

RESEARCH INFRASTRUCTURE IMPROVEMENT (RII 4) PROPOSAL DEVELOPMENT PROCESS

EDUCATION & OUTREACH WHITE PAPER

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TITLE: CREATING A STATEWIDE INFORMAL SCIENCE EDUCATION NETWORK TO DEVELOP INSTITUTIONAL CAPACITY AND PUBLIC PROGRAMS FOCUSING ON EPSCOR RESEARCH ON THE ENERGY-WATER-ENVIRONMENT NEXUS

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Creating a Statewide Informal Science Education Network to Develop Institutional Capacity and Public Programs Focusing on EPSCoR Research on the Energy, Water, Environment Nexus

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Description of Activity

Building upon lessons learned through past and current networks of informal science institutions, the development of a New Mexico Informal Science Education Network (NM ISE Net) would support the educational outreach of the EPSCoR project by 1) Building statewide capacity within the informal science community to understand the current science being generated through research on the energy, water, environment nexus, 2) Develop programs that will reach across the state and inform the public on the current science generated through the project, and 3) Build bridges and create a learning community across research and informal science institutions to learn from each other.

Rationale for this approach can be found in a number of projects funded by the National Science Foundation including:

- The Nanoscale Informal Science Education Network (NSF# 0532536 and 0940143). NISE NET was funded "...to foster public awareness, engagement, and understanding of nanoscale science, engineering, and technology through establishment of a Network, a national infrastructure that links science museums and other informal science education organizations with nanoscale science and engineering research organizations."
- Texas Network for Exhibit-based Teaching and Learning (NSF#0337354): *The TexNET project* was designed to increase the capacity of staff at member museums to provide high-quality learning experiences for their visitors.
- Portal to the Public Project (NSF-063921). The Portal to the Public project was designed to assist informal science education (ISE) institutions as they seek to bring scientists and public audiences together in face-to-face public interactions that promote appreciation and understanding of current scientific research and its application.

In particular, evaluation the TexNET model is recommended as an approach to NM ISE Net: The model that emerged in the last phase of the TexNET project has the potential to be valuable to other statewide networks. In summary, the model consisted of: 1) providing group-wide high-quality professional development...which created shared experiences, vocabulary, and a shared culture... and 2) providing relatively small amounts of funding to each site to create customized... activities, purchase materials, and provide professional development. (Inverness Research 2010).

The specific steps recommended to develop NM ISE Net are 1) Contact informal science institutions across the state (museums, zoos, nature centers, botanic gardens, state/federal parks,

university outreach programs, ...) and invite them to have an initial conversation(s) about EPSCoR and possible work together, 2) From this group create an action team to research past ISE networks and projects to build group capacity as to what could be possible, 3) Create a shared vision for work together, 4) Build capacity around the new science emerging from EPSCoR, 5) Create a learning community where research scientists and informal educators can learn from each other, 6) Create programs for public audiences at NM ISE Net sites across the state, 7) Evaluate effort.

The goal of creating a learning community will be informed by management theory. Peter Senge writes, "Just as an architect and contractor of a house must develop mechanisms to get the right building materials and bring them to the site, builders of learning organizations must develop and improve infrastructural mechanisms so that people have the resources they need: time, management support, money, information, ready contact with colleagues, and more." Management Writer Margaret Wheatley writes about the importance of creating strong systems by creating stronger relationships. "My colleagues and I focus on helping a system develop greater self-knowledge in three critical areas. People need to be connected to the fundamental *identity* of the organization or community. Who are we? Who do we aspire to become? How shall we be together? And people need to be connected to *new information*. What else do we need to know? Where is this new information to be found? And people need to be able to reach past traditional boundaries and develop *relationships* with people anywhere in the system. Who else needs to be here to work with us? The learning community and its work will develop and grow as new research as it emerges from EPSCoR and the field of informal science.

Relevance to the Energy, Water, Environment Nexus

As noted above, the main goals of this effort are to build capacity within the state's informal science education community and to develop public programs about the research underway as part of EPSCoR. As a learning community, the specific outcomes will emerge as does the science through this effort. Specific programs could include lectures, small exhibits, education programs offered to adults and/or children, teacher professional development activities, school field trip offerings at informal institutions or field sites, web resources or other activities. As a network, programs efforts, successes and failures will be shared to all members, with each organization utilizing its own skills and culture to mold its final programs.

<u>Target Audiences</u> include professionals in the informal science education field, research scientists, public and K-16 formal education audiences.

Evaluation of the effort will look at such issues as

- 1) the value and functionality of the network and its support activities
- 2) the quality and value of the professional development offered to the network
- 3) the contributions to local staff and institutions, and
- 4) the quality and value of the resources and activities produced at the local level, and the resulting experiences of the visitors.

An initial conversation with Inverness Research Associations, which has extensive experience evaluating informal science networks, indicated their willingness to work with the effort. Dr. Mark St. John and Becky Carroll would support formative development of the network, and summative evaluation if needed.

<u>Budget Impact</u> on the EPSCoR project would be less in the first years of the effort as the group forms and builds capacity (meeting/travel costs), and more in the latter years as funds would be needed to develop programs.