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Solar plans

Statewide research project into solar energy

By Sage Leehey

With recent news that it might just be too late to stop Antarctic ice from melting, renewable energy has become even more important. And Nevada's higher education entities are currently working on a large project to research and develop better solar panels.

University of Nevada, Reno faculty and students work together on cyber infrastructure for the Solar Nexus Project.
PHOTO/SAGE LEEHEY

To learn more, visit http://nvsolarnexus.org.

The Solar Nexus Project focuses on research and development within the solar energy field and is funded by the National Science Foundation's Experimental Program to Stimulate Competitive Research (EPSCoR). It has three main components: scientific research into solar energy, cyber infrastructure research and development and finally, education and workforce development. Last year—year one of the project—was used mainly for implementation, hiring and getting those involved acclimated to the project, according to EPSCoR director Lori Brazfield.

"The mission of the Nexus project is to advance knowledge and discovery through research on solar energy generation technology, its environmental impacts and associated water issues, and accelerate this research by developing new capabilities in cyber infrastructure," Brazfield said.

Researchers are working to reduce the need for water in solar panels in order to try to conserve water in a desert state and to make panels more efficient and advanced. The project will also bring a new solar facility to Nevada where extensive research can be done.

"What that will have is a hands-on laboratory with real time solar panels that students can work on and develop and hone the skills that are needed for the future to then sustain these solar panels to be used throughout the nation," Brazfield said. "And international collaborations can come to this site to do research to then develop other countries and opportunities for solar power."

The cyber infrastructure piece of the project handles data—from collection to processing—and development of tools for this technology and data collection. Sergiu Dascalu, Ph.D. is the principal investigator and leader for the University of Nevada, Reno for cyber infrastructure in this project.

"We collect the data," Dascalu said. "The data is stored in our databases, which are located here on campus at UNR, and we have servers that process the data because data in itself is very precious. It's like the gold for the miners, but you have to dig it to find out what it means, what forecasting can be done with it, what if scenarios. So computer science is about data collection, transport, storage, curation because we have to maintain data, label data, trace where it comes from, and then process it with visual analytics."

The data comes from towers around the state that collect data like wind speeds, temperatures and soil moisture, according to Fred Harris, Jr., co-leader for cyber infrastructure at UNR. The project uses the Nevada Seismology Lab's mountaintop towers for transmission of the data.

As for the education portion of the project, there are summer research opportunities available for community college students, academic opportunities throughout the school year for university students, a 12-week series that brings scientists to speak to high school students each fall about their fields and the data is available to teachers—mostly middle school because of their curriculum—to use in their classrooms.

Brazfield also has funding to reach out to the solar energy industry to provide paid internships for students.