

A long, straight asphalt road stretches into the distance under a cloudy sky. The road has a double yellow line in the center and white lines on the sides. The landscape is flat and arid, with some sparse vegetation and distant mountains on the horizon.

Pathways to Success

**A Plan for Excellence in STEM Education, STEM
Workforce Development, and Broadband
Infrastructure Development**

2017-2019



Nevada Governor's
Office of Science,
Innovation and
Technology

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Vision

A pathway to success for every Nevadan.

Mission

Coordinate and align efforts statewide to improve **science, technology, engineering, and mathematics (STEM)** education and STEM workforce development so that Nevada's workforce can meet the demands of its growing and diversifying economy.

Coordinate and align state efforts to facilitate and promote **broadband** services to Nevada's education, healthcare, public safety, and corrections institutions.

Objectives

1. Increase the number of schools at all levels in Nevada delivering high-quality STEM education leading to increases in student proficiency, enrollment, attainment rates in STEM-focused coursework and programs, and employment in STEM-related careers in Nevada.
2. Increase the number of Nevadans with some form of STEM-related post-secondary degree/credential/certificate in order to better meet the needs of employers.
3. Increase the number of individuals from underrepresented groups participating in STEM education and employed in STEM fields.
4. Increase awareness of opportunities in STEM amongst students, teachers, families, and businesses.
5. Increase the percent of cities, libraries and schools connected with broadband.
6. Increase the percent of Nevadans that have access to broadband at speeds that meet national benchmarks.
7. By 2025, connect all rural hospitals, health clinics, and state correctional facilities to a broadband connection sufficient to provide telehealth services.

Strategic Initiatives

1. Increase the number of schools at all levels delivering high-quality STEM education.

Develop teacher knowledge, capacity, and confidence in STEM.

- i. Provide on-demand teacher professional learning.*- Lack of STEM professional development, especially at the elementary level, was identified as a top barrier to teaching STEM. Starting in 2018, OSIT will offer customized, on-demand STEM professional learning to individual teachers and schools upon request.
- ii. Engineering Fellows Program*- A unique opportunity for 5th grade teachers to partner with local professional engineers and engineering students from UNLV and UNR to develop and integrate NGSS-aligned engineering design challenges with real-world applications into everyday teaching and existing curricula. OSIT plans to train between 15-18 teachers during the 2018-2019 schoolyear. Each participating teacher will receive a grant for supplies to implement engineering design lessons in the classroom.
- iii. STEM Workforce Pathways Teacher Grants*- OSIT encourages high schools to put in place high-demand STEM programs of study that lead to students earning industry-recognized credentials and training before graduation. These grants fund the training and credentialing of teachers in the certification programs they teach.

Create a cadre of STEM schools that are models of high-quality STEM instruction.

- i. Governor's Designated STEM School Program*-The STEM Advisory Council, together with OSIT, developed the official Governor's STEM School Designation based on national best practices to provide schools with a blueprint for integrating STEM into daily classroom instruction. Designation as a Governor's STEM School denotes that the school meets the highest standards of STEM instruction and is a model for schools around the state. For parents and the community, the designation also communicates the level of high-quality STEM education that can be expected at the school.
- ii. STEM Leadership Academy*- The Academy was created to increase the quality of STEM education throughout the State by providing consultation and professional development to leaders from aspiring STEM schools. During the five day workshop taking place throughout the school year, schools will be guided through a process to create a strategic plan and school-specific roadmap for improving STEM education and receiving the Governor's STEM School Designation. Schools will have the opportunity to apply for a grant from OSIT to support the implementation of their strategic plans.

Strategic Initiatives

1. Increase the number of schools at all levels delivering high-quality STEM education.

Support the development of high-demand programs of study in high school leading to student attainment of industry-recognized credentials.

- i. STEM Workforce Pathways School Grants-* Through grants, provide additional opportunities for students in high school to earn industry-recognized, high-demand, STEM postsecondary credentials, certificates, or degrees. These grants will provide pathways for students to in-demand jobs directly from high school or pathways to postsecondary STEM Workforce programs created by OSIT for continued education before employment.

