when we used to be in the living room?
11. **Lamp:** Those were such enjoyable times.
12. **Album:** Do you remember when Great Aunt Lily would show the old family pictures to the children?
13. **Lamp:** There was never a dull minute then.
14. **Chair:** She used to sit down in me with one or two of them in her lap.
15. **Lamp:** And I would shine like a flame so everyone could see.
16. **Album:** I wish we were back in the living room with the family.
17. (Before that, they hear footsteps.)
18. **Album:** Shush, someone's coming!
19. (Sara and Jackson enter.)
20. **Sara:** I'm so excited to bring Aunt Lily's things downstairs.
21. **Jackson:** It's great that we can use them again.
22. **Sara:** Let's get some cloths to dust everything off.
23. **Great Aunt Lily:** (from downstairs) Don't forget to close the attic door!
24. (They leave.)
25. **Album:** Did you hear that?
26. **Lamp:** Isn't it wonderful?

"Great Aunt Lily's Attic" © 2015 by Measured Progress.

Grade 4 | Writing & Language

Alignment

STANDARD: W.04.03.a

KEY: B

1. Read this sentence.

Sunshine beams through the window and falls across an old rocking chair.

Where should the sentence be added in the passage to **best** set the scene of the events?

- A before sentence 1
- B after sentence 1
- C after sentence 2
- D after sentence 3

Alignment

STANDARD: L.04.01.d

KEY: C

2. How should the underlined words in sentence 3 be changed?

- A NO CHANGE
- B shade colorful glass
- C colorful glass shade
- D colorful shade glass

Grade 4 | Writing & Language

Alignment

STANDARD: W.04.03.d

KEY: D

3. How should the underlined word in sentence 8 be changed to help the reader understand how the lamp is feeling?
- A whispering
 - B trembling
 - C laughing
 - D yawning

Alignment

STANDARD: L.04.05.b

KEY: D

4. In sentence 13, the phrase “never a dull minute” **most likely** means that those times in the living room were
- A surprising.
 - B pleasant.
 - C noisy.
 - D lively.

Grade 4 | Writing & Language

Alignment

STANDARD: W.04.03.b

KEY: B

5. Which change should be made to the underlined word in sentence 14 to **best** show how the chair feels about the event?
- A the visitors
 - B the little ones
 - C the boys and girls
 - D the family members

Alignment

STANDARD: L.04.05.a

KEY: B

6. In sentence 15, what is the **most likely** meaning of the words “shine like a flame”?
- A flash
 - B glow
 - C blaze
 - D spark

Grade 4 | Writing & Language

Alignment

STANDARD: W.04.03.c

KEY: B

7. How should the underlined words in sentence 17 be changed to **most** clearly show the order of events?
- A At last
 - B Suddenly
 - C Meanwhile
 - D For a time

Alignment

STANDARD: L.04.01.c

KEY: A

8. How should the underlined word in sentence 21 be changed?
- A NO CHANGE
 - B must
 - C ought
 - D should

Alignment

STANDARD: W.04.03.e

KEY: A, C

This question has two parts. Be sure to answer both parts of the question.

9. Which sentence should be added after sentence 26 to make the **best** ending for the passage?

- A **Chair:** It'll be nice to be part of the family again!
- B **Chair:** I wonder if the living room has changed much.
- C **Chair:** I can't wait to not be covered in dust anymore!
- D **Chair:** It'll be hard to not miss the peace and quiet a little.

Which detail from the passage **best** supports the answer above?

- A "That got me rocking, and I woke up."
- B "Do you recall when we used to be in the living room?"
- C "**Album:** I wish we were back in the living room with the family."
- D "**Sara:** Let's get some cloths to dust everything off."

Item SAMPLER



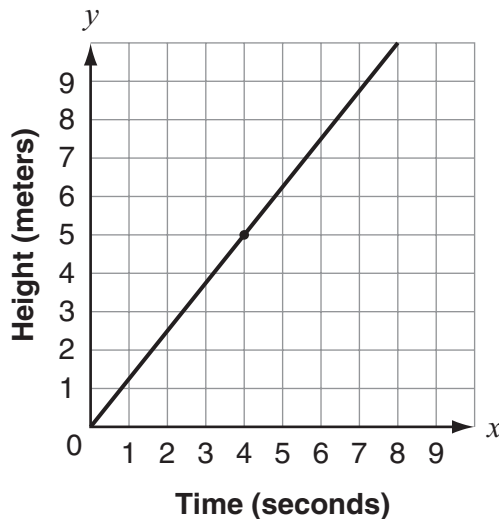
GRADE 7
Mathematics
Reading
Writing & Language

Alignment

STANDARD: 07.RP.01.02.d

KEY: B

1. This graph shows the relationship between the time, in seconds, and the height of the bottom of an elevator, in meters, as the elevator moves upward.



What does the point (4, 5) on this graph represent?

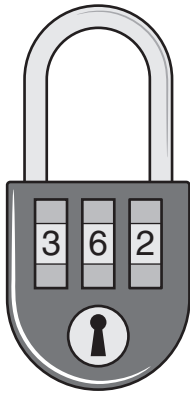
- A** The bottom of the elevator is at a height of 4 meters after moving upward for 5 seconds.
- B** The bottom of the elevator is at a height of 5 meters after moving upward for 4 seconds.
- C** The elevator is moving upward at a speed of 4 meters per second after 5 seconds.
- D** The elevator is moving upward at a speed of 5 meters per second after 4 seconds.

Alignment

STANDARD: 07.SP.03.08.b

KEY: D

2. This lock uses a three-digit code to open.

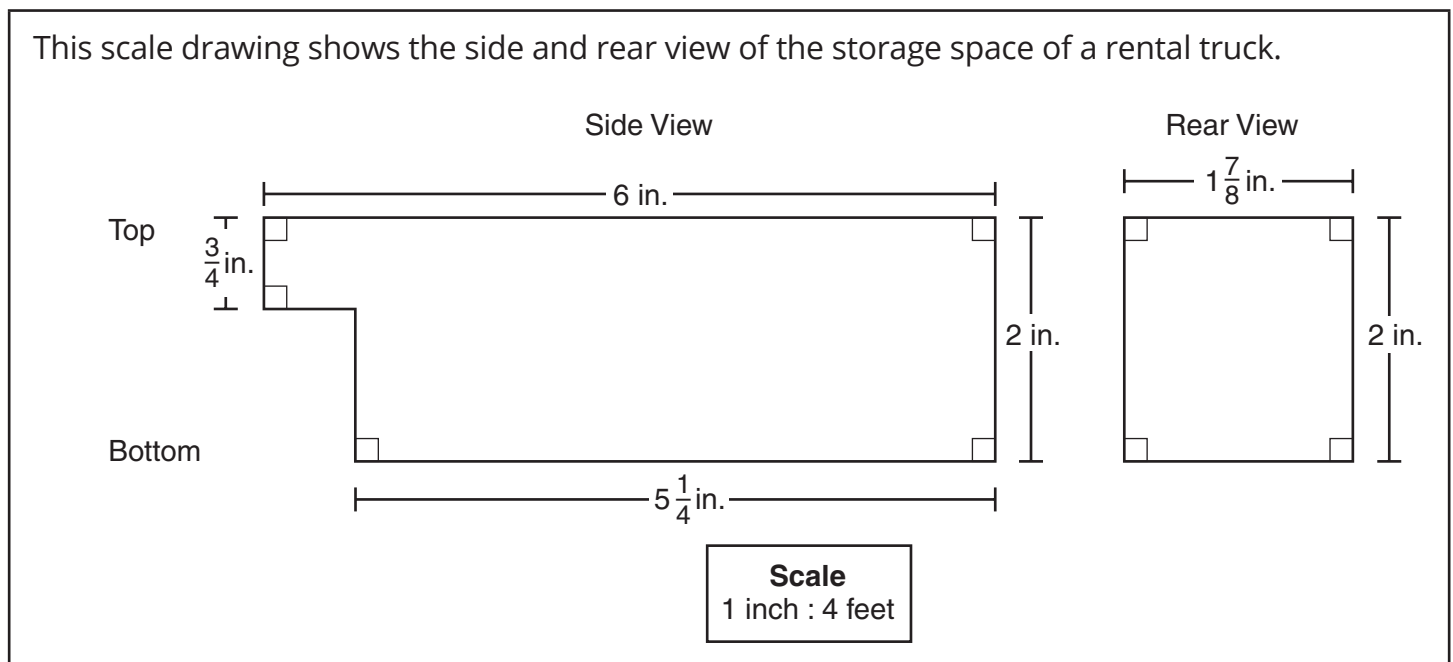


Each digit in the code is a whole number from 0 through 9. Each code can have repeated digits.

What is the total number of possible three-digit codes for the lock?

- A 504
- B 720
- C 729
- D 1,000

Use the information below to answer questions 3 and 4.

**Alignment**

STANDARD: 07.G.01.01

KEY: C

3. Tristan is going to determine the actual floor area of the storage space of the truck. Based on the dimensions in the scale drawing, what units should he use for the floor area of the storage space?
- A feet
 - B inches
 - C square feet
 - D square inches

Alignment

STANDARD: 07.G.02.06

KEY: D

Use the information on the previous page to answer question 4.

4. Barney wrote this expression for the volume, in cubic feet, of the storage space.

$$(4)(4)(4)\left[6(2)-\frac{3}{4}\left(1\frac{1}{4}\right)\right]$$

Four students evaluated Barney's expression. Which student's statement about Barney's expression for the volume of the storage space is true?

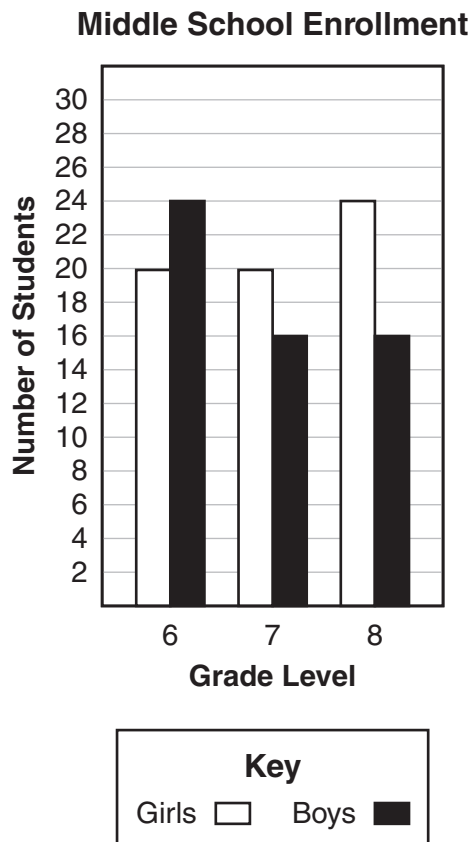
- A Albert says the expression is correct.
- B Felicia says the expression is missing a factor of $(4)(2)\left(1\frac{7}{8}\right)$.
- C Leia says the expression is missing a factor of $(2)\left(1\frac{7}{8}\right)$.
- D Trey says the expression is missing a factor of $1\frac{7}{8}$.

Alignment

STANDARD: 07.SP.03.07.a

KEY: N/A

5. The number of students in each grade level of a middle school who entered their name in a raffle is shown in this bar graph.



Each student could enter his or her name only once. One student who entered the raffle will be selected at random.

What is the probability that the student selected will be a seventh-grade student? Use words or numbers to justify your answer.

Concepts and Procedures Scoring Rubric

Score	Description
2	The student earns 2 points.
1	The student earns 1 point.
0	Response is incorrect or contains some correct work that is irrelevant to the skill or concept being measured.
Blank	No response

Training Notes

2 points for correct answer, $\frac{36}{120}$ or **equivalent**, with sufficient work or explanation to indicate understanding of developing a uniform probability model by assigning equal probability to all outcomes, and using the model to determine probabilities of events

OR

1 point for correct answer with insufficient work or explanation
or
for sufficient work or explanation to indicate understanding of developing a uniform probability model by assigning equal probability to all outcomes, and using the model to determine probabilities of events with incorrect or no answer

Mathematical Practices Scoring Rubric

Score	Description
1	The student earns 1 point.
0	Response is incorrect or contains some correct work that is irrelevant to the skill or concept being measured.
Blank	No response

Training Notes

1 point for interpreting and analyzing a model (demonstrates understanding and using information from the model)

Exemplary Response

The seventh grade has 36 students and there is a total of 120 students at the school. Therefore, the probability that the student chosen is a seventh-grade student is $\frac{20 + 16}{20 + 24 + 20 + 16 + 24 + 16} = \frac{36}{120}$.

Alignment

STANDARD: 07.RP.01.03

KEY: A

6. An ice-cream shop manager lowered the price for a single scoop of ice cream from \$2.50 to \$2.00.

What is the percent of decrease in the price?

- A 20%
- B 25%
- C 50%
- D 80%

Alignment

STANDARD: 07.NS.01.03

KEY: D

7. Mario has a statue that consists of $\frac{1}{10}$ tin and $\frac{1}{4}$ lead. The rest of the statue consists of copper.

What fraction of the statue consists of copper?

- A $\frac{6}{7}$
- B $\frac{7}{10}$
- C $\frac{13}{14}$
- D $\frac{13}{20}$

Alignment

STANDARD: 07.EE.02.04.b

KEY: C

8. Samantha has \$22 to buy one binder and some packages of paper. One binder costs \$4, and packages of paper cost \$3 each. Which inequality can be used to find p , the number of packages of paper Samantha can buy along with the binder?

A $4p + 3 \leq 22$

B $4p + 3 \geq 22$

C $4 + 3p \leq 22$

D $4 + 3p \geq 22$

Alignment

STANDARD: 07.SP.01.02

KEY: B

9. A total of 800 people register to participate in a race. Each participant is given a colored T-shirt to wear in the race. Before the race starts, Aiden records the colors of 32 randomly selected participants' shirts. The results are shown in this table.

Race Shirts

Color	Number of Participants
Red	4
Yellow	12
Purple	10
Orange	6

Based on the results in the table, what is the total number of participants expected to have yellow shirts?

- A 200
- B 300
- C 375
- D 480

Alignment

STANDARD: 07.EE.02.03

KEY: N/A

10. A shoe company has this monthly budget for expenses:

- salaries: $\frac{2}{5}$ of total expenses
- rent: $\frac{1}{3}$ of total expenses
- utilities: $\frac{1}{6}$ of total expenses

The remaining fraction of the total monthly budget for expenses is applied toward miscellaneous expenses.

a. What fraction of the total monthly budget for expenses is applied toward miscellaneous expenses? Use words or numbers to justify your answer.

In April, the budget for miscellaneous expenses was \$8,520.

b. What was the total amount, in dollars, budgeted for all the expenses in April? Use words or numbers to justify your answer.

In May, the budget for salaries was \$45,000.

c. What was the total amount, in dollars, budgeted for **utilities** in May? Use words or numbers to justify your answer.

Concepts and Procedures Scoring Rubric

Score	Description
4	The student earns 6 points.
3	The student earns 4 or 5 points.
2	The student earns 2 or 3 points.
1	The student earns 1 point.
o	Response is incorrect or contains some correct work that is irrelevant to the skill or concept being measured.
Blank	No response

Training Notes

- Part a 2 points for correct answer, $\frac{3}{30}$ or equivalent, with sufficient work or explanation to indicate understanding of solving multistep real-life and mathematical problems posed with positive and negative rational numbers in any form (whole numbers, fractions, and decimals), using tools strategically
- OR
- 1 point for correct answer with insufficient or no work or explanation
or
for appropriate strategy that shows understanding of solving multi-step real-life and mathematical problems posed with positive and negative rational numbers in any form (whole numbers, fractions, and decimals), using tools strategically with incorrect or no answer
- Part b 2 points for correct answer, **\$85,200**, or a correct answer based on an incorrect answer in part (a) with sufficient work or explanation that shows understanding of solving multi-step real-life and mathematical problems posed with positive and negative rational numbers in any form (whole numbers, fractions, and decimals), using tools strategically
- OR
- 1 point for correct answer or a correct answer based on an incorrect answer in part (a) with insufficient or no work or explanation
or
for appropriate strategy that shows understanding of solving multi-step real-life and mathematical problems posed with positive and negative rational numbers in any form (whole numbers, fractions, and decimals), using tools strategically with incorrect or no answer
- Part c 2 points for correct answer, **\$18,750**, with sufficient work or explanation that shows understanding solving multi-step real-life and mathematical problems posed with positive and negative rational numbers in any form (whole numbers, fractions, and decimals), using tools strategically
- OR
- 1 point for correct answer with insufficient or no work or explanation
or
for appropriate strategy that shows understanding of solving multi-step real-life and mathematical problems posed with positive and negative rational numbers in any form (whole numbers, fractions, and decimals), using tools strategically with incorrect or no answer

Mathematical Practices Scoring Rubric

Score	Description
2	The student earns 2 points.
1	The student earns 1 point.
0	Response is incorrect or contains some correct work that is irrelevant to the skill or concept being measured.
Blank	No response

Training Notes

- 1 point for making sense of quantities (demonstrating understanding of the relationship between the fractional budgeted amounts)
- 1 point for contextualizing (using the relationships between the fractional budgeted amounts, the total budget amount, and the individual budget amounts)

Exemplary Response

a. $\frac{2}{5} + \frac{1}{3} + \frac{1}{6} = \frac{12 + 10 + 5}{30} = \frac{27}{30} = \frac{9}{10}; 1 - \frac{9}{10} = \frac{1}{10}$

b. \$85,200;

$$\frac{1}{10}x = 8,520$$

$$\left(\frac{10}{1}\right)\frac{1}{10}x = 8,520\left(\frac{10}{1}\right)$$

$$x = 85,200$$

c. \$18,750;

$$\frac{2}{5}y = 45,000$$

$$\left(\frac{5}{2}\right)\frac{2}{5}y = 45,000\left(\frac{5}{2}\right)$$

$$y = 112,500$$

$$112,500 \cdot \frac{1}{6} = 18,750$$

Soundscape ecology is the study of sounds within a natural environment. The two passages discuss this relatively new area of research.

Passage 1

Capturing Nature’s Playlist

by Virginia Edwards

- 1 Bernie Krause used to be onstage and in front of the microphone. But these days, when he tours the world, it’s to hold a microphone up to nature. By studying the science of soundscapes, he hopes to learn about how humans are affecting the environment—and how we can keep it humming along like it’s supposed to.
- 2 A guitarist, Krause performed in the early 1960s with the Weavers, a group cofounded by legendary folk musician Pete Seeger. When the first sound synthesizers appeared in the middle of that decade, Krause started making electronic music and formed a duo with his friend Paul Beaver. As Beaver & Krause, they released several albums. They also provided music and sound effects for dozens of Hollywood movies.
- 3 One of Beaver & Krause’s albums used recordings from nature as part of the music. Krause made these recordings himself. As he sat alone in the woods, capturing the sounds of air moving and birds passing by, he had a kind of revelation. “I realized, even then, that wild sound might contain huge stores of valuable information just waiting to be unraveled,” he writes in his book *The Great Animal Orchestra*.
- 4 After Paul Beaver passed away suddenly in 1975, Krause decided it was time for a new career. He enrolled in graduate school at age 40 and earned a Ph.D., studying creative arts and bioacoustics (the sounds of living things).
- 5 Then he began his new life’s work, traveling the world with his recording equipment.
- 6 Krause was fascinated by the idea of a “soundscape.” Instead of focusing on one sound at a time and filtering out the rest, as he’d done when creating sound effects for movies, he wanted to capture the overall sound of one particular place and time. Nature’s soundscapes “are the voices of whole ecological systems,” he writes. “Every site on Earth has its own acoustic signature.”
- 7 Animals are one obvious part of that sound signature. Every place has a unique orchestra made up of creatures that sing, chirp, squeak, howl, snort, and burble. There are splashes, scratches, hoof steps, and wing flaps. Depending on the season and time of day, different orchestra members will be onstage.

- 8 But that's not all that makes up an area's acoustic signature. There's also the terrain: hills keep sound contained, while flat regions let sound spread out. Rocks, spongy moss, or dense leaves reflect or soak up sound in different ways. Wet or dry weather also affects how sounds travel. The dew that settles on the ground and leaves at night, Krause notes, helps coyote and wolf howls to reverberate—just like the voices of humans singing in the shower.
- 9 Krause calls the sounds made by living things *biophony*, and those made by nonliving parts of nature (such as wind, water, or thunder) *geophony*. Then there's *anthrophony*: the sounds humans make. If our roads, airplanes, or jackhammers drown out the natural soundscape of an ecosystem, how are other living things affected? That's one of the questions Krause hopes his recordings will help answer.

"Capturing Nature's Playlist" by Virginia Edwards, from *Muse Magazine*, April 2013. Copyright © 2013 by Carus Publishing Company d/b/a Cricket Media.

Passage 2

Scientists Tune In to the Voices of the Landscape

by Richard Harris

- 1 There's nothing new about studying animal sounds; biologists have been doing that for centuries. After all, if you want to understand birds, you need to understand how they communicate.
- 2 But Bryan Pijanowski is now asking his colleagues to take a huge step back and, metaphorically speaking, listen not just to the trees, but to the forest.
- 3 "We're trying to understand how sounds can be used as measures of ecosystem health," says Pijanowski, who teaches in the department of forestry and natural resources at Purdue University.
- 4 He and some colleagues have written a call to action in the journal *BioScience*. It's time, they say, to formalize the study of "soundscape ecology."
- 5 "We're interested in all the voices of the landscape," Pijanowski says. "Not just particular individual species, but really, the orchestration of those different sounds by biological organisms."
- 6 He has a few examples to make his point. First, the midnight trumpeting of forest elephants.
- 7 "We're also hearing some other sounds—the crickets and occasional bird and maybe some other things in the background here," Pijanowski says.
- 8 The recording shows, among other things, how animals divide up the soundscape. Insects are monopolizing the high-frequencies, and elephants are commanding the low notes. Pijanowski says this sound is just as important to the environment there as the trees and the ponds.
- 9 Another example: the stridulation patterns from ants. Stridulation is a fancy way of saying that ants are rubbing their body parts together to make sounds that they use to communicate.
- 10 If you've never heard this sound, it's probably because you've never been buried inside an ant mound.
- 11 "One of the main points we're trying to make here is that a soundscape can be something that we humans just don't hear," Pijanowski says. "It can be on a fairly small scale."
- 12 One goal of this research is to understand how animals interact with each other— even across species. Some silent newts, for example, follow frog sounds to find the best breeding ponds. But one of the biggest questions confronting this field is figuring out how human beings affect the soundscape. . . .
- 13 Jesse Barber, an assistant professor of biological sciences at Boise State University, says scientists have just begun to explore how noise affects animals.

- 14 “Probably the most telling work has come from a series of groups that have worked in oil and gas fields,” he says.
- 15 Researchers compared bird life around noisy equipment that compresses natural gas with similar—but quiet—habitat. In Alberta, they found that birds had fewer offspring at the noisy sites. Similar results came from the Southwestern U.S.
- 16 “The group working in New Mexico found that there is significantly reduced species richness comparing these two sites,” Barber says.
- 17 Lab experiments in Germany have found that noise interferes with bats that hunt for insects on the ground by listening for the sounds they make when scurrying around. Barber says people just don’t think much about how noise is affecting wildlife.
- 18 “For instance, most land management agencies don’t consider noise when they’re making decisions about how to manage public resources,” Barber says. “Even biologists, on the more basic level, haven’t thought about how it’s all integrated.”
- 19 Barber has been part of a project to understand how noise is affecting national parks. He says there’s been a huge change in the past few decades, as both vehicle traffic and airplane traffic have just about tripled in the U.S.
- 20 “For instance, if you record in the back country of Yosemite, you’ll find that 70 percent of the time, a high-flying jet can be heard on the recording,” he says.
- 21 Barber suspects that low rumble is probably not bothering most animals, but “even if it is not affecting wildlife, I would say that 70 percent of the time occupied by highflying jets is definitely an influence to human enjoyment of that landscape.”
- 22 Barber agrees that it’s time to study the ecology of sound and find out how it affects people and wildlife alike.

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Alignment

STANDARD: RI.07.04

KEY: D

1. In paragraph 6 of Passage 1, what does the word “signature” mean?
 - A a notation in a science book
 - B the handwritten name of a researcher
 - C a sign indicating the timing in a song
 - D the unique features of a place

Alignment

STANDARD: RI.07.05

KEY: B

2. In Passage 1, what is the **main** reason the author includes the information in paragraph 9?
- A to list the problems caused by machine noise
 - B to show one purpose behind Krause’s recordings
 - C to describe Krause’s steps for conducting research
 - D to provide definitions for terms regarding sound

Alignment

STANDARD: RI.07.03

KEY: D

- 3.** Based on Passage 2, what is one way scientists hope to improve their understanding of ecosystems?
- A** by learning how soundscapes can exist on such a small scale that humans are unaware of them
 - B** by listening to forest sounds in order to appreciate a variety of animal habitats
 - C** by urging land management agencies and businesses to follow laws about sound
 - D** by increasing the amount and quality of soundscape research

Alignment

STANDARD: RI.07.08

KEY: C, C

This question has two parts. Be sure to answer both parts of the question.

4. What is one way Passage 2 supports Pijanowski’s claim that “sounds can be used as measures of ecosystem health”?

- A** by explaining that people can be disturbed by artificial sounds
- B** by showing that scientists listen to many sounds in a particular natural area
- C** by providing examples of ways that sound is important to animal survival
- D** by describing how animals often change the sound of a landscape

Which choice provides the **best** evidence for the answer to the previous question?

- A** “We’re interested in all the voices of the landscape . . . Not just particular individual species.”
- B** “The recording shows, among other things, how animals divide up the soundscape.”
- C** “Some silent newts, for example, follow frog sounds to find the best breeding ponds.”
- D** “I would say . . . time occupied by high-flying jets is definitely an influence to human enjoyment of that landscape.”

Alignment

STANDARD: RI.07.01

KEY: A

5. In Passage 2, which evidence **best** supports the idea that animals can be affected by human sounds?
- A Lab experiments in Germany revealed that noise influences bats that are hunting.
 - B Scientists know that elephants use low frequency sound to communicate.
 - C Recordings show that cricket sounds can be heard in many locations.
 - D Researchers at Purdue have learned that ants make noises that are difficult to hear.

Grade 7 | Reading

Alignment

STANDARD: RI.07.02

KEY: N/A

6. Passage 1 focuses on the work of Bernie Krause. Write a summary that explains how Krause’s career developed over time. Cite textual evidence from Passage 1 to support your answer.

Rubric

Score	Description
4	The response is a clear, complete, and accurate explanation of how Krause’s career developed over time. The response contains important details from the passage.
3	The response is a mostly clear, complete, and accurate explanation of how Krause’s career developed over time. The response includes relevant but often general details from the passage.
2	The response is a partial explanation of how Krause’s career developed over time. The response includes limited details from the passages and may include misinterpretations.
1	The response is a minimal explanation of how Krause’s career developed over time. The response contains few or no details from the passages and may include misinterpretations. OR The response relates minimally to the task.
o	The response is incorrect or irrelevant or contains insufficient information to demonstrate comprehension.
Blank	No response

Scoring Notes

An explanation of how Krause's career developed over time may include, but is not limited to:

Krause started off as a musician.

- He was part of a folk group called the Weavers. Later, Krause moved to experimenting with synthesizers and sound effects.
- Krause's work with music and sound effects for movies included recordings of sounds in nature. This spurred Krause's interest in the sounds of a landscape.

Krause transitioned to studying the sounds of nature.

- Krause earned his Ph.D. when he was 40, focusing on bioacoustics.
- Through his work, Krause has noticed that every environment has its own "acoustic signature."
- Krause's work has shown that the acoustic signature of a place includes a mixture of the sound of living things and sounds that are made by the "nonliving parts of nature."
- Krause's work continues to explore how human sounds affect ecosystems.

Other interpretations are acceptable if supported by relevant evidence from the text.

Alignment

STANDARD: RI.07.09

KEY: N/A

7. You have read two passages that focus on the topic of soundscape ecology. However, each passage has a different emphasis.

Write a brief essay analyzing how the two authors approach the topic of soundscape ecology in different ways. In your essay, be sure to:

- Analyze how the authors structure the passages to provide important information on the topic.
- Analyze how the passages emphasize different evidence about soundscape ecology.
- Cite textual evidence from **both** passages to support your analysis.

Rubric

Score	Description
4	The student responds to the prompt; provides an accurate and thorough analysis of what the sources say explicitly and/or inferentially; cites specific and relevant textual evidence to support the analysis; shows thorough understanding of central ideas expressed in the sources.
3	The student responds to the prompt; provides an accurate or mostly accurate analysis of what the sources say explicitly and/or inferentially; refers to ideas or details in both sources to support the analysis; shows basic understanding of central ideas expressed in the sources.
2	The student responds to all or part of the prompt; provides a generally accurate summary of what one or both sources say explicitly; may not refer to ideas from both sources to support the analysis; shows some understanding of central ideas expressed in the sources.
1	The student responds to the topic of the prompt; shows some comprehension of what one or both sources say by referring to ideas in the sources; shows limited understanding of the central ideas expressed in the sources.
0	The response is incorrect or irrelevant or contains insufficient information to demonstrate comprehension.
Blank	No response

Scoring Notes

An analysis of how the two authors approach the topic of soundscape ecology in different ways may include, but is not limited to:

The authors structure the passages differently to focus on different aspects of soundscape ecology.

- The author of Passage 1 shows how the work of Bernie Krause, a pioneer of soundscape ecology, evolved. Because soundscape ecology is a relatively new field of study, a look at how it came to be viewed as an important tool is helpful to readers who are likely unfamiliar with it. Therefore, the first part of the passage is chronological in structure and focuses on how Krause eventually began to notice the importance of acoustic signatures.
- In contrast, Passage 2 discusses the research that has been done in soundscape ecology since its inception. The passage shows the importance of sound to animals in nature, while providing evidence that noise caused by humans can be disruptive.

The authors emphasize different evidence to show the importance of soundscape ecology.

