

## **I. Teacher Preparation**

### ***A. Elementary School Licensure Requirements***

#### **1. Licensure Grade Levels<sup>1</sup>**

|   |     |                                   |
|---|-----|-----------------------------------|
| a. Does the state offer an Early Elementary Education credential (Preschool/Kindergarten to Grade 2/3)? | Yes | Early Childhood (Birth - Grade 3) |
| b. Does the state offer an Elementary Education credential (Kindergarten/Grade 1 to Grade 5/6)?         | Yes | Elementary (K-8)                  |

#### **2. Early Elementary<sup>2</sup>**

|  |     |
|--|-----|
| a. Is an educational practice examination required for licensure?                    | Yes |
| b. Is an examination in reading and writing or language arts required for licensure? | Yes |
| c. Is a mathematics examination required for licensure?                              | Yes |
| d. Is a science examination required for licensure?                                  | No  |

#### **3. Elementary Education<sup>2</sup>**

|  |     |
|--|-----|
| a. Is an educational practice examination required for licensure?                    | Yes |
| b. Is an examination in reading and writing or language arts required for licensure? | Yes |
| c. Is a mathematics examination required for licensure?                              | Yes |
| d. Is a science examination required for licensure?                                  | Yes |

#### **4. Licensure Renewal**

|  |                      |                          |
|--|----------------------|--------------------------|
| a. What is the period of validity for an educator's license? | Less than 5 years    | X (3 years) <sup>3</sup> |
|  | 5 years              |                          |
|  | Greater than 5 years |                          |

|  |             |   |  |
|--|-------------|---|--|
| b. Can in-service teachers receive certification credit for professional development courses/programs in Earth and Space Sciences? | Yes         |   | NM does not require professional development credits for license renewal. <sup>4</sup> |
|  | No          |   |  |
|  | Local issue |   |  |
|  | Unknown     | X |  |

### ***B. Elementary School Curriculum Support***

#### **1. Guidelines for Curriculum Development**

|  |    |
|--|----|
| a. Does the SEA provide guidelines for curriculum development, beyond the state's science standards? | No |
|--|----|

|   |                                  |  |  |
|---|----------------------------------|--|--|
| b. If yes, which of the following does the state provide? | 1. Science frameworks            |  |  |
|   | 2. Curriculum maps               |  |  |
|   | 3. Learning progressions         |  |  |
|   | 4. Benchmark maps                |  |  |
|   | 5. Templates for unit design     |  |  |
|   | 6. Curriculum development guides |  |  |
|   | 7. Model units                   |  |  |
|   | 8. Lesson plan templates/guides  |  |  |
|   | 9. Web-based lesson plan portals |  |  |
|   | 10. Model lesson plans           |  |  |
|   | 11. Assessment guidelines        |  |  |

## 2. Instructional Materials<sup>5</sup>

|  |             |   |
|--|-------------|---|
| a. At what level does adoption of instructional materials occur? | State level | X |
|  | Local level |   |

|  |     |  |
|--|-----|--|
| b. If the state is an adoption state, do adopted materials in science include those that address topics specific to the geosciences? | Yes | <p>Approved publishers include: Center for Hands-On-Learning; Delta/FOSS (Full Option Science System ); Harcourt School Publishers; Houghton Mifflin; MacMillan-McGraw Hill; Scott Foresman</p> <p>All of the titles are general science titles, e.g. Journey into Science, Science, and Science Pupil Edition. However, adopted titles have been reviewed as providing instructional material in alignment with the standards at the 80th percentile overall.</p> |
|--|-----|--|

## 3. Support for New Standards<sup>4</sup>

|   |             |   |   |
|---|-------------|---|---|
| a. Does that state provide resources to school systems to effectively implement the standards as they change? | Yes         | X | The state provided professional development for teachers and administrators in the transition to the Common Core State Standards. If New Mexico were to adopt the NGSS, the process would ideally include training for implementation. The next science textbook adoption is in 2017. |
|   | No          |   |   |
|   | Local issue |   |   |
|   | Unknown     |   |   |

