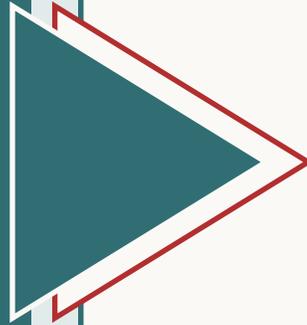




Providing Research Infrastructure,
Human Infrastructure, and
Cyberinfrastructure to the
State of New Mexico



The New Mexico Experimental Program to
Stimulate Competitive Research

2012 INFORMATION PACKET



New Mexico
EPSCoR



ABOUT NEW MEXICO EPSCoR

New Mexico's Experimental Program to Stimulate Competitive Research (NM EPSCoR) is a multi-faceted program aimed at improving New Mexico's capacity to carry out scientific research. Funded by the National Science Foundation, the current project focuses on science research into the impacts of climate change on Northern New Mexico water resources by investing in the state's research infrastructure, cyberinfrastructure, and human infrastructure.

The current project, funded by the NSF in fall 2008, was awarded \$15 million in NSF funding for its Research Infrastructure and Improvement Phase 3 (RII 3) proposal: "Climate Change Impacts on New Mexico's Mountain Sources of Water." The award began September 1, 2008 and continues for five years. In 2012, project participants began work on the RII 4 proposal based on the Water-Energy-Environment Nexus.

In addition to the RII 3 award, NM EPSCoR joined with the Nevada and Idaho EPSCoR projects to form a Tri-State Western Consortium to enhance each state's cyberinfrastructure to support collaborative climate research. Most recently, NM EPSCoR was awarded a third grant, "C2: Improving Broadband Connectivity for Tribal and Regional Colleges in New Mexico" and will work with Navajo Technical College, Northern NM College, and Western New Mexico University to improve bandwidth and cyber-connectivity on their campuses. These improvements will increase diverse participation in research and learning at all levels and advance workforce and economic development and collaboration across institutions.

INSIDE THE KIT:

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NM EPSCoR Quick Facts

- Current PI: William Michener, PhD
- Website: <http://www.nmepscor.org>
- Duration: The award began September 1, 2008 and continues for 5 years
- Project Sponsor: The National Science Foundation (NSF)
- Project Amount: \$15 million for RII 3
- Department/College: Based out of the Office of the Vice President for Research & Economic Development at the University of New Mexico (UNM).
- Research efforts are located at UNM, New Mexico State University (NMSU), New Mexico Tech (NMT), and New Mexico Highlands University (NMHU)

NM EPSCoR IS:

- NSF funded since 2001
- Multi-institutional, multi-disciplinary research project with diverse researchers
- Trusted to foster collaboration and cooperation within and across academic institutions

NM EPSCoR HAS:

- Spearheaded the development of Technology 21, NM's State Science and Technology Plan, an effort initiated by Garrey Carruthers and Jack Jekowski, and brought to fruition in 2009 by Dr. Tom Bowles and Stephan Helgesen
- Brought \$30 million in direct NSF funding and over \$50 million in NSF co-funded projects to New Mexico
- Extended and improved research infrastructure and capacity throughout the state to achieve a level of parity with other states throughout the region
- Provided innovative STEM education opportunities for K-12, undergraduate, graduate students, and citizens