- Passage 1 emphasizes the process of the discovery of soundscape ecology as a tool. Therefore, the passage includes evidence that shows its promise. This is through the lens of a person who was first discovering its worth. The passage emphasizes specific events in Krause's life, as well as the way many sounds come together to make a unique signature. ("Every place has a unique orchestra made up of creatures that sing, chirp, squeak, howl, snort, and burble.")
- Passage 2 emphasizes specific instances where sound makes a difference to animals in the wild. For example, the passage points out that elephants and ants use sound to communicate. It also shows specific examples of human development and the ways sound produced by this development can negatively affect animals. The passage points out that bats' hunting can be affected by noise, and birds can produce fewer offspring if they nest near gas compressors. This evidence helps support the goal of one of the researchers quoted in the passage—to formalize soundscape ecology with the goal of making a better tool for measuring the health of an ecosystem.

Other interpretations are acceptable if supported by relevant evidence from the text.

Volunteering

1. Volunteering isn't just for adults. **2.** Young people around the country have made a difference in countless ways, including donating money to shark research, starting newspapers to help children make friends, and gathering dictionaries for other children. **3.** Some have even turned their ideas into larger projects.

4. Eunice Buhler, 16, has a passion for volunteer work. **5.** Her organization, Cultures for Youth, teaches children about different cultures to help better understand people around the world. **6.** Twelve-year-old Rob Bergquist, whose organization gives prepaid phone cards to soldiers, thinks that young people are uniquely qualified to solve problems because "kids have great ideas and solutions that adults don't think of."

7. The World of Children Youth Award is given to people under 21 who have made a difference for children. **8.** The winners, all of whom have created organizations, receive grant money to help fund the organizations that they created. **9.** Jaylen Arnold, who was only 14 when he received the award, suggests that young people who want to make a difference should "stay focused, [and] determined" and think about "how much you really want to inspire others."

10. Jaylen's foundation even gives wristbands to students as part of its program.

11. You don't need to have a grand idea to make a difference. **12.** Many organizations around the country are eager for people of all ages to assist them with their programs. **13.** If you enjoy spending time outdoors, you could organize a group to collect trash at a park. **14.** If you love animals, then see if your local shelter has a youth volunteer program. **15.** The key is finding something that captures your interest. **16.** If you think books are cool, then read to children at a library. **17.** There are numerous ways to help out your community.

18. Volunteering is good for young people because it keeps them busy and helps them do better in school. **19.** Just because children are small doesn't mean they can't have a big impact on the world.

"Volunteering" © 2016 by Measured Progress.

Grade 7 | Writing & Language

Alignment

STANDARD: W.07.01.b

KEY: D

1. Which sentence is **not** well connected to the topic and should be removed?
- A sentence 6
 - B sentence 7
 - C sentence 9
 - D sentence 10

Alignment

STANDARD: L.07.01.c

KEY: C

2. How should the underlined portion of sentence 5 be changed?
- A to help with understanding
 - B to help better and understand
 - C to help them better understand
 - D to help better understand those

Grade 7 | Writing & Language

Alignment

STANDARD: L.07.03.a

KEY: B

3. Which sentence would be the **best** choice to replace sentence 8?
- A The winners receive grant money to help fund organizations they first started.
 - B The winners receive grant money to help fund organizations that they created.
 - C The winners fund their organizations with the help and assistance of grants they receive.
 - D The winners get the money they receive from grants that help them fund their organizations.

Alignment

STANDARD: L.07.02.b

KEY: C

4. In sentence 9, how should the underlined word be spelled?
- A inspyre
 - B inspyer
 - C inspire
 - D inspier

Grade 7 | Writing & Language

Alignment

STANDARD: L.07.03.a

KEY: C

5. Which choice would be the **best** change to the underlined portion of sentence 12?
- A people of all ages to support their programs
 - B volunteers of all ages to offer to help them
 - C volunteers of all ages
 - D the help of all people

Alignment

STANDARD: W.07.01.a

KEY: B

6. Where should sentence 15 be moved to improve the organization of the passage?
- A between sentences 8 and 9
 - B between sentences 12 and 13
 - C between sentences 13 and 14
 - D between sentences 18 and 19

Grade 7 | Writing & Language

Alignment

STANDARD: W.07.01.d

KEY: B

7. How should the underlined portion of sentence 16 be changed to maintain the style of the passage?
- A If books are your thing
 - B If you are fond of books
 - C If you think books are great
 - D If you are a huge fan of books

Alignment

STANDARD: W.07.01.e

KEY: C, C

This question has two parts. Be sure to answer both parts of the question.

8. Which sentence would be the **best** choice to replace sentence 18 in the concluding paragraph?
- A Volunteering gives young people the chance to learn how organizations work.
 - B Volunteering can give young people experiences that will help them pursue other useful goals.
 - C Volunteering teaches young people to care for others, share their interests, and feel a sense of accomplishment.
 - D Volunteering can be a way for young people to have a greater and more long-lasting influence than most adults.

Which choice provides the **best** evidence for the answer to the previous question?

- A sentence 3
- B sentence 8
- C sentence 17
- D sentence 19

Alignment

STANDARD: L.07.04.a

KEY: D

9. What does the word “impact” mean as it is used in sentence 19?
- A push
 - B stand
 - C grasp
 - D effect

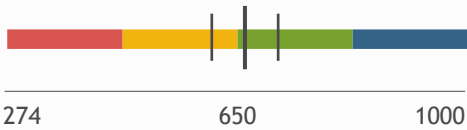
Appendix 4: eMPOWER Report Samples



Reading

652

Achievement Level 3
 Confidence band is 648 to 656



274 650 1000

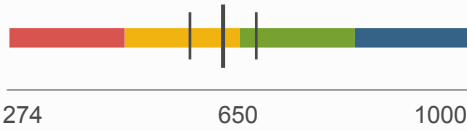
Your child's 2017 Reading score is barely in Level 3, on track for college and career readiness.

Your child's eMPower Reading score corresponds to a Lexile score of 930L.¹

Writing & Language

640

Achievement Level 2
 Confidence band is 636 to 644



274 650 1000

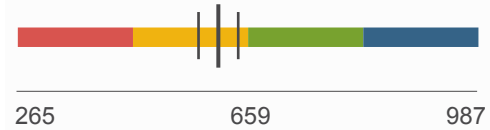
Your child's 2017 Writing & Language score is in Level 2, below on track for college and career readiness.

Level 1 ■ Level 2 ■ Level 3 ■ Level 4 ■

Mathematics

650

Achievement Level 2
 Confidence band is 647 to 653



265 659 987

Your child's 2017 Mathematics score is in Level 2, close to on track for college and career readiness.

Your child's eMPower Mathematics score corresponds to a Quantile score of 931Q.²

Predicted PSAT 8/9 Scores

Your Evidence-Based Reading and Writing Score

482

Confidence band is 467 to 497



160 760

Your child's (combined) eMPower Reading and Writing & Language score predicts a grade 9 PSAT Evidence-Based Reading and Writing score of 482, which is above the College Board College and Career Readiness Benchmark, 460.³

Below the College and Career Readiness Benchmark ■ At the College and Career Readiness Benchmark ■

Your Mathematics Score

460

Confidence band is 445 to 475



160 760

Your child's eMPower Mathematics score predicts a grade 9 PSAT Mathematics score of 460, which is below the College Board College and Career Readiness Benchmark, 510.³


Confidence bands: Your child's test score indicates performance on the day of the test. The confidence bands indicate the range of possible test scores your child would be expected to achieve on a different day.

▼ The PSAT College and Career Benchmarks are 460 in Evidence-Based Reading and Writing and 510 in Mathematics.

¹ See www.lexile.com for details. | ² See www.quantiles.com for details. | ³ See <https://collegereadiness.collegeboard.org> for details.

How did your child do in specific areas of Reading, Writing & Language, and Mathematics? What are your child's strengths and areas for improvement in each content area?

The symbols below indicate whether your child is At Standard, Below Standard, or Above Standard for each area.

Tests provide only one piece of evidence about your child's learning. Your child's teachers can provide additional information regarding strengths and areas for improvement. You can work with your child and speak with teachers about improving your child's learning in areas below with  indicators.

			
Insufficient Data	Below Standard	At Standard	Above Standard

Proficiency Level Subscores




Reading Subscores

Literary Text		
Informational Text		
Comprehension		
Analysis & Interpretation		

Writing & Language Subscores

Expository Writing Analysis	
Argument Writing Analysis	
English Language Conventions	

Mathematics Concepts and Procedures Subscores

The Number System and Expressions & Equations		
Functions		
Geometry and Statistics & Probability		

Mathematical Practices Subscores

Problem Solving, Reasoning, and Argument		
Modeling, Patterns, and Structure		

The paragraphs below describe what students should know and be able to do to be At Standard or Above Standard for each subscore. Review the information on Page 2. If your child is Below Standard in a subscore area, your child may need more time, more instruction, or different instruction to be At Standard or Above Standard. Talk to your child's teacher about how you can support your child at home.

Reading 652 (648 to 658)

Literary Text: Students who are at standard or above standard for Literary Text can independently and proficiently read, comprehend, analyze, and interpret complex literary text appropriate for Grade 8 students. They can apply reading skills and strategies to enhance enjoyment and understanding of literary text, and they can use evidence from texts to support their analyses, interpretations, and conclusions. They can comprehend and analyze themes and important supporting details; interpret characters' motivations and actions; and analyze characters' development. Proficient students can determine the meaning of unfamiliar vocabulary words and evaluate an author's use of literary devices to create effects. They can analyze the structure of texts; identify and evaluate connections between events, characters, and ideas; and compare and contrast story elements and authors' treatment in two texts.

Informational Text: Students who are at standard or above standard for Informational Text can independently and proficiently read, comprehend, analyze, and interpret complex informational text appropriate for Grade 8 students – particularly text related to scientific and social studies topics. They can apply reading skills and strategies to understand and learn from informational text, and they can use evidence from texts to support their analyses, interpretations, and conclusions. They can comprehend and analyze main ideas and important details and interpret an author's purpose, claims, and evidence. Proficient students can determine the meaning of new and unfamiliar vocabulary words; analyze how authors use text features and structures to communicate meaning; and interpret graphical representations of information. They can compare and contrast authors' presentation of information, arguments, and evidence in two texts.

Comprehension: Students who are at standard or above standard for Comprehension can apply reading skills and strategies to read and comprehend central ideas and themes, identify supporting details, and determine the meaning of words and phrases in complex literary and informational text appropriate for Grade 8 students.

Analysis and Interpretation: Students who are at standard or above standard for Analysis and Interpretation can apply reading skills and strategies to complex literary and informational text appropriate for Grade 8 students in order to analyze how ideas, events, and characters are presented; examine relationships among elements of texts; interpret authors' themes, purposes, claims, and evidence; determine and evaluate points of view; determine the meaning of figurative and connotative language, and analyze authors' word choice; compare and contrast the information and authors' methods in two texts; make inferences; and draw conclusions using evidence from the texts to support their interpretations and analyses.

Writing & Language 640 (636 to 644)

Argument Writing Analysis: Students who are at standard or above standard for Argument Writing Analysis can analyze the effectiveness of written arguments and identify improvements in the clarity of a focus or claim, supporting arguments and evidence, logical organization, maintenance of a formal writing style and tone, and use of language to convince or persuade.

Expository Writing Analysis: Students who are at standard or above standard for Expository Writing Analysis can analyze the effectiveness of expository or informational writing and identify improvements in logical organization, supporting facts and details, clarity of purpose, cause-effect relationships, and maintenance of an expository writing style and tone.

English Language and Conventions: Students who are at standard or above standard for English Language and Conventions can evaluate written narrative, expository, and argument writing and identify improvements needed in grammar, vocabulary, English language usage and precision, spelling, punctuation, and capitalization appropriate for Grade 8 students.

Mathematics 650 (647 to 653)

Functions: Students who are at standard or above standard for Functions understand the concept of functions and can represent linear functions in equations, tables, and graphs. They can compare properties of two functions and can interpret linear and nonlinear functions presented in a variety of forms.

The Number System and Expressions & Equations: Students who are at standard or above standard for The Number System and Expressions & Equations understand rational and irrational numbers and can approximate an irrational number with a rational number. They can generate equivalent expression using the properties of integer exponents, use square and cube roots to solve equations, and write numbers in, perform operations with, and solve problems involving scientific notation. They can translate among the various representations of proportional relationships and can analyze and solve problems represented by linear equations and systems of two linear equations.

Geometry and Statistics & Probability: Students who are at standard or above standard for Geometry and Statistics & Probability understand congruence and similarity and understand and can apply the Pythagorean Theorem. They can solve problems involving volumes of cylinders, cones, and spheres. They can investigate patterns associated with bivariate data and use scatter plots and lines of best fit to solve problems. They can solve problems associated with bivariate categorical data using two-way tables and relative frequencies.

Problem Solving, Reasoning, and Argument: Students who are at standard or above standard for Problem Solving, Reasoning, and Argument can apply grade level appropriate mathematical concepts and procedures, quantitative and logical reasoning to solve standard and nonstandard real-world and mathematical problems. They can construct viable arguments and critique the reasoning of others.

Modeling, Patterns, and Structure: Students who are at standard or above standard for Modeling, Patterns, and Structure can use grade level appropriate quantitative reasoning to interpret mathematical representations, represent real world mathematical situations using mathematical models, and use mathematical models to solve real-world and mathematical problems. They can look for and make use of structure and repeated reasoning.

Reading

Writing & Language

Mathematics

Total Score Proficiency Levels

Level 4

Level 3

Level 2

Level 1

Sub Score Proficiency Levels

+ Above Standard

✓ At Standard

! Below Standard

⊘ Insufficient Data

ID Name

ID	Name	Total Reading Scale Score	Reading Proficiency Level	Subscore Proficiency Levels				Total Writing & Language Scale Score	Writing & Language Proficiency Level	Subscore Proficiency Levels			Total Mathematics Scale Score	Mathematics Proficiency Level	Subscore Proficiency Levels				
				Literary Text	Informational Text	Comprehension	Analysis and Interpretation			Expository Writing Analysis	Argument Writing Analysis	English Language Conventions			The Number System and Expressions & Equations	Functions	Geometry and Statistics & Probability	Problem Solving, Reasoning, and Argument	Modeling, Patterns, and Structure
01	Katheryn Deberry	550	Level 3	✓	✓	✓	!	550	Level 3	✓	✓	!	562	Level 3	✓	✓	✓	✓	!
02	Cythia Sonnenberg	555	Level 3	✓	✓	✓	!	551	Level 3	✓	✓	!	564	Level 3	✓	✓	✓	✓	!
03	Kemberly Griffith	553	Level 3	!	✓	✓	✓	560	Level 3	✓	✓	✓	549	Level 3	!	!	✓	✓	✓
04	Tonisha Benshoof	567	Level 2	+	✓	+	✓	573	Level 3	✓	+	✓	571	Level 4	+	+	✓	+	✓
05	Stefania Wingo	550	Level 2	✓	✓	✓	+	572	Level 3	✓	✓	+	562	Level 3	✓	✓	✓	✓	+
06	Mozell Streicher	560	Level 3	✓	✓	✓	✓	562	Level 3	✓	✓	✓	557	Level 3	✓	✓	✓	✓	✓
07	Chas Cedeno	554	Level 3	!	✓	✓	!	559	Level 3	✓	✓	!	535	Level 2	!	!	✓	✓	!
08	Jann Pettit	569	Level 4	+	✓	+	✓	547	Level 3	✓	!	✓	543	Level 3	✓	✓	✓	!	✓
09	Rheba Baily	573	Level 3	✓	+	✓	+	574	Level 4	+	✓	+	570	Level 3	✓	✓	+	✓	+
10	Gisele Mercier	579	Level 4	+	+	+	+	562	Level 3	✓	+	✓	573	Level 3	✓	✓	✓	+	+
11	Soon Drennan	553	Level 3	✓	✓	!	✓	541	Level 3	✓	!	✓	559	Level 3	✓	✓	✓	!	✓
12	Guillermina Van	554	Level 3	✓	✓	!	✓	539	Level 3	✓	!	✓	554	Level 3	✓	✓	✓	!	✓
13	Mozell Streicher	537	Level 2	!	!	!	!	571	Level 3	✓	✓	+	553	Level 3	!	✓	✓	✓	!
14	Providencia Greek	549	Level 3	!	✓	!	✓	551	Level 3	✓	!	✓	540	Level 2	!	!	✓	!	✓

Reading : Students Below Standard in Subscore Areas

Literary Text	Total Scale Score	Proficiency Level
Katheryn Deberry	340	Level 1
Cythia Sonnenberg	370	Level 2
Kemberly Griffith	380	Level 2

Informational Text	Total Scale Score	Proficiency Level
Tonisha Benshoof	340	Level 1
Stefania Wingo	370	Level 2
Mozell Streicher	380	Level 2

Comprehension	Total Scale Score	Proficiency Level
Chas Cedeno	340	Level 1
Jann Pettit	346	Level 1
Rheba Baily	380	Level 2
Gisele Mercier	390	Level 2

Analysis and Interpretation	Total Scale Score	Proficiency Level
Soon Drennan	340	Level 1
Guillermina Van	346	Level 1
Mozell Streicher	380	Level 2
Providencia Greek	380	Level 2
Kent Mccarville	390	Level 2

Writing & Language : Students Below Standard in Subscore Areas

Argument Writing Analysis	Total Scale Score	Proficiency Level
Tandra Kube	340	Level 1
Stefanie Roesner	370	Level 2
Krissy Surace	380	Level 2

Expository Writing Analysis	Total Scale Score	Proficiency Level
Beatriz Sivils	370	Level 2

English Language and Conventions	Total Scale Score	Proficiency Level
Karima Sapien	370	Level 2

Mathematics Concepts and Procedures : Students Below Standard in Subscore Areas

Functions	Total Scale Score	Proficiency Level
Leonardo Vallance	340	Level 1
Almeta Green	370	Level 2
Coretta Paulhus	380	Level 2

The Number System and Expressions & Equations	Total Scale Score	Proficiency Level
Mireya Walberg	340	Level 1
Ines Beckler	370	Level 2
Bok Kruse	380	Level 2

Mathematical Practices: Students Below Standard in Subscore Areas

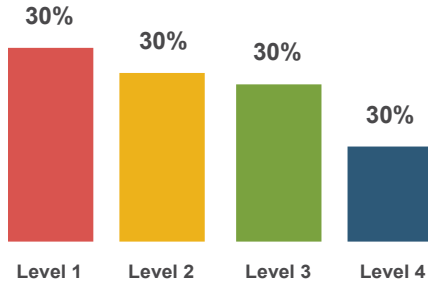
Geometry and Statistics & Probability	Total Scale Score	Proficiency Level
Elenor Fowles	340	Level 1
Grisel Helmick	370	Level 2
Trenton Mickens	380	Level 2

Problem Solving, Reasoning, and Argument	Total Scale Score	Proficiency Level
Elwood Rendon	340	Level 1
Lindsey Guillen	346	Level 1
Horace Harold	380	Level 2
Shonna Huston	390	Level 2

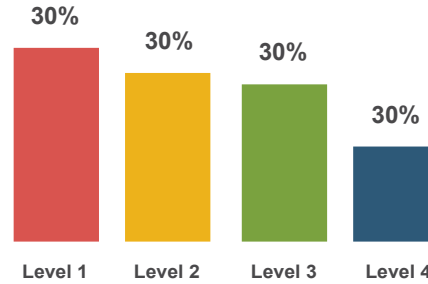
Modeling, Patterns, and Structure	Total Scale Score	Proficiency Level
Emelia Straley	340	Level 1
Stephan Sparks	346	Level 1
Mandi Arms	380	Level 2
Kyoko Comeaux	390	Level 2
Arla Fellman	390	Level 2

All Students

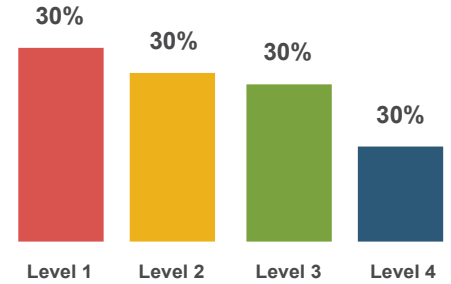
Reading



Writing & Language



Mathematics



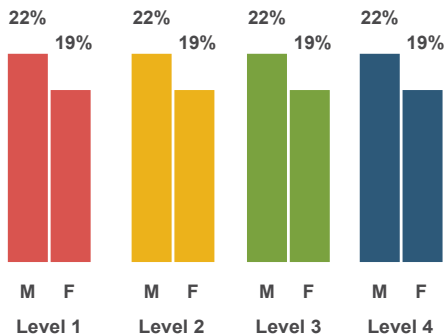
Levels 3 and 4: These students are on track for college and career readiness.

Level 2: These students may need targeted instructional support to progress toward level 3.

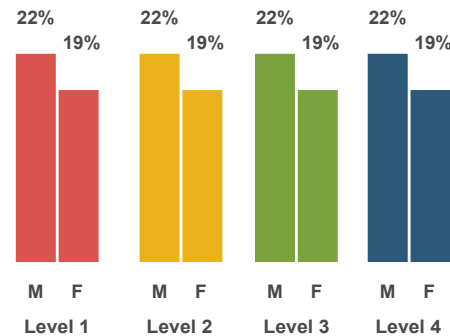
Level 1: These students may need significant and long-term targeted instructional support to progress toward level 3.

Male/Female

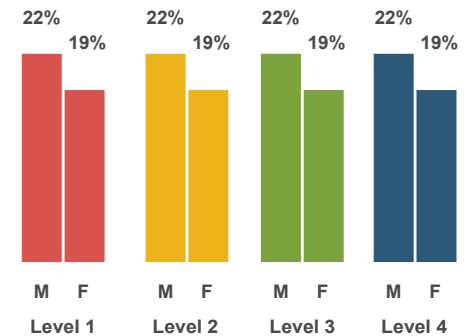
Reading



Writing & Language



Mathematics



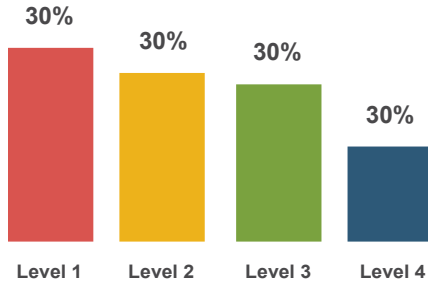
Levels 3 and 4: These students are on track for college and career readiness.

Level 2: These students may need targeted instructional support to progress toward level 3.

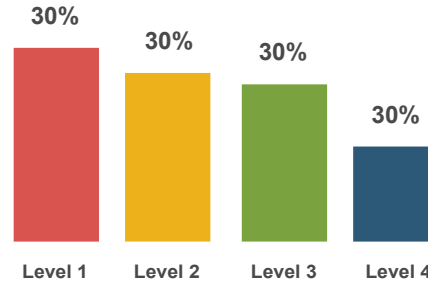
Level 1: These students may need significant and long-term targeted instructional support to progress toward level 3.

Subgroup 1

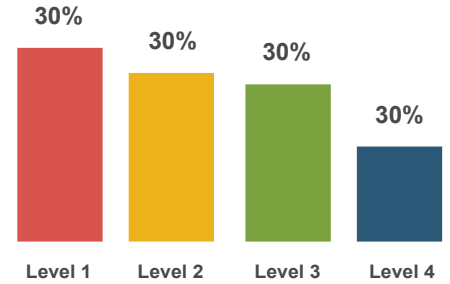
Reading



Writing & Language



Mathematics



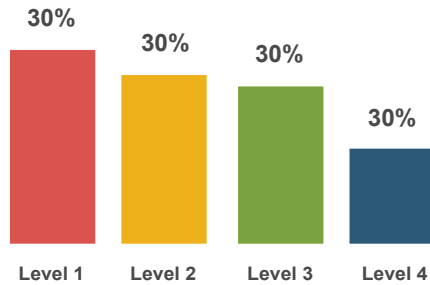
Levels 3 and 4: These students are on track for college and career readiness.

Level 2: These students may need targeted instructional support to progress toward level 3.

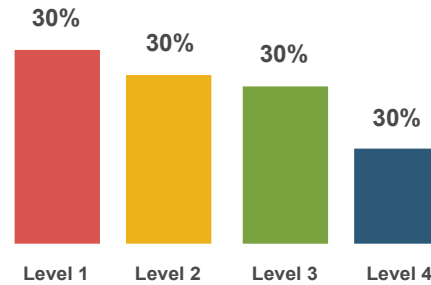
Level 1: These students may need significant and long-term targeted instructional support to progress toward level 3.

Subgroup 2

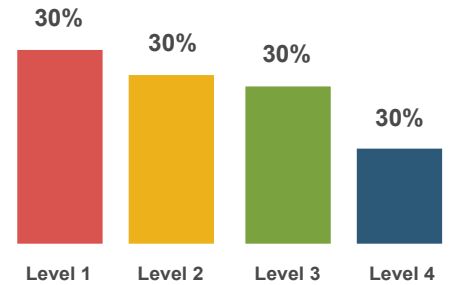
Reading



Writing & Language



Mathematics



Levels 3 and 4: These students are on track for college and career readiness.

Level 2: These students may need targeted instructional support to progress toward level 3.

Level 1: These students may need significant and long-term targeted instructional support to progress toward level 3.



Item Analysis Report

Individual
Spring 2017 Administration

School :
School ID :
District :
Grade : 8
Classroom :

Reading					Examinees with Correct Response			
Item	Targeted Standard	Subscore Category	Similar Item on Practice Test	Item Difficulty	Classroom	School	District	National
ID: 10784	10784	Literary Text	10784	Easy	Correct	15%	15%	15%
ID: 10784	10784	Literary Text	10784	Medium	Incorrect	22%	22%	22%
ID: 10784	10784	Literary Text	10784	Medium	Correct	12%	12%	12%
ID: 10784	10784	Informational Text	10784	Difficult	Correct	15%	15%	15%
ID: 10784	10784	Informational Text	10784	Difficult	Incorrect	12%	12%	12%
ID: 10784	10784	Informational Text	10784	Medium	Correct	20%	20%	20%
ID: 10784	10784	Comprehension	10784	Difficult	Correct	5%	5%	5%
ID: 10784	10784	Comprehension	10784	Medium	Incorrect	27%	27%	27%
ID: 10784	10784	Comprehension	10784	Difficult	Correct	10%	10%	10%
ID: 10784	10784	Analysis and Interpretation	10784	Easy	Correct	47%	47%	47%
ID: 10784	10784	Analysis and Interpretation	10784	Medium	Incorrect	23%	23%	23%

¹ See [url] for Practice Tests ² Easy = 1 - 33% | Medium = 34 - 66%, | Difficult = 67 - 99% ³ Percentage of correct responses for all current eMPower users

Writing & Language					Examinees with Correct Response			
Item	Targeted Standard	Subscore Category	Similar Item on Practice Test	Item Difficulty	Classroom	School	District	National
ID: 10784	10784	Expository Writing Analysis	10784	Easy	Incorrect	15%	15%	15%
ID: 10784	10784	Expository Writing Analysis	10784	Medium	Correct	22%	22%	22%
ID: 10784	10784	Expository Writing Analysis	10784	Medium	Correct	12%	12%	12%
ID: 10784	10784	Argument Writing Analysis	10784	Difficult	Incorrect	15%	15%	15%
ID: 10784	10784	Argument Writing Analysis	10784	Difficult	Incorrect	12%	12%	12%
ID: 10784	10784	Argument Writing Analysis	10784	Medium	Correct	20%	20%	20%



Item Analysis Report

Individual
Spring 2017 Administration

School :
School ID :
District :
Grade : 8
Classroom :

Writing & Language					Examinees with Correct Response			
Item	Targeted Standard	Subscore Category	Similar Item on Practice Test	Item Difficulty	Classroom	School	District	National
ID: 10784	10784	English Language Conventions	10784	Easy	Correct	15%	15%	15%
ID: 10784	10784	English Language Conventions	10784	Medium	Incorrect	22%	22%	22%
ID: 10784	10784	English Language Conventions	10784	Medium	Correct	12%	12%	12%

¹ See [url] for Practice Tests ² Easy = 1 - 33% | Medium = 34 - 66%, | Difficult = 67 - 99% ³ Percentage of correct responses for all current eMPower users

Mathematics					Examinees with Correct Response			
Item	Targeted Standard	Subscore Category	Similar Item on Practice Test	Item Difficulty	Classroom	School	District	National
ID: 10784	10784	The Number System and Expressions & Equations	10784	Easy	Correct	15%	15%	15%
ID: 10784	10784	The Number System and Expressions & Equations	10784	Medium	Correct	22%	22%	22%
ID: 10784	10784	Functions	10784	Difficult	Correct	15%	15%	15%
ID: 10784	10784	Functions	10784	Difficult	Incorrect	12%	12%	12%
ID: 10784	10784	Functions	10784	Medium	Incorrect	20%	20%	20%
ID: 10784	10784	Geometry and Statistics & Probability	10784	Difficult	Correct	5%	5%	5%
ID: 10784	10784	Geometry and Statistics & Probability	10784	Medium	Incorrect	27%	27%	27%
ID: 10784	10784	Geometry and Statistics & Probability	10784	Difficult	Correct	10%	10%	10%
ID: 10784	10784	Modeling, Patterns, and Structure	10784	Easy	Incorrect	47%	47%	47%
ID: 10784	10784	Modeling, Patterns, and Structure	10784	Medium	Correct	23%	23%	23%

¹ See [url] for Practice Tests ² Easy = 1 - 33% | Medium = 34 - 66%, | Difficult = 67 - 99% ³ Percentage of correct responses for all current eMPower users

Appendix 5: eMPower Test Security Policies and Procedures



Introduction

Measured Progress makes every effort to support you, users of eMPower Assessments, as you prepare to manage orderly test administrations. We also take test security seriously in order to protect the

- privacy of student data;
- integrity of the test data that families and educators rely on to help students achieve their academic potential; and
- security of all eMPower test content.

Our test security policies and procedures for eMPower Assessments are designed to provide those protections and help you meet your information needs. We know that you and your schools' staffs are highly experienced in managing state and district test administrations and that you manage secure test content and materials and test administrations in a professional manner. Our policies and procedures for eMPower test security rely on that experience and professionalism, as well as close collaborative efforts with our customers to protect test security and data privacy and integrity.

In fact, we rely on the professional, ethical cultures of schools and the effective delivery of test administration training as part of preventing risks of test security breaches and irregular test administrations. In addition to this document, the *Test Administration Manual* and *Test Coordinator Manual* specify roles and responsibilities for protecting secure print and online content and ensuring appropriate test administration environments and procedures.

