State of Nevada

Advisory Council on Science, Technology, Engineering, and Mathematics (STEM)

Strategic Plan

2016

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[Executive summary and problem statement narrative]

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Today, Nevada is in a renaissance experiencing some of the strongest job growth in the country. Some of the world's most dynamic companies are and have relocated to Nevada, providing unprecedented diversification to Nevada's economy. Nevada is transitioning from a *low-skill, low-wage* economy to a *high-skill, knowledge-based* economy that is driven by technology and innovation. Jobs are being added in almost every industry sector, which includes significant occupational demands in industries that require science, technology, engineering, and mathematics (STEM) education and skills. The 'New Nevada' began with the cultivation of education reform during the 2013 Nevada Legislative Session. The next step is to ensure that Nevada's students are college and career ready by graduation so that they can succeed as the 21st century workforce that Nevada's employers need to continue to thrive and be competitive on a national scale. Part of this renewed focus includes STEM and ensuring that Nevadans possess the education and skills necessary to meet Nevada employers' growing demands for high-quality jobs in Nevada's post-recession employment recovery.

The shift from the *old* Nevada to the New Nevada has placed significant demands for an adaptable, readily-available workforce that possesses science, technology, engineering, and mathematics skills. To meet the exigencies of the New Nevada, a statewide coordination of educational and workforce resources is requisite. This strategic plan includes *common language* that provides clear direction, support and goals that fosters Nevada employers' needs of a prepared workforce. This strategic plan demonstrates data-driven analyses and strategies that are based on a shared vision to leverage public and private resources effectively and efficiently.

The Office of Science, Innovation and Technology (OSIT) was established in NRS 223.600, and reestablished in the 2015 Nevada Legislative session in Assembly Bill 485. The mission of OSIT is to coordinate and align efforts by K-12 and higher education, workforce development and employers to improve STEM education, STEM workforce development and STEM economic development so that Nevada's workforce can meet the demands of its growing economy. The office also coordinates broadband activities, supports Nevada's Advisory Council on STEM and administers STEM Workforce Challenge Grants.

As prescribed in NRS 385.705, the Advisory Council on Science, Technology, Engineering, and Mathematics (STEM) is charged with developing a strategic plan for the development of educational resources in the fields of science, technology, engineering, and mathematics to serve as a foundation for workforce development, college preparedness and economic development in Nevada.

A skilled workforce is critical to Nevada's continued economic development and diversification. Likewise, education and skills training help workers qualify for jobs that provide family-sustaining wages. According to the 2015 Brookings Institution report *America's Advanced Industries: What They Are, Where They Are, And Why They Matter*, Brookings found that people working in STEM occupations earned 42 percent more than those in other non-STEM occupations that require a similar level of education, further noting that this premium was just *19 percent* in 1980, thus clearly suggesting that growth in the demand for STEM skills has outpaced growth in the supply (2016, p. 41).

Through STEM Workforce Challenge Grants, the state seeks to spark the creation of lasting partnerships between industry and workforce training providers to:

1. Identify STEM-specific skills requisite to Nevada employers.
2. Create programs that provide STEM education and skills training to Nevada's workers that match the needs of Nevada employers;
3. Promote workforce training programs that align with *present* and *future* workforce needs in Nevada, which are identified by relevant and current labor market data; and,
4. Create programs that are sustainable after the exhaustion of grant funding.

Section I. Vision and Mission

[VISION SAMPLES]

To identify the gaps in skills and resources requisite to serve the workforce needs of Nevada employers.

To ensure that all Nevadans possess requisite STEM skills necessary to live a life of opportunity and success in Nevada's thriving and innovative economy.

To promote STEM literacy and access for all Nevadans to prosper in a diverse, world-class workforce.

[MISSION STATEMENT SAMPLES]

To identify and develop educational resources in the fields of science, technology, engineering, and mathematics to serve as a foundation for workforce development, college preparedness and economic development in the state.

To construct a framework that will drive the development of progress in the fields of STEM to serve as the foundation for workforce development, college preparedness and economic development in the state.

