

The National Space Grant Office requires two annual reports, the Annual Performance Data Report (APD – this document) and the Office of Education Performance Measurement System (OEPM) report. The former is primarily narrative and the latter data intensive. Because the reporting timeline cycles are different, data in the two reports may not necessarily agree at the time of report submission. OEPM data are used for official reporting.

Nevada Space Grant Consortium  
Lead Institution: Nevada System of Higher Education  
Director: Lynn Fenstermaker  
Telephone Number: 702-862-5412  
Consortium URL: [www.nvspacegrant.org](http://www.nvspacegrant.org)  
Grant Number: NNX10AN23H

## PROGRAM DESCRIPTION

The National Space Grant College and Fellowship Program consists of 52 state-based, university-led Space Grant Consortia in each of the 50 states plus the District of Columbia and the Commonwealth of Puerto Rico. Annually, each consortium receives funds to develop and implement student fellowships and scholarships programs; interdisciplinary space-related research infrastructure, education, and public service programs; and cooperative initiatives with industry, research laboratories, and state, local, and other governments. Space Grant operates at the intersection of NASA's interest as implemented by alignment with the Mission Directorates and the state's interests. Although it is primarily a higher education program, Space Grant programs encompass the entire length of the education pipeline, including elementary/secondary and informal education. The Nevada Space Grant Consortium is a Capability Enhancement Consortium funded at a level of \$430,000 for fiscal year 2014.

## PROGRAM GOALS

The goal of the Nevada NASA Space Grant Consortium is to create and expand opportunities for Nevada students and faculty to be active and valued participants in our Nation's NASA aeronautics and space programs. NVSGC meets this general goal by implementing programs within Nevada that target the following objectives:

**Objective #1: Recruit:** We will a) recruit, train and reward scholars and fellows within all of our academic institutions, b) strive to ensure that they are representative of our state's population, and c) engage faculty and students at all NSHE institutions such that they acknowledge and promote successes of scholars and fellows in ways that enhance employment in STEM careers.

**Objective #2: Support and Guide:** NVSGC will develop new avenues for NASA research projects in Nevada that will ultimately result in new publications or research proposals to NASA.

**Objective #3: Develop Curricula:** Establish new courses and infuse NASA-related content within the NSHE institution's curricula.

**Objective #4: Engage:** Engage students in internships and academy positions at Industrial Affiliates and NASA centers.

**Objective #5: Compete:** Conduct curricular and extracurricular programs where multiple students are involved in hands-on science or engineering activities with an emphasis on the development of teams that compete in science and engineering competitions rooted in NASA-relevant and real world problems.

**Objective #6: Promote STEM materials:** Promote and increase the awareness and availability of NASA content-based STEM materials among teachers so that they can effectively integrate these in their future teaching endeavors.

**Objective #7: Promote STEM literacy:** Promote STEM literacy and increase awareness and perceived importance of NASA's missions through NVSGC activities.

### **PROGRAM/PROJECT BENEFIT TO OUTCOME (1,2, and 3)**

**Anecdote for Contributing to Outcome #1:** Eunja Kim was the PI on a Hands On Training project that provided 3 students (Mai Bausch, Kiah Mayo and Matt Ackerman) with training to become familiar with the basic concepts of quantum mechanics and its applications. Following the simulation and modeling research activities, Ms. Bausch received and accepted a professional engineering career at IGT, Mr. Ackerman was admitted into a competitive Ph.D. program at the University of Chicago and Ms. Mayo is currently preparing for her pre-med program at ASU, while maintaining involvement in the research of this initial HOT project.

**Anecdote for Contributing to Outcome #2:** After completing her internship, one student commented: “This internship has opened my eyes to see all the possibilities around me. One of the greatest things that has come out of me doing this is that before this internship, I was unsure about pursuing a Master’s degree. Now, after working with Dr. Culbreth, I know I do want to pursue it and that it would be best if I did. In these last couple of months, other than learning things specific to the UAV project, I have gained knowledge about more careers that I could potentially work in with math and science, a few tricks that will make everyday school life easier, and have been encouraged to always work hard and dream big.”