Failure by district or school administrators, teachers, or students to follow test security policies can create test security incidents. Whether intentional or unintentional, irregularities in testing (improper behavior, unforeseen illness, cheating, and/or security breaches) can either give a student an unfair advantage or compromise the secure administration of the assessments. It is the duty of all those with access to test materials to protect the materials and the validity of results. Consequences of misconduct could result in delays in reporting results, invalidation of results, and/or discipline in accordance with district policies.

Security Incident Definitions

Measured Progress classifies security incidents into three categories: minor, moderate, and severe. We define and give examples for each category and outline prevention and resolution in regards to these categories. Note that we are able to determine whether test security incidents create minor, moderate, or severe impacts only after investigation and resolution of an incident.

Minor

Improper behavior or minor disruptions have low potential impact on individuals or groups who are testing and have low potential risk of affecting student performance, test security, or validity. These irregularities are considered MINOR and may include but are not limited to:

- a. Student arrives late.
- b. Student or staff makes distracting motions or sound while testing.
- c. Student is not focused on the test or constantly looking around.
- d. Student leaves the test due to illness.
- e. Student leaves an entire section or test blank.
- f. Student randomly marks answers on test or answers in a pattern.
- g. Student unintentionally submits test before completion.
- h. Staff gives incorrect instructions or deviates from the directions for administration.
- i. Staff unlocks test section by mistake.
- j. All students need to leave the room during testing (fire drill, emergency evacuation).

Moderate

Serious misconduct before, during, or after testing may have high potential impact to individuals or groups who are testing and may affect student performance, test security, and validity. These irregularities are considered MODERATE and may include but are not limited to:

- k. Student unintentionally uses incorrect login.
- l. Student leaves the testing room without supervision or permission.
- m. Student moves ahead in test (section mistakenly unlocked).
- n. Staff provides incorrect accommodations for student.
- o. Staff unlocks test section intentionally prior to appropriate time.
- p. Staff allows a test session to be tested over multiple days.
- q. Disruption of online access to testing system.

Severe

Security breaches, such as cheating or stealing test content, are events that pose a potential threat to the validity of the test and the loss of copyrighted assets, and may result in removal of the test item(s) from future testing. These breaches are considered SEVERE and may include but are not limited to:

- r. Student intentionally uses incorrect login (taking the test for someone else).
- s. Student copies answers or provides answers during testing.
- t. Students discuss test questions during breaks.
- u. Student accesses a cell phone or recording device to find answers or to record test items.

-
- v. Student removes test materials from the testing room.
 - w. Student or staff disseminates or discusses test content to others within school or district or via public forums (social media, websites) before, during, or after testing.
 - x. Staff loses login information (printed tickets are missing) or a theft occurs of login information before testing.
 - y. Staff loses paper test forms or a theft occurs of the paper test forms before or after testing.
 - z. Staff provides students with non-allowable materials or devices during testing.
 - aa. School or district staff coaches, provides answers, or modifies student responses.
 - bb. Staff resets a test to give student a second attempt at testing.
 - cc. Staff leaves room unsupervised during testing.
 - dd. Staff intentionally or unintentionally administers a secure test for practice.
 - ee. Unauthorized person(s) accesses online test content or student records.

Students and educators often wonder how far the rules on protecting test security extend. Clearly, broadcasting test item content and reading passages by posting on the web, using social media, or discussing them with colleagues or friends compromises test security. In addition, students and teachers may be aware of the main ideas of some test item content and reading passages before a test administration (e.g., by recalling a previous test administration). Measured Progress’s position is that discussing the topic of a reading selection or the content of test items is most likely a security violation. Our advice is to avoid such discussions.

One exception may be family conversations, where parents may ask about their child’s experience in taking eMPower Assessments. Here, general discussion of reading topics and the general nature of test items may be appropriate—as long as these general discussions do not extend beyond immediate family discussions.

Protection of Data and Prevention of Security Violations

The goal of our test security policies and practices is to protect the privacy of eMPower Assessments users, the integrity of eMPower test scores and related information, and the security of eMPower test content. These protections require close collaboration between Measured Progress and all eMPower users. We pursue this goal by putting in place procedures and other measures to prevent test security violations.

Training

Training on the identification of test security incidents and testing irregularities and the role that individuals play in protecting test security are crucial to protecting test security and data integrity. Training can help avoid inadvertent test security threats and minimize the risk of intentional security breaches. Test coordinators are required to train all staff who administer and proctor eMPower administrations to review essential information, including test security and ethics and roles/responsibilities. In addition to the *Test Coordinator Manual* and *Test Administration Manual*, which identify our requirements for all school personnel involved in eMPower test administrations, Measured Progress will provide videos to help with this training.

Responsibilities

All individuals in a school or district have the responsibility to protect the security of eMPower Assessments. Any individuals authorized to have access to secure materials must follow the requirements and should not participate in, encourage, or fail to report any irregularity or act of misconduct. Security protocols apply to tests, test questions, answer sheets, and student responses that are not made public by Measured Progress. All of these materials are confidential and must not be distributed outside of testing time or to anyone who is not testing. All secure materials must be returned to Measured Progress after testing is complete. Only school personnel authorized by the district test coordinator should handle secure materials. Students should never transport secure test materials, and all materials should be locked in a storage area with access limited to only authorized staff when not actively testing. The responsibilities of test coordinators, test administrators, and all individuals with access to secure materials are listed below.

District Test Coordinator

- Review plans for maintaining test security with staff.
- Authorize and train personnel to act as test site coordinators (building) and test administrators (proctors).
- Provide copies of the test security requirements to all individuals with access to secure materials.
- Instruct students on test security requirements.
- Sign the *Test Security Agreement*, signifying that you and any test administrators or individuals with access to secure materials understand the test security requirements and will abide by and enforce the requirements.
- Follow local policies and procedures to ensure proper test security (tests are administered without conflicts, on prescribed days, and in correct order).
- Keep secure print materials locked, and account for all materials at the end of each day of testing.
- Return all secure print materials for paper-pencil tests to Measured Progress according to the packing instructions found in the *Test Coordinator Manual* (if using paper-pencil tests).
- Report any test administration irregularities and test security violations to Measured Progress.
- Support and participate in efforts by Measured Progress to detect possible test security violations and investigate possible violations that warrant follow-up.

Test Administrator

- Review the *Test Administration Manual* and all test security requirements before administering test sessions.
- Attend training in test security requirements.
- Administer tests during the prescribed testing window, on designated days, and in the order determined by your district.
- Accurately follow the directions in the *Test Administration Manual*.
- Prevent the use of prohibited materials, technology, or tools.

-
- Consistently monitor the test room to ensure that students are working on the correct sessions/sections.
 - Do not leave students unsupervised during testing, including during breaks.
 - Ensure that students do not consult notes, books, other students, or school personnel during testing.
 - Do not coach students or alter any student responses.
 - Do not read or review student responses.
 - Report any test administration irregularities and test security violations to your Test Coordinator.
 - Cooperate with and support any follow-up investigations.

Other Personnel with Access to Secure Materials or Present during Test Administration

- Attend training in test security requirements.
- Make sure all materials are secure at all times.
- Do not allow unauthorized people to access testing locations.
- Do not leave secure materials unattended unless locked in storage.
- Do not review, duplicate, or discuss secure materials before, during, or after administration.
- Do not remove secure materials from school buildings.
- Do not discard, recycle, or destroy (with exception for contaminated materials) any secure test materials.
- Report any test administration irregularities and test security violations to your Test Coordinator.
- Cooperate with and support any follow-up investigations.

Prevention Measures

Measured Progress also has a role in preventing cheating and the exposure of secure test content during or after administration. With the cooperation of our customers, we will analyze test data for anomalies to identify evidence of possible exposure of secure test content, cheating among students, possible interventions by educators as students take the test, or tampering with student responses. Measured Progress also regularly replaces items and reading selections to avoid overexposure. This is a standard practice that helps protect test security and data integrity. Some items and reading selections are repeated occasionally to accomplish psychometric tasks that are crucial to data integrity and enable some test security checks.

Preventing test security violations may be the most important part of providing the protections needed. Some common security incidents and ways to mitigate these incidents are in the table below.

Common Security Incidents	Prevention Measures
Disorderly testing sessions that can distract students and raise the risk of student cheating	Close familiarity with eMPower test administration and security policies and practices
	Rigorous training of all district and school staff involved in test administrations
	Promotion of cultures of professional ethics and behavior in schools and throughout the school district
Exposure of secure test content, including test items, reading passages, etc., before, during, and after test administrations	Security controls and chain of command for all printed material delivered to schools and the district
	Arrangement of online test administration locations that screen test content from viewing by anyone other than an examinee
	Identifying and training district and school staff who are responsible for protecting secure material
	Monitoring of testing sites and test administrations
Cheating during test administrations	Random and targeted observations of schools during testing and of test administration sessions

Reporting and Investigation of Possible Test Irregularities and Security Violations

We all know that test security violations do occur. Sometimes they occur inadvertently, and most often they are relatively minor. Sometimes, test takers and educators are involved in serious, even blatant test security violations, despite the existence of test security requirements. If incidents do occur, district and school test coordinators must ensure that all test security incidents are documented and proper action is taken at the time of the incident. The test site (school) coordinator is responsible for notifying the district test coordinator of any security breaches or testing irregularities that occur in the administration of the test. Test coordinators are responsible for notifying Measured Progress via the *Testing Irregularity Reporting Form* or phone of any incidents that occur before, during, or after testing. If the incident requires a follow-up, Measured Progress will send a case number and next steps to the submitter and to the district test coordinator via email. Invalidation of a test (individual or group) will be determined after an investigation and consultation between the district test coordinator, district administrators, and Measured Progress. All district and school personnel are required to cooperate with and support follow-up investigations.

Test Irregularity Reporting Process

Depending on the severity of incident, please follow the required action reporting steps below. The *Testing Irregularity Reporting Form* can be found at <https://empower.measuredprogress.org>. The form should be completed and posted to your secure FTP site and your Measured Progress Account Manager should be notified. Please do not email the form. Enter student ID numbers and the first three letters of each student’s last name

with first initial in the form; do not use student names. If the incident requires a follow-up, follow the directions provided in the email you receive in response to filing the form.

Minor

1. Site staff (proctor or administrator) takes corrective actions, notifies Test Coordinator.
2. Site staff mitigates or resolves incident as necessary (pause or reset of test).
3. Test Coordinator reviews the information provided by the person reporting the occurrence against the definitions to verify that the occurrence is a test security incident.
4. Test Administrator or Proctor changes test settings for the student or students in TestConnect to reflect irregularity report.
5. Test Coordinator reports the incident to Measured Progress using the *Testing Irregularity Reporting Form* within **48** hours.

Moderate

1. Site staff (proctor or administrator) takes corrective actions, notifies Test Coordinator.
2. Site staff mitigates or resolves incident as necessary.
3. Test Coordinator reviews the information provided by the person reporting the occurrence against the definitions to verify that the occurrence is a test security incident.
4. Test Administrator or Proctor changes test settings for the student or students in TestConnect to reflect irregularity report.
5. Test Coordinator reports the incident to Measured Progress using the *Testing Irregularity Reporting Form* within **24** hours.
6. Measured Progress responds with next steps for district.

Severe

1. Site staff (proctor or administrator) investigates, mitigates, or resolves as possible, notifies Test Coordinator immediately.
2. Test Coordinator reviews the information provided by the person reporting the occurrence against the definitions to verify that the occurrence is a test security incident.
3. Test Administrator or Proctor changes test settings for the student or students in TestConnect to reflect irregularity report.
4. Test Coordinator **immediately** reports the incident to Measured Progress via phone and then uses the *Testing Irregularity Reporting Form* within **24** hours.
5. Measured Progress responds with next steps for district.

To expedite the processing of your incident or appeal, during any follow-up please provide Measured Progress with any additional information that is requested.

Investigations and Resolution

Because student privacy and district data integrity are important to you, and reliability and validity of eMPower test content is important to all of us, together we are obligated to resolve all suspected, alleged, and supported test administration irregularities and security violations.

Investigations may be simple or require rigorous, sensitive, professional inquiry and follow-up. For example, follow-up investigations may be simple, such as asking a test administrator to clarify a report that a disruption occurred during test administration. Other follow-up investigations may be complicated and highly sensitive—such as investigating reports that students were coached on item responses during test administration, that a particular testing group or school may have had access to test items before the test administration, or that there was educator intervention after student test taking. Follow-up investigations may be undertaken by district staff, at the request or approval of Measured Progress, or by a third party hired by or approved by Measured Progress.

Measured Progress recognizes that in most cases no single report or piece of evidence is adequate to support an allegation of cheating or other test security violations. We also recognize that no single protocol is adequate for all situations and contexts for weighing evidence to draw conclusions and take corrective, punitive, or other actions. Evidence must be reviewed to determine whether it indicates and supports the need for further investigation and whether it indicates and supports the need to take corrective, punitive, or other actions to resolve a security incident. The types, amounts, and strength of evidence required will depend on the suspected or alleged violation, the extent of harm that results from the violation, and the severity of the sanctions, damages, or claims to be imposed on violators.

Measured Progress will work with districts to review substantiated evidence (within legal limitations) of a security breach and determine programmatic corrective measures needed and make recommendations to mitigate risk in the future. Measured Progress will follow its change order process to determine the level of corrective measures needed and, once mutually agreed to, will enact the corrective measures. Districts may be asked to take action in a school or with school or district personnel who may be responsible for a test administration irregularity to prevent similar errors in the future, or take appropriate personnel actions for educators who are responsible for significant test security violations. In the event of a security breach or infringement of its intellectual property, Measured Progress reserves the right to take appropriate action.

Support

If you have questions regarding the security policies and procedures or need support throughout the irregularity reporting process, please contact Measured Progress product support at productsupport@measuredprogress.org or call 866-699-0822 between the hours of 8:00 a.m. and 5:00 p.m. ET.

Appendix 6: eMPOWER Testing Irregularities Reporting Form



Instructions

To report a testing irregularity, complete and post this form to your secure FTP site and notify your Measured Progress Account Manager. Please do not email the form. Enter student ID numbers and the first three letters of each student’s last name with first initial in the form; do not use student names. If the incident requires follow-up, follow the directions provided in the email you receive in response to filing the form. Please keep any documentation associated with the incident for one year. Measured Progress classifies security incidents into three categories: minor, moderate, and severe. The tables below list examples of irregularities that are possible at each severity category, but it is not an exhaustive list.

Examples of Irregularity Type	Required Actions
<i>Minor</i>	
<ul style="list-style-type: none"> a. Student arrives late. b. Student or staff makes distracting motions or sound while testing. c. Student is not focused on the test or constantly looking around. d. Student leaves the test due to illness. e. Student leaves an entire section or test blank. f. Student randomly marks answers on test or answers in a pattern. g. Student unintentionally submits test before completion. h. Staff gives incorrect instructions or deviates from the directions for administration. i. Staff unlocks test section by mistake. j. All students need to leave the room during testing (fire drill, emergency evacuation). 	<ul style="list-style-type: none"> 1. Site staff (proctor or administrator) takes corrective actions, notifies Test Coordinator. 2. Site staff mitigates or resolves incident as necessary (pause or reset of test). 3. Test Coordinator reviews the information provided by the person reporting the occurrence against the definitions to verify that the occurrence is a test security incident. 4. Test Administrator or Proctor changes test settings for the student or students in TestConnect to reflect irregularity report. 5. Test Coordinator reports the incident to Measured Progress using the <i>Testing Irregularity Reporting Form</i> within 48 hours.

Examples of Irregularity Type	Required Actions
<i>Moderate</i>	
<ul style="list-style-type: none"> k. Student unintentionally uses incorrect login. l. Student leaves the testing room without supervision or permission. m. Student moves ahead in test (section mistakenly unlocked). n. Staff provides incorrect accommodations for student. o. Staff unlocks test section intentionally prior to appropriate time. p. Staff allows a test session to be tested over multiple days. q. Disruption of online access to testing system. 	<ol style="list-style-type: none"> 1. Site staff (proctor or administrator) takes corrective actions, notifies Test Coordinator. 2. Site staff mitigates or resolves incident as necessary. 3. Test Coordinator reviews the information provided by the person reporting the occurrence against the definitions to verify that the occurrence is a test security incident. 4. Test Administrator or Proctor changes test settings for the student or students in TestConnect to reflect irregularity report. 5. Test Coordinator reports the incident to Measured Progress using the <i>Testing Irregularity Reporting Form</i> within 24 hours. 6. Measured Progress responds with next steps for district.

Examples of Irregularity Type	Required Actions
<i>Severe</i>	
<ul style="list-style-type: none"> r. Student intentionally uses incorrect login (taking the test for someone else). s. Student copies answers or provides answers during testing. t. Students discuss test questions during breaks. u. Student accesses a cell phone or recording device to find answers or record test items. v. Student removes test materials from the testing room. w. Student or staff disseminates or discusses test content to others within school or district or via public forums (social media, websites) before, during, or after testing. x. Staff loses login information (printed tickets are missing) or a theft occurs of login information before testing. y. Staff loses paper test forms or a theft occurs of the paper test forms before or after testing. z. Staff provides students with non-allowable materials or devices during testing. aa. School or district staff coaches, provides answers, or modifies student responses. bb. Staff resets a test to give student a second attempt at testing. cc. Staff leaves room unsupervised during testing. dd. Staff intentionally or unintentionally administers a secure test for practice. ee. Unauthorized person(s) accesses online test content or student records. 	<ul style="list-style-type: none"> 1. Site staff (proctor or administrator) investigates, mitigates, or resolves as possible, notifies Test Coordinator immediately. 2. Test Coordinator reviews the information provided by the person reporting the occurrence against the definitions to verify that the occurrence is a test security incident. 3. Test Administrator or Proctor changes test settings for the student or students in TestConnect to reflect irregularity report. 4. Test Coordinator immediately reports the incident to Measured Progress via <u>phone</u> and then uses the <i>Testing Irregularity Reporting Form</i> within 24 hours. 5. Measured Progress responds with next steps for district.

School or District Name		
Code (use uppercase lettering)	OrganizationID (district)	OrganizationID (school)
Testing School Information	School Name	
	City, State	

Test Information	Administration	<input type="checkbox"/> Fall <input type="checkbox"/> Winter <input type="checkbox"/> Spring	Subject	<input type="checkbox"/> Reading <input type="checkbox"/> Writing/Language <input type="checkbox"/> Math
	Grade	<input type="checkbox"/> 3 <input type="checkbox"/> 4 <input type="checkbox"/> 5 <input type="checkbox"/> 6 <input type="checkbox"/> 7 <input type="checkbox"/> 8	Format	<input type="checkbox"/> online <input type="checkbox"/> paper
	Test Date		Test Admin Name	

Irregularity	Time Occurred	Type (example: moderate; k)	Description (attach separate sheet if needed)

Detail	Reporting Group ID or Student ID	Individual (I) or Group (G)	Session Code	Student Last Name (first 3 letters), First Initial	Recommend to Void Results? (Y/N)	

Test Administrator Signature _____ Date _____ Test Coordinator Signature _____ Date _____

Appendix 7: Measurement Incorporated Research Studies



Item Types

Of the hundreds of items already in production use in PEG, a large number of both short-answer and full-write item types have been scored. Our most recent traffic data from 2016 is included below and summarizes the breakdown of production scoring for our client with the largest number of AI scored items.

Table A-1: 2016 Item Types

Subject	Item Type	Test Type	Count
ELA	Short-Answer	CAT	3,177,245
ELA	Short-Answer	Research	3,206,406
ELA	Writing Extended Response	Writing Extended Response	849,972
Math	Short-Answer	CAT	581,772
Math	Short-Answer	Performance Task	3,184,071
		TOTAL	10,999,466

Although demand for PEG AI scores was already high in 2016, we are optimistic that it will continue to increase in 2017. Scoring of both short and long-form item types is already well underway for this year, while the list of items approved for AI scoring is being reviewed and increased annually.

PEG Research Studies

The PEG scoring platform utilizes new algorithms developed in-house (publication pending see tech report <https://www.dropbox.com/s/oj85rcradm6m56b/kappa.pdf>) that provably optimizes the industry standard human-machine agreement metric known as quadratic weighted kappa (QWK). Human-machine agreement is comparing 1st reader (whether it's human-scored) to the 2nd reader (most often AI scored) to see if both human and machine scored responses are in agreement. Improving this metric of agreement tends to result in higher accuracy of the scoring application.

Automated scoring engines are typically trained using human-scored writing samples. We can then measure the accuracy of the AI engine by using it to score additional human-scored writing samples that the AI has never encountered before. By comparing the AI scores to the human scores, we can assess the agreement between the two. We have made several theoretical advances that are new to the field and have led to a deeper understanding of QWK and its optimization in automated scoring.

The growing body of research and the increasing demand for large scale production scoring demonstrate the viability of AI scoring in general and MI's leadership in the AI scoring industry in particular.

The new system has been redesigned from the ground up to be a modular collection of loosely connected components, controlled by a simple set of parameters. There has been a great deal of research done over the past few decades in the fields of natural language processing, text analytics, and machine learning. PEG's modular nature allows MI's researchers to quickly and easily "plug in" new algorithms and techniques, ensuring that the system is able to stay at the cutting edge of automated scoring technology. PEG is also self-correcting so that if a new component does not increase the accuracy with which PEG scores student responses, it is automatically excluded from the final model. This self-correcting feature highlights the philosophy at the heart of the system, which is that the authority on whether a particular piece of writing embodies the writing construct being measured resides with the hand-scoring experts and rubric creators, rather than with the engineers of any particular piece of technology.

PEG's approach to measuring the writing construct begins with the assumption that the goal of the model-building process is to generate an algorithm (or model) that faithfully mimics the scoring done by the expert human readers who scored the training set. Rather than try to identify ahead of time the optimal features to measure and algorithms to use in correlating scores with features, we allow the data to drive the process, automatically finding those features and algorithms that best minimize the error rate on the training data. In order to jump-start the process, our linguists and engineers have worked together to create thousands of handcrafted features. These features measure the elements of writing that expert scorers and teachers look for when scoring student responses, as well as those elements of the text that our researchers have found commonly correlate with high and low scoring responses.

We then extend this extrinsic feature set with a theoretically infinite set of intrinsic features that can be automatically extracted from the training set corpus. These are created in a number of ways, but some of the commonly used methods involve n-grams of characters, words, parts of speech, and phrases, similarity measures, and various matrix manipulations on the underlying intrinsic and extrinsic features. If these features correlate with the scores given by the expert human readers, then they can be encoded into the model without being directly observed by the researchers. In many cases, it would not be possible to observe them explicitly, because they are too complex. Measurement Incorporated views this model-complexity as a strength. It frees PEG from the limitations of only looking for features that our engineers happen to think of and instead allows the system to leverage the collective intelligence of the humans who scored the responses in the training set.

Automated Scoring Assessment Prize (ASAP) Competition

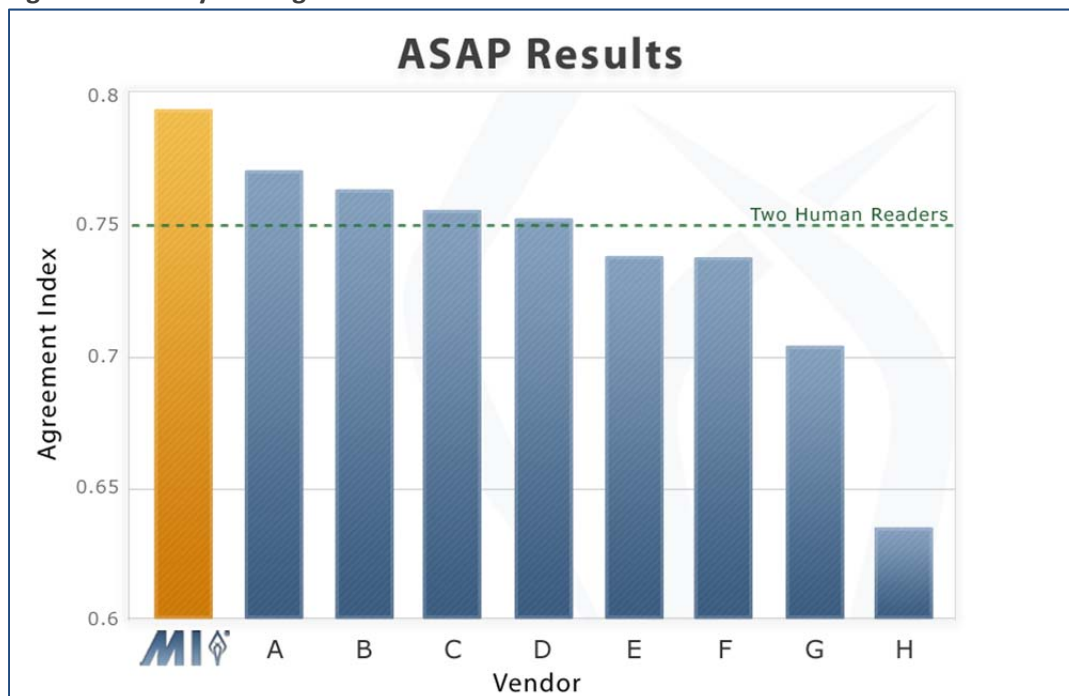
MI's essay scoring engine has scored formative and summative writing assessments since 2005. PEG's results are comparable to expert human scorers in terms of reliability and validity. Our

results have been validated in independent third party studies and in research that we have conducted on behalf of our clients.

As a direct result of our innovative scoring technologies and demonstrated scoring accuracy, PEG was selected as the first automated essay scoring product to be used to score a high-stakes summative writing assessment.

In January 2012, the Hewlett Foundation invited MI and eight other major vendors of AI scoring of student essays to participate in the Automated Scoring Assessment Prize (ASAP) competition. The ASAP competition represents the first time these major programs have been compared to one another under controlled, objectively refereed conditions. In results announced in April 2012, MI achieved the highest agreement index of the nine participating vendors (**Figure A-1**). Hewlett AI experts checked the work of each vendor, comparing their results to scores previously given to the same essays by trained human readers. They also computed agreement indices for pairs of human readers. Five vendors (MI and vendors A–D) had higher agreement indices than human readers had with each other (as shown by the dashed line at 0.75). The results demonstrate conclusively the viability of AI scoring in general and MI's leadership in particular.

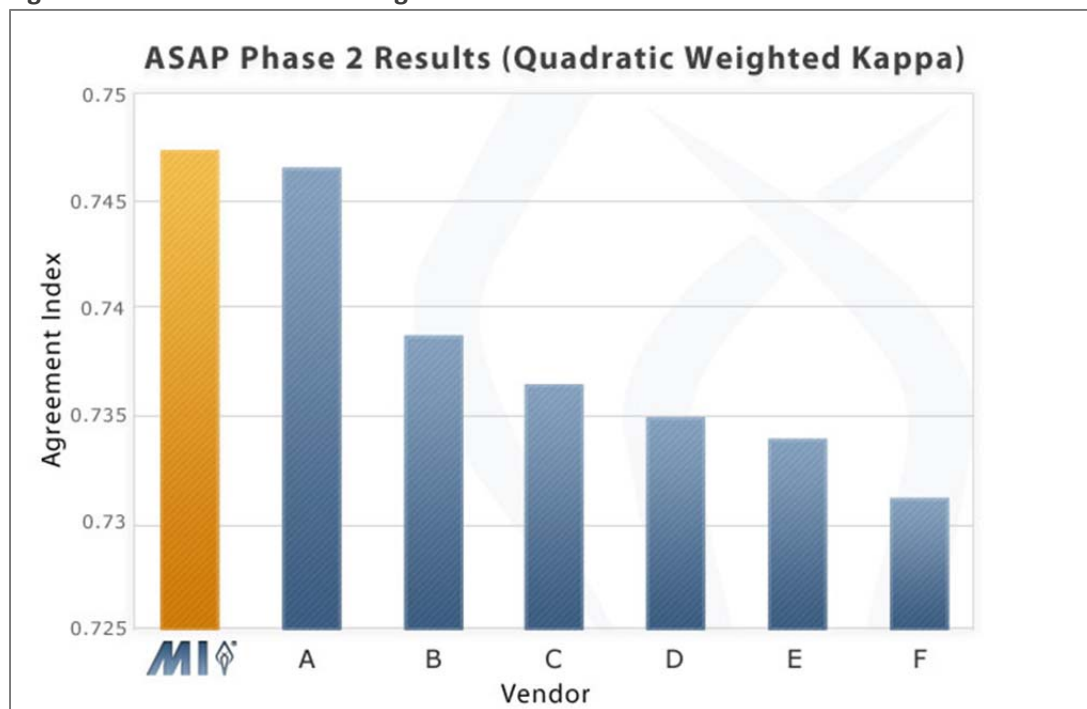
Figure A-1: Essay Scoring Results



The ASAP essay scoring contest was followed by a second competition in September 2012, designed to test accuracy in short-answer scoring. Once again, MI was the top performer based on level of agreement between AI scoring and human scores (**Figure A-2**). Competitors scored more than 22,000 responses to ten prompts, which were supplied by three different state education departments. On average, each answer was approximately 50 words in length. Some responses were more dependent upon source materials than others, and the answers covered

a broad range of disciplines, from English Language Arts to Science. The range of prompts was intended to help participants and researchers develop a better understanding of the strength of specific solutions. The Hewlett Foundation's competition determined that MI's AI scoring engine, PEG, was similar to human graders in scoring short-answer student responses and that PEG is the most capable scoring system available to automatically score student written responses to test questions. Technical methods papers outlining the public (non-vendor) winners' specific approaches along with any known limitations was released to the public at the National Council on Measurement in Education (NCME) conference in April 2013.

Figure A-3: Short-Answer Scoring Results



Note: Competition entries A, B, C, E, and F are public (non-vendor) systems that are unavailable in a production setting.

The emphasis in the first two phases of ASAP was on evaluating the degree to which current high-stakes writing assessments might be scored through automated methods. The table below shows the results of 20 vendors in essay and short-answer from both phases.