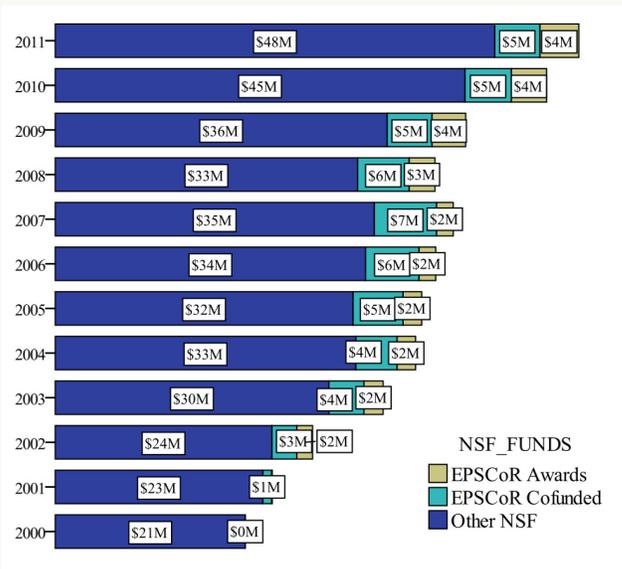
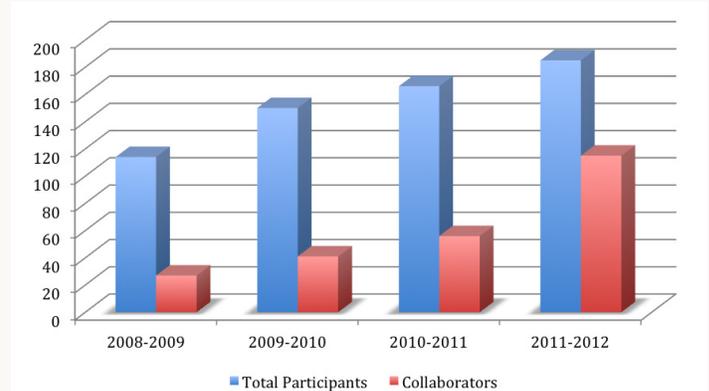
Supported by NSF
Grant # EPS-0814449



Economic Impacts of NM EPSCoR on New Mexico

NM EPSCoR PARTICIPATION

By providing improvements to environments that connect data, computers, and people, NM EPSCoR is advancing our ability to observe and simulate mountain hydrological processes and their susceptibility to climate change. NM EPSCoR has developed a scalable infrastructure for flexible data and information delivery that provides access to environmental data to researchers, educators, and policy-makers.



NSF Funded Awards in New Mexico by Calendar Year: 2000-2011

FUNDING AWARDED TO NEW MEXICO

Since 2000, NSF EPSCoR has contributed approximately \$79 million to New Mexico in direct EPSCoR awards (\$28M) and co-funded awards (\$51M; co-funded awards would not have been made without EPSCoR funding). Also, NM EPSCoR is achieving its goal of making the state more competitive in securing NSF funding.

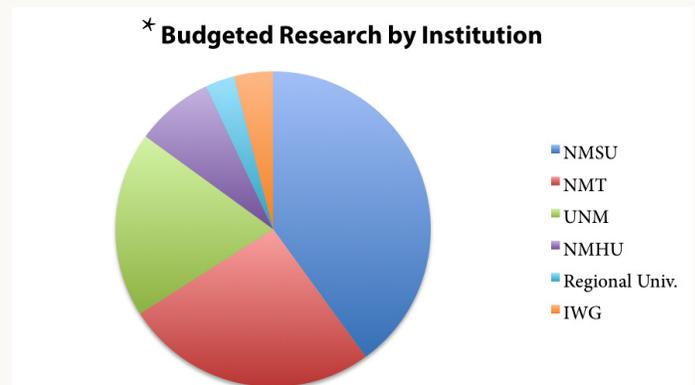
More information about the RII 3, Track 2, and C2 projects is available on our website at nmepscor.org.

NM EPSCoR SUPPORT FOR RESEARCH

The current award supports research investments at higher education institutions across the state. Research funding is used for:

- Equipment
- Laboratory upgrades
- Field experimental facilities
- Salary plus tuition for graduate and undergraduate students
- Travel to professional conferences

* New Mexico State University, New Mexico Tech, University of New Mexico, New Mexico Highlands University, Regional Universities: Eastern New Mexico University, Western New Mexico University, Diné, Navajo Technical College. IWG: Innovation Working Groups support researchers to work collaboratively on complex science issues through integration and synthesis of data, information, and knowledge.





People of New Mexico EPSCoR

KEY BIOGRAPHIES

Dr. Bill Michener, Director: Bill Michener (University of New Mexico) is Professor and Director of e-Science Initiatives for University Libraries at the University of New Mexico. He has a PhD in Biological Oceanography from the University of South Carolina and has published extensively in the ecological sciences and information sciences. During the past decade he has directed several large interdisciplinary research and cyberinfrastructure projects. Presently, he directs the New Mexico EPSCoR Program and is Principal Investigator for DataONE—a large NSF-supported multi-institutional, multi-national program focused on data preservation.