Support the use of high-quality STEM curriculum and resources in the classroom and after school.

- i. Nevada STEMworks program-* The State Strategic STEM Plan recommends that Nevada identify and fund evidence-based, high-quality formal and informal STEM practices and programs. In order to determine which STEM programs meet this evidence-based, high-quality standard, OSIT partnered with WestEd to develop criteria and vet programs for inclusion on a list of recommended programs for funding. OSIT uses this list in its funding decisions and to promote high-quality programs to schools, districts, and the State.
- ii. K-5 STEM Grants-* K-5 STEM Grants seek to promote increased equity and access to high-quality STEM programs in elementary schools in order to better prepare students for STEM courses in later grades and a career pathway to success in the New Nevada. This grant program aligns with four key strategies identified in the State STEM Strategic Plan. Elementary schools apply for funding to implement one of the STEM programs on the list of recommended STEM programs.
- iii. Develop and disseminate best practices in informal education-* The STEM Advisory Council, through the Informal STEM Learning Environments Subcommittee, will develop a rubric, a guide, and an outreach strategy to improve the quality of informal education.
- iv. STEM Hub Resources-* OSIT will curate high-quality STEM lesson plans and teaching ideas from Nevada's best STEM teachers and reputable national resources for use by Nevada's schools. OSIT will also develop resources for teachers and schools to integrate STEM into daily classroom instruction.

Strategic Initiatives

2. Increase the number of Nevadans with some form of STEM-related post-secondary education.

Increase Nevada's STEM workforce development capacity to meet the needs of employers.

- i. STEM Workforce Challenge Grants-* OSIT seeks to spark the creation of lasting partnerships between industry and workforce training providers that result in sustainable training programs that are aligned with present and future workforce needs. These programs will be focused on providing training for “middle-skill” STEM jobs requiring an associate degree or industry-recognized credential.
- ii. Graduate Medical Education (GME) Grants-* Nevada consistently ranks among the most underserved states in most areas of healthcare delivery, both in urban and rural settings, due in large part to shortages of physicians. OSIT administers grants to ACGME-accredited training providers. These grants will fund new or expanded programs resulting in an increased number of slots for medical residents and fellows.

Increase collaboration between industry, education, and state government.

- i. STEM Community Partnerships Manual -* OSIT will support the Community Partnerships Subcommittee of the STEM Advisory Council in developing and promoting a manual for schools, businesses, and communities to collaborate on increasing partnership opportunities in STEM.
- ii. Expand Business-Education Partnerships through work-based learning-* OSIT collaborated with the Office of Workforce Innovation (OWINN) to successfully apply for a grant from the National Governors Association (NGA) to increase STEM-based, work-based learning (WBL) opportunities in Nevada. OWINN and OSIT will work with NDE, NSHE, GOED, DETR and others to develop policies and guides for STEM WBL based on best practices in other states. Work-based learning includes career exploration, mentoring, job shadowing, internships, pre-apprenticeships, and apprenticeships.

Strategic Initiatives

3. Increase the number of individuals from underrepresented groups participating in STEM education and employed in STEM fields.

Increase the recruitment, retention, and completion rates for underrepresented students in postsecondary STEM programs.

- i. STEM Workforce Equity Grants-* OSIT has partnered with the College of Southern Nevada on a four-year project that funds the development of new programs and the integration of existing programs to increase the recruitment, retention, and graduation rates of underrepresented students in in-demand STEM degree and certificate programs.

Align State STEM education with national equity best practices.

- i. Intermountain STEM Network/NSF Includes Grant-* OSIT joined a consortium of 6 western states to successfully apply for a grant from the National Science Foundation to increase equity and broaden participation in STEM by underrepresented groups. The six states are working with NAPE to develop and scale best practices throughout the region. OSIT will work with NAPE to identify and develop pilot sites in Nevada that can later be scaled throughout the State.

Integrate computational thinking universally across all grade levels for all students.