**Anecdote for Contributing to Outcome #3:** To date, through a project titled: *“Improving classroom support for K-6 STEM education through hands-on activities introducing the engineering design process”*, 2,200 students have been reached by activities that incorporate partnerships between formal and informal education providers. The project provides low-cost hands on activity kits and a professional engineer or scientist to facilitate hands on training to k-6 school classrooms. Activities in the kits are developments and further improvements of activities previously promulgated by the NSF-funded *Design Squad* and *Zoom into Action* PBS TV programs. UNLV and the Nevada Society of Professional Engineers (NvSPE), with ongoing support from the National Society of Professional Engineers (NSPE), have developed four kits for deployment in school classrooms. Funding has included \$1,500 from the Nevada Society, approximately \$3,000 worth of in-kind support from NSPE, and \$4,952 from a NASA Space Grant to UNLV.

## PROGRAM ACCOMPLISHMENTS

### Outcome 1: Contribute to the development of the STEM workforce in disciplines needed to achieve NASA's strategic goals. (Employ and Educate)

**Fellowships/Scholarships/Internships:** 44 students were significantly supported through Fellowships, Scholarships and Internships. This included 12 graduate Fellowships, 28 undergraduate Scholarships and 4 Internships. **(Objective #1,2 &3)**

- **7 students had the opportunity to participate in talks, poster presentations or meetings** – Nevada Space Grant students presented at the Nevada Undergraduate Research Symposium at the University of Nevada, Reno, at the 2014 Society for Advancement of Hispanics/Chicanos and Native Americans in Science (SACNAS) Conference, the Honors Western Regional Conference, and at the Festival of Communities at UNLV. In addition a student will be presenting their research at the Denver American Chemical Society National Meeting this March, and another student plans to present at the 2015 Western Snow Conference. **(Objective #1 &2)**
- **6 students had the opportunity to contribute to a publication** - Nevada Space Grant students planned to or have already collaboratively or individually submitted their work to journals including the Journal of Geophysical Research, the Nevada State Undergraduate Journal, LPSC and the UNR Undergraduate Research Journal. **(Objective #1 &2)**
- **13 students participated in research activities as part of their project** – The research conducted included a variety of focus areas such as: the effects of aerosols deposited on snow and ice; on snow radiative transfer and energy balance; analysis of field and arctic soil samples for physical and chemical properties; spatial variability of snow water equivalent; electromagnetism; stress-strain calculations for ZnO; developing a prototype for a high power EM meter; behavior of Alkali-Alkali Earth ions; creating failsafe algorithms for UAS platforms; and propagation and growth of lettuce varieties under various conditions. **(Objective #1 &2)**
- **As of the writing of this report, 4 students have taken the next step of graduating and pursuing an advanced STEM degree.** The remainder are still enrolled in their current degree program, however many have plans to work in the industry or to pursue a higher degree in fields such as hydrology, physics, electronic engineering, astrophysics, astrobiology, computer science, mechanical engineering, chemistry, statistics, business administration, instrumentation, public health, and environmental science. **(Objective #1 &2)**

**Higher Education:** Of the Higher Education projects funding during FY14, the following contributed to the development of the STEM workforce in disciplines needed to achieve NASA's strategic goals:

#### *Curriculum Development:*

- Development of a 100 level course entitled 'The Physics of Climate Change', intended for non-majors fulfilling their general education requirement at the University of Nevada, Las Vegas. **(Objective #3 & 7)**
- The Mechanical Engineering program at the University of Nevada, Reno has seen its undergraduate enrollments roughly triple over the past decade. This enormous growth has put tremendous pressure on the faculty and resources of the department. This is especially evident in resource and time intensive courses such as the Senior Capstone Course.