To develop a statewide strategic plan that identifies educational resources in STEM to serve as the foundation for workforce development, college preparedness and economic development in the state.

For Nevada to continue to excel in a globally competitive economy, ensuring that all Nevadans have access to science, technology, engineering, and mathematics (STEM) education is paramount.

Section II. Strategic Planning Elements

Analyses: Education, Workforce and Economic Conditions

Education

[NEED NARRATIVE – *What is the current status of STEM education in Nevada, from pre-K through higher education? How does Nevada compare nationally in STEM education? Where and what are the gaps? Why STEM matters.*]

XXX

Workforce

[NEED NARRATIVE – *What are the current conditions of STEM occupations in Nevada? How does it compare nationally? What are the statistics for DEMAND for STEM occupations? Where and what are the gaps? What are Nevada employers' needs? Why STEM matters.*]

XXX

Economic

[NEED NARRATIVE – *What are the current conditions of economic development in Nevada? How does Nevada's economic development compare nationally? Where and what are the gaps? Why STEM matters.*]

XXX

Activities: Education, Workforce and Economic Development

[NEED NARRATIVE – *What is Nevada currently doing as far as STEM/STEM-related activities to promote and/or improve education, workforce and economic development in the state? What current STEM programs does Nevada offer that serve as a foundation for: (1) workforce development, (2) college preparedness and (3) economic development in the state? What does Nevada* ***propose*** *to do to make it better?]*

XXX

Nevada's Goals

[NEED NARRATIVE – *What are Nevada's current and future goals for the promotion of STEM in the state?]*

Target 1: (Goal 1)

[NEED NARRATIVE – *Could outline goals in this format, e.g., choose top three or top five goals/targets, then outline (1) current status, (2) actions needed, (3) success indicators/measures.]*

Target 2: (Goal 2)

[NEED NARRATIVE – *Could outline goals in this format, e.g., choose top three or top five goals/targets, then outline (1) current status, (2) actions needed, (3) success indicators/measures.]*

Target 3: (Goal 3)

[NEED NARRATIVE – *Could outline goals in this format, e.g., choose top three or top five goals/targets, then outline (1) current status, (2) actions needed, (3) success indicators/measures.]*

Section III. Operational Planning Elements

Nevada's Stakeholders

[NEED NARRATIVE – *Identify who Nevada's STEM stakeholders are; who STEM beneficiaries are; and, who STEM contributors are. BASICALLY --- identify the populations involved in these efforts.]*

Nevada's Strategies

[NEED NARRATIVE – *What are Nevada's proposed strategies for the promotion of STEM in the state? This could include the strategies for the tasks that the Advisory Council is charged with, e.g., promoting/marketing STEM in Nevada; recognizing pupils in the state who demonstrate exemplary achievement in STEM; identifying recommendations for the implementation of STEM programs in public schools in the state based on the survey data collected; etc. BASICALLY --- how does Nevada plan to implement the proposed activities/programs? How does Nevada plan to attain its goals?]*

[IDEAS]

- Coordination and alignment of various stakeholders, programs and activities (e.g., NDE, NSHE, DETR, GOES, state and local workforce development boards, training and internship programs, etc.)
- Partner and stakeholder engagement
- Increasing K-12 STEM program/course enrollment
- Increase postsecondary STEM program/course enrollment, attainment and diversity
- Increase certificate attainment in STEM-related occupational programs
- Coordinate alignment with economic development strategies/the state's Economic Development Plan
- STEM Career Pathways for middle school, high school, and college
- Integrating community colleges into the STEM pipeline
- Adding an 'A' to STEM
- STEM teacher pipeline
- Equity
- Computer Science

[ALSO, I just watched a news story on Channel 2 on March 16, 2016, that indicated a new program at UNR ('NevadaTeach') geared to address the state's teacher shortage, specifically in STEM disciplines. This program allows students in other STEM degree programs to simultaneously opt for a dual-route in

education. The demand for STEM teachers is significant, and this gives degree-seekers and option to go into teaching knowing that jobs will be available to those students upon graduation due to the teacher shortages in Nevada. The story indicated that this NevadaTeach was grant-funded, and that they were looking at ways to expand into other STEM-related disciplines like Computer Science. This may be a 'goal' that we as a council could identify (i.e., expansion of the NevadaTeach program) and the strategy may be funding through STEM Challenge Grants or some other resource. Just a thought… I thought it was an interesting initiative that encompassed alternate degree pathways.]

