



NSF EPSCoR

Research

Nevada's future is bright. The NEXUS project, funded by NSF EPSCoR focuses on solar energy and its linkages with water and the environment. Research teams involving more than 100 faculty, students and technicians are finding innovative cost-effective means for harvesting solar-energy while keeping costs down for water usage and reduce environmental impacts.

Nevada is half-way through the NEXUS EPSCoR project and it has already resulted in beneficial partnerships. One such partnership is Valley Electric Association and US Fish and Wildlife, which are working together to build an environmentally-friendly 15-megawatt affordable solar energy project in Pahrump, NV. These partnership and research teams in Nevada have many direct benefits to attract solar companies to Nevada.

Nexus Benefits to Nevada's Economy:

- Less expensive, more competitive solar electricity
- Attract solar companies
- Reduced water costs
- Job creation
- Generate revenue

Cyberinfrastructure

DataONE, an organization that enables universal access to data and facilitates researchers in fulfilling their need for data management, recently welcomed the Nevada Research Data Center (NRDC) to its federation. The NRDC, which is part of the NSF EPSCoR track 1 award studying the effects of solar energy generation on water resources, is operated out of the University of Nevada, Reno and currently sends updates from the NevCAN project sites located throughout rural Nevada. The partnership will make the data from the NRDC available to more researchers through the DataONE network.



Graduate Student Research



NSF EPSCoR Solar Energy-Water-Environment NEXUS in Nevada has provided Danielle Nobles-Lookingbill, UNLV, (Mentor: Dr. Robert Boehm) the opportunity to be part of an innovative, environmentally forward research team, while pursuing her life goal of being a Doctor

of Philosophy in Mechanical Engineering. *"Due to the support of the EPSCoR program, I am not only a first generation university graduate, but am both the first in my family to soon achieve a doctoral degree and a part of a research team that is striving to create a cleaner tomorrow,"* said Nobles-Lookingbill.

When asked why Nevada or UNLV? Nobles-Lookingbill responded, "Southern Nevada is perfect for solar energy research, among other environmentally grounded research within the Solar NEXUS project provided by EPSCoR. Less well known is that in the midst of the desert sun and the Las Vegas lights, UNLV also provides a genuine sense of community. There is a real focus on community outreach embedded within the EPSCoR research team at the University of Nevada, Las Vegas that I am proud to be an active part of. I believe we do not only affect our community by our research, but also by engaging younger generations and encouraging them to continue the journey."

"An achievement of my participation was the opportunity to provide mentorship to undergraduate and high school students in research."

-- Christopher Hicks - UNLV
Mentor: Dr. Yahia Baghzouz



NASA EPSCoR

Workforce Development

NASA EPSCoR provided funding for Omar Navarro Leija, UNLV computer science graduate student, to participate as a Summer 2015 NASA intern at the NASA Goddard Space Flight Center. "We have dozens of satellites taking hundreds of pictures of the earth every single day. To accurately measure changes in geology, urban growth, and the environment, we must be able to automatically align these images with other images of the same region. In my project we developed and programmed better computer algorithms to automatically align satellite images," said Leija.



"Thanks to my internship I realized that my passion was indeed research and I want to pursue a career as a researcher in computer science."

-- Omar Navarro Leija

NEVADA STEM PIPELINE

SCIENCE • TECHNOLOGY • ENGINEERING • MATHEMATICS

Nevada EPSCoR has an interactive map to search by county for statewide STEM programs focusing on K-20 activities. The NV STEM Pipeline has identified many programs in the state of Nevada that offer multidisciplinary programs geared towards students interested in or currently majoring in the fields of Science, Technology, Engineering, and Mathematics. Many of these programs include opportunities for undergraduate students in field research, internships, and other research experiences. These opportunities can help guide students academic major and career decisions, as well as enhance their resume, scholarship, and graduate school applications.

nvstempipeline.org



Undergraduate Research Opportunity Program (UROP)

Over \$295,000 awarded in scholarships to 73 students



Focuses on providing students hands-on experience in research at lower level and upper level division coursework throughout the state. Students participate from the colleges and universities within NSHE. They participate in intensive research experiences through dedicated mentors at their institution. The program was created to enhance the recruitment and retention of undergraduates in STEM disciplines, especially those related to solar energy and its effects on water resources and the environment.

"I had the opportunity to understand how much impact academic research can have on the lives of other people, and how it can help to change the world."

-- Aline Cristina de Sousa Resende - UNR
Mentor: Dr. Valdyanathan (Ravi) Subramanian

"This project will deeply remain as the starting point of my research life."

-- Christina I. Lee - UNLV
Mentor: Dr. Pradip K. Bhowmik

"The UROP scholarship has been a highlight of my resume and has allowed me to be competitive for... the US-UK Fulbright Graduate Scholarship."

-- Michael T. Briones - UNLV
Mentor: Dr. Ernesto Abel-Santos

"I am confident that I will apply these critical thinking, technology, and team skills I have acquired into a future interdisciplinary natural resource career."

-- Elana Ketchian - WNC
Mentor: Dr. Laurel Saito and Dr. Peter Weisberg

Nevada NSF EPSCoR is funded by the National Science Foundation (NSF) awards #IIA-1301726, #IIA-1329469 and #IIA-1348401. Nevada NASA EPSCoR is funded by the NASA awards #NNX11AM09A and #NNX14AN24A. Any opinions, findings, conclusions, or recommendation expressed in the material are those of the author(s) and do not necessarily reflect the views of the National Science Foundation or NASA.

From 1993 - 2015



National Science Foundation

Current Projects

2013 - 2018 \$22,749,700

Past Projects

1993 - 2013 \$51,154,083



National Aeronautics and Space Administration

Current Projects

2013 - 2018 \$2,625,000

Past Projects

1993 - 2013 \$7,950,000



Department of Energy

Past Projects

2000-2010 \$4,150,000



Department of Defense

Past Projects

2002-2011 \$4,177,659

Return on Investment From EPSCoR

\$162,378,740

Total of follow on funding includes completed projects since inception and only prior year reporting on current projects.

N.E.R.D.S.

NEVADA EDUCATORS REALLY DOING SOLAR

NERDS shows teachers how to develop skills about science and solar energy through the process of inquiry and documenting the research process. It's a year-long program at the Raggio Research Center and part of the Nevada NSF EPSCoR Nexus project.

Middle and high school educators this past summer learned about solar energy by exploring a solar-powered car, investigating wind energy and touring a "net zero" home. The hands-on program allowed participants not only to learn but how to implement what they learned in the classroom.