Funding has been provided to help build a Capstone Curriculum that can be scaled to handle the increasing enrollments while still ensuring quality educational outcomes. Using a flipped classroom model is the cornerstone of this effort that will be supported by a rigid structure and the use of outside mentors to advise senior teams. Research as part of this curricula development has been included in a publication submission to the International Journal of Engineering Education 2015 Special Issue Capstone. **(Objective #3, 5, & 7)**

*Hands On Training:*

- NevadaSAT is an ongoing multi-faceted program providing students with exposure to aerospace. For the past decade, the program has included activities in scientific ballooning, rocketry, aircraft, rovers, and Earth-orbiting satellites. All of these programs are aimed at achieving the long-range goal of producing a student satellite in Earth orbit. Some of the activities that students become engaged in are: designing and building gliders for competition, researching thin air foils, preparing payloads, filling weather balloons, and creating modular antenna for radios. **(Objective #5)**
- AACT Rover 2014-2015 is a hands-on training activity centered around team entry into the annual NASA Human Exploration Rover Challenge. It is an integrated STEM approach based on an athletics team competition model, and provides high school curriculum in Engineering and Technical Writing, extracurricular extension and educator professional development. **(Objective #5, 6 and 7)**

*Internships:*

- Samantha Mayer is an undergraduate student who engaged in an internship with Dr. Alison Murray at the Desert Research Institute molecular microbiology laboratory, working on research related to life in extreme environments. Samantha commented that, “I wish to continue to push forward on this path to enhance our understanding of life and its existence in the cosmos,” and plans to pursue an advanced degree in Astrobiology/Molecular Biology. **(Objective #4 & 5)**
- Two students engaged in internships at the Jack C Davis Observatory at Western Nevada College under the guidance of Thomas Herring. Kevin Brandenburg and Eric Waski learned about scientific concepts, engaged in self-directed research, created science teaching videos and conducted outreach to schools. At the end of the internship, both students expressed interest in pursuing a higher degree in physics at the University of Nevada, Reno. **(Objective #4, 5, 6, & 7)**
- Aimee Gonzales completed an undergraduate internship at UNLV with Dr. Bill Culbreth on a UAV project that taught her skills in soldering, programming, electronics, building a UAV, mathematics, and science writing. At the completion of the internship, Aimee expressed motivation to pursue her Master’s degree. **(Objective #4)**

**Research Infrastructure:** During FY14, six Research Infrastructure projects were funded through Nevada Space Grant. Of these, the following projects contributed to the development of the STEM workforce in disciplines needed to achieve NASA’s strategic goals. Please note that only 5 of the 6 projects are listed below as one of them was described above in the section titled *Anecdote for Contributing to Outcome #1*:

- Murat Yuksel has begun a research project titled, ‘Free Space Optical Modules for Mobile Opportunistic Networking and Localization of Space Rovers.’ Results from this project will support and improve NASA’s ability to perform long-duration exploration missions to solar system destinations such as the Moon and Mars with increasing frequency and sophistication. Murat will involve 2-3 students in this research project including 2 undergraduate students and possibly 1 graduate student. *(Objective #1, & 2)*
- Elisabeth Hausrath is conducting a research project titled, ‘Interaction of CA and phosphate with prebiotic material on Mars.’ This work has the potential to strongly contribute to understanding of phosphate mobility on Mars. This project includes the involvement of one female PhD student and one female undergraduate student. *(Objective #1 & 2)*
- Chris Fritsen is conducting a research project titled, ‘Microscopic Investigations of Bacteria and Sediments of the Lake Vida Ice Core.’ The work will involve the recruitment and training of an undergraduate student while providing a high precision study of precious materials- the results of which will provide preliminary data for follow on proposals to NASA’s exobiology or Habitable Planets programs within NASA’s Science Mission Directorate. *(Objective #1 & 2)*
- David Feil-Seifer is conducting a research project titled, ‘Fast Detection of Partially Occluded Humans for Mobile Platforms.’ His research involves one male undergraduate student and one female graduate student. This work aims to improve human-robot interaction by developing robot systems that can detect human poses in partially occluded environments. For example, the research team has built human detectors in their lab that work with people who are sitting at a table or are otherwise out of the field of view of the camera. This research may help outside of research lab settings, and eventually work in space-related environments to help robots to effectively complement astronauts. *(Objective #1 & 2)*
- Shahram Latifi is conducting a research project titled, ‘Stationary Tracking and Concentrated Photovoltaic (CPV Design for Space Applications.’ His research involves one female PhD student, Stephanie Shreck and a male student, Carlos Camecho. The main objective is to build research infrastructure in spacecraft power system design through concentrated photovoltaic advancements. *(Objective #1&2)*