## 4. Professional Development<sup>4</sup>

|  |                             |   |   |
|--|-----------------------------|---|---|
| a. Does the SEA provide professional development that is, at least in part, specific to the geosciences? | Yes, provided by SEA        |   | Teacher preparation for new teachers is overseen by the Higher Education Department. On an individual level, teachers may choose to become involved with Project Learning Tree, GLOBE, or Project Wild. |
|  | Yes, but independent of SEA |   |   |
|  | No                          |   |   |
|  | Local issue                 | X |   |
|  | Unknown                     |   |   |

## II. Curriculum

### *A. Elementary School State Science Standards*

#### **1. Organization<sup>6</sup>**

|   |   |
|---|---|
| a. What is the name of the state's elementary school science standards? | New Mexico Science Content Standards, Benchmarks, and Performance Standards |
|---|---|

|  |                        |   |
|--|------------------------|---|
| b. What is the grade-level arrangement of the standards? | Grade specific         | X |
|  | Grade-level bands      |   |
|  | Benchmark grade levels |   |

|                                    |   |   |  |                       |
|------------------------------------|---|---|--|-----------------------|
| c. How are the standards outlined? | Overarching standard statements (level one)   | X | d. What terms are used to identify each level? | Benchmarks            |
|                                    | Sub-standard statements that provide more detail to the overarching standards (level two) | X |  | Performance Standards |

#### **2. Content<sup>6</sup>**

|   |     |   |
|---|-----|---|
| a. Are the science standards subdivided according to scientific discipline (Physical Science, Life Science, and Earth and Space Science)?   | Yes | <p>The State's standards are organized according to 3 strands:</p> <ol style="list-style-type: none"> <li>1) Scientific Thinking and Practice</li> <li>2) Content of Science</li> <li>3) Science and Society</li> </ol> <p>The second strand, Content of Science, is subdivided into three Standards:</p> <p>Standard I Physical Science<br/>Standard II Life Science<br/>Standard III Earth and Space Science</p>  |
| b. Are the Earth and Space Science standards identified by core ideas in the geosciences?   | Yes | <p>Strand II: Content of Science<br/>Standard III: Earth and Space Science<br/>Benchmark I: Structure of the solar system and the objects in the universe.<br/>Benchmark II: Structure and formation of Earth and its atmosphere and the processes that shape them.</p>   |
| c. Do the state's standards include current issues in the geosciences? Current issues in the geosciences can be described as Earth science processes altered by human activities or Earth science processes that affect human well- | Yes | <p>As part of Strand III: Science and Society</p> <ul style="list-style-type: none"> <li>- Grade 4 performance standard states, "Know that science has identified substances called pollutants that get into the environment and can be harmful to living things."</li> <li>- Grade 5 performance standard states, "Describe the contributions of science to understanding local or current issues (e.g., watershed and community decisions regarding water use)."</li> </ul> |

|  |     |  |
|--|-----|--|
| being.   |     |  |
| d. Do the state's standards include career exploration in the geosciences? | Yes | As part of Strand III: Science and Society - Grade 4 performance standard states, "Know that both men and women of all races and social backgrounds choose science as a career." |

### 3. Development

|   |                                       |   |  |
|---|---------------------------------------|---|--|
| a. When were the standards adopted or last revised? | Within the last two years (2014-2015) |   | Approved 2003 (Reformatted 6/18/2008) <sup>6</sup> |
|   | Between 3-6 years ago (2010-2013)     |   |  |
|   | Between 7-10 years ago (2006-2009)    |   |  |
|   | More than 10 years ago (before 2006)  | X |  |

|  |   |   |  |
|--|---|---|--|
| b. Does the state have plans to review/revise its science standards? | Currently under review                      | X | New Mexico's teachers are doing a comparative analysis of the NM Science Standards and the NGSS in January and February of 2015. The results of the analysis will be a large factor in the decision to move towards adoption of the NGSS. <sup>4</sup> |
|  | Within the next 5 years (2015-2020)         |   |  |
|  | Between 5 and 10 years from now (2020-2025) |   |  |
|  | No plan or timeline exists                  |   |  |
|  | Unknown                                     |   |  |