Dr. Mary Jo Daniel, Associate Director: Dr. Mary Jo Daniel has a doctorate in Multicultural Childhood and Teacher Education from the University of New Mexico. Currently she is Associate Director of the New Mexico EPSCoR program. She is responsible for overall program management and fiscal oversight, fostering and facilitating the development of new research and education funding opportunities, and assisting the EPSCoR state program to achieve its goals of multi-institutional, multi-disciplinary collaboration on complex issues related to climate change science.

CONTACT NM EPSCoR:

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NM EPSCoR STATE OFFICE STAFF

Dr. Bill Michener, Director & PI
Dr. Mary Jo Daniel, Associate Director
Anna Morrato, Program Administrator

Natalie Willoughby, Public Information and Outreach Representative

Chris Allen, Web Developer
Dustin Allen, IT Manager
Laura Arguelles, Data Manager
Arman Basamian, Accountant I
Melissa Coverdale, Admin Coordinator
Megan Gallegos, Accountant II
Tracy Hart, Program Planning Officer

Kayla Achen, Student Employee
Erick Aldaz, IT Student Employee
Zachary Emerson, Student Employee
Pablo Laight, Student Employee
Choung Liu, Student Employee
David Milisa, Student Employee



People of New Mexico EPSCoR

NM EPSCoR STATE COMMITTEE

CO-CHAIRS

Jack Jekowski, Principal Partner, Innovative Technology Partnerships
Dr. Jose Garcia, Cabinet Secretary, New Mexico Higher Education Department

UNIVERSITY REPRESENTATIVES

Dr. Vimal Chaitanya, VP for Research, Graduate Studies, and International Programs, NMSU
Dr. Julia Fulghum, Vice President for Research and Economic Development, UNM
Dr. Van Romero, Vice President for Research, NMT
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Dr. John Montgomery, Assistant Dean, Liberal Arts and Sciences, ENMU
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Dr. Kurt Steinhaus, Community Programs Office Director, LANL

SANDIA NATIONAL LAB REPRESENTATIVE

Marie Garcia, University Research Program Manager, SNL

NEW MEXICO GOVERNOR'S OFFICE REPRESENTATIVES

TBD

STATE GOVERNMENT REPRESENTATIVE

TBD

STATE GOVERNMENT LEGISLATORS

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Senator Mary Kay Papen, District 38, Doña Ana County
Senator Linda Lopez, District 11, Bernalillo County

PRIVATE INDUSTRY REPRESENTATIVES

Ronald Tafoya, Senior Software Engineer, Intel Corporation
Beverlee McClure, President and CEO, Association of Commerce and Industry of NM
Stephan Helgesen, Second Opinion Marketing & Communications

STATE EPSCoR OFFICE (EX-OFFICIO)

William Michener, State Director



NM EPSCoR Project Highlights

Highlights are brief descriptions of NSF funded projects that showcase program accomplishments through words and images.

Award Year 4

Report Period: Sept. 1, 2011-Aug. 31, 2012

Highlight 1: Research - The Las Conchas Fire

Highlight 2: Education & Outreach - The Sandia Mountain Natural History Center

Highlight 3: Collaboration - Cyberlearning Summit



The Las Conchas Fire & Water Quality

TITLE

The Las Conchas fire and its impact on water quality in the Valles Caldera National Preserve (VCNP)

OUTCOME/BENEFITS

Rapid return to baseflow conditions for all events (particularly post-fire monsoons) highlights the important role precipitation plays in delivering solutes and sediment to rivers. Non-monsoonal events result in increased NO_3^- and turbidity. Post-fire monsoonal events resulted in increased NO_3^- , PO_4^{3-} , SC, turbidity, and decreased DO and pH, and data indicate subsurface dominated flowpaths for all events.

Climate change manifests itself in major changes to the terrestrial landscape of New Mexico. The New Mexico EPSCoR project is providing a very detailed picture of the effects of a major forest fire on the water quality, hydrology, and ecology of an important source of freshwater for the State of New Mexico. Continuous monitoring is critical to describe the timing and magnitude of and the controls on these highly variable parameters. Better understanding of controls on water quality variability can help management in the face of climate change.