**Outcome 2: Attract and retain students in STEM disciplines through a progression of educational opportunities for students, teachers, and faculty: (Educate and Engage)**

Of the Higher Education projects and Pre-College programs conducted in FY14, the following contributed to the goal of attracting and retaining students in STEM disciplines through a progression of educational opportunities for students, teachers, and faculty. In order to prevent repetition, a more complete description of higher education activities is described above in the Outcome 1 section of Program Accomplishments.

- AACT Rover 2014-2015 Pre-College activities is a subset of the larger Rover project, which trains teachers and students in hands-on STEM through participation in a team-based NASA design competition. *(Objective #5, 6 & 7)*

**Outcome 3: Build strategic partnerships and linkages between STEM formal and informal education providers that promote STEM literacy and awareness of NASA’s mission: Engage and Inspire)**

During FY14, the following Informal Education programs helped build strategic partnerships and linkages between STEM formal and informal education providers that promote STEM literacy and awareness of NASA's mission:

- Kenneth Coll's Dean Future Scholar Summer program provides approximately 100 low-income first generation students the opportunity to participate in an overnight camping trip to Grizzly Creek Ranch in Portola, California. The student learning objectives support NASA's Science Mission Directorate-Earth Science and the lessons and activities are delivered by Sierra Nevada Journey's staff who specialize in teaching STEM. **(Objective #5, 6, & 7)**
- Elizabeth Hausrath's Educational Experiences K-12 in Earth and Planetary Sciences program engages K-12 students in STEM related outreach activities that can be the catalyst for students to start, continue and retain educational and career paths within STEM fields. Her team has developed a series of informal activities in the Earth, Planetary, and Space Sciences for K-12 classrooms. The activities include a short presentation, hands on activity and a question and answer session with a STEM scientist. **(Objective #5, 6, & 7)**
- David Crowther's STEM After School Experiences Program is a partnership between the Raggio Research Center for STEM Education in the College of Education at the University of Nevada, Reno and the City of Reno Youth Services Sierra Kids afterschool program. Three units from the Engineering Adventures program developed by the Museum of Science in Boston for after school programs were used as curriculum for the project. Four Sierra Kids Youth Facilitators were trained on the Engineering Adventures program and then the units were used at three locations with a total of 54 elementary aged students. **(Objective #5, 6, & 7)**
- Wendy Calvin's Mars Missions for Pre and In-Service Teachers Program partners with Challenger Center for Space Science to provide "Voyage to Mars" missions to 20 pre and in service teachers and their classes. Prior to the mission, teachers engage in a pre-mission workshop to perform hands on activities about the planet Mars, the mission and receive curricular content and hands on labs to perform with their class prior to the mission. They are also trained as "flight specialists" to assist during the mission simulation with their class. **(Objective #5, 6, & 7)**
- Wendy Calvin's Pluto Mission and Encounter Activities Program provides two primary activities. Pluto mission beta testing and public engagement events around the New Horizons mission encounter with Pluto. In partnership with the Challenger Learning Center of Northern Nevada, activities will include a simulated space mission to Pluto and a public "Pluto Party" with telescope viewing. **(Objective #5, 6, & 7)**
- Henry Sun's Developing a Desert Astrobiology Box for Nevada's School project aims to develop five hands on activities involving desert-inhabiting cyanobacteria for elementary and middle schools in Nevada. The project exposes school children to exploration sciences related to the search for life on other planets. **(Objective #5, 6, & 7)**

