New Mexico EPSCoR

RESEARCH INFRASTRUCTURE IMPROVEMENT (RII 4)
PROPOSAL DEVELOPMENT PROCESS

EDUCATION & OUTREACH WHITE PAPER

FOR DISCUSSION
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TITLE: INTEGRATION OF THE NNMC AGROECOLOGY AND BIOLOGICAL RESEARCH STATION, NMSU ALCALDE SUSTAINABLE AGRICULTURAL RESEARCH CENTER, AND NMHU WIND RIVER RANCH BIOLOGICAL RESEARCH STATION WITH THE ENERGY-WATER-ENVIRONMENT NEXUS

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Title:
Integration of The Northern NM College (NNMC) Agroecology and Biological Research Station, NM State University (NMSU) Alcalde Sustainable Agricultural Research Center, and NM Highlands University (NMHU) Wind River Ranch Biological Research Station with the Energy-Water-Environment Nexus.

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Description of Activity:
The research stations at El Rito, Alcalde, and Wind River Ranch (WRR) at NNMC, NMSU, and NMHU respectively are multidisciplinary cross-functional facilities that emphasize undergraduate and graduate research opportunities, K–12 educational initiatives, and community education and outreach. The NNMC Station has 60 dorm rooms, a cafeteria, classrooms, an auditorium, virtual research library, various out-buildings for indoor research opportunities, and open land for field research. Both the Alcalde and WRR locations have some facilities but are not as extensive as the El Rito Station at NNMC.

As part of the proposed energy-water-environment nexus project, the Stations from each institution can house specific elements of the project including acequia research, a biomass utilization facility, and public outreach and K – 12 initiatives. NMSU, UNM, NMHU, and NNMC as well as other NM institutions can utilize the facilities as base stations for operations in the El Rito, Vallecitos, and Mora watersheds. Additionally, the NNMC Station, located in El Rito, has access to the nearby Sustained Yield Management Unit of the Carson N.F. The Stations also have extensive surface water rights and acequias located on the properties allowing for crop production, acequia, hydrology, and water quality research. For example, the NMSU Alcalde Sustainable Agricultural Research Center could use the Station to expand on their crop production research using a high elevation site (~7,000 ft). The Alcalde Center also could partner with NNMC and NMHU to utilize the NNMC and WRR Stations for acequia research and public education and outreach via the establishment of a document repository. Additional experimental acequias could be constructed at the Stations for research under controlled experimental conditions. For example, paired comparisons can be made with specific emphasis on the differences due to their west and east side locations along the Sangre de Cristo Range.

The E-W-E nexus “Sufficiency from Scarcity” proposed project includes elements of biomass utilization, watershed science and management, and ecosystem restoration as they relate to energy security, agricultural production, and socio-economic development. The NNMC and WRR research stations can be utilized as centers for scientific inquiry, education, and outreach for the entire northern half of NM due to their locations and close proximity to NNMC and NMHU.

The NNMC Station is proposing to house the Northern New Mexico Cultural Heritage and Ecological Education Center and The Northern New Mexico Land Policy and Acequia Resource

Center. The WRR site already has partnerships that focus on K-20 and community outreach with the US Fish and Wildlife Service and the Rio Mora Watershed association, the Jane Goodall Institute *Roots and Shoots Program*, the Denver Zoo *Environment and Energy Outreach Program*, the Inter Tribal Buffalo Council, and the WRR *Science Out of the Box K-12 Education Program*. These entities can partner with the Stations to host conferences, seminars, workshops, meetings, retreats, and personal/professional development activities related to the research, education, and outreach efforts of the E-W-E nexus.

Target Audience:
Undergraduate/graduate students (primary), K–12, public outreach.

Relevance to the Energy-Water-Environment nexus:
The Stations can provide opportunities for an array of environmental and tradition-based agricultural research that is highly applicable and responsive to northern New Mexico needs and assets. The Stations are located in communities that are heavily dependent on water and other natural resources as key economic drivers and are representative of land and water use issues faced in Northern NM. The NNMC and WRR research stations will emphasize undergraduate and graduate research on agroecology, natural resource science and management, and environmental monitoring. For the NNMC site, a partnership is being developed with Carson National Forest to establish nearby research sites. All proposed Stations can offer a combination of indoor laboratories and outdoor on-campus sites to study various elements of agroecological production, woody biomass and an array of ecological studies. Development and advancement of these Stations will include partnerships and collaborations with other academic institutions, state and federal agencies, regional K-12 schools, area employers, community organizations, and stakeholders. At the NNMC site, the Northern New Mexico Land Policy and Acequia Resource Center will focus on the scientific principles and merits as related to water and land use polices including acequia management and land grant issues in northern NM. Furthermore, the Northern New Mexico Cultural Heritage Center can organize and offer educational workshops. These partnerships and programs can be expanded to the other sites and enrich the collaboration between all Stations and institutions involved. Lastly, the Stations will operate as resource centers for local communities by offering workshops related to agriculture, land management, and environmental issues affecting those communities. The Station can use on-site demonstration plots related to the E-W-E nexus for K–12 students, undergraduate and graduate students, and the public. The proposed Stations will provide the basis for integration of science-based elements related to the Energy-Water-Environment nexus.