Table A-2. The top 20 competitors from the ASAP Phase 1 and Phase 2 competitions (2012)

Rank	ASAP Essay		ASAP Short-Answer	
	K_{ω}	Δ_K	K_{ω}	Δ_K
1	0.814	0.000	0.748	0.000
2	0.809	-0.005	0.747	-0.001
3	0.806	-0.008	0.739	-0.009
4	0.804	-0.010	0.737	-0.011

Table A-2. The top 20 competitors from the ASAP Phase 1 and Phase 2 competitions (2012)

Rank	ASAP Essay		ASAP Short-Answer	
	K_{ω}	Δ_{κ}	K_{ω}	Δ_{κ}
5	0.799	-0.015	0.735	-0.013
6	0.797	-0.017	0.735	-0.013
7	0.788	-0.026	0.734	-0.014
8	0.788	-0.026	0.731	-0.017
9	0.786	-0.028	0.726	-0.022
10	0.784	-0.030	0.725	-0.023
11	0.773	-0.041	0.721	-0.026
12	0.772	-0.042	0.716	-0.032
13	0.765	-0.049	0.716	-0.032
14	0.764	-0.050	0.712	-0.036
15	0.762	-0.052	0.707	-0.041
16	0.762	-0.052	0.706	-0.042
17	0.755	-0.060	0.705	-0.043
18	0.754	-0.060	0.704	-0.044
19	0.753	-0.062	0.703	-0.045
20	0.752	-0.062	0.701	-0.047

The ASAP contest completed in 2012 was where PEG first definitively proved its value in content scoring. We completed roughly a half-million content based scores in 2012 and our traffic has roughly doubled every year since (including 2016, in which we've done over 10 million) Production scoring for 2017 is well underway, with 2 million scores thus far.

Measurement Incorporated: Automated Essay Scoring (Extended Version)

Measurement Incorporated is a recognized leader in the field of performance assessment scoring (human scoring) and automated essay scoring. We have continually refined and improved our state-of-the-art automated essay scoring engine, Project Essay Grade (PEG™) and we have extended our artificial intelligence (AI) expertise to content scoring.

MI's essay scoring engine has been used to provide tens of millions of scores to students in formative and summative writing assessments since 2005. Most recently in 2015 and 2016, PEG has had large projects and partnerships recently via subcontracts, including the following states: Michigan, California and SBAC states.

PEG Functional Description

MI's AI scoring engine is able to automatically score a variety of constructed response items, from paragraphs, extended essays to short-answers that comprise of 1-2 sentences, a few

words, or single word responses, and can work with any number of predefined score-point ranges and rubric definitions. PEG's flexibility allows us to build AI models using the methods that are most effective for each type of response.

Building an AI Scoring Model – Development and Implementation

Building an AI scoring solution for an assessment is a multi-step process of analysis, model building, and training the model, in which we identify and score training responses that are then used to develop the AI scoring model. The model is calibrated prior to being released for production scoring.

Preparation

AI model building requires 1500-2000 student responses per item, depending on the complexity of the item and the complexity of the rubric. AI model building requires at least 100 student responses at each score point for each trait (some of the same papers may be used across traits).

Analysis

For extended responses, MI's essay scoring engine processes the responses and calculates more than 500 variables that describe the responses in mathematical terms. These variables range in complexity and include measures such as word count or sentence length, word choice and spelling errors, and the number and severity of grammatical errors. The most complex variables measure patterns that represent style, fluidity, smoothness of transitions, clarity of communication, and other sophisticated concepts.

Model Building

To build an essay scoring model, PEG examines the variables and features, correlates them with human scores previously assigned, and identifies those variables that have high predictive value. The variables are combined into a model and weighted according to their contribution to the scoring decision. Results from executing the model are scaled according to the scale of the target rubric.

To build a content scoring model, PEG analyzes the training set and calculates features that pertain to the content in question. PEG then sends the features to hundreds of different algorithms that compete to see which algorithms can best associate the features with the human-assigned scores. These algorithms draw on many of the latest advances in the field of machine learning to generate both linear and non-linear models. The strongest models are then automatically blended together to create a final model that retains the best elements from the various algorithms.

When gathering the training data, we generally require two independent human scores per response. While PEG only requires one score per response to build a model, the second score provides necessary information about how well two humans are able to agree on a score, which is then used as a benchmark for how well PEG's predictions should agree with the human scores.

Training the Model

Using human-scored range-finding papers, PEG continually gauges the confidence level of the evolving scoring model as it analyzes the scored papers. Once PEG analyzes a sufficient number of papers to meet the confidence threshold, the model is released for operational scoring.

PEG relies on an accurate sampling matrix of the anticipated testing population and works from a predefined score point range and rubric definition. Each scoring model is initially informed by exemplar typed responses that define the performance range and variety of student responses for each score point and each trait (if a trait rubric is being applied). Traits and rubrics can be scored for types of writing and styles of writing.

Benchmarking

For essay and content scoring, the predictive model is run against a benchmarking set of responses derived from the original training set. The benchmarking set is independent from the training set in that none of the responses it contains have been used to build the model. If the model produces results of high quality (based on human/computer inter-rater reliability measures), it can be released for production scoring.

To demonstrate accuracy, the AI engine compares its scores with the results of multiple readers on each response. When our AI content engine agrees with the humans as well as the humans agree with each other, we consider the model successful and release it to production.

Scoring Responses with the AI Engine

PEG receives batches of student responses from the test delivery system in a mutually agreed upon format (XML or plain-text). The file transfer will be encrypted and satisfy FERPA security requirements. After the batch is processed, the scored records will be returned to the client for reporting.

Built into MI's automated essay scoring engine are a variety of triggers for identifying alert papers and responses that have low confidence. PEG assigns a condition code to responses that could not be scored; these responses are sent to the assessment hand-scoring system.

MI will conduct ongoing quality checks of the AI scoring engine to ensure that the scoring models continue to perform as expected. PEG can be programmed to randomly select responses to be routed to the professional reading staff for hand-scoring according to the read-behind parameters requested by the State (for example, 25% human read-behind for new items, 10% for subsequent use of an item type).

Appendix 8: eMetric Sample Test Plan





TEST PLAN FOR

[REDACTED] 2015

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1. INTRODUCTION

This document describes the approach and methodologies to be used by the software testing team on how to plan, and test of the iTester portal application. The purpose of this document is to provide feature rich functionality for the fall 2015 in [REDACTED] based on the testing scenarios and strategies defined in this document.

1.1 THE SQA TEAM

[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]
[REDACTED]

1.2 ENVIRONMENT

The portal application will be tested thoroughly on the test site, and then will be moved to UAT. On UAT the SQA team will do a cursory check to make sure there are no deployment issues. After signing off on UAT, the application will be deployed to production, where the SQA team will perform E2E checks.

[REDACTED]
[REDACTED]
[REDACTED]

1.3 TEST TIMELINES

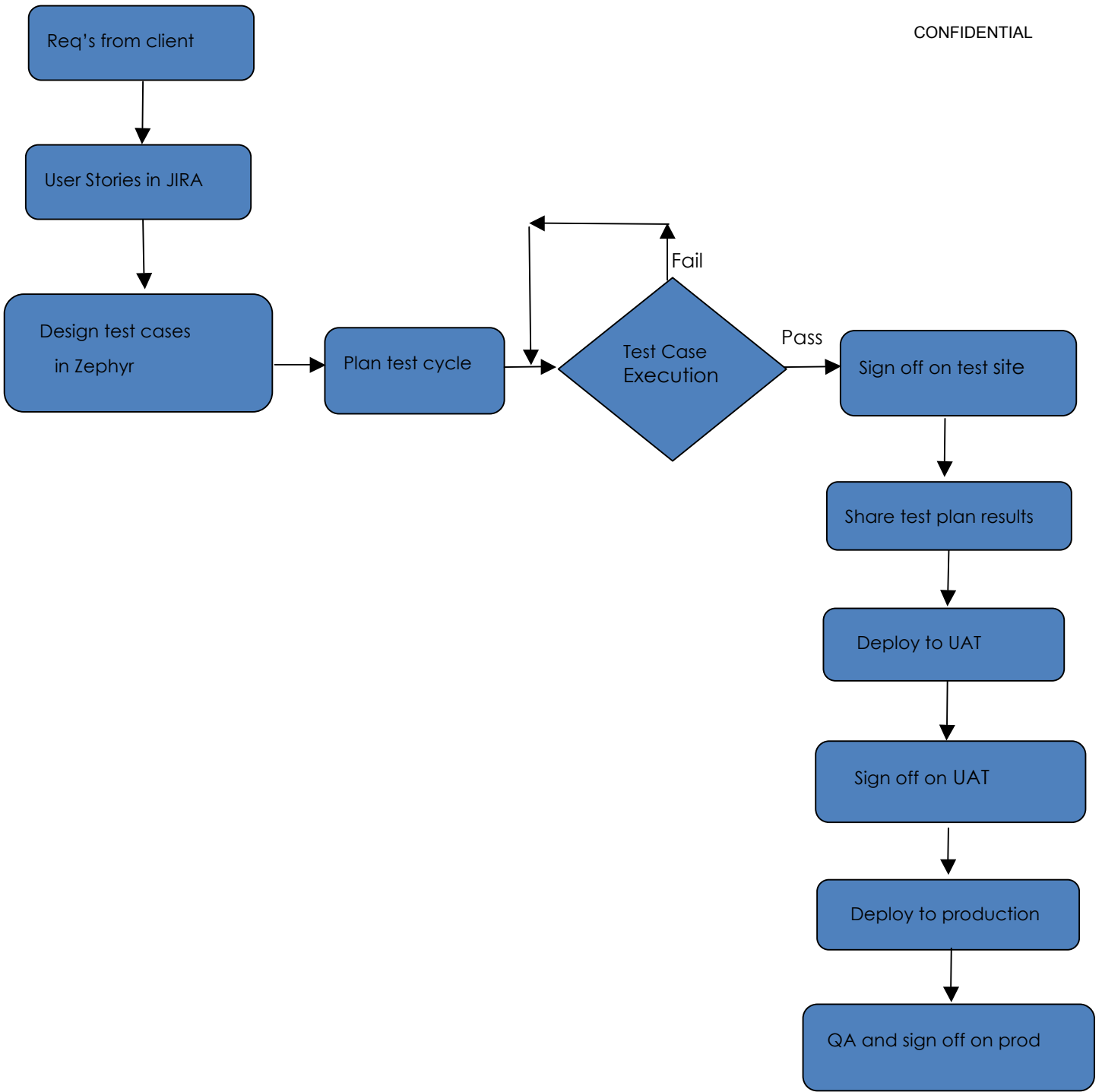
Organization file QA: 08/18/2015
Feature QA on test site: 08//2015 - 08/21/2015
First round of E2E on test site: 09/01/2015 – 09/15/2015
Practice test QA on UAT: 09/21/2015 - 09/25/2015
Production QA: 09/28/2015 – 10/02/2015

2 TEST PROCESS

iTester portal 3.1 version of [REDACTED] will be delivered for Fall 2015 and the testing process listed in this document will be used to deliver quality application. This section explains the testing strategies and methodologies that will be followed while testing the portal application.

2.1 TEST PROCESS OVERVIEW

A standard test cycle will be followed for testing this portal application.



2.2 BROWSER SUPPORT

The test cases are executed on all browsers and apps that the application supports as listed below.

Client:

Windows	MAC	LINUX	Chromebook	iPAD	N Comp	Browser
Win Vista	OSX 10.6	ubuntu 10.04	Samsung Managed	iOS 6	Win 7	Chrome
Win 7	OSX 10.7	ubuntu 11.10	Samsung Un-Managed	iOS 7		FireFox
Win 8	OSX 10.8	fedora 15		iOS 8		IE 10
Win 8.1	OSX 10.9	fedora 16				IE 11
Win 10	OSX 10.10					

Admin:

Chrome	Firefox	IE 10	IE 11	Safari
--------	---------	-------	-------	--------

3 TEST STRATEGY

Testing to ensure the functionality of the application is primarily done manually.

List of stories included in the iTester Portal 3.1 release will include:

<add link>

Test Cycle:

<add link>

██████ features (implemented for 2014-15):

<add link>

Test Cases:

Administration: <add link>

Client: <add link>

Feature list:

Administration: <add link>

Client: <add link>

3.1 FUNCTIONAL TESTING

- B. **Unit Testing** – Performed by the developers on each module as they develop the application.
- C. **Minimum Acceptance Testing** – Tested if the application is stable enough for further testing.
- D. **Feature Testing** - Testing every change request in detail to make sure it satisfies the req.
- E. **Module Testing** – Testing every component of the application in detail.
- F. **E2E Testing - Check** the entire application to make sure the process flows correctly from start to finish.
- G. **User Acceptance Testing** – Application is tested by the client on UAT site.

3.2 MINIMUM ACCEPTANCE TESTING (BETA)

This process of testing is typically conducted by the client. Testing also participates in this milestone process by providing confirmation feedback on new issues uncovered and input based on identical or similar issues detected previously. The intention is to verify that the product is ready for distribution and acceptable to the user and to iron out potential operational issues.

Throughout the UAT test cycle, bug fixes will be focused on minor issues. Testing will continue its process of verifying the stability of the application through manual testing. At the end of UAT site review by the client, we will receive a written sign off stating that the application meets all the agreed requests and is ready to be pushed to production.

4 SIGN OFF AND RELEASE

The application needs to be signed off, after going through the testing strategies listed in this document and the test case have been passed and all the major bugs have been addressed.

4.1 RELEASE SIGN OFF

After the application has been tested enough on the test site and all the test cases have been executed, at least one round of E2E needs to be planned. The purpose of E2E is to check all the components - authoring, admin, and client together to verify the data and functional integration between the components. This needs to be performed on the test site.

E2E checklist: <http://confluence.emetric.local/display/QT/ITester+portal+manual+testing+documents>

While the application is under testing process, the test case results will be recorded under the test plan in Zepher. If the test plan results look satisfactory to the SQA Manager, the application will be signed off/approved and will be ready for a release.

Test Cycle on Zepher:

<add link>

4.2 RELEASE CHECKLIST

After all the major bugs have been addressed on the test site, and the application has been signed off/approved to be updated, the application will be pushed to UAT/production.

The following checklist(s) will be followed to sign off the application on UAT/Production.

<add link>

4.3 POST RELEASE TESTING

After the final release of the application, if there are any updates or fixes on the app, it should first be checked on the test server and signed off. Then the changes should get pushed to UAT site. Upon the client sign off, it should get pushed to production.

5 DOCUMENTATION

5.1 ISSUE DOCUMENTATION

All issues will be documented under JIRA which is a project management portal. All necessary project team members should have access to JIRA for issues related to ████ project. The procedure for logging bugs on JIRA is as follows:

- A. QA person finds a bug in the application.
- B. QA person records the issue as a new bug in JIRA, linking the bug to a story if applicable, and assigning to the appropriate team member to address.
- C. The team member responsible for fixing the bug should acknowledge that the issue is being worked on by changing the status of the issue to *In Progress*.
- D. After the bug has been fixed, the team member responsible for fixing the bug should change the status to *In QA* AND assign the issue back to the QA person who reported it.
- E. The QA person should then verify whether the bug has been resolved. If it has, the QA person should change the status of the bug to *Closed/Done*. If the bug has not been fixed, the QA person should change the status to *Re-Open* and re-assign the bug to the team member responsible for fixing the bug.
- F. The Technology Manager should review these bugs on a daily basis to ensure that bugs are being resolved.

5.2 PASS/FAIL CRITERIA

Pass/Fail criteria is defined as follows:

Pass is defined when action = expected result

Fail is defined when action ≠ expected result or if there is an unexpected behavior of the application along with the expected result.

6 CHANGE HISTORY

Date	Changes	Author
07/20/2015	Document created.	[REDACTED]

Appendix 9: eMPower Work Plan



eMPowerTM _____
Sample Annual Work Plan



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1 Introduction

This annual work plan provides the overall scope and framework for the eMPower™ _____ program Grades 3-8 and the SAT at third-year high school, mathematics and ELA/literacy, for _____ This work plan documents overall project deliverables, project scope and management approach, roles and responsibilities, communication plans, schedule and budget for the current contract year. It also includes key support and reference documents. This document will be updated annually.

2 Summary

Measured Progress will work with the _____ Department of Education (_____ DOE) to deliver and score the eMPower™ _____ program in grades 3-8, as well as third-year high school assessment, which will be the College Board SAT. eMetric will serve as Measured Progress's subcontractor for the contract, providing the online platform iTester™ for test administration. College Board will serve as a subcontractor for the SAT program for the high school assessment.

3 Scope Management Approach

For this contract, scope management will be the responsibility of the Measured Progress Program Manager. The scope for this project is defined by this annual work plan and any appendices to the annual work plan. The Measured Progress Program Manager will work across operational divisions and subcontractors to establish and approve documentation for project scope, which includes deliverables, deliverable quality checklists, budget, payment schedules and maintenance of timelines.

4 Roles and Responsibilities

4.1 Measured Progress

Measured Progress is committed to providing high-quality assessments. The program team is dedicated to ensuring the deliverables and expectations set forth in this annual work plan are met to the established level of satisfaction known to both Measured Progress and the _____ DOE.

The Measured Progress Client Services Leadership and Program Management teams will provide oversight and support for the project, leading a team of other operational managers from within Measured Progress. This team has responsibility for managing the scope of the project. As such, it is also the role of this team to make team members aware of their responsibilities in order to ensure that work performed on the project is within the established scope, as defined by this document, the contract, and the proposal, throughout the duration of the project, and that status of this scope is clearly and consistently reported to _____.

The eMetric Project Manager will provide management support for the project, leading a team within eMetric. This team has responsibility for managing the scope of the online portion of the project, working in collaboration with the Measured Progress project team. As such, it is also the role of this team to make other team members aware of their responsibilities in order to ensure

that work performed on the project is within the established scope and that this scope is clearly and consistently reported to Measured Progress.

4.2 _____ Department of Education

Measured Progress will rely on the _____ DOE to provide guidance, assistance with program information, timely review of milestones as they are completed and identified in the schedule, and timely responses to project needs and questions as they arise. Measured Progress appreciates any input and/or critiques, and will work closely with the identified client point of contact(s) to ensure all goals and requirements of this project are met according to the schedule found in Appendix C.

4.3 Individual Roles and Responsibilities

Position	Name	Telephone	E-mail
Program Manager			
Financial Analyst			
Test Developers			
Technology			
Distribution			
Scoring			
DRS Project Manager			
Psychometrics Project Manager			
eMetric Project Manager			
College Board Project Manager			

5 Contract Scope Statement

This contract/program scope statement and its appendices detail the program work products and the work necessary to create the deliverables including functional specifications and schedules for the contract year.

5.1 Contract Scope Description

Measured Progress will deliver eMPower as a summative assessment for _____ at grades 3 through 8 for mathematics, reading and writing/language arts and the College Board’s SAT at third-year high school/grade11 for spring 2017. The eMPower assessments are aligned to _____’s College Ready Standards. Measured Progress will deliver eMPower using eMetric’s iTester online test administration platform. A paper-based version of the test will be produced for up to ___ test-takers statewide. Accommodations will include Braille, Large Print and online aids currently available in iTester. The testing window for grades 3 through 8 will be _____; the SAT will be administered to third-year high school students on _____. eMPower™ _____ and SAT results will be scaled together at grade 8.

Testing durations will include two Mathematics sessions averaging ___minutes total, two Reading sessions totaling ___minutes, two Writing/Language sessions totaling ___ minutes and one Direct Writing session totaling ___minutes. Practice tests will be available online prior to the operational testing window. Measured Progress will score the SCR and ECR items for all

grades and contents. Benchmarking meetings with the _____ DOE will be used to select anchor papers and rubrics for Direct Writing. Released items, including rubrics, anchor papers and annotations, will come from Measured Progress's item bank and the writing prompts administered during spring 2017.

Measured Progress will facilitate a process for development and review of achievement level descriptors (ALDs) for Direct Writing. Measured Progress, the _____ DOE and a small group of _____ educators will draft ALDs and finalize any revisions. A standard setting meeting using the modified Body of Work Method™ will take place in late summer to arrive at a pass/fail cut score for _____'s Direct Writing spring 2017 assessments.

A technical report will be produced that documents the methods of test construction, data collection and analysis, and resulting claims from the 2017 administration. A final results file will be delivered to the client and the client's reporting vendor.

5.2 Contract Deliverables

5.2.1 Meetings

Measured Progress will provide the following:

- Meeting agendas
- Meeting notes
- Plan of procedures and documentation necessary for the meeting
- Schedule meetings and arrange for meeting facilities
- Prepare meeting materials
- Lead meetings with Department/Customer staff
- Prepare and maintain documentation of procedures used/decisions made
- Meeting refreshments and meals
- Provide lodging for participants traveling from outside of _____
- Air travel or mileage/tolls reimbursement for participants
- Meeting facility fees

Meeting Type	Date	# Attendees			Location	# Mtgs	# Mtg Rms	Dur (days)	Meeting Costs				
		MP	Department of Education	Participants					Meals	Lodging	Facility	H- Stipend	S- Substitute
Planning Meetings													
TAC Meetings													
Regional Trainings													
Scoring Observation													
Standard Setting													
Benchmarking													

Meeting Costs Covered – x: MP Staff only; %: MP & Participants; &: MP, DOE & Participants

Applicable Rates

- o Airfare/Rental Cars provided only for **MP, DOE and TAC staff** traveling more than 500 miles round-trip)
- o Mileage = ____ Substitute Teacher Costs (S) = ____
- o Stipend/Honorarium Costs (H) = ____
- o Meal Expenses = ____

5.2.2 Service Center

- Standard _____ availability is M-F 7:30 a.m.–4:00 p.m. EST.
- Support is extended 6:30 a.m.–6:00 p.m. EST beginning two weeks prior to and during testing.
- Measured Progress response is requested within the day of the customer call. Calls received after 6:00 p.m. will be addressed the following morning.
- Maintenance of detailed call logs is required, including the time to resolution of each contact. Program Management will send a weekly report to _____ DOE on Wednesday of each week.
- Accepts and processes calls for materials shortages, additional materials orders and materials return shipment.
- Accepts and processes calls for all activities relating to online testing: Enrollment, Site Readiness and Setup, Coordinator Training, Practice Testing and Operational Testing.
- Provides updates for the weekly eMPower _____ team status report.

5.3 Test Design

In addition to using multiple-choice and constructed-response items from eMPower, the assessments will include newly developed and field tested extended constructed-response (ECR) writing prompts for

all grades. Paired passages and writing prompts were developed and field tested online in November 2016 with at least ___ respondents per grade to ensure the quality of the items and that the full range of score points was possible. Each grade tested four forms containing two paired passages and one writing prompt for a total of ___ prompts field tested. The results from the Writing Field Test were benchmarked by Measured Progress and _____ DOE staff to validate rubrics and select anchor papers for each score point and hand scored by Measured Progress.

Operational field test forms of eMPower™ _____ will include the following item types:

- Selected Response
- Evidence-Based Selected Response
- Constructed Response
- Direct Writing

Further details of each grade and subject’s operational test design, form composition and durations are shown below.

Grades 3-8

- Mathematics: ___ minutes (2 sessions)
- Reading:
- Writing & Language: _____ minutes (2 sessions)
- Direct Writing: _____ minutes (2 sessions)

Approximate total time: ___ minutes (not including time for reading of directions)

5.3.1 Test Construction

This information is presented in the Test Maps and Field Test Plan.

5.3.2 Publishing

This information is presented in the Print Specifications Template.

5.3.2.1 Large Print and Braille Requirements/Specs

Form 1 of all test books is available in large print and Braille.

5.3.3 Printing

Given the small quantity of print materials, test booklets and answer documents will not be class packed. All printed test booklets and answer documents will be secure. Documents will have a variable and static barcode for identification purposes. We will print up to ____ labels for the paper-based testing population.

Out of scope: Sample Items, RIDs and Manuals will be available as downloadable PDFs only.

5.3.4 Online Material Preparation

eMetric's iTester platform will be used to administer computer-based tests.

General Requirements: Operational Tests

1. Computer-based _____ Educational Assessments (_____ A) will be administered to students in grades 3–8 in the mathematics and English language arts content areas.
 - a. English language arts includes reading and writing.
2. The computer-based _____ testing will begin _____ and will end _____.
3. The UAT portal and client will be delivered to the _____ DOE and Measured Progress on.
4. The production portal and client will be delivered to the _____ DOE and Measured Progress on.
5. The production test kiosk will be made available to _____ DOE, Measured Progress and the field on. _____
6. The portal will be made available to schools and districts to edit student accommodations on. _____
7. Test scheduling will be available.
8. The production URL will be _____
9. The _____ User Acceptance Testing site URL will be During all administrations, computer-based testing will be available 6:30 AM–6:00 PM EST, Monday–Friday.
 - a. If a student logs in and begins a test prior to 6:00 PM, the student will be permitted to continue testing past 6:00 PM.
10. The computer-based test delivery system will be available via desktop/laptop kiosk and mobile app.

The _____ DOE has requested the following to be available to all students as “universal tools”:

- Screen zoom,
- Custom masking,
- Reverse contrast,
- Answer masking,
- Sketch and highlight, and
- Guideline.

The following accommodations will appear in the add/edit student interface accommodations tab within the portal:

- Text-to-speech English language arts
- Text-to-speech mathematics

- Color contrast
- Turn off all universal tools

Dashboard and Usage Statistics

1. A dashboard will be available in the _____ A portal only to state and admin users.
2. Data will be refreshed nightly during the testing window.
3. The following metrics will be provided in the dashboard.
 - a. Portal users – The number of unique users who logged in to the portal per day.
 - b. “Concurrent” testers – Total number of active students who successfully logged in to the _____ A client per day and by hour. Invalid username/password attempts will be excluded.
 - c. Number of tests scheduled – Cumulative total of the number of tests that have been scheduled in the current administration by test.
 - d. Number of tests completed – Total number of tests completed per day and cumulative by test.
 - e. Percentage of tests completed – Percentage of tests completed in the current administration, all tests combined.
 - f. Operating system usage – Number of operating systems by operating system type, cumulative.
4. Two metrics will be provided to the _____ DOE one time at the close of the administration:
 - a. Usage over time – Average time, in minutes, spent on the test, by test. The calculation for usage over time will exclude the time between a pause and re-login and will exclude tests that were inactive and timed out.
 - b. IP address – External IP address where a student logged in or attempted to log in to the operational test.

Sample Items

1. The sample items will be available.
2. One set of sample items will be created for each grade 3-8 (sets total) that will be accessible by all students and will each have a single username and password.
 - a. Each sample item set will include all content areas: Mathematics, Reading, Writing & Language, and Direct Writing.
3. The username and password for the mathematics sample items accessible by all students will be: username = _____, password _____.
4. The username and password for the English language arts sample items accessible by all students will be: username = _____, password _____.
5. The computer-based test delivery system will be available via desktop/laptop kiosk, mobile app, and browser.
6. Accommodations available for the sample items on the desktop/laptop kiosk and mobile app will be:
 - a. Text-to-speech English language arts ELA,
 - b. Text-to-speech mathematics,
 - c. General masking,
 - d. Reverse contrast,
 - e. Basic calculator,
 - f. Color contrast accommodation, and
 - g. Screen zoom.
7. Accommodations available on the sample items browser:

- a. General masking,
 - b. Screen zoom,
 - c. Basic calculator,
 - d. Reverse contrast, and
 - e. Color contrast.
8. The sample items will also be available as downloadable PDFs.

5.3.5 Packaging and Distribution

Measured Progress will package paper-based test materials by school with the label “_____ TESTING MATERIALS—Open immediately and inventory. Items are secure.” All test materials except Direct Writing will be shipped via UPS ground on _____. Direct Writing test materials will be shipped via UPS ground on _____.

5.3.6 Test Administration

5.3.6.1 Number of students, schools and districts

There are ____ districts and ____ schools in _____. There are approximately _____ students per grade in grades 3-8 and high school.

5.3.6.2 Training Plan and delivery

During the week of, _____ Measured Progress will conduct four in-person training sessions. Measured Progress will also produce four webinars. The topics will be:

- Test Security
- Accessibility, Tools & Accommodations
- Workshop content
- Test Administrator preparation

Measured Progress will work with the _____ DOE to create training materials that will be used to train districts and administrators on the procedures needed to ensure a successful administration. Measured Progress will develop PowerPoint presentations and handouts as well as training scripts to ensure the training is consistent, no matter who conducts the training or where/when it is conducted.

5.3.6.3 Support services

Measured Progress Service Center will provide Tier 1 support for computer-based and paper-based testing ____ weeks prior to test administration, during test administration, and ____ weeks after test administration. The Client Services program management team will provide additional Tier 1 support as needed as well as Tier 2 and Tier 3 support. eMetric will provide Tier 3 CBT support. Measured Progress also maintains a Help & Support site where information regarding the program, upcoming dates, manuals, forms, and correspondence is kept. That URL is _____

5.3.7 Online Test Delivery System

5.3.7.1 Platform information

eMetric will provide the database architecture and web application to support the online administrative and authoring system called the _____ A Portal. All users will access the portal at _____ with a unique username and password. Passwords will be sent via email on _____

eMetric will provide the database architecture and iTester 3 online testing engine client. The client will be available in three modes: kiosk, browser, and mobile app. For the operational administration, only the secure kiosk and mobile apps may be used. For the public sample items, all three modes will be used.

5.3.7.2 Technical requirements

eMetric

System Requirements – All Hardware	
Connectivity	Student devices must be able to connect to the internet via wired or wireless networks.
Screen Size	9.7” screen size or larger/ “10-inch class” tablets or larger
Screen Resolution	1024 x 768
Browsers (Used for Practice Test <u>ONLY</u>)	Internet Explorer 11 Microsoft Edge Firefox 47 Chrome browser 51 or newer Safari 8 or newer
Headphone/Earphone/Ear Buds/Microphone	Headphones/earphones/ear buds are only required for students who have a text-to-speech accommodation. Microphones are not required for the 2017 assessment.
Desktop and Laptop Specific Requirements	
CPU	1.2 GHz
Memory	2 GB
Input Device ^a	Keyboard – wired or wireless/Bluetooth mouse or touchpad
Windows [®] operating system	Windows Vista, Windows 7, 8.1, 10 (32-bit and 64-bit)
Mac OS [®] operating system	10.9 – 10.11 (64-bit only ^c)
Linux OS	Ubuntu 12.04.5 – 14.04 LTS (64-bit only) Fedora 21, 22 (64-bit only)
Tablet/Netbook/2-in-1 Specific Requirements	
iPad [®]	iOS 9.2.3
Chromebook™ notebook computer	Chrome OS operating systems 50 – 52 ^d
Windows-based tablets/netbooks/2-in-1	Windows 8.1 – 10

5.3.7.3 Concurrent users -- The eMetric student testing system has been validated to support up to 5,000 users logging in within a five-minute period.