[HERE ARE SOME ADDITIONAL 'IDEAS' FOR STRATEGIES]

1. **Ensure workforce readiness**
   - 1.1 Transparent and accessible *common* data system (e.g., DETR's One-Stop Operations System (SAWS), Silver State Solutions (Burning Glass)).
   - 1.2 Data-driven decision making (e.g., accurate identification of industry needs, gaps, and educational achievements, gaps) to facilitate data-driven MATCHING.
2. **Increase STEM achievement: student, educator and institution**
   - 2.1 Align *new* Nevada skills with STEM school programs and curriculum.
   - 2.2 Align student achievement indicators with education-to-workforce continuum to drive current and future education – workforce pipelines.
   - 2.3 Identify integrated tools and supports (e.g., NPWR, Silver State Solutions) to enable schools, programs and workforce to *communicate* via *common language* attributes.
3. **Increase public awareness of Nevada's economic needs**
   - 3.1 Utilizing public/private partnerships, increase public awareness of STEM, a broader community understanding and support for education innovations that support Nevada's economic needs.
   - 3.2 Provide a one-stop, integrated resource for employers, job seekers, students and their parents to build impetus in the STEM initiative.
4. **Leverage public and private resources to improve Nevada's citizens and their economic future**
   - 4.1 Invest public and private funds to scale effective STEM programs, policies and practices.
   - 4.2 Promote the STEM Advisory Council charge through Nevada's comprehensive STEM Strategic Plan.
5. **Develop a diverse STEM talent base that is prepared to meet the demands of a globally competitive economy and is informed by and aligned with statewide economic and workforce development initiatives.**

5.1 Align secondary and postsecondary STEM content and programs with workforce and economic needs.

5.1.1 Number of schools with a STEM-centric charter.

5.2 Increase STEM postsecondary degree production.

5.2.1 Number of degrees awarded in STEM CIP coded degree programs.

5.2.2 Ratio of STEM degrees to non-STEM degrees awarded.

5.3 Increase STEM certificate programs.

5.3.1 Number of certificates awarded in STEM certificate programs.

5.3.2 Ratio of STEM certificates to non-STEM certificates awarded.

6. Create awareness and support for STEM education across the state.

6.1 Develop diverse and culturally relevant communication messages and tools to highlight the importance of STEM.

6.1.1 Number of STEM outreach activities by institution.

6.2 Identify and showcase STEM events, statewide.

6.2.1 Number of STEM outreach activities by institution.

7. Adopt a framework for identifying and recognizing programs that align with 21st century skills in STEM.

7.1 STEM graduates employed in Nevada 1-, 2-, and 5-years after graduation.

XXX

Nevada Systems and Policies

[NEED NARRATIVE – *Identify what current systems, policies, legislation that Nevada has in place that promote these efforts (e.g., NPWR/SLDS, Silver State Solutions, STEM Challenge Grants, etc.). Also, identify what is NEEDED in Nevada to promote STEM efforts]*.

XXX

Assessment

[NEED NARRATIVE – *Identify current STEM assessment methods for (1) education; (2) workforce; and, (3) workforce development. Also, identify how the proposed strategies will be assessed, measured and analyzed for implementation in both the current and future.]*

XXX

Actions

[NEED NARRATIVE – *Outline a timeline of actions to be taken in this current strategic plan, and future iterations (e.g., 2- ,5-, and 10-year projection).] Also, identify the actions taken by the subcommittee and the advisory council in this effort.*

XXX

Glossary

[NEED NARRATIVE – *Include at the end of this strategic plan an acronym glossary --- we all know we live in a world of acronym abyss, so a glossary that assists all 'audiences' would be beneficial.]*