EXPLANATION

One component of the current New Mexico EPSCoR project is the effect of climate change on water quality in the forested mountain catchments of New Mexico. The Las Conchas fire in the Jemez Mountains in June and July of 2011 was the largest recorded fire in New Mexico history and burned approximately 80% of one of our primary research catchments (East Fork Jemez River). The fire burned with variable intensity throughout the catchment with forested areas generally seeing higher intensity fire. The primary research site along the East Fork Jemez was spared from the fire and provides excellent background information on water quality before the fire. New state-of-the-art instrumentation in the East Fork Jemez River and the shallow groundwater system along the river offer the opportunity for detailed characterization of water quality before and after the Las Conchas fire.

Post-fire impacts to streams and rivers have begun with the onset of the monsoons in late July of 2011. Massive erosion events with major changes in total suspended sediments, conductivity, total phosphorus, total nitrogen, and total ammonia have occurred in the East Fork Jemez River, Rio San Antonio, and Indios Creek. Major fish kills have been documented in the Rio San Antonio and Indios Creek. Trout have been particularly severely affected with 95% or greater mortality. Native non-game fish have survived in somewhat greater numbers.



Above Top: The Las Conchas Fire approaches Bandelier National Monument in the Jemez Mountains, June 2011.

Above Bottom: Post-fire monsoon flow of debris is evident in this image of the East Fork Jemez River, July 2011.



Outdoor classrooms at the SMNHC provide a unique take on lessons. Here, Roise Norlander explains the different types of trees in the Sandia Mountains.

Sandia Mountain Natural History Center

TITLE

New Mexico EPSCoR partners with the Sandia Mountain Natural History Center

OUTCOME

Partnership with the NMMNHS and the SMNHC via funding for education staff achieves the NM EPSCoR education objective to develop a citizenry informed about climate change and its impacts on the state of New Mexico.

IMPACT/BENEFITS

The Center and its staff educate New Mexico students about ecology, ecosystems, the environment and conservation. The Center also hosts teacher workshops on science and ecology.

EXPLANATION

The Sandia Mountain Natural History Center (SMNHC) is a beautiful 128-acre piece of pinon-juniper forest owned by the Albuquerque Public School System, and run by the New Mexico Museum of Natural History and Science (NMMNHS). As part of New Mexico EPSCoR's education goal to reach a large and diverse population in both urban and rural areas, funding was provided to the Sandia Mountain Natural History Center for extra staff to give tours to school groups interested in the Ecology Field Programs.

SMNHC employee Rosie Norlander, hired through EPSCoR funding, led a group of 5th grade students from A. Montoya Elementary on the Ecology Field Program. The students followed Rosie on a 2-hour walking tour of the forest, learning about what an ecosystem is, the aspects of nature that join to create ecosystems, the different kinds of trees and wildlife in the Sandia Mountains, how to properly catalogue plants and animals, how to observe without disturbing any surroundings, and much more. Students performed hands-on observations in order to understand human connections to ecosystems. The SMNHC teaches over 10,000 students a year about New Mexico wildlife, the interconnectedness of nature, and how to protect it for years to come.



Cyberlearning Summit

TITLE

1st Annual Western Consortium Tri-State Cyberlearning Summit

OUTCOME

CL leaders efficiently collaborated on how the various approaches used by each program and their respective strengths could best be integrated and leveraged in STEM education and outreach. The summit also resulted in several cyberlearning sessions that were offered at the 4th Annual Tri-State meeting in Sun Valley, Idaho.

IMPACT/BENEFITS

CL leaders from each state contributed to a proposal to NSF's Cyberlearning: Transforming Education program that would support development of a research program. During the summit, it became clear that the programs developed individually were synergistic and would likely provide even more effective learning opportunities for students by incorporating components across projects.

EXPLANATION

A group of EPSCoR collaborators from New Mexico, Nevada, and Idaho joined together in Jemez Springs to discuss cyberlearning activities, programs, and materials that have been developed with support from the NSF EPSCoR Track 2 award. One component of the Western Tri-State Consortium (Track 2) of NV, NM and ID is the utilization of cyberinfrastructure to integrate research with education. Consequently, each of the states has developed cyberlearning (CL) tools related to the theme of water resources and climate change.