- i. Computer Science Collaborative-* OSIT and the STEM Advisory Council's Computer Science subcommittee collaborated with the Nevada Department of Education (NDE) to apply for funding from the National Science Foundation to fund the development of K-12 computer science standards and a statewide computer science summit to train teachers and administrators in the new standards. OSIT and NDE will continue to collaborate with outside partners from Code.org, the College Board, and the Regional Professional Development Programs to provide training in computer science to teachers.

Partnerships that promote equity

- i. GirlsGoCyberstart-* OSIT has a partnership with the SANS Institute to offer a cybersecurity competition exclusively for high school girls in Nevada.

Strategic Initiatives

4. Increase awareness of opportunities in STEM amongst students, teachers, families, and businesses.

Provide information about high-demand STEM careers to students and families.

- i. Nevada STEMhub website-* Using data from GOED and NSHE, OSIT has built a comprehensive career guide to Nevada's top STEM jobs. OSIT will continue to update the guide, adding video and other content, and will promote the guide to students, families, teachers, and schools.
- ii. Support and collaborate with statewide and regional efforts to promote STEM careers-* The Statewide strategic plan recommends increased local and state collaboration to promote STEM careers. OSIT will work with school districts, higher education, businesses, and economic development authorities to promote STEM careers to students and families, and to adults looking for better jobs.
- iii. Grow awareness and participation in K-12 and postsecondary cybersecurity programs-* OSIT has a partnership with the SANS institute to grow interest and awareness of cybersecurity programs for high school and college students. Through its STEM Workforce Challenge Grants and STEM Workforce Pathways Grants, OSIT will continue to award funding to create secondary and postsecondary cybersecurity programs.

Recognize and showcase student and teacher excellence in STEM.

- i. Nevada K-12 STEM Challenge and student recognition events-* OSIT and the STEM Advisory Council are required to hold events that recognize students for their achievements in STEM. The Nevada K-12 STEM Challenge was created to engage students and teachers to use STEM concepts to help solve some of Nevada's biggest challenges. These recognition events take place at institutions of higher education in Northern and Southern Nevada.
- ii. STEM Teachers of the Year awards-* These awards honor six dedicated teachers that inspire a life-long passion for STEM and equip students with the knowledge and skills needed for careers in the New Nevada. Each year, the winners will be recognized at the Governor's K-12 STEM Challenge Recognition Events. Over the 2018-2019 school year, OSIT will highlight the practices and pedagogy of the six STEM Teachers of the Year as models for teachers around the state. Each teacher will receive a \$1,000 award for their classroom, supported by the generous donations of our STEM industry partners.

Strategic Initiatives

5. Increase the percent of cities, libraries and schools connected with broadband.

Provide customized technical assistance to schools and libraries.

- i. Nevada Connect Kids Initiative*– The initiative was created to increase broadband internet access, adoption, and use across the state. Governor Sandoval announced in 2017 an investment of \$2 million for a state matching fund to ensure schools and libraries have the infrastructure they need to access high-speed broadband. Through the Nevada Connect Kids Initiative, OSIT will engage communities to ascertain needs, provide customized consulting, internal and external network design, and tailored application assistance to school districts in order to increase the amount of federal broadband funding (known as E-rate) applied for and received by school districts and libraries allowing students to attend schools with broadband capacity that meets the FCC standard while bringing increased broadband access to communities currently without it.
- ii. Organize a School and Library Coalition* – OSIT will form a coalition for broadband services and projects that maximizes efficiencies and creates a competitive advantage enabling schools and libraries, big and small, to do more with less. Procurement of “bulk” buys ensures lower costs for equipment, services, construction buildouts and monthly recurring costs.

Strategic Initiatives

6. Increase the percent of Nevadans that have access to broadband at speeds that meet national benchmarks.

Whole community connectivity.