### B. Middle School State Science Standards

#### 1. Content<sup>6</sup>

|  |   |
|--|---|
| a. What is the name of the state's middle school science standards?        | New Mexico Science Content Standards, Benchmarks, and Performance Standards |
| b. Are Earth and Space Science topics included in the standards?           | Yes   |
| c. Is Life Science and Physical Science content included in the standards? | Yes   |

### C. High School State Science Standards

#### 1. Content<sup>6</sup>

|  |   |
|--|---|
| a. What is the name of the state's high school science standards?          | New Mexico Science Content Standards, Benchmarks, and Performance Standards |
| b. Are Earth and Space Science topics included in the standards?           | Yes   |
| c. Is Life Science and Physical Science content included in the standards? | Yes   |

### D. High School Course Requirements

#### 1. Credits Required for Graduation<sup>7</sup>

|   |         |
|---|---------|
| a. What is the total number of credits required for graduation?   | Unknown |
| b. What is the number of science credits required for graduation? | 3       |

## **2. Course Content<sup>7</sup>**

|   |            |
|---|------------|
| a. Is Life Science required?                | No         |
| b. Is Physical Science required?            | No         |
| c. Is Earth Science required?               | No         |
| d. Is Environmental Science required?       | No         |
| e. Is Earth Science accepted?               | Not stated |
| f. Does Earth Science have to be lab-based? | Not stated |

### **III. Instruction**

#### ***A. Elementary School Approaches to Instruction***

##### **1. State Science Standards<sup>6</sup>**

|   |         |
|---|---------|
| a. Do the state's science standards provide guidelines regarding any specific approach to be used for science teaching? | Yes     |
| b. If so, what is the term used to identify this approach?  | Inquiry |
| c. Do the state's science standards provide a rationale for this approach?  | No      |
| d. If so, what is the rationale?  | N/A     |

##### **2. Guidelines for Curriculum Planning**

|  |     |
|--|-----|
| a. If the state offers guidelines for curriculum planning, do these advocate more specific strategies for science instruction? | No  |
| b. If so, what are the strategies?   | N/A |

##### **3. Technology<sup>4</sup>**

|   |   |
|---|---|
| a. Are decisions regarding the use of technology in elementary science classrooms made at the state level or local level? | Local level   |
| b. What kinds of technology are being used by elementary school science teachers in the state?                            | Varies by teacher and the technology and internet capabilities at the school. |

## **IV. Learning Contexts**

### ***A. Elementary School Classrooms***

#### **1. Class Size<sup>4</sup>**

|   |   |
|---|---|
| a. What is the average number of students in an elementary classroom?           | Unknown   |
| b. What is the maximum allowable number of students in an elementary classroom? | By statute, if a Kindergarten class has greater than 14 students, an aide must be present. The class size cannot be greater than 21 unless there is a waiver. Grade 1: if there are more than 21 students an aide must be present. For grades 1-3, the average, taken together, can be no greater than 22, unless there is a waiver, and for grades 4 – 6, the average cannot be greater than 24, unless a waiver is granted. |

#### **2. Instructional Time<sup>4</sup>**

|   |  |   |  |
|---|--|---|--|
| a. At the elementary level, are teachers recommended or required to dedicate a certain amount of instructional time to science? | There is no time requirement                                   | X |  |
|   | Local decision   |   |  |
|   | Teachers must spend a certain amount of time teaching science. |   |  |
|   | Unknown  |   |  |

