

### The abundant solar flux in Nevada makes it one of the best sources for solar energy generation in the world Solar Panels at Desert Research Institute, Las Vegas, Nevada, Photo by Imagine Communications/Nevada System of Higher Education



Photo by Nevada System of Higher Educati

#### Teachers Became the Students NSF EPSCoR Track 3

Cyberlearning Activities to Scaffold STEM Practices (CLASSP) project held its first teacher training June, 2014. Middle school teachers throughout Nevada participated in a week long training hosted collaboratively by the Nevada State GEAR UP<sup>1</sup> program and CLASSP.

During the week:

- teachers engaged in inquiry based learning practices and an engineering design cycle;
- hands-on activities included field work at the Clark County Wetlands Park & Nature Center;
- the teachers, now the students, worked together and gathered water sample data to examine habitats;
- and were introduced to effective argumentation strategies and concepts with the 5-features Dynamics Inquiry Enterprise (5-DIE).

<sup>1</sup> Gaining Early Awareness and Readiness for Undergraduate Program (GEAR UP) is designed to increase the number of low-income students who are prepared to enter and succeed in post-secondary education.

## NSF EPSCoR Research & Education Highlights

The Solar-Energy-Water-Environment Nexus in Nevada NSF EPSCoR Track 1

Harnessing renewable energy, such as solar, could supply all the energy the U.S. needs reducing the dependency on fossil fuel electricity production.

However, harvesting solar energy requires consideration of the impact on Nevada's scarce water resources and sensitive desert environment.

Therefore, the Nexus project focuses on understanding the linkages among solar energy development, limited water resources, and fragile environments.

In the first year:

- five sites were selected to study the impact of dust particles and water usage on the effectiveness of solar panels;
- the use of nanotechnology to mitigate dust accumulation on the solar panels began;
- and research is being done to understand microclimate change on desert plant communities as well as developing advanced water technology to support solar energy development.

#### Mini Solar Panel Labs at Nevada Title 1 High Schools NSF EPSCoR Track 1

Nexus Science Co-Principal Investigators, Dr. Bob Boehm and Dr. Jaci Batista, showcased the Nexus solar lab kits at the University of Nevada, Las Vegas Rebel STEM Academy.

UNLV engineering undergraduate students worked with Boehm and Batista to implement mini solar



panel labs to Title I high school students and teachers.

- Nevada high schools will start using the solar kits next year.
- The kits will help engage the students in a solar themed laboratory and promote the possibility of pursuing an engineering degree.

University of Nevada, Reno

Desert Research Institute

## NASA EPSCoR Research & **Education Highlights**

Building Capacity in Interdisciplinary Snow Sciences for a Changing World

Nevada NASA EPSCoR was awarded \$750,000 for the interdisciplinary study of snow. In this changing world, snow and ice are experiencing significant climate change impacts, leading to dramatic declines in western U.S. snowpack. Snow and ice also are subject to many other stressors including land use change and wildfires and increasing population densities increasing pollution and nutrient loads in snowpack.

This project is studying the linkages between

- snow energy balance,
- life in snow,
- and snowmelt processes and watershed hydrology.

Diversity is being promoted by leveraging existing recruitment programs to attract first-generation students and firsttime college students to STEM careers; actively recruiting students from Nevada's Native American tribes, and supporting underrepresented students through faculty mentors and student ambassadors.

### NASA Summer Internships

Three University of Nevada, Reno undergraduates completed summer 2014 internships with NASA on autonomous systems and computer vision projects. David Frank and Josh Curtis interned at the NASA Ames Research Center at Moffett Field, California and Shubham Gogna at the Jet Propulsion Laboratory - NASA in Pasadena, California.



## **NSF EPSCoR Research & Education Highlights**

![](_page_1_Picture_12.jpeg)

### Nevada's Primarily Undergraduate Colleges Involved NSF EPSCoR Track 2

Undergraduates and faculty mentors from Western Nevada College, Sierra Nevada College, and Nevada State College participated in a three-day summer workshop on modeling and visualization

The workshop was:

a less-advanced modeling experience, focusing on using Google Earth to create GIS content,

- developing a watershed model and using it to visualize various scenarios,
- using free geographical data sources and software,
- and novel approaches to creating 3D models.

## NSF EPSCoR Participation and Diversity

#### From 2013-2014

NSF Track 1 Participation

- Participation from baseline of 0 to 108 participants
- 27% women
- 12% underrepresented minorities

NSF Track 1 External Engagement

- Externally engaged with 1,888 participants
- 53% women
  - 73% underrepresented minorities

# Nevada's EPSCoR Project Funding

From 1993 - 2014

![](_page_1_Picture_33.jpeg)

**National Science** Foundation

**Current Projects** 2013 - 2018 \$22,749,700 Past Projects 1993 - 2013

\$50,030,297

\$1,875,000

\$6,600,000

![](_page_1_Picture_37.jpeg)

**Current Projects** 

2013 - 2018

Past Projects

1993 - 2013

**National Aeronautics** and Space Administration

![](_page_1_Picture_39.jpeg)

**Department of Defense** 

Past Projects 2002-2011

2000-2010

\$4,177,659

![](_page_1_Picture_43.jpeg)

![](_page_1_Picture_44.jpeg)

\$3,550,000

#### **Return on Investment** From EPSCoR

#### \$157,364,615 Total of follow on funding for completed

projects & since EPSCoR Inception

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