- i. Individual community assessment-* In addition to working with schools and libraries to apply for E-rate funding, OSIT will work to convene local governments, businesses, and other community anchor institutions and organizations to conduct a comprehensive assessment of broadband assets and needs.
- ii. Develop whole community connectivity plans-* Based on needs assessments, OSIT will work with community stakeholders to develop plans that will aggregate demand and improve connectivity to cities and counties with a “*Whole Community Approach*” mechanism. An all inclusive approach targets education, healthcare, public safety, key stakeholders, commercial business, and economic development opportunities. The Whole Community Approach includes, but is not limited to:
 - Leveraging federal and state grant/loan opportunities
 - Combining state, city, and county efforts to maximize SB53
 - Creating middle mile and last mile deployment projects
 - Creating community development projects for tribal colonies and reservations
 - Encouraging provider competitiveness to spur innovation and growth
 - Working with large, national telecommunications firms on an “open access” model
 - Enabling “smart” technology opportunities

Strategic Initiatives

7. By 2025, connect all rural hospitals, health clinics, and state correctional facilities to a broadband connection sufficient to provide telehealth services.

Increase federal funding Nevada receives for telemedicine.

- i. Create coalitions to apply for federal healthcare broadband funding-* Telehealth is emerging as a solution to some of the most challenging problems of our current healthcare system: access to care, cost effective delivery, and distribution of limited providers. Telehealth can change the current paradigm of care and allow for improved access and improved health outcomes in cost effective ways. OSIT will work to increase access to telemedicine by:
 - Creating coalitions to apply for USDA healthcare broadband funding
 - Working with rural clinics to apply for USAC federal funding and the Rural Healthcare Program
 - Working with telecommunications providers to deploy fiber and wireless rural solutions in partnership with healthcare providers
 - Working with Renown, EITS, and NDOC to build a data tunnel to improve connectivity for telemedicine at state correctional facilities

Performance Measures

Activity- Prepare all students for college and career success.

Objective 3.1.4: Increase student proficiency, enrollment, and attainment rates in STEM- focused coursework and programs.

Measure: Increase the number of Governor's STEM School designees.

Objective 3.2.2: Expand the availability of STEM-focused career pathways and training.

Measure: Increase awareness of STEM education and career opportunities in Nevada by providing accurate information through the Nevada STEM Hub website about STEM career pathways and top occupations in Nevada's STEM industry sectors.

Measure: Increase the number of STEM-focused workforce training programs each year to meet the changing and growing needs of employers while ensuring that all Nevadans have the opportunity to obtain in-demand STEM skills.

Activity- Enhance access to broadband services & digitally delivered information.

Objective 2.2.1: Increase the percent of cities, libraries and schools connected with broadband.

Measure: Collect baseline data on school broadband adoption and E-rate.

Objective 2.2.2: Increase the percent of Nevadans that have access to broadband at speeds that meet national benchmarks.

Measure: Conduct regional strategic planning meetings with broadband stakeholders.

Activity- Improve the quality and accessibility of primary medical services.

Objective 4.2.1: By 2025, connect all rural hospitals, health clinics, and state correctional facilities to a broadband connection sufficient to provide telehealth services.

Measure: Plan, coordinate, and facilitate the submission of applications for federal grants that support telemedicine efforts

Future Initiatives

1. Grow STEM ecosystems across the state through the creation of regional STEM networks or hubs that unite local stakeholders (businesses, K-12 and higher education, informal educators, nonprofit educators, and local governments) around strategies to foster student interest and awareness in high-demand STEM careers specific to the region, carry out the on-the-ground implementation of state-level programs or goals, identify and build local programs worthy of scaling statewide, and identify on-the-ground programmatic gaps or implementation challenges in need of state-level assistance,
2. Provide district-level consulting and STEM strategic planning assistance for districts interested in starting or expanding STEM schools.
3. Grow educator knowledge of STEM careers by providing opportunities to participate in summer externships to local STEM businesses.
4. Help Nevada become the most connected state by developing policies and growing support for fifth-generation (5g) wireless deployment leading to faster speeds, innovation in the digital economy, new opportunities for economic development, and smarter cities.
5. Work with telecommunications providers to close the digital divide so that Nevada students have more opportunities to access the internet through Edu Roam and Wi-Fi on the Bus initiatives.