5.3.7.4 Scoring Data Requirements

Machine-Scored Items

Specifications and requirements will be captured and agreed to in the “Machine-Scored Item Data Import Requirements” document. The machine-scored data will be exported to Measured Progress. Machine-scored data will be exported as a compressed flat file.

All selected-response items will be machine scored.

The student responses will be processed by eMetric’s scoring system and stored in the operational data store in the order that they are received.

eMetric’s scoring system is responsible for scoring all machine-scoreable student responses. These machine-scoreable responses include simple multiple-choice items with key comparison.

Human-Scored Items

Specifications and requirements for format and processing will be captured and agreed to in the “Open Response Scoring Data Import Requirements” document.

The responses will be exported from eMetric’s system and provided to Measured Progress in a compressed .zip backup file. Human-scored items will be exported as a compressed database backup.

5.3.7.5 Student data transferred between Measured Progress and eMetric will be stored on a secure server. Access to this data will be restricted via user management. Data will be received from _____ DOE as exported from WAVE. Measured Progress’ Data and Reporting Services (DRS) will validate the data according to previously defined validation rules and will provide the data to eMetric in SQL DBs utilizing agreed-to structure and layouts. See Appendix E for a Chart of Expected Data Transfers.

5.3.8 Receiving/Log-in

5.3.8.1 Login Specs

Additional materials and UPS pick up requests will be handled through the Service Center.

Measured Progress (Distribution Services) will implement procedures for collecting and separating scoreable and nonscorable materials (including unused and damaged test materials) received from schools. Measured Progress’ collection procedures shall include the capability to track unreturned test materials and trace any delayed receipt of test materials to the Measured Progress processing site.

5.3.8.2 Discrepancy Plan

After log-in is complete, a discrepancy list will be sent to Client Services. Client Services will verify the information prior to contacting the districts. The Measured Progress Program Manager will provide daily reports regarding the return of test materials for two weeks following the end of the testing window. One report will include the information pertaining to the tracking and return of scoreable test materials boxes and a second report will provide information

regarding the inventory of secure non-scoreable materials ordered and shipped versus received. The Measured Progress Service Center will contact school districts, charter schools, and State educational institutions to facilitate the return of materials and ensure pickup and return of 100% of secure test materials.

5.3.8.3 *Level of shipment*

Materials are shipped out and returned by ground shipment. For 2016-17, we will have a UPS window for the return of materials and then a ___-day pick-up two days after the close of the testing window for those districts that still have not returned materials.

5.3.8.4 Measured Progress will retain scoreable test materials for a period of one year from the last day of the test administration from which they were collected and retain non-scoreable and unused test materials for a period of six months from the last day of the test administration from which they were collected. Measured Progress is to retain electronic copies of returned test materials for the full term of this Agreement.

5.3.9 **Scanning**

Measured Progress (Operational Services) will be responsible for the scanning/imaging of student paper-based answer documents to capture all of the multiple-choice and open-ended responses for eMPower _____ assessments.

5.3.10 **Scoring**

5.3.10.1 *Scorer requirements*

Results will be provided to _____ DOE for verification by _____.

Scoring Team Leaders:

- Supervise a small group of scorers (at a ratio of 10:1)
- Possess demonstrated abilities to consistently apply approved scoring criteria to student work over multiple prior scoring projects
- Are selected for their consistency, accuracy, and their ability to supervise others

Scoring Supervisors:

- Oversee the process at the grade and content level
 - Supervise Scoring Team Leaders and meet or exceed their requirements
 - Possess applicable content knowledge
 - Demonstrate the ability to successfully train other scorers
 - Possess years of experience in supervising the scoring of large-scale assessments
- Measured Progress actively seeks a diverse scoring pool and typically employs scorers (also referred to as readers) with a broad range of backgrounds:

teachers, business professionals, graduate school students, retired educators, and the like.

- To ensure this diversity, demographic information such as gender, race, educational background, etc., will be collected.
- Potential scorers will submit documentation (resume and/or transcripts, etc.) as evidence of meeting the education and experience requirements.
- It is our standard policy to make any of our quality control reports available to our clients.

5.3.10.2 Client participation in benchmarking and scoring

Measured Progress operates three scoring facilities, including our headquarters in Dover, NH. We will plan to conduct the majority of scoring at our Dover campus in order to facilitate onsite observation by the _____ DOE. If scoring occurs at other scoring facilities, our communication system will allow the _____ DOE to listen to training from any location. If there is a specific grade or content area that the _____ DOE wishes to be onsite to observe, we will work with them to adjust schedules when possible. Benchmarking for the fall stand-alone field test will take place in Dover, NH in _____

5.3.11 Data Analysis and Reporting

5.3.11.1 All interactions with data regarding _____’s students must be handled with attention to accuracy and also with attention to protecting student privacy.

5.3.11.2 Electronic results file containing student- level results data will be available _____.

5.3.11.3 SAT results release dates are below.

5.4 Activity	5.5 Date
5.6 SAT Student Score Release	5.7 _____
5.8 SAT Data File Delivery	5.9 _____

5.4 Psychometrics

5.4.1 Technical Advisory Committee

Measured Progress will provide two one-day TAC meetings, including all logistics and support for six TAC members and the _____ DOE.

5.4.2 Technical Report

Measured Progress will produce a technical report in 2017 that, at a minimum, fulfills the requirements listed in Section 4 of the U.S. Department of Education Peer Review Notes on Technical Quality of Assessments. These requirements include a summary of the design of the assessment (test specifications, item types, description of test design in all content areas), test development process (item development, test translation procedures, item reviews, item editing, item selection, operational test draft review), test administration procedures (responsibility for administration, participation requirements and documentation, administrator training, test security and administration irregularities, administration window, service center), procedures and evidence of validity, consistency between structure of assessment and academic content standards, statistical relationships between test scores and student characteristics, procedures and evidence of reliability, including analysis at the subgroup level, consistency of student classification at the cut points, evidence of generalizability for all relevant sources, such as group variability (i.e., standard error of measurement and conditional standard error of measurement), reliability (reliability and standard errors of measurement, subgroup reliability, reporting subcategory reliability, reliability of performance-level categorization, and inter-rater consistency); classical item analysis (classical difficulty and discrimination indices, DIF analysis for ethnicity groups, ELLs, SWDs, and FRLPs; dimensionality analysis); tables of total points and total items by grade and content area at the standards, benchmark, and grade-level expectations level; procedures for improving test quality, including refreshment of items; and scoring (machine-scored items, scoring location and staff, person-scored items, reader recruitment and qualifications, methodology for scoring polytomous items, reader training, leadership training, quality control monitoring), and scaling procedures (item response theory, item response theory results, equating, equating for independently developed tests, achievement standards, reported scores).

5.5 Test Administration Support

5.5.1 Service Center support is vital to the successful administration of large-scale assessments. To best support schools and districts, Measured Progress will continue to maintain a Service Center desk dedicated to eMPower _____. It will provide a central, toll-free location for the field to call to request assistance, report problems, or ask specific questions.

5.5.2 Escalation procedures:

At a minimum, the Service Center will consist of trained service representatives responsible for receiving, responding to, and tracking calls and e-mails and routing issues to the appropriate person(s) for resolution. In addition, a program manager is available to aid the service representatives with any communications that require a higher level of program support.

5.6 Technology Support

- 5.5.3 All locations are expected to perform the Workstation Readiness system checks and to self-certify for site readiness prior to testing online.
- 5.5.4 All user guides/FAQs, webinar recordings and training presentations are accessible via the _____ Help and Support page at: Measured Progress will provide technical support to Local Education Agencies during the installation and testing of the computer-based assessment system.
 - Level 1 Support – Measured Progress Technical Product Support
 - Level 2 Support – Measured Progress _____ Program team
 - Level 3 Support – eMetric

5.7 Retention of Materials

Measured Progress will retain scoreable test materials for a period of one year from the last day of the test administration from which they were collected and retain non-scoreable test materials for a period of six months from the last day of the test administration from which they were collected. Measured Progress is to retain electronic copies of returned test materials for the full term of this Agreement.

6 Acceptance Criteria

Materials delivered to the _____ DOE, including the Test Administration Manual, School Test Coordinator Manual and communications to the field will be free from fatal flaws and will match specifications that will be approved by both the _____ DOE and Measured Progress. Test forms will adhere to the approved form layout charts. The answer documents will follow the form layout specifications.

Steps for acceptance of non-eMPower-branded product materials are as follows:

1. Whenever possible, handoffs will be scheduled for the _____ DOE to have ____ days to review documents.
2. The _____ DOE will provide feedback to Measured Progress.
3. The _____ DOE and Measured Progress will discuss the edits.
4. Measured Progress will incorporate agreed-upon edits.
5. Measured Progress will return the final document for _____ DOE to review the edits.
6. The _____ DOE will comment on or approve the edits.
7. Measured Progress will finalize the document and send to the SDE for fatal flaw review and sign off.

_____ will have an opportunity to review all eMPower-branded materials before they are released in _____. Measured Progress will consider edits recommended by the _____ DOE.

7 Project Schedule

A milestone project schedule is available in Appendix C.

8 Change Management Plan

In the course of any project, stakeholders (including the client) may uncover the need to alter the agreed-upon project scope as documented in the annual work plan, the contract and/or the proposal. For this project we will follow this change management procedure:

1. Measured Progress documents formal request to change scope using the Change Request document.

2. The Measured Progress Program Manager will work to determine the level of effort to effect change, including impact to the project schedule and budget.
3. The Measured Progress Program Manager will provide options to the _____ DOE.
4. The _____ DOE will select the appropriate option.
5. The Measured Progress Program Manager will generate a change of scope form for client approval. This may include a contract addendum.
6. The Measured Progress Program Manager will revise relevant documents, including the annual work plan, schedule and budget. They will distribute this for internal communication.

9 Billing Schedule

Billing Schedule	FY2017
November 30, 2016	
December 31, 2016	
January 31, 2017	
February 28, 2017	
March 31, 2017	
April 30, 2017	
May 31, 2017	
June 30, 2017	
July 31, 2017	
August 31, 2017	
September 30, 2017	
October 31, 2017	

10 Measurement of Success

Rider A Numbering	Rider A Pagination	Requirement Text
1.1.1.1	1	Initial project planning meeting
1.1.2.1	1	Project plan (Annual Work Plan) submitted to the Department

1.1.2.2	1	Project schedule submitted to the Department
1.1.2.3	1	Meeting notes from initial project planning meeting submitted to the Department
1.2.1.1	1	Named Project Director
1.3.1.1	1	Procurement of toll-free conference number
1.3.1.2	1	Agendas submitted to the Department
1.3.1.3	1	Hosting of conference calls
1.3.1.4	1	Posting of meeting notes to the Department
1.5.1.1	2	Agendas submitted to the Department
1.5.1.2	2	Hosting of two planning meetings
1.5.1.3	2	Meeting notes submitted to the Department
2.1.1.1	2	Assessment content aligned to _____'s College- and Career-Ready Standards
2.2.1.1	2	Successful online delivery of eMPower™ _____ for grades 3 through 8.
2.2.1.2	2	A paper-based fixed form of the assessment for grades 3 through 8.
2.2.2.1	2	A paper-based fixed form of the 2017 assessment for third-year high school/grade 11.
2.3.1.1	2	Development and production of selected-response (SR), short-constructed-response (SCR), and extended-constructed-response (ECR) item types for inclusion in online and paper-based operational test forms.
2.4.1.1	3	Delivery of sub-score data for all grades and content areas.
2.5.1.1	3	Total scheduled assessment time for grades 3 through 8 will not exceed 7 hours
2.5.2.1	3	Total scheduled assessment time for the SAT will not exceed 4 hours.
2.6.1.1	3	Item development will follow principles of Universal Design (UD).
2.6.2.1	3	Availability of online accommodations in grades 3 through 8 as well as state-approved accommodations for paper-based test-takers.
2.7.1.1	3	Online and paper-based assessments ready for students by ____

2.7.2.1	3	Paper-based assessments ready for students by ____
2.8.1.1	4	Grades 3 through 8 preliminary results available on____
2.8.2.1	4	SAT results available on ____.
3.1.1.1	4	Assessment Frameworks for grades 3 through 8.
3.1.2.1	4	Assessment Frameworks for third-year high school/grade 11.
5.1.1.1	5	Secure posting of grades 3 through 8 assessment items to the Department for review (PDFs via secure ftp).
5.1.2.1	5	Secure posting of SAT assessment items to the Department for review.
6.1.1.1	5	Grades 3 through 8 support for peer review from the Provider.
6.1.1.2	5	Third-year high school/grade 11 support from the SAT vendor partner.
7.1.1.1	5	Content security for grades 3 through 8 item authoring system and content bank
7.1.2.1	5	Restriction of grades 3 through 8 summative assessments for sale to ____ districts and schools.
7.1.3.1	5	All items for grades 3 through 8 operational administration will be field tested prior to operational use.
7.1.3.2	6	Approximately 67 percent of operational items replaced each administration
7.1.5.1	6	Secure receipt, handling, and return of paper-based SAT materials.
8.1.1.1	6	Inclusion of various item types on the grades 3 through 8 assessments
8.1.2.1	6	Inclusion of various item types on the third-year high school/grade 11 assessment
9.1.1.1	6	Limit reuse of items to 33 percent over any two consecutive years.
9.2.1.1	6	Release items from 2017 assessments for grades 3 through 8.
9.2.2.1	7	Release items from the 2017 SAT for third-year high school/grade 11.

10.1.1.1	7	Online accommodations tools for grades 3 through 8 that can be turned on and off by students
10.1.1.2	7	Online accommodations tools for grades 3 through 8 that can be turned on and off by a system administrator or proctor.
10.1.1.3	7	For Spring 2017, we will work with State to define the requirements and implement the interface to support batch uploading of accommodations.
10.2.1.1	7	Tracking of online testing accommodations for grades 3 through 8
10.2.2.1	7	Tracking of online testing accommodations for the SAT.
10.2.3.1	7	Online request processing system for SAT testing accommodations
10.3.1.1	8	Online accommodations tools a-i for grades 3 through 8
11.1.1.1	8	Production of operational test forms for 2017 test administration.
11.2.1.1	8	Production of Braille and large print test materials for all grades and content areas
12.1.1.1	8	Delivery of the SAT for third-year high school/grade 11
14.1.1.1	9	iTester 3 platform for grades 3 through 8 online assessments.
14.2.1.1	10	Platform support of required operating systems.
14.2.2.1	10	Browser support for the platform.
14.2.3.1	10	A caching solution for the platform will be provided if needed in future administrations.
14.2.4.1	10	Joint plan with the Department for OS sunsetting, if needed.
14.2.5.1	10	Disclosure of functionality limitations by OS prior to operational testing
14.2.5.2	10	Text to speech is supported across all supported devices.
14.2.6.1	10	Planning and scheduling of support of new OSs, if needed.
15.1.1.1	10	Platform support on specified devices.
15.1.2.1	10	Platform support on specified devices.

16.1.1.1	11	Specify hardware and accessory requirements on supported devices.
17.1.1.1	11	Required tools will function on Mac, Windows, and Chrome devices.
17.2.1.1	11	Comparable platform delivery on both wired and wireless devices.
17.3.1.1	12	Define bandwidth recommendations and number of concurrent testers
17.4.1.1	12	Delivery of readiness toll for LEAs.
18.1.1.1	12	Rendering quality control check of content in iTester on approved devices in Outcome 15, to include department review as indicated in Outcome 5.
19.1.1.1	12	A non-production environment for the Department to conduct application testing.
20.1.1.1	13	Completion of User Acceptance Testing activities in Measure 1.
20.1.1.2	13	Deployment of the system, for Department review, six weeks prior to testing.
21.2.1.1	13	Schedule platform reviews with the Department.
22.1.1.1	13	Access to real-time and archived user statistics.
22.2.1.1	14	Production of a system activity report.
23.1.1.1	14	A toll-free Service Desk telephone line, with voicemail capability
23.1.1.2	14	An established email address for Service Desk queries from the field
23.1.1.3	14	Service Desk contact information published in administration manuals and the online portal
23.1.2.1	14	A three-tiered support model within the Service Desk
23.2.1.1	15	Service Center operational during the times specified in Measure 1.
23.3.1.1	15	During testing, hold times remain under eight minutes.
23.3.2.1	15	During testing, email responses sent out in under two hours
23.3.3.1	15	Outside of testing, responses to all correspondence with twenty-four business hours

23.4.1.1	15	Weekly report of Service Desk documentation and metrics in a format approved by the Department.
24.1.1.1	15	Comply with all technical requirements in state IT policies
25.1.1.1	16	Production of one paper-based test form per grade/content area.
25.1.1.2	16	Production of standard paper-based test forms for up to one hundred-fifty students.
25.1.2.1	16	Production of one Braille paper-based test form per grade/content area.
25.1.2.2	16	Production of Braille paper-based test forms for approximately ten students.
25.1.3.1	16	Production of paper-based version of the SAT.
25.1.4.1	16	Production of Braille paper-based version of the SAT.
25.2.1.1	16	Production of student ID labels.
26.1.1.1	17	Production of documents specified in Measure 1.
27.1.1.1	17	A comprehensive test content security plan
27.2.1.1	17	Training procedures for test security
27.2.1.2	17	Training procedures for confidentiality of student data and PII.
27.3.1.1	17	Procedures for security breaches and testing irregularities.
27.4.1.1	17	Procedures for transport and storage of secure test materials.
28.1.1.1	18	Procedures to ensure security through all stages of chain of custody of secure test materials.
28.2.1.1	18	Procedure for chain of custody to ensure test materials are properly received, accounted for, distributed, and returned.
29.1.1.1	18	A data file will be delivered to the Department. The file will include, but will not be limited to the following variables: District Code, District Name, School Code, School Name, flagging identifiers from the two analyses accompanying the with statistical probability, if applicable.

30.1.1.1	19	Secure Web-based item authoring system
30.1.1.2	19	Secure facilities for the Provider and subcontractors
30.1.1.3	19	Creation and implementation of Use and Exposure Rules
30.1.2.1	19	Secure facilities for SAT production and distribution
31.1.1.1	19	Procedure for benchmarking 2017 open-response items
31.2.1.1	20	Benchmarking meeting for eMPower™ _____ open-response items and separate Provider items scheduled for release in _____.
32.1.1.1	20	Accurate scoring of selected-response items
32.1.2.1	20	Accurate scoring of selected-response items
32.2.1.1	20	Accurate scoring of extended-response items and short-constructed-response items
32.2.2.1	20	Accurate scoring of open-response items
32.3.1.1	20	Preliminary data handoff by _____
32.3.1.2	20	Confidentiality of student information during scoring
32.3.2.1	20	Preliminary data handoff by _____
32.3.2.2	20	Confidentiality of student information during scoring
33.1.1.1	21	Post-secondary degree for all human scorers.
33.1.2.1	21	Post-secondary degree for all human scorers.
34.1.1.1	21	Establish and publish scoring specifications
34.2.1.1	21	Twenty percent of short constructed responses will be double-scored.
34.2.1.2	21	Twenty-five percent of extended responses will be double-scored.
34.3.1.1	21	Establish and publish scoring specifications
34.4.1.1	22	Tracking of adjacent and agreement rate of assigned scores
35.1.1.1	22	Department-approved Scoring Specifications

35.1.1.2	22	Released Items Documents with Department-approved rubrics, exemplars, anchor papers, and annotations
35.2.1.1	22	Scorer training and qualification
35.2.1.2	22	Communication platform for remote participation in scorer training and qualification
35.3.1.1	22	On-demand scoring reports
35.4.1.1	22	Process for “crisis papers”
36.1.1.1	23	Process for score verification requests
37.1.1.1	23	Up-to-date familiarity with FERPA.
37.2.1.1	23	Provider agrees to follow terms and conditions to receive identifiable student data detailed in contract Rider E
37.4.1.1	23	Security and privacy of student data and PII
37.5.1.1	23	Testing of technical solutions to pass OIT Deployment Certification
38.1.1.1	24	Use Department-supplied data files
38.1.2.1	24	Validation of state demographic data
38.1.3.1	24	Checks of Department-specified data points.
38.2.1.1	24	Secure transmission of state data file transfers.
38.3.1.1	24	Chart of expected data transfers.
38.4.1.1	24	Acceptance of state-level data files only.
38.5.1.1	25	Creation and maintenance of student demographic database.
38.6.1.1	25	Final score data file, with scaled scores and achievement levels, posted to the _____ DOE after._____.
38.6.2.1	25	Agreement on data file specifications
38.6.3.1	25	SAT Student Score Release on _____
38.6.3.2	25	SAT Data File Delivery on _____
39.1.1.1	26	An online _____A-specific portal for use by schools and the public.
39.2.1.1	26	Single Sign On secure login for the portal
39.2.1.2	26	Defined hierarchy of school-, district-, and state-level user roles
39.3.1.1	26	Class roster uploading
40.1.1.1	27	Training plan and schedule
40.1.2.1	27	Four in-person regional trainings in _____.

40.1.3.1	27	Four Web-based trainings
40.1.3.2	27	Online sample items
41.3.1.1	28	Documentation of quality assurance issues
42.1.1.1	28	Style manuals
42.2.2.1	28	Final electronic copy test forms
44.1.1.1	29	Agendas submitted by the Department
44.1.1.2	29	Hosting of two TAC meetings in _____
44.1.1.3	29	Provider staff attendance at meetings
44.1.1.4	29	Meeting notes submitted to the Department
48.1.1.1	31	2017 Technical Report (electronic PDF)
48.1.1.2	31	2017 Technical Report (two bound and labeled paper copies)
50.1.1.1	31	Annual ad hoc analyses
51.1.1.1	32	Commissioned paired passages and direct writing prompts for grade-level modes of writing and standards indicated by the Department.
51.2.1.1	32	Separate test session for direct writing prompt.
51.3.1.1	32	eMPower product Interpretive Guides for score reporting.

11 Sponsor Acceptance

Approved by the [Client]:

Date: _____

Approved by Measured Progress:

Date: _____

Client Services Director

12 Appendices

Appendix A – Test Maps and Field Test Plan

Appendix B – Print Specifications

Appendix C – Schedule

Appendix D – Service Center Report Sample

Appendix E – Chart of Expected Data Transfers

13 Appendix A

14 Appendix B

15 Appendix C

16 Appendix D

17 Appendix E

eMPower _____ Chart of Expected Data Transfers				
File Name	Description	Transfer Date	Transfer Type	Notes
Organization Data	Organization Data File		DOE to MP	Completed; Copied from Science
Pre-ID File	Enrollment Data File		DOE to MP	
Reporting File	Enrollment Data File		DOE to MP	
Final Results File	Reporting Data File		MP to DOE	

Appendix 10: Measured Progress and eMetric Business Continuity



Emergency Preparedness/Business Continuity

Measured Progress plans for a variety of continuity risks that could potentially affect the ability to consistently deliver products and services that our clients rely upon.

Business Continuity Management

The purpose of Measured Progress' Business Continuity Management (BCM) program is to meet client expectations by:

- Assisting all Measured Progress locations and assigned personnel in preparation for, in response to, and recovery from continuity events
- Ensuring the safety and security of employees and visitors
- Minimizing the disruption of business operations
- Maintaining or restoring access to systems and data
- Recovering critical business functions
- Returning Measured Progress to normal business operations.

The goals of Measured Progress' BCM program include the protection, recovery, and preservation of:

- Employee safety and well-being
- Brand and reputation
- Client confidence
- Enterprise assets such as facilities, equipment, products, information systems and assets (digital and non-digital), intellectual capital and property
- Decision-making processes
- Continuity of business operations in acceptable time frames
- Revenue streams, funding sources and investments
- Legal, contractual and regulatory obligations

It is Measured Progress's policy that all locations have in place Business Continuity (BC) Plans to direct, control, and coordinate the response and recovery of operations. These plans describe specific organizational roles, responsibilities, and procedures.

Our BC Plans document the processes for keeping clients, employees, suppliers, senior leaders, other stakeholders, and the public informed, including procedures to coordinate with other Measured Progress locations, business partners, regulators, and public authorities. All Measured Progress locations and departments develop, maintain, and continuously improve their Business Continuity Plans to ensure organizational resilience and sustainability, and promote a coordinated and timely response to a continuity event.

Measured Progress's management recognizes its ethical and fiduciary responsibility to protect, preserve and recover enterprise resources (for example, personnel, facilities, equipment, IT systems and information assets) if a continuity event occurs.

The BCM program is supported and directed at the executive level, with an executive sponsor and steering committee. A program leadership team representing a cross section of all business areas monitors and manages progress. Business Continuity Coordinators are assigned responsibility for key business areas, departments, and office locations.

BCM teams have responsibility for both developing and maintaining the BC plans, as well as for executing those plans in an actual continuity event. All BCM roles must have a primary person and at least one alternate assigned.

Operational Impact Risk Assessment

Ongoing assessment of operational risks occurs to develop and implement strategies for prevention or mitigation that are appropriate and effective, considering the realities of constraints in resources, time, and corporate priorities.

A standard risk assessment process has been defined and is executed on a periodic basis or when new risks are identified. The steps in this process are as follows:

Process Steps	Explanation
Risk identification	Includes appropriate escalation of a risk once it has been recognized
Risk definition	Clearly describe, quantify, or qualify the risk
Assessment of Likelihood	Typically this utilizes a 3 level (high, medium, low) or 5 level (high, med-high, medium, med-low, low) rating scale
Assessment of Impact	Impact can be 'hard' (dollars, people, other assets, etc.), or 'soft' (lost opportunity, damage to brand or public relations, customer service, failure of critical corporate objectives, etc.), using a relevant rating scale similar to likelihood
Definition of Timing Considerations	the likelihood or potential impact may change based on the timing of an anticipated event, or certain known risks may have a specific date or time associated, and should be considered in developing a strategy
Identification of any Dependencies	Identified risks may be dependent on other risks, or on known or anticipated events
Prioritization/Ranking against other known Risks	Based on the likelihood and impact ratings, use of a 'magic quadrant' is helpful in visualizing and prioritizing risk
Prevention, Reduction, or Mitigation Strategy definition	Strategies may require significant efforts or projects, to effectively prevent, reduce, or mitigate impact from risks
Development and Implementation of Prevention/Reduction/Mitigation Strategies	Clear accountability, requirements, and timelines must be established to ensure successful implementation
Monitoring / Tracking / Improving	Risks and strategies must be monitored and periodically re-assessed to ensure strategies remain effective, or to identify opportunities for continuous improvement

The Risk Assessment process is often the point of initiation for significant 'mitigation projects'. These are projects that typically take on their own life, managed separately from BCM, with assigned resources and defined timelines for completion. The Risk Assessment process must

therefore monitor mitigation projects to ensure they have ownership, make appropriate progress with proper participation, and come to completion.

Emergency Response/Business Recovery Plan

The purpose of the Business Recovery Plan (BRP) is to minimize the impact of business interruptions by enabling employees to respond in an organized, efficient manner to an incident, thereby ensuring that critical business functions are restored within predetermined times, so that we can continue to meet the needs and expectations of our customers and stakeholders.

BRP includes assessment and analysis of the risk and impact of a continuity event, to mitigate risk in advance of an event where possible, and develop strategies for recovering business functions after an event has occurred.

The goals of Measured Progress's BRP program include the following:

- Ensure continued client satisfaction
- Continue critical business functions in a cost-effective manner
- Limit the severity of the disruption
- Protect corporate assets, including information assets
- Maintain a positive image/reputation
- Comply with all statutory and/or regulatory requirements
- Effectively restore critical business functions in accordance with recovery priorities
- Develop contingencies for effective communication with employees, customers, business partners, regulators, and other stakeholders following a continuity event
- Develop strategies for recovering critical business functions, resources, and assets
- Establish recovery teams with clearly defined roles and responsibilities for both planning and execution of the BRP



The Business Recovery Plan is one of 4 components of the overall Business Continuity Management program (reference “BCM Overview”):

- Emergency Response Plan (ERP)
 - Focus on employee safety
 - Evacuation, medical emergency, shelter-in-place, etc.

- Incident/Crisis Management Plan (IMP)
 - Focus on crisis command and control
 - Protect and account for people, safeguard Measured Progress brand and reputation, protect corporate assets, mitigate further risk

- Business Recovery Plan
 - Focus on recovery of business operations
 - Critical functions, processes, services, and communication with customers, business partners, and staff

- IT Disaster Recovery Plan (DRP)
 - Focus on information technology
 - Systems, data, telecommunications, IT services, network, data center operations

Business Continuity and Employee Training

All individuals who have a role in response activities as part of Emergency Response, IT Disaster Recovery, Business Recovery, and Incident/Crisis Management, receive periodic orientation/refresher for emergency event scenarios identified in the plans and participate in drills, tabletop exercises and other plan testing.

All Measured Progress locations ensure that every employee is provided with site-appropriate building evacuation procedures. New employees receive training during orientation upon hire. Periodic refreshers are provided to existing employees to maintain awareness and relevance. Certain response plans such as evacuation procedures are exercised annually as part of a drill.

Employee training associated with cross training occurs on a regular schedule but is defined by department leadership based on business need. For example, departments may train annually, prior to planned time off, or before major upgrades or releases.

Emergency Responders

The Local Emergency Response Team (LERT) is composed of staff members that have been selected or have volunteered to respond in an emergency, to protect the safety of their fellow employees. Following is an itemization of key emergency response duties:

Planning role

- Be fully aware and knowledgeable of all Emergency Procedures
- Participate in drills
- Participate in periodic continuous improvement meetings
- Gather feedback to support improvement efforts
- Advocate for emergency preparedness in relevant business units, and across the company

Response role

- Direct others during an actual evacuation, and during drills
- Provide emergency medical response if trained and qualified
- Take charge in an emergency situation
- Gather information about the emergency to support good decision making
- Alert others, ensure proper notification is given and escalated

Should an incident occur, the following roles will activate:

Incident commander

- Takes charge in an emergency and leads the Local Emergency Response Team (LERT)
- Ensures proper notifications regarding the event are made
- Gathers accurate information about the emergency from staff, building management, or civil authorities

Deputy incident commander

- Assists the Fire Warden with communications to employees and in evacuating the premises
- Backup replacement for the Incident Commander if unavailable

Searcher

- Searches the assigned floor space, including rest rooms, conference rooms, offices, cafeteria, etc
- Assist the Warden and Deputy Warden in guiding people out of the building or to safe havens

Facilities/Security

Security personnel or Facilities staff assist and provide direction in the event of a building emergency or evacuation, based on pre-defined emergency procedures.