In January 2012, 26 participants from all three states convened in New Mexico to explore synergies that exist amongst the projects. During the two-day CL Summit, representatives of each state led demonstrations of the K-12 CL materials/programs that had been developed or expanded with NSF EPSCoR funding, including the McCall Outdoor Science School (MOSS) in Idaho, Growing up Thinking Scientifically (GUTS) in New Mexico, and implementation of Climate Change Cyberlearning Curriculum Development (C4D) in Nevada. In addition to learning about the programs, a goal of the summit was to identify components of the projects that were suitable for scaling up and dissemination to the other states.



NM EPSCoR in the News

A collection of the most recent press releases and news articles about New Mexico EPSCoR. Find more announcement at our news archive on the NM EPSCoR [website](#).



\$20M Grant for New Mexico Universities at Risk

BY ASTRID GALVAN / JOURNAL STAFF WRITER
THURSDAY, JANUARY 19, 2012

For years, an organization that has won multimillion-dollar research grants for New Mexico universities has been able to do so with nothing more than in-kind donations such as office space.

But this year, New Mexico's Experimental Program to Stimulate Competitive Research, also known as EPSCoR, will have to prove it can provide a match of 20 percent before it applies for a new five-year, \$20 million grant. Universities can match not just with monetary contributions but by hiring new faculty for the project.

Leaders at EPSCoR are worried that attracting that kind of money – it amounts to \$4 million over five years – will be a challenge in a state that is still battling economic problems.

The current grant, which funds research on the impact of climate change in Northern New Mexico, ends next year, EPSCoR associate director Mary Jo Daniel said.

EPSCoR is working on proposing a new research project, for which it will seek the new \$20 million grant in the fall. The group must have the matching funds committed by then.

The match can come from a non-federal group or the private sector, but EPSCoR is hoping universities such as New Mexico State, University of New Mexico and New Mexico Institute of Mining and Technology will pitch in.

“We are hoping we are going to be able to get a lot of support from (universities), but we're hoping we can get it from others as well,” Daniel said. “EPSCoR has brought in a lot of money to the state.”

EPSCoR in 2008 was awarded a five-year, \$15 million grant from the National Science Foundation, a federal agency. The funding has allowed NMSU, UNM, Tech, New Mexico Highlands and Los Alamos and Sandia national labs to conduct climate change research in the northern part of the state. About 150 students are involved, Daniel said.

The money has paid for remote monitoring stations that study sources of water coming into the state, said Jack Jekowski, co-chair for an EPSCoR advisory committee.

While providing faculty, staff and office space, the universities have not had to contribute any money.

A decision by the National Science Foundation will soon change that.

“About 2 1/2 years ago, the National Science Foundation ... made a pretty dramatic decision to get commitment from the states for this (grant program). They wanted to see real cash dollars and donations. It's taken this long for it to ripple through the system,” Jekowski said.

He said getting universities to commit a 20 percent match will prove difficult



\$20M Grant for New Mexico Universities at Risk

because they are already grappling with slashed budgets.

“There’s some concern that coming up with that much, even if it’s over five years, will be a bit much, particularly with the funding cuts,” he said.

So far, there hasn’t been much talk at the universities about how, or whether, they will be able to help financially.

UNM spokeswoman Cinnamon Blair called the program “critical” and said the university is “a part of the dialogue and process to examine ways of managing funding and creating partnerships to successfully fund the necessary commitment.”

EPSCoR, which UNM administers, has benefited the school by bringing in expert faculty, encouraging research on climate change and water sources at the local level and providing students with research opportunities, she said.

New Mexico Tech officials have not yet considered the possibility of providing a match for a new EPSCoR grant, spokesman Tom Guengerich said.

“I don’t think our money people have really analyzed it to see what the impact will be,” he said.

Still, Guengerich said, it’s not uncommon for the school to have to match a federal grant.

“New Mexico Tech has enjoyed a lot of success in getting federal grants for research over a number of years. A significant number do require matching,” he said.

Daniel, of EPSCoR, said finding matching money is one of several steps in getting the next grant.

“We’re at the very beginning stages in terms of writing the proposal ...,” she said. Daniel said EPSCoR formed a steering committee that will meet in the spring to consider project ideas.