## PROGRAM CONTRIBUTIONS TO NASA EDUCATION PERFORMANCE MEASURES

***Diversity of Institutions:*** The Nevada System of Higher Education (NSHE) is composed of two doctoral-granting research universities, one state college, four community colleges and one

research institute: the University of Nevada, Las Vegas; University of Nevada, Reno; Nevada State College; College of Southern Nevada; Great Basin College; Truckee Meadows Community College; Western Nevada College; and Desert Research Institute. According to the NSHE Diversity Report (2012-2013), six NSHE institutions are considered emerging Hispanic-serving institutions (UNLV, UNR, NSC, CSN, TMCC, and WNC) and three have received the designation of Minority Serving Institution (UNLV, NSC, and CSN). More than half (55.8%) of the total number of students enrolled at NSHE institutions are female. The percentage of students who are of an under-represented race or ethnicity grew significantly across NSHE from 2002 to 2012 and is projected to continue to increase as Nevada's population changes. Statewide it is expected that the white population will decrease while the minority population increases. In particular, the Hispanic population is expected to grow at a rate faster than any other race.

***Diversity of Faculty:*** FY14 funded faculty served at a variety of Nevada institutions ranging from 4-year institutions, research institutions and a community college. FY14 included the participation of the University of Nevada, Las Vegas; University of Nevada, Reno; Western Nevada College; and Desert Research Institute. The faculty members were experts in a variety of STEM disciplines including: physics, mechanical engineering, astronomy, microbiology, education, geoscience, astrobiology, chemistry, and computer science.

***Diversity of Student Participants:*** Of the 43 students who participated in Nevada's Scholarship, Fellowship and Internship programs, 3 reported that they were Hispanic/ Latino; 1 that they were black/ African American; 4 that they were Asian/ Pacific Islander and 1 that they were American Indian/ Alaskan native. The remainder were white or declined to report their race/ethnicity. 16 were female/ 27 male. 3 reported that they had a disability.

***Minority-Serving Institution Collaborations:*** 16 student awards and 7 faculty awards were distributed to MSIs in Nevada which include College of Southern Nevada (CSN), Nevada State College (NSC) and University of Nevada Las Vegas (UNLV). NSC received no faculty or student awards; CSN received 1 scholarship; and UNLV received 7 faculty awards, 1 internship, 4 fellowships, and 10 scholarships. 3 of the students who received awards at Nevada MSIs were Asian, 1 was black, 1 was Hispanic with the remaining number being Caucasian. 2 reported that they had a disability. 11 of the students reported that they planned to attain a higher degree after completion of their current degree program. The seven faculty awards at UNLV included the following:

- **Physics of Climate Change** (This activity consists of curriculum development of a course entitled the Physics of Climate Change to be offered at the 100 level as a science credit for non-majors fulfilling their general education requirement at the University)
- **Ab Initio Study of Functionalized Polycyclic Aromatic Hydrocarbons and Extended Carbonaceous Structures** (Eunja Kim was the PI on a Hands On Training project that provided 3 students training to become familiar with the basic concepts of quantum mechanics and its applications.)
- **Educational Experiences K-12 in Earth and Planetary Sciences** (The PIs of this project have developed a series of informal activities in Earth, Planetary, and Space Sciences for K-12 classrooms that include a presentation and hands on activities with a practicing STEM scientist.)