As a sound business practice, Measured Progress has provided a summary of the business continuity plan for processes that can be accomplished remotely during a disruption. Specifically, Measured Progress categorizes potential business disruptions into the following categories:

- One or more vital systems are non-functional
- The building(s) is not available for an extended period of time but all systems are functional within it
- The building(s) is available but all systems are non-functional
- The building(s) and all systems are non-functional

Alternate Locations

It has been determined that the majority of functions can operate remotely, resuming business-as-usual operations at 100% capacity provided the necessary software tools and hardware resources are available. For the remainder of functions requiring a workspace, response personnel at each location has defined alternate locations and resources necessary to continue work at capacity or at a reasonably reduced capacity.

Workforce Contingency

Measured Progress has conducted pandemic planning at the department level where critical roles were identified and contingency planning has been accomplished with cross training. Cross training occurs with peers within functions, departments, and among leadership to support functions and tasks. Ideally, no role is a single-point of failure. We are configured to support work from home for the majority of functions and operations. For remaining functions and operations, multiple personnel are trained, back-up equipment is in place, and the resources to schedule additional shifts with short notice are on contract to support reduced staff and increased operating times.

Secondary Communications

In the event of any or all of these types of business disruptions affecting the company, Measured Progress will do all it possibly can to continue business within twenty-four (24) hours of the business disruption. Measured Progress Client Services staff will contact our clients, suppliers, partners and critical vendors by telephone and e-mail to apprise them of the operational status of the company. Additionally, notification will be placed on our main number

outgoing message. Human Resources systems are in place and made readily available for leaders to communicate with employees, replacing the prior phone tree method of contact.

Business Continuity Plan Testing

Various exercises (walk-through, scenario planning, table-top, drill, etc.) will be used throughout the planning and improvement processes to identify planning gaps and overlaps, and verify effectiveness and thoroughness of the plan that is being developed.

Formal testing is especially required for backup/alternate technology, equipment, facilities, physical assets, and/or alternate personnel that are utilized in a recovery plan.

Exercises or tests are required on a periodic basis for all business continuity plans to ensure readiness and effectiveness. Measured Progress has not employed third-party testing but is happy to do so upon contract award at a negotiated price.

Business Continuity & Disaster Recovery

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1.3. Business Continuity Requirements	4
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1. BUSINESS CONTINUITY PLAN

eMetric understands the responsibilities that come along with being responsible for sensitive data. We stay up-to-date with industry standard best practices for planning for business interruption or disaster. This section will describe the key aspects of our approach for managing system and business interruptions.

eMetric utilizes Edge Hosting and Amazon Web Services. Both service providers are SAS70 compliant and offer PCI grade network configurations. These facilities have enterprise grade physical security controls to safeguard critical infrastructure. To ensure continuous power, each facility has its own diesel generators to provide emergency power. In the case of a power outage or fluctuation, the UPS (Uninterruptible Power Supply) systems will engage and provide power during the time required for the generators to begin to power the facility. The generator systems are tested on a regular basis by our service providers.

eMetric's philosophy is to build redundancy and fault tolerance in the design and implementation of our computing infrastructure and applications. This approach reduces the potential for serious downtime or interruption. We have multiple application servers, database servers, and network devices such as load balancers and switches configured to allow for operations to continue, should one resource fail. Our service providers maintain a supply of extra equipment that is available for immediate deployment. We have negotiated with our providers for expedited services of any other technology that is needed.

For data backups, we use a combination of solutions across various environments including our headquarters, where most data processing operations and software development activities are conducted, and data centers, where all eMetric's applications are deployed and made available for the end users. Our backup solutions are designed to offer reliability, flexibility, and redundancy. eMetric's data backup processes and procedures follow industry best practices.

eMetric's computing environment and disaster recovery plans are described in more detail below.

1.1. ARCHIVING AND BUSINESS CONTINUITY SOLUTIONS AND PLANS

A. ARCHIVING DATA

eMetric's data management approach ensures that data used for processing and operations be retained for the life of the specific contract. We provision secure web based file transfer solutions such as eMetric FileX or Secure FTP sites based on the volume of data being transferred.

eMetric maintains a copy of data uploaded to our FileX and secure FTP servers at the data center and another copy on an internal Network Attached Storage(NAS) solution. Access control to our NAS is managed by our Active Directory and explicit access permissions can be set for various users and roles.

B. RECOVERY AND BACKUP OF SYSTEMS

eMetric's approach to system design and implementation takes into consideration that at any point in the software development cycle or production operations, there may be a need to recover data. We developed our approach to backups after a careful evaluation process to determine and classify critical data. This evaluation eliminates data duplication and improves efficiency of the overall backup process.

Data Backups: For all critical systems, we use RAID (Redundant Array of Independent Disks) volumes that offer redundancy and safeguard against hardware failures. These resources are also secured using industry standard ICASA certified firewall solutions. Critical data such as Application Source Code is backed up on a nightly basis. Important data such as business requirements, specifications and documentation are stored on redundant cloud services with guaranteed SLA's. Secure information,

such as student assessment data that falls under FERPA guidelines, are stored within a secure internal NAS solution. Access to the NAS is only assigned to designated employees.

Database Backups: We use log shipping and mirroring features provided by Microsoft SQL Server technology to backup databases. All databases on the primary production database server are configured to ship/mirror to a secondary production grade database server that is always available on stand-by.

Most databases are configured for one hour log ship intervals while some databases that do not change on a day to day basis are configured for 24 hour intervals. We also conduct periodic audits to track the activity of log shipping activity using email alerts to monitor stale and unsuccessful log ship attempts. We are confident that we can fail over to our stand-by database within an hour in case of major outage affecting the primary database server.

All internal databases and mission critical VM's used for day-today business activities are backed up daily and archived at Amazon Web Services.

1.2. SYSTEM REDUNDANCY & FAULT TOLERANCE

eMetric designs systems and infrastructure to be as fault tolerant as technically possible. Web applications are designed using n-tiered architecture with load balancing services providing a very high degree of fault tolerance. eMetric will provide 99% availability between the hours of 6:00 a.m. and midnight Eastern Standard Time, seven days per week for web-based applications.

The clustered environment also allows a controlled application of critical security patches during production cycles without impacting production service levels. The fail-over facility is used to remove from production and patch one server at a time assuring proper functionality before deploying the production server back into the production configuration. This process further assures the failover function is working properly in an emergency.

Data are stored in devices using appropriate levels of RAID to protect against data loss caused by disk failure while maintaining required performance levels. Access to eMetric offices is controlled by secure key access codes. Application systems are designed to work with the hardware and network infrastructure using redundancy, load balancing, and security. Servers are configured in clusters with failover. Data are stored on configurations utilizing the appropriate level of RAID to assure data protection with necessary performance.

Employee access to client data is restricted. All server consoles are locked with tightly controlled passwords. All workstations require network authentication and screen savers. eMetric denies all access to sensitive data and then grants access to only selected staff. Network accounts are audited regularly and require unique passwords that change every 60 days. Accounts are immediately disabled whenever an employee leaves eMetric. There is a high level of security awareness among all employees at eMetric.

eMetric has secured the internal network through the use of industry standard firewalls protecting company resources from unauthorized access. Available security updates and patches are reviewed on a regular basis and implemented on all servers when applicable. Websites containing sensitive material require public-key cryptography security through Secure Sockets Layer (SSL) connections.

eMetric has an effective anti-malware solution. eMetric has virus scanning software on all PCs, workstations, and servers to add a second layer of protection. All anti-malware software packages automatically update definitions daily and protect the following systems:

- **Email:** Server side scanning of all incoming and outgoing mail powered by Google Apps.
- **Workstations:** All workstations are protected with memory resident virus software.

1.3. BUSINESS CONTINUITY REQUIREMENTS

eMetric's Business Continuity framework will address all relevant technology components and platforms. The basic requirement is to design the system and the disaster recovery plan to:

- Maintain critical business functions;
- Fulfill emergency support functions; and
- Sustain critical infrastructure.
- Interruptions are classified into three general classifications:

Class 1: Single, replaceable component with majority of the infrastructure intact and functioning.

- Server, switch, router, or disk interruption that can be repaired or replaced in 12 hours or fewer.

Class 2: Catastrophic event at a facility that causes operations to be temporarily unavailable.

- Power interruption or communication link interruption with repair in 24 hours or fewer.

Class 3: Local or regional interruption, including pandemic, so that further operation within eMetric facilities is not possible in the short term.

- Fire, tornado, or other physical damage preventing restoration of service in the existing facility in less than one week.
- Influenza pandemic with infrastructure fully functional, but without key personnel or access to key facilities prohibited.

The steps taken in any emergency situation will vary, but the core functions remain the same for all types of emergencies. These core functions for the Emergency Plan are:

- Notify and convene Emergency Response Team meeting
- Identify essential functions depending on the emergency
- Identify critical resources
- Determine if alternate locations/facilities are necessary
- Execute the employee notification/communication plan
- Identify recovery priorities
- Execute appropriate recovery plan

2. DISASTER RECOVERY PLAN

Disaster prevention and recovery are an integral part of the way eMetric develops and operates systems, including the physical structures, computing infrastructure, and application design and development.

To appropriately handle and manage emergencies, eMetric has created an Emergency Response Team (ERT). The ERT will be promptly notified using eMetric internal communication protocols for all escalated and classified emergency situations.

eMetric Emergency Response Team (ERT):

Huixing Tang, PhD	President
Dixie Knight	Vice President, Operations
Vamsi Mukkamala	Vice President, Technology
Raju Venkataraman	Manager, Database Systems

Recovery

For Class 1 and some Class 2 interruptions, eMetric is prepared to make emergency component changes. Key components, such as servers, switches, and dedicated disk drives are maintained on-site at our data centers for quick replacement. Every server's configuration is documented in the event a rebuild is required.

For a situation when a specific facility is unavailable, eMetric will escalate and assign key personnel resources to recover resources utilizing cloud services such as Amazon Web Services or other similar cloud service providers.

For some major class 2 and class 3 emergencies, the ERT will immediately execute an emergency plan based on the core functions described above.

Appendix 11: Measured Progress Financial Information



Measured Progress, Inc. DUNS: 10-818-3682

Dashboard

Company Info

100 Education Way
Dover, NH 03820

URL: www.measuredprogress.org

Phone: (603) 749-9102

Scores

PAYDEX®	Delinquency Predictor		Financial Stress		Supplier Eval. Risk Rating	Credit Limit Rec.	D&B Rating	D&B Viability Rating
Score	Score	Class	Score	Class	Rating	Recommendation	Rating	Rating
79 ▲	582 ▲	1	1530 ▼	2	1 ▲	\$100K	1R3	21BG

Recent Alerts

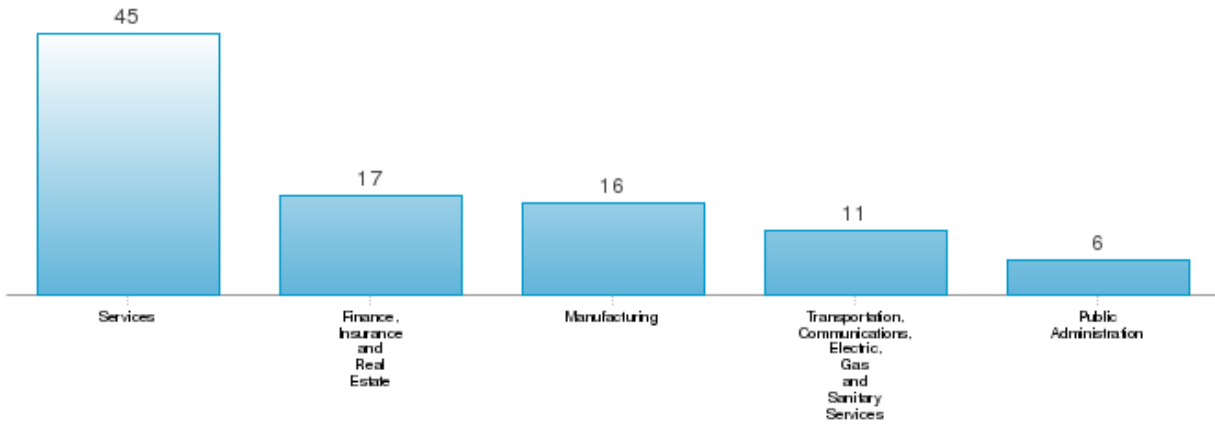
INQUIRY 12/12/16 1 New Inquiry	INQUIRY 11/14/16 1 New Inquiry
INQUIRY 11/11/16 1 New Inquiry	INQUIRY 11/10/16 3 New Inquiries

Inquiries

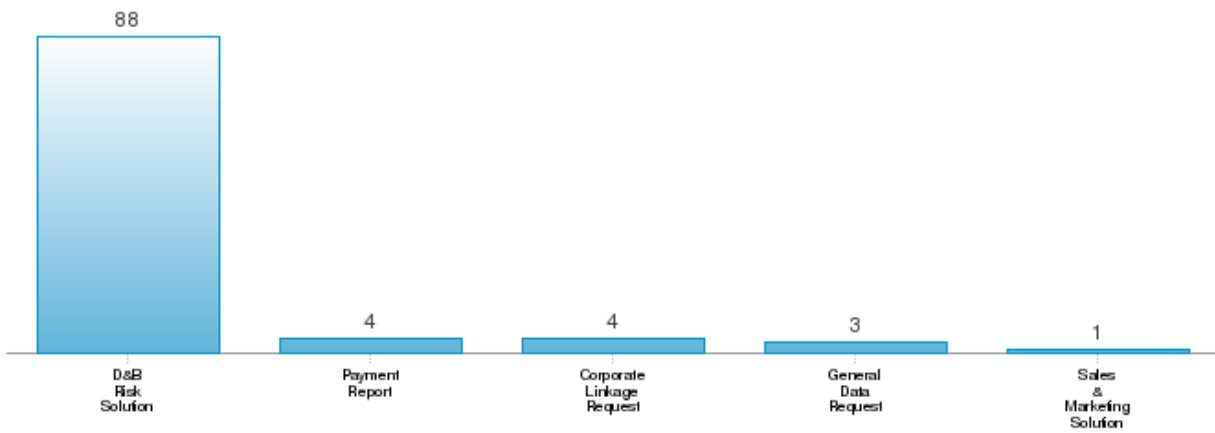
Most Recent

Date	SIC / Sector	Report type
12/09/16	Finance, Insurance and Real Estate	D&B Risk Solution
11/11/16	Finance, Insurance and Real Estate	D&B Risk Solution
11/07/16	Services	D&B Risk Solution
11/06/16	Manufacturing	D&B Risk Solution
11/01/16	Services	D&B Risk Solution

Top 5 Inquiries by SIC / Sector (12 Months)



Top 5 Inquiries by Report Type (12 Months)



Scores

PAYDEX®

79



3 Month PAYDEX®

80

2 days beyond terms

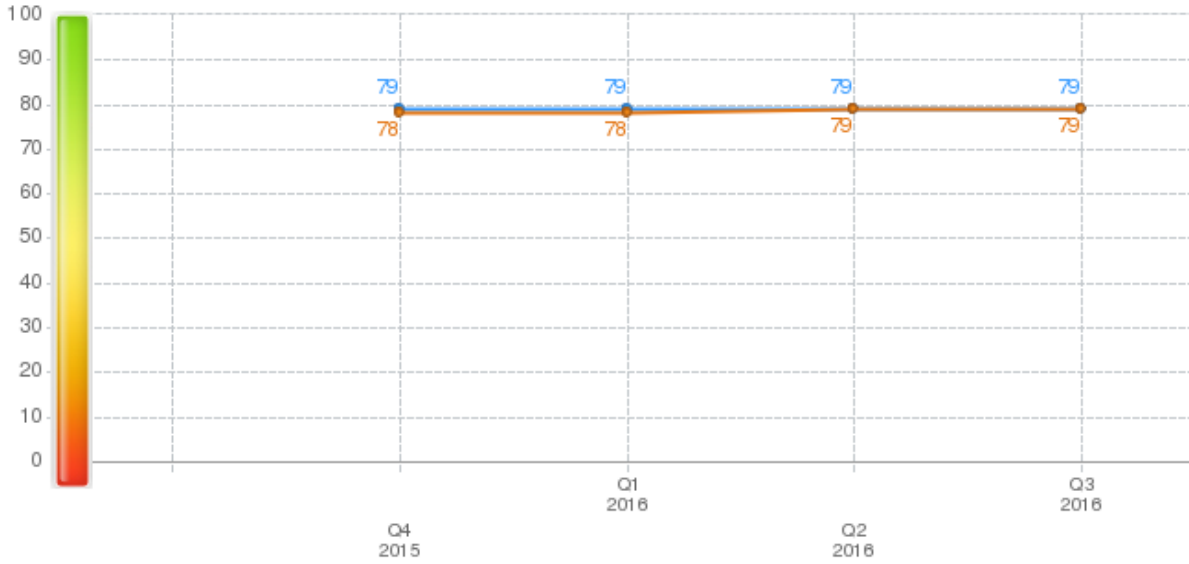


Understanding My Score

The D&B PAYDEX® is a unique, dollar weighted indicator of payment performance based on payment experiences as reported to D&B by trade references.

Recent Payments

Total (Last 24 Months): 63

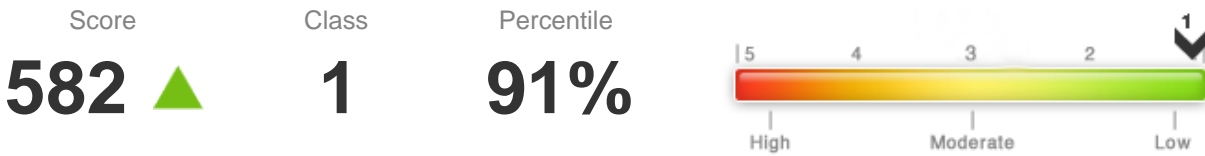


- My Company (79)
- Industry Median: (79)

Based on payments collected over the last 4 quarters.

- Current PAYDEX® for this business is 79, or equal to 2 days beyond terms
- The present industry median score is 79, or equal to 2 days beyond terms.

Delinquency Predictor Score



Low risk of severe payment delinquency over next 12 months

Understanding My Score

The D&B Delinquency Predictor (formerly the Commercial Credit Score) predicts the likelihood that a company will pay in a severely delinquent manner (91+ days past term) over the next 12 months, seek legal relief from creditors, or cease operations without paying all creditors in full over the next 12 months based on the information in D&B's database. A severely delinquent firm is defined as a business with at least 10% of its dollars 91+ days slow.

Incidence of Delinquent Payment:

Among Companies with this Classification: **1.10%**

Factors Affecting Your Score:

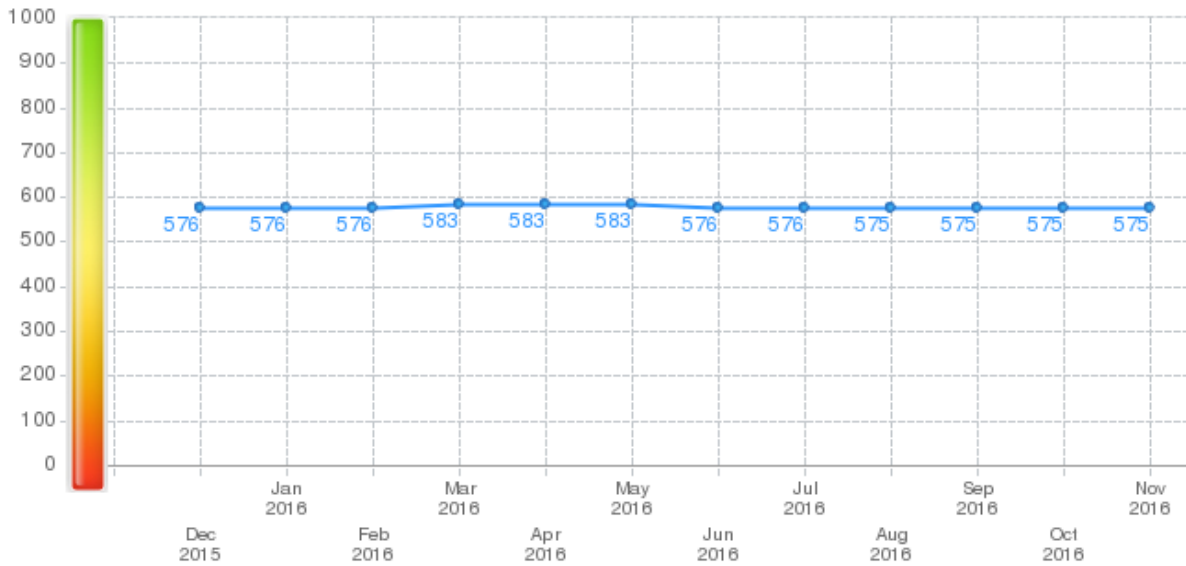
Higher risk industry based on delinquency rates for this industry

Evidence of open liens

Key

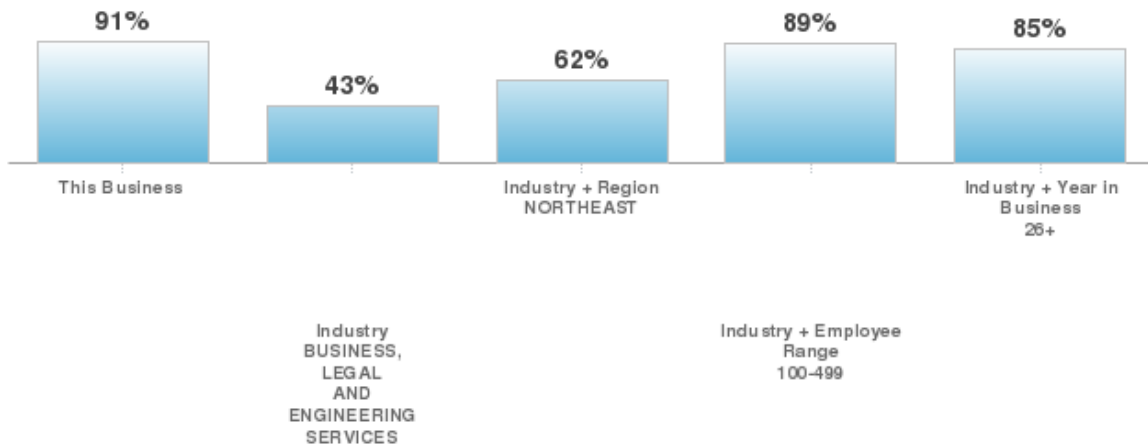
Risk Class	% of Businesses within this Class	Percentile	Score
1	10%	91-100	580-670
2	20%	71-90	530-579
3	40%	31-70	481-529
4	20%	11-30	453-480
5	10%	1-10	101-452

Trends - Scores, 12 Month



• My Company (582)

Industry Comparison



This business has a Credit Score Percentile that shows:

- Lower risk than other companies in the same region.
- Lower risk than other companies in the same industry.
- Lower risk than other companies in the same employee size range.
- Lower risk than other companies with a comparable number of years in business.

Financial Stress Score

Score

Class

Nat'l %

1530 ▼ 2 79%



Moderate risk of severe financial stress, such as a bankruptcy, over the next 12 months

Understanding My Score

Incidence of Financial Stress:

Among Companies with this Classification: **0.09** (84 per 10000)

Factors Affecting Your Score:

Composite credit appraisal is rated fair.

UCC Filings reported.

High number of inquiries to D&B over last 12 months.

Negative change in net worth.

- The Financial Stress Class Summary Model predicts the likelihood of a firm ceasing business without paying all creditors in full, or reorganization or obtaining relief from creditors under state/federal law over the next 12 months. Scores were calculated using a statistically valid model derived from D&B's extensive data files.

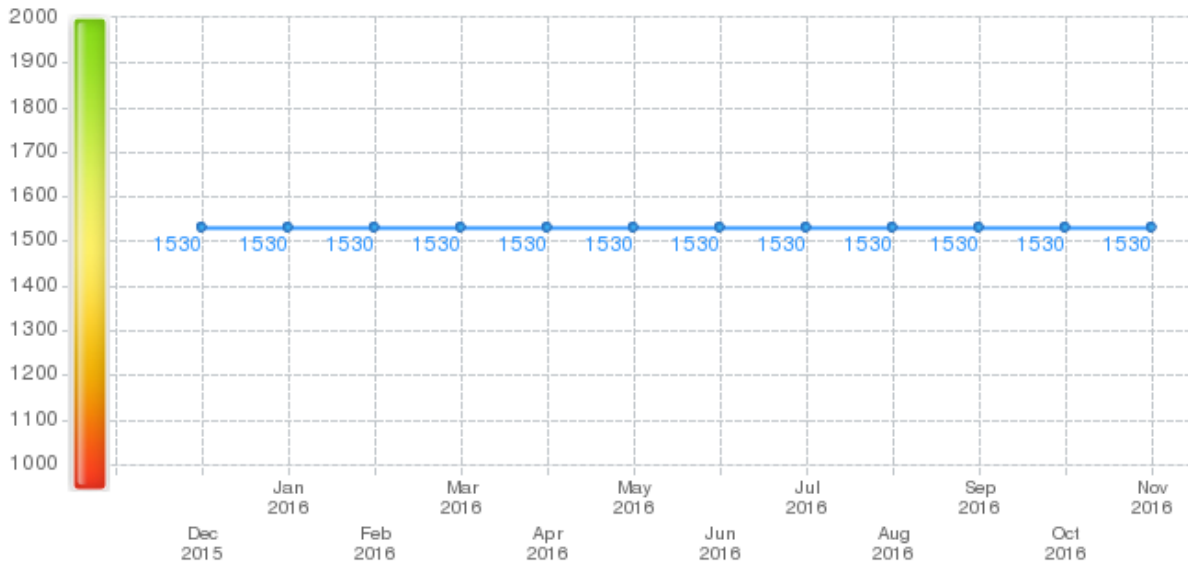
Notes:

- The Financial Stress Class indicates that this firm shares some of the same business and financial characteristics of other companies with this classification. It does not mean the firm will necessarily experience financial stress.
- The Incidence of Financial Stress shows the percentage of firms in a given Class that discontinued operations over the past year with loss to creditors. The Incidence of Financial Stress - National Average represents the national failure rate and is provided for comparative purposes.
- The Financial Stress National Percentile reflects the relative ranking of a company among all scorable companies in D&B's file.
- The Financial Stress Score offers a more precise measure of the level of risk than the Class and Percentile. It is especially helpful to customers using a scorecard approach to determining overall business performance.
- All Financial Stress Class, Percentile, Score and Incidence statistics are based on sample data from

Key

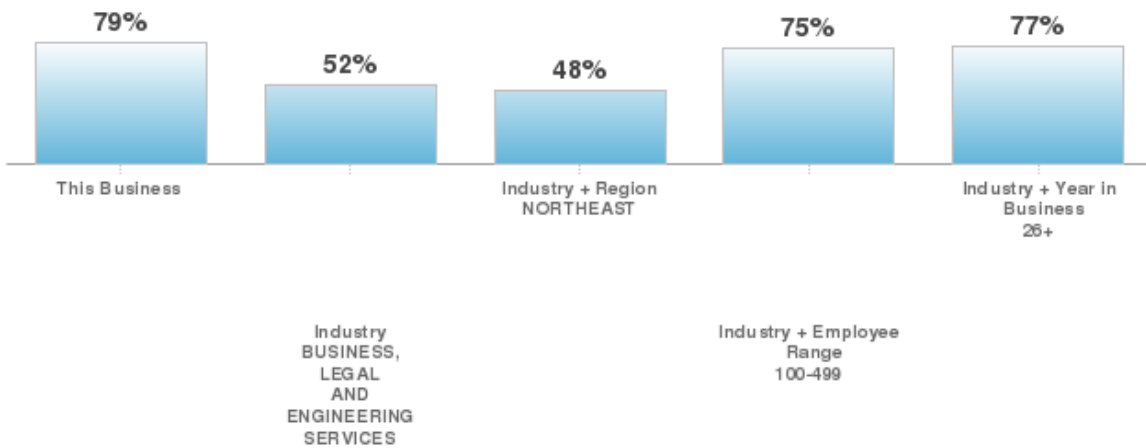
Score	Class	Percentile	Incidence of Financial Stress
1570-1875	1	95-100	6.0%
1510-1569	2	69-94	10.6%
1450-1509	3	34-68	18.4%
1340-1449	4	2-33	31.5%
1001-1339	5	1	70.0%

Trends - Scores, 12 Month



• My Company (1,530)

Industry Comparison



Based on payments collected over the last 4 quarters.

- Lower risk than other companies in the same region.
- Lower risk than other companies in the same industry.
- Lower risk than other companies in the same employee size range.
- Lower risk than other companies with a comparable number of years in business.

Supplier Evaluation Risk Rating

1 ▲



Low risk of supplier experiencing severe financial stress over the next 12 months.

Understanding My Score

The Supplier Evaluation Risk (SER) Rating predicts the likelihood that a supplier will cease

business operations or become inactive over the next 12 month period based on the depth of predictive data attributes available on the business. The SER Rating scoring system uses statistical probabilities to classify public and private companies into a 1-9 risk rating, where 1 represents low risk and 9 represents high risk.