Although she shares concern about getting schools and outside groups to provide a match, Daniel said EPSCoR’s strong relationships with the schools will help.

“We’re optimistic that we’re going to get all the pieces, but we are always looking for more opportunities,” she said.

— This article appeared on page A1 of the Albuquerque Journal



3rd Annual NSF EPSCoR Tri-State Meeting

FOR IMMEDIATE RELEASE
April 1, 2011

NEW MEXICO – The 3rd Annual NSF EPSCoR Western Consortium Tri-State Meeting is being held in Bernalillo, NM from April 6-8, 2011 at the [Tamaya Resort Hotel and Spa](#). The Western Consortium is comprised of Idaho, Nevada, and New Mexico EPSCoR programs in which similar research agendas are shared, and collaboration can develop joint research and education initiatives.

Two hundred researchers and educators from across the consortium are registered to attend the meeting, which will include concurrent sessions on climate research and education projects, workshops, and a poster competition for students. Keynote presentations include “Forest Mortality Responses to Climate Change” by Craig Allen of the U.S. Geological Survey and “Standards and Sharing in Mature Organizations” by Ted Habermann of the NOAA’s National Geophysical Data Center.

This year’s meeting builds upon and extends the collaborations that have been established between researchers across institutions and disciplines throughout the Western Consortium. By combining resources and expertise across the Consortium, progress is being made that otherwise would be impossible by individual states. For the full agenda, please visit [our website](#). If you have questions about New Mexico EPSCoR, the Western Consortium, or the 3rd Annual Tri-State Meeting, please contact Natalie Willoughby at nwilloughby@nmepscor.net.

New Mexico’s Experimental Program to Stimulate Competitive Research (NM EPSCoR) is a multi-faceted program aimed at improving New Mexico’s capacity to carry out scientific research. Funded by the NSF, the current project focuses on science research into the impacts of climate change on Northern New Mexico water resources.

Contact: Natalie Willoughby, Public Information and Outreach Representative, nwilloughby@epscor.unm.edu



EPSCoR NSF Day in New Mexico

FOR IMMEDIATE RELEASE
FEBRUARY 14, 2011

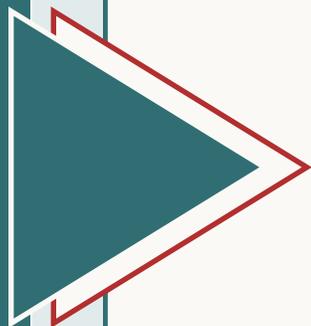
ALBUQUERQUE, NM - New Mexico EPSCoR, in partnership with the National Science Foundation, is pleased to host “NSF Day” on March 17, 2011, at the Embassy Suites Hotel in Albuquerque, New Mexico. This is a great opportunity to meet with Program Officers from across the National Science Foundation to learn about upcoming funding opportunities and priorities. Anyone with an interest in the National Science Foundation and its programs is welcome to attend this day-long workshop. Topics will include the NSF proposal and merit review process, and discussions of potential research proposals, as well as information for tribal and community colleges. Program presentations by representatives from the NSF directorates, the Office of International Science and Engineering, and the Office of Integrative Activities will also be held. This workshop is primarily designed for researchers and educators less experienced in proposing to the NSF; however, more experienced proposers and NSF grantees may find the workshop useful and informative.

The registration fee for NSF Day is \$35. However, the Office of the Vice President for Research has agreed to sponsor the registrations of any UNM junior faculty that would like to attend. Interested junior faculty should contact Jennifer Nieto (jnieto01@unm.edu) for more information.

To register, please visit <http://nmepscor.org> and click on the headline “NSF Day” under the Events column. If you have questions about NSF Day, please contact Natalie Willoughby at nwilloughby@nmepscor.net.

New Mexico’s Experimental Program to Stimulate Competitive Research (NM EPSCoR) is a multi-faceted program aimed at improving New Mexico’s capacity to carry out scientific research. Funded by the NSF, the current project focuses on science research into the impacts of climate change on Northern New Mexico water resources.

Contact: Natalie Willoughby, Public Information and Outreach Representative, nwilloughby@epscor.unm.edu



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**New Mexico
EPSCoR**