- **Improving Classroom Support for K-6 STEM Education through hands-on activities introducing the engineering design process** (This project provides low-cost hands on activity kits and a professional engineer or scientist to facilitate hands on training to k-6 school classrooms.)
- **Stationary Tracking and Concentrated Photovoltaic (CPV) Design for Space Applications** (The main objective of this proposal is to build research infrastructure in spacecraft power system design through concentrated photovoltaic advancements.)
- **Surface Characteristics of Mars Dust: Implications for Detection of Recent Liquid Water Events** (This project seeks to better understand the surface chemistry of dust and soil particles on Mars and address the questions of what information can be extracted on future missions.)
- **Interaction of CA and phosphate with prebiotic material on Mars** (The PIs of this project are performing dissolution experiments of the Mars-relevant phosphate minerals chlorapatite and merrillite in the presence of prebiotic organic compounds, which allows the collection of preliminary data for proposals and manuscripts.)
- **NASA Education Priorities:**
  - Authentic, hands-on student experiences in science and engineering disciplines – the incorporation of active participation by students in hands-on learning or practice with experiences rooted in NASA-related, STEM-focused questions and issues; the incorporation of real-life problem-solving and needs as the context for activities.
    - During FY14, Nevada Space Grant Supported 4 Internships which provided hands on learning for students in STEM and NASA related areas or research.
    - Emil Geiger redesigned an Engineering Capstone Course at the University of Nevada, Reno that will improve the hands on training experience for seniors in the engineering program.
    - Eunja Kim directed a project titled, ‘Ab Initio study of Functionalized Polycyclic Aromatic Hydrocarbons and Extended Carbonaceous Structures’ that trained students in the basic concepts of quantum mechanics and its applications. The students learned to get familiar with UNIX commands and the vi editor as well as with density functional theory implemented in the Vienna Ab initio Software Package (VASP), the construction and visualization of molecular structure with the VESTA graphical interface software, and data analysis with the XMGRACE program. Such activity helps the students better prepare their future as the next generation of scientists and engineers, by acquiring the skill needed to model simulated molecular processes of importance to NASA mission.
  - Engage middle school teachers in hands-on curriculum enhancement capabilities through exposure to NASA scientific and technical expertise. Capabilities for teachers to provide authentic, hands-on middle school student experiences in science and engineering disciplines (see above).
    - Nevada Space Grant has provided funding to Wendy Calvin to provide a ‘Mars Mission for Pre and In-Service Teachers’ program that will engage elementary, middle and high school teachers and students in a simulated ‘Voyage to Mars’

- mission workshop. In addition, teachers will be provided with curriculum to use with their class, outside of the initial workshop.
- Wendy Calvin received funding to implement a project titled ‘Pluto Mission and Encounter Activities’ that provides the opportunity for elementary, middle and high school groups to “beta test” activities in a simulated space exploration/planetary science mission to Pluto. The project will also provide informal education opportunities for the general public.
  - Through a partnership with UNLV and the Nevada Society of Professional Engineers, Dave James’ project, ‘Improving Class Support for K-6 STEM education through hands-on activities introducing the engineering design process,’ provides hands on kits to K-6 teachers and a professional engineer or scientist to teach and conduct a hands-on engineering activity with the students. The K-6 classroom teacher learns how to use the kit and is permitted to keep it for future use, if they wish to do so.
  - AACT Rover is a hands-on training activity centered around team entry into the annual NASA Human Exploration Rover Challenge. A major component of the project is that it trains elementary, middle and high school teachers and students in hands-on STEM through participation in a team-based NASA design competition.
  - Elizabeth Hausrath’s project, ‘Educational Experiences K-12 in Earth and Planetary Sciences’ will produce a library of supplemental materials that the UNLV Department of Geosciences will use to conduct outreach to K-12 students. The kits include a series of hands on activities in the Earth, Planetary and Space Sciences.
- Summer opportunities for secondary students on college campuses with the objective of increased enrollment in STEM disciplines or interest in STEM careers.
    - The Dean’s Future Scholar Summer program provides low income, first generation middle school students with the opportunity to participate in an overnight camp at Grizzly Creek Ranch. Informal educators provide STEM education in an outdoor setting. The overall goal is for students to demonstrate increased knowledge about academic STEM objectives, demonstrate a higher confidence level and interest in science, and have a positive experience with learning in an outdoor setting.
  - Community Colleges – develop new relationships as well as sustain and strengthen existing institutional relationships with community colleges.
    - During FY14, Nevada Space Grant provided the opportunity for 2 internships at Western Nevada College.
    - In FY14, Nevada Space Grant has named 3 new Campus Associate Directors (positions that were previously vacant) at community colleges across the state (College of Southern Nevada, Great Basin College and Truckee Meadows Community College). Nevada Space Grant is committed to maintaining regular communication and relationships with existing community college partners such as Tom Herring of Western Nevada College and the Jack C. Davis Observatory. In addition, Nevada Space Grant has fostered a new relationship with the new

director of the CSN Planetarium, Andrew Kerr and invited him to serve as an affiliate of the consortium.