### ***B. Elementary School Support Services***

#### **1. Specialized Support<sup>4</sup>**

|  |   |   |                               |
|--|---|---|-------------------------------|
| a. Are there specific policies in place regarding English as a Second Language (ESL) and Special Education services that could impact science instruction (e.g. pull-out or push-in models)? | Local level decision                                      |   | This is specified by the IEP. |
|  | Depends on the specifications of a student's IEP or ILP   | X |                               |
|  | Teachers must follow specific practices regarding science |   |                               |
|  | Unknown   |   |                               |

**V. Extra-Curricular Programs**

***A. Elementary School Geosciences Enrichment Opportunities***

**1. After-School and Informal Education<sup>4</sup>**

|  |     |
|--|-----|
| a. Are opportunities to engage in geoscience-related topics outside of school (e.g. after-school programs and informal education programs) being offered to students in the state? | Yes |
|--|-----|

|                          |   |
|--------------------------|---|
| b. If so, what are they? | <p>Varies by teacher and district.</p> <p>The Math and Science Bureau has a Math and Science Advisory Council, participates in the STEM Collective Impact Initiative, partners with the Informal Science Network, NM EPSCor, and the NM AfterSchool Alliance.</p> |
|--------------------------|---|

**2. Remedial Education<sup>4</sup>**

|   |  |   |                                 |
|---|--|---|---------------------------------|
| a. What remedial supports are in place for geosciences topics with which students are struggling? | Local level decision   | X | Varies by teacher and district. |
|   | Remediation services are being provided to students in science |   |                                 |
|   | No remediation support in science                              |   |                                 |
|   | Unknown  |   |                                 |



## VI. Monitoring Systems

### *A. Elementary School Statewide Science Assessment*

#### **1. Structure and Content<sup>8</sup>**

|  |  |   |  |
|--|--|---|--|
| a. What is the name of the statewide standardized test in science at the elementary level?   | The New Mexico Standards Based Assessment (SBA) in Science |   |  |
| b. At what grade(s) is the assessment implemented?   | 4  |   |  |
| c. Does the statewide science assessment measure achievement of the state's standards, i.e. is the assessment aligned with state standards?      | Yes  |   |  |
| d. Is the content of the statewide science assessment sub-divided by discipline, namely Physical Science, Life Science, Earth and Space Science? | Yes  |   |  |
| e. Are there any plans for revising or changing the current elementary level science assessment?   | No plans for revision                                      | X | The NM SBA will remain the science assessment for at least the next four years. NM has not yet decided to adopt the NGSS. <sup>4</sup> |
|  | Revision is planned, but timeline is unknown               |   |  |
|  | Revision is planned with implementation date set           |   |  |
|  | Unknown  |   |  |

#### **2. Results<sup>8</sup>**

|  |     |
|--|-----|
| a. Is student achievement measured by Performance Level Descriptors? | Yes |
| b. If yes, how many performance levels are there?                    | 4   |

#### **3. District Level Reporting<sup>8</sup>**

|  |     |   |
|--|-----|---|
| a. At the district level, are the percentages of students performing at each PLD reported to the public?   | Yes | Reports generated at the district level include:<br>1) District Summary Roster<br>2) District Report of Schools<br>3) State Report of Districts   |
| b. At the district level, is student achievement reported according to scientific discipline (Life Sciences, Physical Sciences, Earth and Space Sciences)? | Yes | Each report provides performance summary information for each of the schools within the district for grade and content area, e.g. grade 4 science.<br><br>District Report of Schools and the State Report of Districts provides information for each reporting category on the assessment. The reporting categories for science are:<br>1: Scientific Thinking and Practice (20%)<br>2: Physical Science (17%)<br>3: Life Science (22%)<br>4: Earth Science (26%)<br>5: Science Society (15%)<br>The following is reported for each category:<br>1) number of items |
| c. If yes, is this data available to the public?   | No  |   |

|  |  |   |
|--|--|---|
|  |  | 2) total number of points possible<br>3) average points earned<br>Note: these reports are delivered online through a secure Web site. |
|--|--|---|