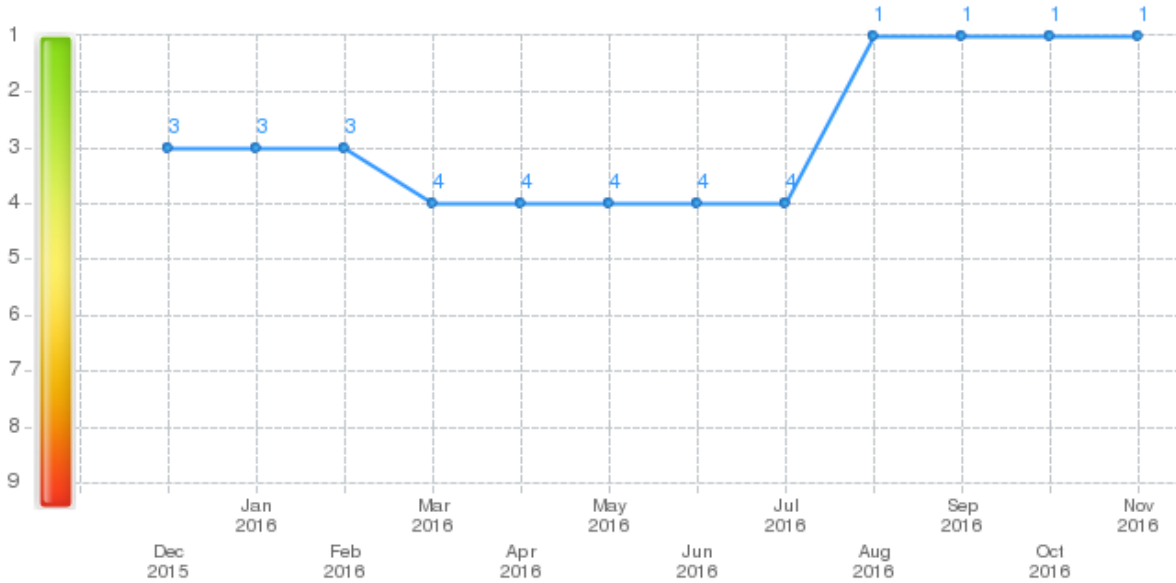
Factors Affecting This Company's Score:

Higher risk industry based on inactive rate for this industry

Proportion of past due balances to total amount owing

Evidence of open liens

Trends



• My Company (1)

Credit Limit Recommendation

Risk Category

1

Low

Conservative Credit Limit

\$100k

Aggressive Credit Limit

\$250k



Understanding My Score

D&B's Credit Limit Recommendation is intended to help you more easily manage your credit decisions. It provides two recommended dollar guidelines:

A conservative limit, which suggests a dollar benchmark if your policy is to extend less credit to minimize risk.

An aggressive limit, which suggests a dollar benchmark if your policy is to extend more credit with potentially more risk.

The dollar guideline amounts are based on a historical analysis of credit demand of customers in D&B's U.S. payments database which have a similar profile to your business.

Rating
1R3

Number of employees: **1R** indicates 10 or more employees
Composite Credit Appraisal: **3** is fair

D&B Rating	Date Applied
1R3	2016-04-18
4A3	2015-06-08
1R3	2015-04-13
4A1	2014-03-03
4A2	2013-05-28
1R3	2013-04-16
4A2	2012-02-09
--	2011-08-22
4A4	2010-09-24
1R3	2010-04-13

Understanding My Score

Factors Affecting Your Score

of Employees Total: **340 (323 here)**

Sales: **\$93,772,537.00**

As of 06/30/14

Working Capital: **\$4,923,322**

Payment Activity (based on 63 experiences):

Average High Credit: **\$8,253**

Highest Credit: **\$100,000**

Total Highest Credit: **\$338,700**

Note: The Worth amount in this section may have been adjusted by D&B to reflect typical deductions, such as certain intangible assets.

D&B Viability Rating

2

Viability Score



Compared to ALL US Businesses within the D&B Database:

- Level of Risk: **Low Risk**
- Businesses ranked 2 have a probability of becoming no longer viable: **2%**
- Percentage of businesses ranked 2: **4%**
- Across all US businesses, the average probability of becoming no longer viable: **14%**

1**Portfolio Comparison**

Compared to ALL US Businesses within the D&B Database:

- Model Segment: **Established Trade Payments**
- Level of Risk: **Low Risk**
- Businesses ranked 1 within this model segment have a probability of becoming no longer viable: **2%**
- Percentage of businesses ranked 1 within this model segment: **11%**
- Within this model segment, the average probability of becoming no longer viable: **5%**

B**Data Depth Indicator****Data Depth Indicator:**

Rich Firmographics
 Extensive Commercial Trading Activity
 Basic Financial Attributes

G**Company Profile**

Financial Data	Trade Payments	Company Size	Years in Business
Not Available	Available (3+Trade)	Large	Established

Compared to ALL US Businesses within the D&B Database:

- Financial Data: **Not Available**
- Trade Payments: **Available: 3+Trade**
- Company Size: **Large: Employees:50+ or Sales: \$500K+**
- Years in Business: **Established: 5+**

Inquiries**12 Month Summary**

Over the past 12 months ending 12-2016, 100 individual requests for information on your company were received; this represents a 28.00% increase over the prior 12 month period. The 100 inquiries were made by 46 unique customers indicating that some companies have inquired on your business multiple times and may be monitoring you. Of the total products purchased, 45, or 45.00% came from the Services sector; 17, or 17.00% came from the Finance, Insurance and Real Estate sector; 16, or 16.00% came from the Manufacturing sector.

12 Month Total# Inquiries: 100**12 Month Unique Customers:**46

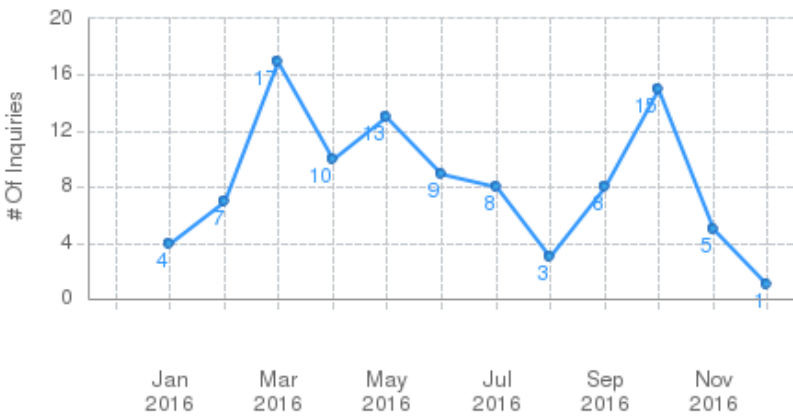
Date ▼	Report type	SIC / Sector
12/09/16	D&B Risk Solution	Finance, Insurance and Real Estate
11/11/16	D&B Risk Solution	Finance, Insurance and Real Estate
11/07/16	D&B Risk Solution	Services

11/06/16	D&B Risk Solution	Manufacturing
11/01/16	D&B Risk Solution	Services
11/01/16	Payment Report	Services
10/31/16	D&B Risk Solution	Manufacturing
10/30/16	D&B Risk Solution	Manufacturing
10/26/16	D&B Risk Solution	Manufacturing
10/25/16	D&B Risk Solution	Services
10/21/16	D&B Risk Solution	Manufacturing
10/21/16	D&B Risk Solution	Manufacturing
10/21/16	D&B Risk Solution	Transportation, Communications, Electric, Gas and Sanitary Services
10/21/16	Payment Report	Transportation, Communications, Electric, Gas and Sanitary Services
10/20/16	D&B Risk Solution	Services
10/18/16	D&B Risk Solution	Finance, Insurance and Real Estate
10/10/16	D&B Risk Solution	Manufacturing
10/10/16	D&B Risk Solution	Transportation, Communications, Electric, Gas and Sanitary Services
10/10/16	D&B Risk Solution	Transportation, Communications, Electric, Gas and Sanitary Services
10/07/16	Corporate Linkage Request	Public Administration
10/07/16	Sales & Marketing Solution	Public Administration
09/27/16	D&B Risk Solution	Manufacturing
09/27/16	D&B Risk Solution	Manufacturing
09/26/16	D&B Risk Solution	Finance, Insurance and Real Estate
09/20/16	D&B Risk Solution	Finance, Insurance and Real Estate
09/19/16	D&B Risk Solution	Finance, Insurance and Real Estate
09/16/16	D&B Risk Solution	Services
09/15/16	D&B Risk Solution	Services
09/07/16	D&B Risk Solution	Finance, Insurance and Real Estate
08/31/16	D&B Risk Solution	Public Administration
08/08/16	D&B Risk Solution	Finance, Insurance and Real Estate
08/05/16	D&B Risk Solution	Finance, Insurance and Real Estate
07/29/16	D&B Risk Solution	Finance, Insurance and Real Estate
07/27/16	D&B Risk Solution	Wholesale Trade
07/25/16	D&B Risk Solution	Services
07/25/16	D&B Risk Solution	Services
07/25/16	Payment Report	Services
07/21/16	D&B Risk Solution	Finance, Insurance and Real Estate
07/21/16	D&B Risk Solution	Finance, Insurance and Real Estate
07/21/16	Payment Report	Finance, Insurance and Real Estate
06/21/16	D&B Risk Solution	Services
06/21/16	D&B Risk Solution	Services
06/20/16	D&B Risk Solution	Services

06/14/16	D&B Risk Solution	Wholesale Trade
06/12/16	D&B Risk Solution	Manufacturing
06/12/16	General Data Request	Manufacturing
06/08/16	Corporate Linkage Request	Public Administration
06/07/16	D&B Risk Solution	Services
06/06/16	D&B Risk Solution	Manufacturing
05/25/16	D&B Risk Solution	Wholesale Trade
05/23/16	D&B Risk Solution	Services
05/23/16	D&B Risk Solution	Services
05/20/16	D&B Risk Solution	Services
05/17/16	D&B Risk Solution	Finance, Insurance and Real Estate
05/10/16	D&B Risk Solution	Services
05/09/16	D&B Risk Solution	Services
05/09/16	D&B Risk Solution	Services
05/05/16	D&B Risk Solution	Transportation, Communications, Electric, Gas and Sanitary Services
05/05/16	D&B Risk Solution	Transportation, Communications, Electric, Gas and Sanitary Services
05/03/16	D&B Risk Solution	Transportation, Communications, Electric, Gas and Sanitary Services
05/03/16	D&B Risk Solution	Transportation, Communications, Electric, Gas and Sanitary Services
05/02/16	General Data Request	Finance, Insurance and Real Estate
04/21/16	D&B Risk Solution	Services
04/21/16	D&B Risk Solution	Services
04/20/16	D&B Risk Solution	Services
04/18/16	D&B Risk Solution	Services
04/14/16	D&B Risk Solution	Services
04/14/16	D&B Risk Solution	Services
04/14/16	D&B Risk Solution	Services
04/11/16	D&B Risk Solution	Finance, Insurance and Real Estate
04/07/16	D&B Risk Solution	Services
04/07/16	D&B Risk Solution	Services
03/29/16	D&B Risk Solution	Transportation, Communications, Electric, Gas and Sanitary Services
03/29/16	D&B Risk Solution	Transportation, Communications, Electric, Gas and Sanitary Services
03/29/16	D&B Risk Solution	Services
03/29/16	D&B Risk Solution	Services
03/29/16	D&B Risk Solution	Public Administration
03/28/16	D&B Risk Solution	Services
03/24/16	D&B Risk Solution	Services
03/24/16	D&B Risk Solution	Services
03/23/16	D&B Risk Solution	Services
03/22/16	D&B Risk Solution	Services
03/21/16	D&B Risk Solution	Public Administration

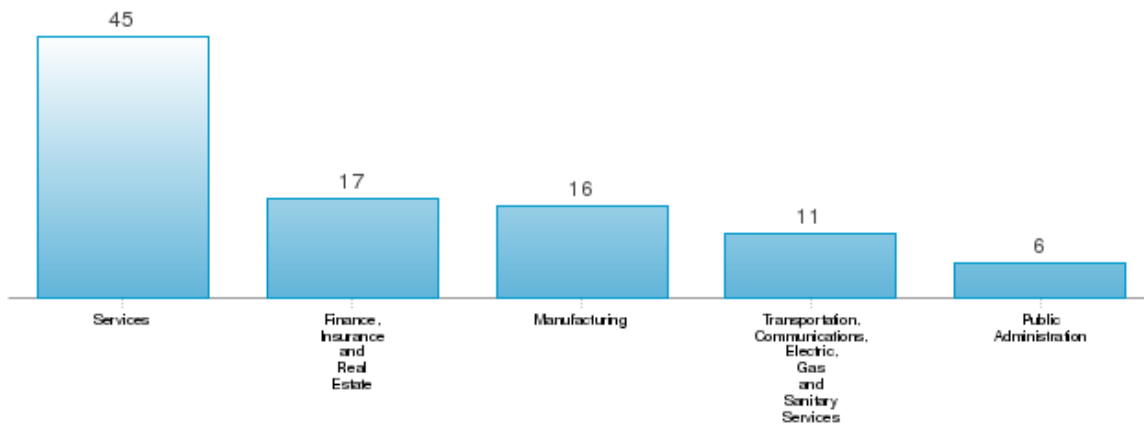
03/17/16	D&B Risk Solution	Services
03/17/16	D&B Risk Solution	Services
03/15/16	D&B Risk Solution	Services
03/14/16	D&B Risk Solution	Services
03/10/16	Corporate Linkage Request	Services
03/01/16	D&B Risk Solution	Manufacturing
02/29/16	Corporate Linkage Request	Services
02/26/16	D&B Risk Solution	Transportation, Communications, Electric, Gas and Sanitary Services
02/25/16	D&B Risk Solution	Services
02/22/16	D&B Risk Solution	Services
02/18/16	D&B Risk Solution	Manufacturing
02/18/16	General Data Request	Manufacturing
02/11/16	D&B Risk Solution	Wholesale Trade
01/21/16	D&B Risk Solution	Manufacturing
01/21/16	D&B Risk Solution	Services
01/12/16	D&B Risk Solution	Wholesale Trade
01/04/16	D&B Risk Solution	Finance, Insurance and Real Estate

Trends - 12 Month

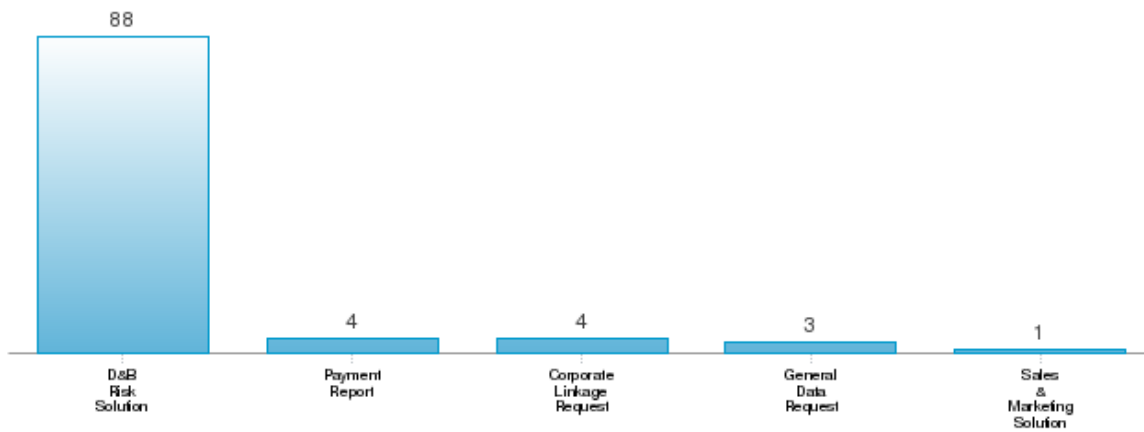


Top 5 Inquiries by Report Type (12 Months)

Report Type	Count



Top 5 Report Types Graph(12 Months)



All Inquiries by Industry and SIC / Sector

SIC/Sector	Jan 2016 to Mar 2016	Apr 2016 to Jun 2016	Jul 2016 to Sep 2016	Oct 2016 to Dec 2016	Total Inquiries
Finance, Insurance and Real Estate	1	3	10	3	17
Manufacturing	4	3	2	7	16
Public Administration	2	1	1	2	6
Services	16	19	5	5	45
Transportation, Communications, Electric, Gas and Sanitary Services	3	4	0	4	11
Wholesale Trade	2	2	1	0	5

Inquiries by Report Type

Report Type	Jan 2016 to Mar 2016	Apr 2016 to Jun 2016	Jul 2016 to Sep 2016	Oct 2016 to Dec 2016	Total
Corporate Linkage Request	2	1	0	1	4
D&B Risk Solution	25	29	17	17	88
General Data Request	1	2	0	0	3
Payment Report	0	0	2	2	4
Sales & Marketing Solution	0	0	0	1	1

Payments

Currency: Shown in USD unless otherwise indicated

Payments Summary

Current PAYDEX®: 79 Equal to 2 days beyond terms
Industry Median: 79 Equal to 2 DAYS BEYOND terms
Payment Trend: ↔ Unchanged, compared to payments three months ago

Total payment Experiences in D&Bs File (HQ): 63
Payments Within Terms (not dollar weighted): 92
Total Placed For Collection: NA
Average Highest Credit: 8,253
Largest High Credit: 100,000
Highest Now Owing: 20,000
Highest Past Due: 7,500

Payments Summary by Industry

Total (Last 24 Months): 63

	Total Received	Total Dollar Amount	Largest High Credit Payment summary	Within Terms	Days Slow			
					31	30-80	81-90	90
Top Industries								
Nonclassified	4	\$90,000	\$45,000	100%	0	0	0	0
Telephone communictns	4	\$26,000	\$15,000	98%	2	0	0	0
Trucking non-local	3	\$18,000	\$10,000	56%	44	0	0	0
Whol computers/softwr	2	\$100,500	\$100,000	100%	0	0	0	0
Help supply service	2	\$15,000	\$10,000	83%	17	0	0	0
Natural gas distrib	2	\$17,500	\$10,000	100%	0	0	0	0
Investment advice	2	\$3,500	\$2,500	100%	0	0	0	0
Radiotelephone commun	2	\$300	\$250	100%	0	0	0	0
Misc equipment rental	1	\$30,000	\$30,000	100%	0	0	0	0
Employment agency	1	\$15,000	\$15,000	100%	0	0	0	0
Whol plumb/hydraulics	1	\$2,500	\$2,500	100%	0	0	0	0
Mfg elevator/escaltrs	1	\$2,500	\$2,500	100%	0	0	0	0
Mfg photograph equip	1	\$2,500	\$2,500	100%	0	0	0	0
Mfg computers	1	\$1,000	\$1,000	100%	0	0	0	0
Misc communictns svcs	1	\$1,000	\$1,000	100%	0	0	0	0
Passenger car rental	1	\$1,000	\$1,000	100%	0	0	0	0
Short-trm busn credit	1	\$500	\$500	100%	0	0	0	0
Misc business credit	1	\$500	\$500	100%	0	0	0	0
Ret stationery	1	\$500	\$500	100%	0	0	0	0
Whol motor vehicles	1	\$500	\$500	100%	0	0	0	0
Electric services	1	\$500	\$500	100%	0	0	0	0
Books-print/publish	1	\$250	\$250	0%	0	100	0	0
Reg misc coml sector	1	\$250	\$250	100%	0	0	0	0
Information retrieval	1	\$250	\$250	100%	0	0	0	0
Whol chemicals	1	\$250	\$250	100%	0	0	0	0
Misc business service	1	\$250	\$250	100%	0	0	0	0
Lithographic printing	1	\$100	\$100	100%	0	0	0	0
Other Categories								
Cash experiences	21	\$3,500	\$750	--	--	--	--	--
Unknown	2	\$5,050	\$5,000	--	--	--	--	--
Unfavorable comments	0	\$0	\$0	--	--	--	--	--
Placed for collections with D&B:	0	\$0	\$0	--	--	--	--	--
Other	0	N/A	\$0	--	--	--	--	--
Total in D&B's file	63	\$338,700	\$100,000	--	--	--	--	--

Payments Beyond Terms

Total (Last 24 Months): 4

Date ▼	Paying Record	High Credit	Now Owes	Past Due	Selling Terms	Last sale w/f (Mo.)
11/2016	Ppt-Slow 30	\$5,000	\$0	\$0	N30	6-12 mos
02/2016	Ppt-Slow 30	\$1,000	\$1,000	\$750	--	1 mo
03/2015	Slow 30	\$7,500	\$7,500	\$7,500	--	--
11/2014	Slow 60	\$250	\$0	\$0	N30	6-12 mos

All Payments

Total (Last 24 Months): 63

Date ▼	Paying Record	High Credit	Now Owes	Past Due	Selling Terms	Last sale w/f (Mo.)
12/2016	Ppt	\$15,000	\$0	\$0	--	4-5 mos
11/2016	Ppt	\$100,000	\$20,000	\$0	N30	1 mo
11/2016	Ppt	\$45,000	\$0	\$0	--	6-12 mos
11/2016	Ppt	\$25,000	\$15,000	\$0	--	1 mo
11/2016	Ppt	\$15,000	\$0	\$0	N30	2-3 mos
11/2016	Ppt	\$10,000	\$10,000	\$0	--	1 mo
11/2016	Ppt	\$5,000	\$0	\$0	--	4-5 mos
11/2016	Ppt	\$2,500	\$0	\$0	--	4-5 mos
11/2016	Ppt	\$2,500	\$750	\$0	--	1 mo
11/2016	Ppt	\$2,500	\$2,500	\$0	--	1 mo
11/2016	Ppt	\$1,000	\$1,000	\$0	--	1 mo
11/2016	Ppt	\$1,000	\$750	\$0	--	1 mo
11/2016	Ppt	\$500	\$500	\$0	--	1 mo
11/2016	Ppt	\$500	\$500	\$0	Lease Agreemnt	1 mo
11/2016	Ppt	\$50	\$0	\$0	--	6-12 mos
11/2016	Ppt-Slow 30	\$5,000	\$0	\$0	N30	6-12 mos
11/2016	(017)	--	\$0	\$0	Cash account	1 mo
10/2016	Ppt	\$15,000	\$250	\$0	--	1 mo
10/2016	Ppt	\$10,000	\$0	\$0	--	2-3 mos
10/2016	Ppt	\$10,000	\$0	\$0	--	2-3 mos
10/2016	Ppt	\$7,500	\$0	\$0	--	2-3 mos
10/2016	Ppt	\$5,000	\$500	\$0	--	4-5 mos
10/2016	Ppt	\$5,000	\$50	\$0	--	1 mo
10/2016	Ppt	\$1,000	\$1,000	\$0	--	1 mo
10/2016	Ppt	\$250	\$0	\$0	--	6-12 mos
10/2016	(026)	--	--	--	Sales COD	1 mo
10/2016	(027)	\$250	--	--	--	1 mo
09/2016	(028)	\$100	--	--	Cash account	6-12 mos
09/2016	(029)	\$100	--	--	Cash account	1 mo
08/2016	Ppt	\$250	\$0	\$0	--	6-12 mos

Date ▼	Paying Record	High Credit	Now Owes	Past Due	Selling Terms	Last sale w/f (Mo.)
07/2016	Ppt	\$250	\$0	\$0	--	6-12 mos
07/2016	(032)	\$50	--	--	Cash account	6-12 mos
07/2016	(033)	\$50	--	--	Cash account	1 mo
07/2016	(034)	\$50	--	--	Cash account	6-12 mos
06/2016	(035)	\$50	--	--	Cash account	1 mo
06/2016	(036)	\$50	--	--	Cash account	1 mo
05/2016	(037)	\$750	--	--	Cash account	1 mo
05/2016	(038)	\$500	\$500	--	Cash account	--
05/2016	(039)	\$500	\$500	--	Cash account	--
05/2016	(040)	\$50	--	--	Cash account	6-12 mos
05/2016	(041)	\$50	--	--	Cash account	6-12 mos
05/2016	(042)	--	\$0	\$0	Cash account	6-12 mos
04/2016	Slow 15	\$500	\$500	\$500	--	--
02/2016	Ppt-Slow 30	\$1,000	\$1,000	\$750	--	1 mo
02/2016	(045)	\$250	\$0	\$0	--	6-12 mos
01/2016	Ppt	\$1,000	\$0	\$0	--	6-12 mos
01/2016	Ppt	\$500	\$0	\$0	N30	6-12 mos
11/2015	(048)	\$50	--	--	Cash account	1 mo
11/2015	(049)	\$50	--	--	--	1 mo
11/2015	(050)	\$50	--	--	Cash account	6-12 mos
11/2015	(051)	\$50	--	--	Cash account	1 mo
10/2015	Ppt	\$100	--	--	--	1 mo
09/2015	Ppt	\$500	\$0	\$0	--	6-12 mos
09/2015	(054)	\$250	--	--	Cash account	1 mo
07/2015	Ppt	\$30,000	\$250	--	Lease Agreemnt	--
07/2015	(056)	\$5,000	\$5,000	\$0	N30	--
06/2015	Ppt	\$500	\$0	\$0	--	6-12 mos
03/2015	Slow 30	\$7,500	\$7,500	\$7,500	--	--
03/2015	(059)	\$750	--	--	Cash account	1 mo
02/2015	(060)	\$50	--	--	Cash account	6-12 mos
01/2015	Ppt	\$2,500	\$0	--	--	6-12 mos
12/2014	Ppt	\$500	\$0	\$0	--	6-12 mos
11/2014	Slow 60	\$250	\$0	\$0	N30	6-12 mos

Indications of slowness can be the result of disputes over merchandise, skipped invoices, etc. Accounts are sometimes placed in collection even though the existence or amount of debt is disputed.

The public record items contained in this report may have been paid, terminated, vacated or released prior to the date this report was printed.

Company Overview

Company Name:	MEASURED PROGRESS, INC.	URL:	www.measuredprogress.org
Doing Business As:	MEASURED PROGRESS, INC.	Stock Symbol:	NA
Street Address:	100 Education Way Dover, NH 03820	History:	NA
Phone:	(603) 749-9102	Operations:	NA
Fax:	(603) 749-6398	Present Management Control:	NA
		Annual Sales:	\$93,772,537

History

The following information was reported: **10/28/2016**

Officer(s):

MARTIN BORG, PRES-CEO
 JAMES M BOWEN, CIO
 PATTI AYER, SEC-TREAS
 SHELLY CRAIG, INTERIM CFO
 STUART KAHL, FOUNDER

DIRECTOR(S):

THE OFFICER(S) and Board Members: Alice Irby, Mark Elgart, Karen Cowe, Dan Caton .

The Delaware Secretary of State's business registrations file showed that Measured Progress, Inc. was registered as a Non-Profit Corporation on January 28, 2000, under file registration number 332905.
 Business started 1983 by Richard K Hill and Stuart Kahl.

RECENT EVENTS:

On November 24, 2010, sources stated that Datawise, Inc., Redding, CA, was acquired by Measured Progress, Inc., Dover, NH, on November 10, 2010. With this acquisition, Datawise, Inc. will operate as a subsidiary of Measured Progress, Inc. The employees and management have been retained at this time. Other details were not disclosed.
 On September 16, 2010, an inside source stated that Measured Progress, Inc., Dover, NH, has completed the acquisition of Nimble Assessment Systems, Inc., Newton, MA, on September 9, 2010. With this acquisition, Nimble Assessment Systems, Inc. now operates as a wholly-owned subsidiary of Measured Progress, Inc. Employees and management were retained. Terms were not disclosed.
 MARTIN BORG. Martin Borg joined Measured Progress as president in November of 2008 and was appointed chief executive officer in 2011.
 JAMES M BOWEN. James M. Bowen assumed the position of Chief Information Officer at Measured Progress in September 2014.
 PATTI AYER. Antecedents are unknown.
 SHELLY CRAIG. Acting CFO effective June 1, 2015.
 STUART KAHL born 1948. Stuart Kahl co-founded Measured Progress as Advanced Systems in Measurement and Evaluation, Inc. in 1983, serving as vice president during the company's first fourteen years and as president and chief executive officer from 1997 to 2011.
 .
 MARTIN BORG. Work history unknown.
 JAMES M BOWEN. Work history unknown.
 PATTI AYER. Work history unknown.
 SHELLY CRAIG. Work history unknown.
 STUART KAHL. Work history unknown.

Business address has changed from 1 Washington Center, Dover, NH, 03820 to 100 Education Way, Dover, NH, 03820.
 Business address has changed from 171 Watson Rd, Dover, NH, 03820 to 1 Washington Center, Dover, NH, 03820.
 Business address has changed from 100 Education Way , Dover, NH, 03820 to 100 Education Way, Dover, NH, 03820.

Business Registration

We currently don't have enough data to display this section.

Operations

10/28/2016

Description:

Provides educational assessment and services in both state and district areas (100%).

ADDITIONAL TELEPHONE NUMBER(S): Facsimile (Fax) 603 749-6398.

Terms are Net 30 days. Sells to commercial concerns. Territory : United States.

Nonseasonal.

Employees: 340 which includes officer(s). 323 employed here.

Facilities: Owns premises in steel building.

Location: NA

Branches: Maintains a branch location in Dover, NH.

Subsidiaries: NA

Subsidiaries: NA

Subsidiaries: NA

Subsidiaries: NA

Subsidiaries: This business has one subsidiary listed below.

New Horizon's in Child Development Inc (100%) chartered 1998. Operates as a child care center.

SIC & NAICS

SIC:

Based on information in our file, D&B has assigned this company an extended 8-digit SIC. D&B's use of 8-digit SICs enables us to be more specific to a company's operations than if we use the standard 4-digit code. The 4-digit SIC numbers link to the description on the Occupational Safety & Health Administration (OSHA) Web site. Links open in a new browser window.

8732 0201 Educational research

NAICS:

541720 Research and Development in the Social Sciences and Humanities

Public Filings

Currency: Shown in USD unless otherwise indicated

Summary

The following data includes both open and closed filings found in D&B's database on this company.

Record Type	# of Records	Most Recent Filing Date
Bankruptcy Proceedings	-	-
Judgments	0	-
Liens	3	07/14/11
Suits	0	-
UCCs	81	02/11/16

The following Public Filing data is for information purposes only and is not the official record.

Certified copies can only be obtained from the official source.

Judgments

We currently don't have enough data to display this section.

Liens

A lien holder can file the same lien in more than one filing location. The appearance of multiple liens filed by the same lien holder against a debtor may be indicative of such an occurrence.