- Aeronautics research – research in traditional aeronautics disciplines; research in areas that are appropriate to NASA's unique capabilities; directly address the fundamental research needs of the Next Generation Air Transportation System (NextGen).
  - Eric Wang's Nevada SAT program is an ongoing multi-faceted program that provides students with exposure to aerospace including ballooning, rocketry, aircraft, rovers, and earth-orbiting satellites.
- Environmental Science and Global Climate Change – research and activities to better understand Earth's environments.
  - George Rhee directed the development of a 100 level course titled the 'Physics of Climate Change' at the University of Nevada, Las Vegas.
- Enhance the capacity of institutions to support innovative research infrastructure activities to enable early career faculty to focus their research toward NASA priorities.
  - During FY14, six Research Infrastructure projects were funded through Nevada Space Grant. These included the work of the following early career faculty: David Feil-Seifer, Assistant Professor of Computer Science at the University of Nevada, Reno; Elisabeth Hausrath, Assistant Professor at the University of Nevada, Las Vegas Department of Geoscience; and Paul Forster Assistant Professor, Department of Chemistry. University of Nevada Las Vegas. As a whole, their research focused on Mars dust and on human-robot interactions.

## IMPROVEMENTS MADE IN THE PAST YEAR

- Hired new Program Coordinator in September 2015, Stephanie Borene.
  - The Program Coordinator has been trained on reporting, has obtained access to OEPM and developed a more efficient reporting system using Survey Monkey. She attended the National meeting in Washington.
  - In an effort to increase the number of minority students we reach with our opportunities, the Program Coordinator researched all Nevada NSHE student groups and organizations for students of diverse backgrounds that focus on STEM. She has contacted the leadership of these student organizations and is creating better communication with them. They are now included in our NSHE and Space Grant Consortium's listserv. Additional plans are in place to conduct outreach and presentations to these groups to enhance minority participation among all the programs.
- Hired new Project Director in January 2015, Dr. Lynn Fenstermaker, Associate Research Professor at Desert Research Institute, Division of Earth and Ecosystem Sciences. Under the direction of the new director, NVSGC has accomplished the following:
  - Re-energized relationships with the Community Colleges and named 4 new Campus Associate Directors at College of Southern Nevada, Desert Research Institute, Great Basin College, and Truckee Meadows Community College.
  - With new ADs in place, we are strengthening their roles in recruiting and supporting STEM students, taking extra effort to engage minority student

involvement; working with faculty to encourage their involvement with Space Grant competitions/projects, working with management, specifically the Program Coordinator, to coordinate the announcement and understanding of Space Grant opportunities on their campuses. An updated strategic plan for Nevada will be developed which will include more clearly articulated scope of work for campus AD's.

- Begun planning of an annual Statewide Spring Meeting to be held April 30 – May 1, 2015.
- The Associate Director position has not been refilled. The Campus ADs' stronger management roles will create statewide synergy benefitting the program.

## **PROGRAM PARTNERS AND ROLE OF PARTNERS IN PROJECT EXECUTION**

*Each Academic Affiliate has a Campus Associate Director that serves as a point of contact for the institution. The Program Director (PD) works directly with the Campus Associate Directors (AD) to fully integrate Space Grant activities across the state. Each AD is tasked to engage and share best practices to overcome perceived obstacles to reaching a broad and diverse student/faculty population. The ADs will recruit students and faculty members providing support and mentoring in areas related to aerospace and STEM disciplines. Overall, they will help recruit and train US citizens for careers in aeronautics, astronautics, earth systems, space science and technology placing special emphasis on diversity by recruiting women, underrepresented minorities, and persons with disabilities. A few of the ADs responsibilities include: actively recruit students; actively recruit faculty members; promote informational opportunities (i.e., national speaker on campus); announce campus STEM opportunities emphasizing NASA goals; collaborate with multiple institutions; engage with the NVSGC program office; and participate in consortium communication efforts.*

### **Academic Affiliates:**

***College of Southern Nevada*** is a community college, minority serving institution and an emerging Hispanic-serving institution that also houses a planetarium. Andrew Kerr serves as the Campus Associate Director.