#### 4. State Level Reporting<sup>9</sup>

|   |     |  |
|---|-----|--|
| a. At the state level, are the percentages of students performing at each PLD reported to the public?   | Yes | SEA does not make statewide science assessment sub-scores available on its website. <sup>4</sup> |
| b. At the state level, is student achievement reported according to scientific discipline (Life Sciences, Physical Sciences, Earth and Space Sciences)? | No  |  |
| c. If yes, is this data available to the public?  | No  |  |

#### B. Elementary School International Assessments in Science

##### 1. TIMSS<sup>10</sup>

|   |    |
|---|----|
| a. Has the state participated in the Trends in International Mathematics and Science Study (TIMSS)? | No |
|---|----|

|  |      |  |
|--|------|--|
| b. If yes, in which years did the state participate? | 1995 |  |
|  | 2003 |  |
|  | 2007 |  |
|  | 2011 |  |

#### C. Middle School Statewide Science Assessment

##### 1. Structure and Content<sup>11</sup>

|   |  |
|---|--|
| a. What is the name of the statewide standardized test in science at the middle school level? | The New Mexico Standards Based Assessment (SBA) in Science |
| b. At what grade(s) is the assessment implemented?  | 7  |
| c. Does the assessment address Life Science concepts?   | Yes  |
| d. Does the assessment address Earth Science concepts?  | Yes  |
| e. Does the assessment address Earth Science concepts?  | Yes  |

***C. High School Statewide Science Assessment(s)***

**1. Structure and Content**

|  |  |  |
|--|--|--|
| a. What is the name of the state's standardized science assessment(s)? | The New Mexico Standards Based Assessment (SBA) in Science <sup>11</sup> | PED End-of-Course Exams (EoCs) for Biology and Chemistry <sup>12</sup> |
| b. At what grade level is the assessment implemented?                  | 11   | End-of-Course  |
| c. Does the assessment address Life Science concepts?                  | Yes  | Yes  |
| d. Does the assessment address Physical Science concepts?              | Yes  | Yes  |
| e. Does the assessment address Earth Science concepts?                 | Yes  | No   |

**VII. Accountability**

***A. School Level***

**1. Individual Student<sup>8</sup>**

|  |     |  |
|--|-----|--|
| a. Does the state produce an Individual Student Report (ISR) that describes a student's performance on the state's science assessment? | Yes | Schools provide an individual Student Report to Parents for the parents/guardians of each student participating in the New Mexico Standards Based Assessments. The grade 4 report describes an individual student's performance on the statewide science assessment in terms of scale score and achievement level. |
| b. Is the ISR made available to a student's parents or guardians?  | Yes |  |
| c. Is the ISR made available to a student's teacher?   | Yes | The report also includes points earned in each reporting category, as well as the points possible. The reporting categories for science are:   |
| d. Does the ISR report student's performance in terms of scale score and achievement level?  | Yes | 1: Scientific Thinking and Practice (20%)  |
| e. Does the ISR subdivide results by science discipline (Physical Science, Life Science, Earth and Space Science)?                     | Yes | 2: Physical Science (17%)<br>3: Life Science (22%)<br>4: Earth Science (26%)<br>5: Science Society (15%)   |
|  |     | A Student Report to Teachers is generated for teacher use.   |

**2. Teacher Appraisal<sup>4</sup>**

|   |     |
|---|-----|
| a. Are students' results on the statewide science assessment a component of teacher evaluation? | Yes |
|---|-----|

***B. District Level***

**1. District Accreditation**

|   |                   |   |
|---|-------------------|---|
| a. Are student outcomes in statewide science assessments at the elementary level part of accreditation of public schools at the district level? | Yes               |   |
|   | No                |   |
|   | At a future point |   |
|   | Local decision    |   |
|   | Unknown           | X |