Amount: 1140
Status: Open
DOCKET NO. 11JG026182
Type State: State Tax
Filed By: STATE OF OHIO
Against: MEASURED PROGRESS INC
Where Filed: FRANKLIN COUNTY COMMON PLEAS COURT, COLUMBUS, OH
Date Status Attained: 07/14/11
Date Filed: 07/14/11
Latest Info Received: 10/25/12

Amount: 601
Status: Open
DOCKET NO. 10JG030631
Type State: State Tax
Filed By: STATE OF OHIO
Against: MEASURED PROGRESS INC
Where Filed: FRANKLIN COUNTY COMMON PLEAS COURT, COLUMBUS, OH
Date Status Attained: 08/05/10
Date Filed: 08/05/10
Latest Info Received: 11/06/12

Amount: 335
Status: Open
DOCKET NO. 09JG020919
Type State: State Tax
Filed By: STATE OF OHIO
Against: MEASSURED PROGRESS INC
Where Filed: FRANKLIN COUNTY COMMON PLEAS COURT, COLUMBUS, OH
Date Status Attained: 04/18/09
Date Filed: 04/18/09
Latest Info Received: 11/06/12

Suits

We currently don't have enough data to display this section.

UCC Filings

Collateral: Negotiable instruments including proceeds and products - Accounts receivable including proceeds and products - Inventory including proceeds and products - Account(s) including proceeds and products - and OTHERS
Type: Original
Sec.Party: TD BANKNORTH, NATIONAL ASSOCIATION, CONCORD, NH
Debtor: MEASURED PROGRESS, INC.
Filing No.: 6286109 4
Filed With: SECRETARY OF STATE/UCC DIVISION, DOVER, DE
Date Filed: 08/17/06
Latest Info Received: 10/09/06

Type: Amendment
Sec.Party: TD BANKNORTH, NATIONAL ASSOCIATION
Debtor: MEASURED PROGRESS, INC.
Filing No.: 2007 0269356
Filed With: SECRETARY OF STATE/UCC DIVISION, DOVER, DE
Date Filed: 01/17/07
Latest Info Received: 02/26/07
Original Filing No.: 6286109 4
Original UCC Filed Date: 08/17/06

Type: Amendment
Sec.Party: TD BANKNORTH, NATIONAL ASSOCIATION, CONCORD, NH
Debtor: MEASURED PROGRESS, INC.
Filing No.: 2007 2379427
Filed With: SECRETARY OF STATE/UCC DIVISION, DOVER, DE
Date Filed: 06/22/07
Latest Info Received: 07/19/07
Original Filing No.: 6286109 4
Original UCC Filed Date: 08/17/06

Type: Amendment
Sec.Party: TD BANKNORTH, NATIONAL ASSOCIATION
Debtor: MEASURED PROGRESS, INC.
Filing No.: 2007 2655404
Filed With: SECRETARY OF STATE/UCC DIVISION, DOVER, DE
Date Filed: 06/25/07
Latest Info Received: 08/21/07
Original Filing No.: 6286109 4
Original UCC Filed Date: 08/17/06

Type: Amendment
Sec.Party: TD BANKNORTH, NATIONAL ASSOCIATION, CONCORD, NH
Debtor: MEASURED PROGRESS, INC.
Filing No.: 2008 0003861
Filed With: SECRETARY OF STATE/UCC DIVISION, DOVER, DE
Date Filed: 01/02/08
Latest Info Received: 02/06/08
Original Filing No.: 6286109 4
Original UCC Filed Date: 08/17/06

Type: Amendment
Sec.Party: TD BANKNORTH, NATIONAL ASSOCIATION, CONCORD, NH
Debtor: MEASURED PROGRESS, INC.
Filing No.: 2008 1894581
Filed With: SECRETARY OF STATE/UCC DIVISION, DOVER, DE
Date Filed: 06/03/08
Latest Info Received: 07/02/08
Original Filing No.: 6286109 4
Original UCC Filed Date: 08/17/06

Type: Amendment

Sec.Party: TD BANKNORTH. NATIONAL ASSOCIATION, CONCORD, NH
Debtor: MEASURED PROGRESS, INC.
Filing No.: 2008 3835251
Filed With: SECRETARY OF STATE/UCC DIVISION, DOVER, DE
Date Filed: 11/17/08
Latest Info Received: 12/19/08
Original Filing No.: 6286109 4
Original UCC Filed Date: 08/17/06

Type: Release
Sec.Party: TD BANKNORTH, NATIONAL ASSOCIATION, CONCORD, NH
Debtor: MEASURED PROGRESS, INC.
Filing No.: 2009 1096319
Filed With: SECRETARY OF STATE/UCC DIVISION, DOVER, DE
Date Filed: 04/07/09
Latest Info Received: 06/11/09
Original Filing No.: 6286109 4
Original UCC Filed Date: 08/17/06

Type: Amendment
Sec.Party: TD BANKNORTH, NATIONAL ASSOCIATION, CONCORD, NH
Debtor: MEASURED PROGRESS, INC.
Filing No.: 2009 3495683
Filed With: SECRETARY OF STATE/UCC DIVISION, DOVER, DE
Date Filed: 10/30/09
Latest Info Received: 12/02/09
Original Filing No.: 6286109 4
Original UCC Filed Date: 08/17/06

Type: Amendment
Sec.Party: TD BANKNORTH, NATIONAL ASSOCIATION, CONCORD, NH
Debtor: MEASURED PROGRESS, INC.
Filing No.: 2010 3853680
Filed With: SECRETARY OF STATE/UCC DIVISION, DOVER, DE
Date Filed: 11/03/10
Latest Info Received: 12/02/10
Original Filing No.: 6286109 4
Original UCC Filed Date: 08/17/06

Collateral: Negotiable instruments including proceeds and products - Accounts receivable including proceeds and products - Inventory including proceeds and products - Account(s) including proceeds and products - and OTHERS

Type: Original
Sec.Party: TD BANKNORTH, NATIONAL ASSOCIATION, CONCORD, NH
Debtor: MEASURED PROGRESS, INC.
Filing No.: 20060015817A
Filed With: SECRETARY OF STATE/CORPORATION DIVISION, CONCORD, NH
Date Filed: 06/29/06
Latest Info Received: 07/14/06

Type: Continuation

Sec.Party: TD BANKNORTH, NATIONAL ASSOCIATION, CONCORD, NH
Debtor: MEASURED PROGRESS, INC.
Filing No.: 110211043534
Filed With: SECRETARY OF STATE/CORPORATION DIVISION, CONCORD, NH
Date Filed: 02/09/11
Latest Info Received: 10/18/11
Original Filing No.: 20060015817A

Collateral: Negotiable instruments and proceeds - Inventory and proceeds -
Accounts receivable and proceeds - Assets and proceeds - and OTHERS
Type: Original
Sec.Party: TD BANK, N.A., DOVER, NH
Debtor: MEASURED PROGRESS, INC.
Filing No.: 2011 2507419
Filed With: SECRETARY OF STATE/UCC DIVISION, DOVER, DE
Date Filed: 06/29/11
Latest Info Received: 07/21/11

Type: Amendment
Sec.Party: TD BANK, N.A.
Debtor: MEASURED PROGRESS, INC.
Filing No.: 2015 1902864
Filed With: SECRETARY OF STATE/UCC DIVISION, DOVER, DE
Date Filed: 05/04/15
Latest Info Received: 06/05/15
Original Filing No.: 2011 2507419
Original UCC Filed Date: 06/29/11

Collateral: Account(s) and proceeds - General intangibles(s) and proceeds - Chattel
paper and proceeds - Leased Equipment and proceeds
Type: Original
Sec.Party: TD EQUIPMENT FINANCE, INC., CHERRY HILL, NJ
Debtor: MEASURED PROGRESS, INC.and OTHERS
Filing No.: 1602011407143
Filed With: SECRETARY OF STATE/CORPORATION DIVISION, CONCORD, NH
Date Filed: 01/29/16
Latest Info Received: 03/18/16

Collateral: Inventory and proceeds - Accounts receivable and proceeds - Account(s)
and proceeds - Fixtures and proceeds - and OTHERS
Type: Amendment
Sec.Party: TD EQUIPMENT FINANCE, INC., CHERRY HILL, NJ
Debtor: MEASURED PROGRESS, INC.and OTHERS
Filing No.: 1602121418149
Filed With: SECRETARY OF STATE/CORPORATION DIVISION, CONCORD, NH
Date Filed: 02/11/16
Latest Info Received: 03/18/16
Original Filing No.: 1602011407143
Original UCC Filed Date: 01/29/16

Collateral: Accounts receivable and proceeds - Leased Inventory and proceeds -

Account(s) and proceeds - Contract rights and proceeds - and OTHERS

Type: Original
Sec.Party: TD EQUIPMENT FINANCE, INC., CHERRY HILL, NJ
Debtor: MEASURED PROGRESS, INC.
Filing No.: 2016 0804771
Filed With: SECRETARY OF STATE/UCC DIVISION, DOVER, DE
Date Filed: 02/10/16
Latest Info Received: 03/11/16

Collateral: Accounts receivable and proceeds - Leased Inventory and proceeds - Account(s) and proceeds - Leased Assets and proceeds - and OTHERS
Type: Original
Sec.Party: TD EQUIPMENT FINANCE, INC., CHERRY HILL, NJ
Debtor: MEASURED PROGRESS, INC.
Filing No.: 2015 0608579
Filed With: SECRETARY OF STATE/UCC DIVISION, DOVER, DE
Date Filed: 02/11/15
Latest Info Received: 03/13/15

Collateral: Accounts receivable and proceeds - Leased Inventory and proceeds - Account(s) and proceeds - Leased Assets and proceeds - and OTHERS
Type: Amendment
Sec.Party: TD EQUIPMENT FINANCE, INC., CHERRY HILL, NJ
Debtor: MEASURED PROGRESS, INC.
Filing No.: 2015 0779487
Filed With: SECRETARY OF STATE/UCC DIVISION, DOVER, DE
Date Filed: 02/24/15
Latest Info Received: 03/27/15
Original Filing No.: 2015 0608579
Original UCC Filed Date: 02/11/15

Collateral: Accounts receivable and proceeds - Leased Inventory and proceeds - Account(s) and proceeds - Leased Assets and proceeds - and OTHERS
Type: Amendment
Sec.Party: TD EQUIPMENT FINANCE, INC.
Debtor: MEASURED PROGRESS, INC.
Filing No.: 2015 0954320
Filed With: SECRETARY OF STATE/UCC DIVISION, DOVER, DE
Date Filed: 02/25/15
Latest Info Received: 04/03/15
Original Filing No.: 2015 0608579
Original UCC Filed Date: 02/11/15

Collateral: Assets and proceeds - Communications equipment and proceeds
Type: Original
Sec.Party: GE CAPITAL COMMERCIAL INC., BILLINGS, MT
Debtor: MEASURED PROGRESS, INC.
Filing No.: 2014 3476652
Filed With: SECRETARY OF STATE/UCC DIVISION, DOVER, DE
Date Filed: 08/29/14
Latest Info Received: 10/17/14

Collateral: Account(s) and proceeds - Leased Assets and proceeds - General intangibles(s) and proceeds - Chattel paper and proceeds - and OTHERS
Type: Original
Sec.Party: BANC OF AMERICA LEASING & CAPITAL, LLC, PROVIDENCE, RI
Debtor: MEASURED PROGRESS, INC.
Filing No.: 2007 2616703
Filed With: SECRETARY OF STATE/UCC DIVISION, DOVER, DE
Date Filed: 06/25/07
Latest Info Received: 08/21/07

Collateral: Account(s) and proceeds - General intangibles(s) and proceeds - Chattel paper and proceeds - Leased Computer equipment and proceeds
Type: Original
Sec.Party: BANC OF AMERICA LEASING & CAPITAL, LLC, PROVIDENCE, RI
Debtor: MEASURED PROGRESS, INC.
Filing No.: 2007 2379443
Filed With: SECRETARY OF STATE/UCC DIVISION, DOVER, DE
Date Filed: 06/22/07
Latest Info Received: 07/19/07

Collateral: Account(s) and proceeds - General intangibles(s) and proceeds - Chattel paper and proceeds - Leased Fixtures and proceeds - Leased Computer equipment and proceeds
Type: Original
Sec.Party: BANC OF AMERICA LEASING & CAPITAL, LLC, TUCKER, GA
Debtor: MEASURED PROGRESS, INC.
Filing No.: 2007 0271527
Filed With: SECRETARY OF STATE/UCC DIVISION, DOVER, DE
Date Filed: 01/17/07
Latest Info Received: 05/21/07

The public record items contained herein may have been paid, terminated, vacated or released prior to today's date.

Government Activity

Summary

Borrower (Dir/Guar): NO
Administrative Debt: NO
Contractor: YES
Grantee: YES
Party Excluded from Federal program(s): NO
Possible Candidate:
Labor Surplus Area: publicFilingSectionDetails.govtActivity.laborSurplusArea}
Small Business: N/A
8(A) Firm: N/A

The public record items contained herein may have been paid, terminated, vacated, or released prior to today's date

The public record items contained herein may have been paid, terminated, vacated or released prior to today's date.

Financial Statements

We currently don't have enough data to display this section.

Banking

We currently don't have enough data to display this section.

Special Events

We currently don't have enough data to display this section.

Corporate Linkage

Parent

Company Name	DUNS #	City, State
MEASURED PROGRESS, INC.	10-818-3682	DOVER, NEW HAMPSHIRE

Headquarters (US)

Company Name	DUNS #	City, State
MEASURED PROGRESS, INC.	10-818-3682	DOVER, NEW HAMPSHIRE

US Linkages

Company Name	DUNS #	City, State
Subsidiaries		
NIMBLE ASSESSMENT SYSTEMS, INC.	96-069-0456	NEWTON, MASSACHUSETTS
NEW HORIZON'S IN CHILD DEVELOPMENT INC	02-936-6106	DOVER, NEW HAMPSHIRE
DATAWISE, INC.	06-841-6010	DOVER, NEW HAMPSHIRE
Branches		
MEASURED PROGRESS, INC.	02-094-4703	LOUISVILLE, KENTUCKY
MEASURED PROGRESS, INC.	96-967-2679	DOVER, NEW HAMPSHIRE

International Linkages

We currently don't have enough data to display this section.

Appendix 12: New Hampshire Information Security



Information Security Appendix

Prepared for the
New Hampshire DOE
for RFP 2017-073,
New Hampshire Statewide Assessments

Information Security

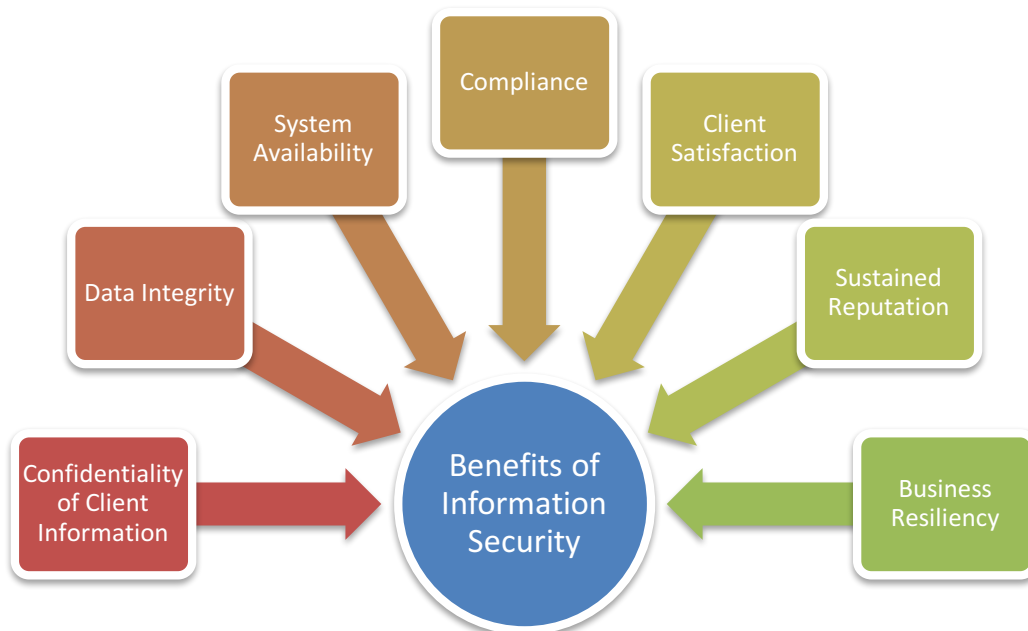
Introduction, Purpose, and Scope

Measured Progress recognizes the critical importance of information security and we understand the essential responsibilities associated with being accountable for confidential and sensitive data such as test content and student data. We are committed to proactively addressing security on several fronts to ensure data confidentiality, integrity, and availability. We will work to ensure that our security policies are clearly documented and mutually understood.

In the text below, we will detail some practices and procedures for maintaining system and data security. We will also describe information security protections within environments developed by and within the span of control of Measured Progress and client data within that span of control to include data at rest and in transit from a Measured Progress environment. These protections do not apply to platforms developed by other parties or environments hosted by other parties.

Information Security Program Overview

The Information Security Officer (ISO) leads the Measured Progress Information Security Program (ISP). This program involves the continuous evaluation of our security controls and other related business policies and procedures. The ISP exists so that we may deliver high quality solutions safely and securely to meet business objectives and exceed client expectations. We execute this strategy by safeguarding the confidentiality, integrity, and availability of systems, data, and solutions by applying administrative, technical, and physical security controls and measuring those controls diligently.



Roles and Responsibilities

Information Security Officer (ISO)

The Information Security Officer (ISO) leads the Information Security Program at Measured Progress. The ISO assesses, develops, maintains, and implements a security program that successfully protects the systems, data, and solutions from loss or compromise. The ISO's responsibilities include assessment of the ISP, making security recommendations, and ensuring the best solutions are applied.

Information Security Working and Advisory Group (ISWAG)

The ISWAG comprises a group of subject matter experts that use a risk-based approach to evaluate security vulnerabilities. The ISWAG meets regularly to review changes in the environment or new threats that may affect the security posture. In addition, the ISWAG applies a risk rating based on the sensitivity of data resident on a system, the span of systems or users affected, and the likelihood of impact. Based on risk, the ISWAG makes a formal report and recommendation, if needed, to the Information Security Council (ISC).

Information Security Council (ISC)

The Chief Information Officer sponsors the Information Security Council. The ISO chairs the ISC, which meets to review security concerns and address the risk to the organization or its clients presented by the concern. The ISC is the decision-making body that has the ability to approve policy and budget around information security matters.

Measured Progress Security Policies

Currently at Measured Progress, security controls and policies exist for the successful operation of the company network, client-facing applications, and other environments.

Auditing and Scanning

The company network and its client-facing applications support critical business functions and house sensitive and protected information. Our engineering teams conduct logging and auditing to help ensure the integrity, confidentiality and availability of information and resources in accordance with Measured Progress security policies. For security and network maintenance purposes, and to align with authoritative guidelines and regulatory guidance, authorized individuals within Measured Progress monitor systems, network traffic and general user activity and conduct audits on servers to ensure proper configuration and operation.

Patch Management

Measured Progress maintains its network and client-facing systems within a patch management program. We perform Operating System (OS) updates that address functionality, security, and system stability as released by vendors. Our engineering teams prioritize updates using a risk-management approach and then test them to reduce negative impact to the environment and our clients. We update client-facing systems during the established maintenance schedules. Systems with installed antivirus software receive definition updates as they are released. We required users to ensure that the most up-to date versions of antivirus software are installed on any device used to conduct Measured Progress business and that users update their antivirus definitions as published by their antivirus provider.

Least Privilege

Measured Progress enforces the concept of least privilege by practice and policy. Privileged accounts such as domain administrator, administrator, SQL Administrator (SA), and any account with privileges that exceed basic user level access, are restricted to only those engineers who require the level of access to accomplish their work. Generally, administrators have basic user accounts for conducting regular business that does not require administrator access.

Acceptable Use Policies

Measured Progress has committed to a culture of integrity and protection for its employees, partners, and the company from illegal or damaging actions perpetrated by individuals, either knowingly or unknowingly.

As such, acceptable use policies are in place. These policies describe acceptable use of company equipment, software, storage media, user accounts, electronic mail, and Internet browsing and describe the expectation of conduct when using these tools as a representative of Measured Progress.

Effective security is a team effort involving the participation and support of every Measured Progress employee and affiliate who deals with information and/or information systems. It is therefore the responsibility of every user to know these guidelines and to conduct their activities accordingly.

To ensure compliance with these policies, Measured Progress does filter Web sites known to conflict with company policy. Measured Progress also audits users for compliance with these policies on a periodic basis.

Password Policy

Measured Progress posts policies for the protection and use of passwords. These policies describe the confidential use and handling of passwords as well as the responsibility of the user to be accountable for the protection of passwords. Policies including length and complexity of passwords, circumstances under which passwords require changing, password reuse, password-protected screen saver, as well as reuse of passwords are described.

Endpoint Security for the Protection of Sensitive Information

Measured Progress implements physical and technical safeguards for all devices that access sensitive information to restrict access to authorized users. We define sensitive or protected information for this policy as *any electronic or hardcopy information considered sensitive by law, policy or contract*. Examples of security measures include but are not limited to:

- Restricting physical access to devices to only authorized personnel
- Ensuring devices are used for authorized business purposes only
- Securing devices (screen lock or logout) prior to leaving area to prevent unauthorized access
- Enabling a password-protected screen saver with a short timeout period to ensure that devices that were left unlocked will secure within a reasonable time
- Complying with all applicable password policies and procedures.

-
- Preventing the installation of unauthorized software
 - Processing and storing sensitive information on an encrypted device, using VPN or behind the network firewall
 - Accessing sensitive information from a company-issued device only
 - Complying with all encryption policies
 - Ensuring the most current antivirus software is installed with the most up-to-date definitions
 - Ensuring that monitors are positioned away from public view; if necessary, install privacy screen filters or other physical barriers to public viewing
 - Ensuring devices are left on but logged off with applications and documents closed in order to facilitate after-hours updates that may include security.
 - Ensuring that all workstations are surge protected by using a protected approved power strip or uninterruptible power supply (UPS)
 - If a remote wireless access point (WAP) is used, the WAP must be configured for security; password-protected at a minimum
 - When remotely accessing sensitive information, the virtual private network (VPN) must be used

In addition to technical and administrative controls, we enforce an effective housekeeping or *clean desk policy* to protect paper documents and other media that contain sensitive information. An organized environment reduces the threat of a security incident. Confidential information will be locked away when unattended and is less likely to be lost or compromised.

Mobile Computing and Storage Device Policy

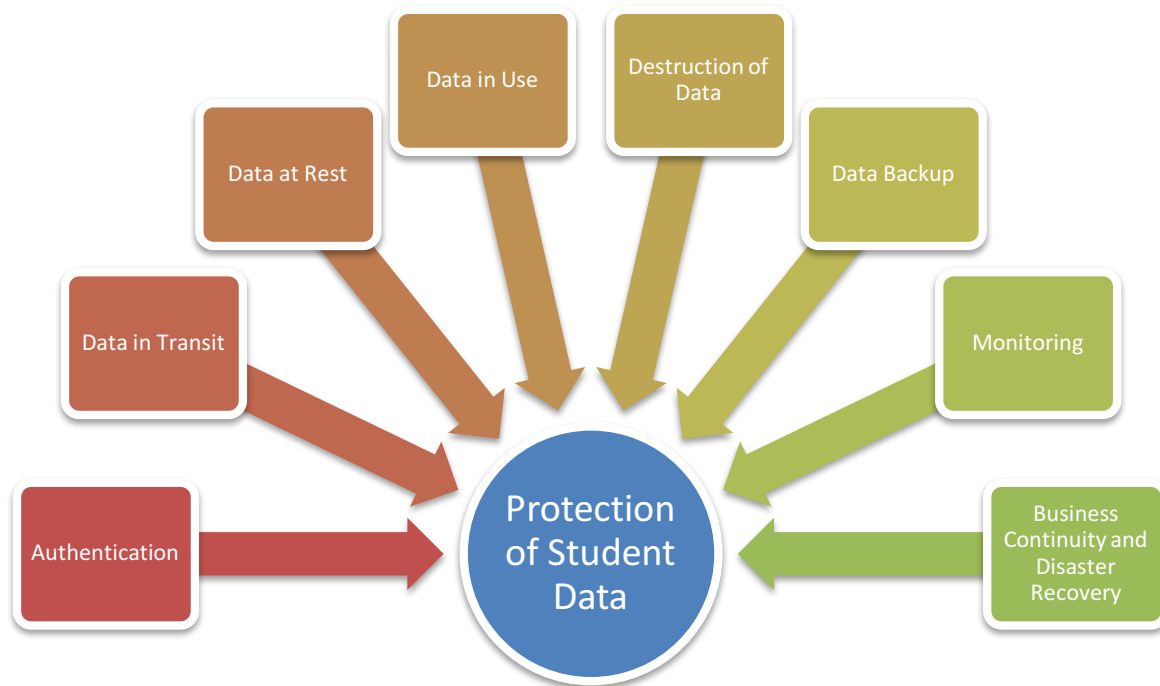
Measured Progress has established a policy and procedure for managing the use of personal mobile computing devices and storage media that contain or access information resources.

General Security Policies

As with most computing environments, we employ best practices and general policies to maintain the availability, integrity, and confidentiality of data and systems. Some of these policies include:

- remote access
- removable media
- wireless networks
- physical security

Protection of Student Data



Data Collection and Management

Authentication

We anticipate that the client will provide authentication data such as username conventions to Measured Progress. Measured Progress generates passwords and matches them with user names. The credentials are uploaded in bulk to the system and provided through appropriate channels to users.

The Measured Progress Customer Care Center supports user authentication and user management support calls for students, administrators, and educators. If password assistance occurs via email, the pre-registered address on file will be used. Password information will not be provided over the phone.

Data in Transit

Measured Progress uses secure-file transfer protocols (“SFTP”) and hyper-text transfer protocol over secure socket layer (“HTTPS”) as cryptographic protocols that provide confidentiality and integrity of data during transmission over the Internet.

Data at Rest

Student data contained within our systems or environments resides on encrypted storage media in an environment within the United States that provides an industry-standard set of security controls to include network protections such as firewall, secure server configuration, access controls, user management, authentication, remote VPN, logging and auditing, antivirus protections, physically secured data center, and company policies and procedures.

Data in Use

At the database level, integrated Active Directory (AD) security via non-domain login service accounts provide authentication from the application pools on the Web to the database. Network protections such as firewall, secure server configuration, user management, authentication, remote VPN, logging and auditing, antivirus protections, physically secured data center, and company policies and procedures provide additional layers of security.

Destruction of Data

- When confidential data is no longer needed, Measured Progress will return data to the client or delete and overwrite the data space in a controlled manner. Hardcopy data will be shredded.
- Should endpoint system hard drives, and removable storage media such as thumb drives and portable hard drives contain sensitive data, they will be erased and space overwritten repeatedly.
- Regular, active internal data is located on a shared network storage system with encrypted disk. Depending on the size of the data, it may or may not be possible to securely destroy/overwrite the dataset in one sweep. A more laborious and time-intensive process can be implemented to destroy/overwrite the dataset in pieces (folder by folder), but it is extremely labor and time intensive. For example, securely overwriting 13 megabytes of data can take up to 15 minutes. Most of our contracts contain anywhere from 50-500GB of data. Due to the shared storage system, it is not possible to sanitize the physical disks.
- To destroy external backup data, we can remove automated backups from the system and CommVault will programmatically purge the data from the backup sets. Client data is backed up in a proprietary blob format that is completely unreadable when removed from the backup system and its indexes. Due to the shared storage system, it is not possible to sanitize the physical disks nor do we have control over the destruction of physical media at the offsite location.

Background Investigations

Measured Progress conducts background investigations for criminal activity and to verify education as a regular hiring practice. Prior to conducting any development work, Measured Progress will verify that a background investigation has been conducted for all individuals involved in the software development process and certify that each individual has successfully cleared the investigation.

Business Continuity

Measured Progress is committed to our business partners and understands fully the responsibility connected with services supplied by and agreed to between organizations. Our commitment is to provide a business continuity structure that protects both the interest of our business partners and Measured Progress.

Data Backup

All data is stored on encrypted disks, in fault-tolerant RAID configurations. All production data is backed up at least daily. The critical, frequently changing databases are backed up hourly or more often as appropriate. Copies of backup data are stored onsite for rapid restore, as well as offsite for disaster recovery purposes. Offsite backup data is securely transferred to Amazon S3

cloud storage. This allows us to move data offsite efficiently, ensure the integrity of the backup media, and have immediate access to backup data for recovery should the need arise.

Monitoring

Measured Progress employs various solutions to perform either active system monitoring or on-demand system monitoring depending on the business need. These tools monitor the state of the system to ensure normal system function and reports data such as capacity, efficiency, and resource management as well as anomalies, errors, and other trouble alerts.

Intrusion Detection System

Measured Progress employs an intrusion detection system to protect systems and data in the following ways:

- Holistic view of server environments
- Centralized analysis of millions of events to zero in on real threats
- 24x7 Security Operations Center monitoring of all activity
- Security monitoring of log data
- Customizable log archival periods to store data
- Real-time analyst reviews of logs, escalating alerts and additional security intelligence
- Protects web applications from dangerous and common attacks (SQL injection, cross-site scripting, and other OWASP Top Ten attacks)
- Provides Web application protection for all HTTP/HTTPS request
- Positive security model alerts based on behavior, detecting zero-day attacks
- Learning engine adapts security policies to application behavior

Disaster Recovery

Measured Progress maintains a formal Disaster Recovery Program that supports the resilience of the company and the client's operating environment. The Disaster Recovery Plan is regularly updated to ensure successful and accurate response during a crisis. Measured Progress aligns its Disaster Recovery initiative with the client's needs by creating a custom recovery plan based on the client's environment that becomes part of the master Disaster Recovery document.

Data Breach Management

Although security controls and best practices are in place to protect information, cyber-security is a dynamic environment with new vulnerabilities exposed daily. No program can guarantee security. If a security breach is suspected, it is immediately reported to the ISO. The ISO will convene a team of subject matter experts to triage the event and take appropriate action.

General response actions are as such:

- Contain the information – stop the flow of information, secure the data or method of intrusion
- Confirm that a breach took place – how, why, when the breach occurred
- Determine the extent of the breach – data, systems, equipment, and backups affected

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- Report the event to leadership who will manage further communications to Client, Vendors, and Service Providers as required and appropriate
 - Implement the Disaster Recovery Plan to restore data and operations if required.
 - Review security protocols and enhance or upgrade as needed
 - Test and Implement enhancements and upgrades as required

