RESEARCH INFRASTRUCTURE IMPROVEMENT (RII 4)
PROPOSAL DEVELOPMENT PROCESS

EDUCATION & OUTREACH WHITE PAPER

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TITLE: COMMUNICATIONS PORTAL & PLATFORM

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Communications Portal & Platform
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The potential end-users of the scientific data and knowledge at the environment-water-energy nexus fall into a diverse set of communities that include k-12 and post-secondary educators and students; policy makers and regulators; researchers; non-profits and NGOs; and private sector businesses. The information access and presentation needs of these communities are as diverse as the populations that they consist of, and developing a system that can support these diverse needs presents a significant challenge, particularly given the "traditional" approach of developing information "portals" that are optimized for delivery to only one specific end user community - e.g. Researchers, Geospatial data professionals, k-12 educators. The concept proposed here differs from this traditional approach in that it is based upon a model in which a single information platform is deployed that enables a drill-down approach to information and data access that supports the diverse needs of different communities, *and* enables *bi-directional* information *exchange.*

1. How innovative and potentially transformative is the activity?
This activity is innovative and potentially transformative in that it is based upon an information and access model that is based upon progressive delivery of detailed information and related data through a “drill-down” model where users are not distinguished from each other by type, but instead by the level of detail that they are interested in viewing. This alternative method of partitioning users has the advantage of providing a unified interface through which novice users can enter for basic use, but as their experience with the presented information and data grows, they can satisfy their increasingly complex needs (spurred through the development of new research questions or through intellectual curiosity) through experimentation with tools that allow for intuitive drill-down into more detailed content.

The second innovative aspect of this portal is a fundamental design that enables bi-directional information exchange where system users can provide feedback about the usability and quality of the available data, services, and interface for their particular applications. Given that different users will have different uses and data and information requirements, the provided feedback will need to be assessed and presented in the context of user-defined uses, where the resulting quality information will likely vary from use to use.

2. Are there existing programs that can be leveraged?
The current EPSCoR data management system and related services platform may be used as the initial system upon which new data services and may be built. Given the common platform for the NM Resource Geographic Information System (RGIS) and the NM EPSCoR data portal, the capabilities of both systems will both contribute to and benefit from the development of the enhanced system capabilities proposed for this portal. With the tiered services oriented architecture of both RGIS and the EPSCoR data management system, the new communications-enabled drill-down interface can be developed while taking advantage of previous investments in the development of the underlying data management and publication services of the RGIS/EPSCoR platform.

3. How well does the activity relate to the energy---water---environment nexus?
While the capabilities described for this activity are not specific to the energy-water-environment nexus, the drill-down data and information model and bi-directional information collection capability are well positioned to enable the inherently multi- and trans-disciplinary characteristics of the research and applications activities that will be taking place within the nexus. Domain-specific researchers and educators can potentially focus within the portal on data access and assessment relevant to their particular domain while trans-disciplinary activities can also work very effectively in the developed environment within which data from multiple sources can be integrated using the common access model and interfaces.

4. How well does the activity focus on secondary school teachers and minority---serving two---year and four---year institutions?
The inclusion of high-level access methods that are simple to use and access provide a low barrier to entry for entry-level researchers and educators - encouraging exploration and experimentation with the science products and services published by the system. As the students and teachers gain experience with the tools, data and access methods they may dig deeper into the system through tools that enable more complex multi-variate analysis and visualization of the same data and information products that they are already familiar with through their earlier exploration. This incremental access model allows for effective self-paced exploration of data and tools.

5. Does the activity contribute to the development of a diverse, well---prepared, internationally competent, and globally engaged STEM workforce and a more scientifically literate public?
Through the publication of scientific information and data with related quality feedback from users, the above described communication portal will ease access to key data and information that both the public and STEM workforce need to evaluate arguments made regarding the costs and benefits of new energy resources, particularly in reference to their potential impacts on New Mexico's environment and water resources. The availability of a common collection of data that may be used both for public presentation and analysis will support the communication of science outputs in a more consistent manner to multiple stakeholder and research audiences.