***Desert Research Institute*** is a research institute with locations in Northern and Southern Nevada. DRI is the environmental research arm of the Nevada System of Higher Education and conducts cutting-edge applied research in air, land and life, and water quality across Nevada, the United States and on every continent. Eric Wilcox serves as the Campus Associate Director.

***Great Basin College*** is a community college with centers located across the state of Nevada in Battle Mountain, Ely, Pahrump, and Winnemucca. Rita Bagwe serves as the Campus Associate Director.

***Nevada State College*** is a Nevada's only state college, a minority serving institution and an emerging Hispanic-serving institution located in Henderson, Nevada. Brian Martinelli serves as the Campus Associate Director.

***Truckee Meadows Community College*** is a community college and an emerging Hispanic-serving institution located in Reno, Nevada. Dan Lorz serves as the Campus Associate Director.

***University of Nevada, Las Vegas*** is a doctoral granting research university, a minority serving institution and an emerging Hispanic-serving institution located in Southern Nevada. George Rhee serves as the Campus Associate Director.

**University of Nevada, Reno** is a doctoral granting research university and an emerging Hispanic-serving institution located in Northern Nevada that also houses the Fleischmann Planetarium and Science Center. Michael Collopy serves as the Campus Associate Director.

**Western Nevada College** is a community college and emerging Hispanic-serving institution with locations in Carson City, Douglas, Fallon, Fernley and Yerington, Nevada. It also houses the Jack C. Davis Observatory. Thomas Herring serves as the Campus Associate Director.

*The Business Affiliates and Planetariums/Observatories, Museums and Center Affiliates provide information to the Project Director (PD) about campus and industry specific needs relevant to NASA missions.*

#### **Business and Industry Affiliates:**

**Digital Solid State Propulsion** (DSSP) is a Nevada based business founded in October 2005 to commercialize green, safe, solid energetic materials. DSSP has a modern, fully-equipped energetics laboratory including TGA, DSC, auto titrator, FTIR, and Karl Fisher titrator.

**Equipment Links** has its roots in the operations and maintenance of industrial equipment. In 2005, they became the lead consultant for NASA's Deep Space Network managed out of Jet Propulsion Laboratories in Pasadena, CA. In 2008 and later, they expanded their solutions to the NASA Rocket Propulsion Test Facilities at White Sands Test Facility, Plum Brook Station and the Glenn Research Facility. RCM analyses were performed on some of the most unique and advanced facilities in the world.

**Sustainable Grounding Systems** was established in order to install and apply state of the art principles and technology to the Oil and Gas industry and is currently bringing these principles to the Rail, trucking aviation, pipelines and medical industries.

#### **Planetariums/Observatories, Museums and Center Affiliates:**

**Challenger Learning Center of Northern Nevada** is a local not-for-profit organization founded to bring Challenger Center to Nevada. It offers k-16 programs, challenger missions, digital dome programs and workshops and labs.

**Fleischmann Planetarium & Science Center** is located at the University of Nevada, Reno. They offer public star shows and large-format films showing daily in their dome theatre, and public star observing in partnership with the Astronomical Society in Nevada. Built in 1964, they are the first planetarium in the world to project full-dome movies (of time-lapse clouds and weather phenomena).

**Jack C. Davis Observatory** is located at Western Nevada College (WNC), is open to the public and provides a research-level facility for WNC students and the community. With both interior and exterior telescopes, and perched on the eastern edge of the Sierra Nevada mountains, the Davis Observatory is the place to be for astronomical happenings, planetary walks, and informative classes that keep students, scientists and the community on the edge of the latest technological advances.

**The Planetarium at CSN** presents programs to the general public and local schools on their domed screen. The theater features an Evans & Sutherland Digistar 5 high definition hemispheric video projection system that creates virtual realities on the dome surrounding the audience.