**C. State Level**

**1. Statewide Monitoring<sup>4</sup>**

|  |     |   |
|--|-----|---|
| a. Are student outcomes in statewide science assessments at the elementary level used in monitoring the adequacy of state educational systems? | Yes | It is tracked by the state and available on the PED website. The Math and Science Advisory Council has an annual report on the state of math and science education. |
|--|-----|---|

**2. Trends in Student Outcomes<sup>9</sup>**

|   |     |
|---|-----|
| a. Does the SEA report to the public performance results on the state science assessment over time? | Yes |
|---|-----|

|  |  |   |                             |
|--|--|---|-----------------------------|
| b. If yes, how many years of achievement data are available? | 3 years (2011-2012 to 2013-2014)       |   |                             |
|  | 4-7 years (2007-2008 to 2013-2014)     |   |                             |
|  | 8 to 10 years (2004-2005 to 2013-2014) | X | 9 years of data (2005-2014) |
|  | 11 or more years (before 2004-2005)    |   |                             |

|  |     |
|--|-----|
| c. Are the results also subdivided by science discipline (Life Sciences, Physical Sciences, Earth and Space Sciences)? | Yes |
|--|-----|

<sup>1</sup> New Mexico Public Education Department, Professional Licensure Bureau, Approved Licensure Program Requirements, MSWord: <http://www.ped.state.nm.us/Licensure/2010/index.html>

<sup>2</sup> New Mexico Teacher Assessments, Prepare for the New Mexico Teacher Assessments, Search by Test: [http://www.nmta.nesinc.com/NM\\_prepare\\_opener.asp](http://www.nmta.nesinc.com/NM_prepare_opener.asp)

<sup>3</sup> New Mexico Public Education Department, Professional Licensure Bureau, Licensure FAQ: <http://www.ped.state.nm.us/Licensure/index.html>

<sup>4</sup> New Mexico Public Education Department (personal communication).

<sup>5</sup> New Mexico Public Education Department, Math and Science Bureau, Resources for Districts and Schools, Instructional Materials, Science, PDF: <http://www.ped.state.nm.us/MathScience/district.html>

<sup>6</sup> New Mexico Public Education Department, New Mexico Content Standards with Benchmarks and Performance Standards, Science: <http://www.ped.state.nm.us/standards/>

<sup>7</sup> New Mexico Public Education Department, Graduation: [http://ped.state.nm.us/ped/Graduation\\_index.html](http://ped.state.nm.us/ped/Graduation_index.html)

<sup>8</sup> New Mexico Public Education Department, Assessment and Evaluation Bureau, SBA, SBA Technical Reports, New Mexico Standards Based Assessment 2013-14 Technical Report, PDF: <http://ped.state.nm.us/AssessmentAccountability/AssessmentEvaluation/SBA/index.html>

<sup>9</sup> New Mexico Public Education Department, Assessment and Accountability Home, Academic Growth and Analysis, New Mexico Accountability Data, Statistics and Data, Proficiencies State, District and School, by Grade 2014: <http://www.ped.state.nm.us/AssessmentAccountability/AcademicGrowth/NMSBA.html>

<sup>10</sup> U.S. Dept. of Education, Institute of Education Sciences, National Center for Education Statistics, Trends in International Mathematics and Science Study (TIMSS), State and District Participation in TIMSS: <https://nces.ed.gov/TIMSS/benchmark.asp>

<sup>11</sup> New Mexico Public Education Department, Assessment and Accountability Home, Assessment and Evaluation, Standards Based Assessment: <http://ped.state.nm.us/AssessmentAccountability/AssessmentEvaluation/SBA/index.html>

<sup>12</sup> New Mexico Public Education Department, Assessment and Accountability Home, Assessment and Evaluation, End of Course: <http://ped.state.nm.us/AssessmentAccountability/AssessmentEvaluation/EOC/index.html>