July 16, 2024

State and Federal Partnerships for Research and Development

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Research and Development in New Mexico

- New Mexico has three research universities: University of New Mexico, New Mexico State University, and New Mexico Tech. These institutions expended $630 million for research in FY24, of which $509 million came from non-state sources, primarily from federal grants and contracts.
- While research conducted at these universities may focus on national or international issues, a significant amount is focused on projects that have an application in the state.
- Research spending can be leveraged into workforce development by training students in technical and scientific areas leading to employment with the same federal agencies awarding grants and contracts and to business development in high-tech, high wage fields.

FY24 Research Expenditures by Institution
(in thousands)

	Total	Non-State
NMSU	130,854.6	104,150.6
NM Tech	118,016.3	108,418.1
UNM	161,008.4	129,373.8
UNM-HSC	220,688.5	167,394.4
Total	**630,567.8**	**509,336.9**

Source: LFC Files

NMSU Partnerships for Research and Development

Intelligent Additive Manufacturing leverages machine learning and artificial intelligence to guide remote and distributed 3D printing. Advancements in 3D printing and additive manufacturing are increasingly driven by digital technology, where advanced sensors inform complex part design and production.

- NMSU has been awarded a $7 million grant from the National Science Foundation. This grant involves key research partnerships with Navajo Technical University, NM Tech, UNM, the National Laboratories, and private sector collaborators. The project aims to support and scale up distributed manufacturing in New Mexico by making innovations that address supply chain issues, intellectual property protection, and cybersecurity, ultimately making distributed additive manufacturing a reality in the state.

Hypersonic missiles, which can travel over five times the speed of sound, are a critical national defense priority. Unlike Russia, the United States currently lacks this capability, and requires significant research in thermal management, material durability, aerodynamic design, guidance and navigation systems, propulsion, and detection and tracking technologies. Hypersonic research is also of interest to commercial aviation as it seeks to develop safe, fuel-efficient, and faster modes of transportation.

- NMSU has excellent capacity in hypersonic missile research. Since 2022, more than $2.5 million in Federal research grants have been awarded to the NMSU Hypersonics program. The Technology Enhancement Fund recently allocated $1.36 million to support a $2.7 million proposal to the Office of Naval Research's Defense University Instrumentation Program to acquire a Mach 7 wind tunnel. The outcome of that proposal is pending.

Advanced Chemical Analysis Instrumentation allows researchers to observe the chemical composition of complex samples. This capability is required for many state, regional, and national research and workforce development efforts, including impaired water remediation and reuse, biomedical discovery, agriculture and plant science, environmental science and engineering, oil and gas production, materials science, energy, and food safety.

- In the past year, over $2.3 million in federal funds have been awarded to NMSU for projects supported by this laboratory. The total value of these collaborative efforts exceeds $11 million in research funding. The laboratory supports over $25 million in current research projects. The FY23 Technology Enhancement Fund provided 50 percent of the funds to bring $3.9 million in new instrumentation to this laboratory, and installation of those instruments is in progress.

Radionuclides are unstable forms of chemical elements that release radiation and are created through nuclear fusion and nuclear weapons production. Radionuclides must be securely stored to avoid harmful environmental contamination, and New Mexico is the most active state for radionuclide-related research and economic activity in the country.

- NMSU is a leading institution in radionuclide research and workforce training, with a strong focus on training students to handle and study radioactive elements. NMSU recently secured a $4.8 million grant from the Department of Energy to enhance research and workforce skills in radioactive tank waste management. NMSU received over $2.1 million in federal funding for radionuclide-related research in the past two years. Last year, the Plutonium Workforce Development Initiative delivered $8 million of an anticipated $18 million in research and workforce development funding to New Mexico universities.

NM Tech partnerships for research and development:

The **Playas Research and Training Center** is a former company town for Phelps Dodge that was acquired by NM Tech in 1999 after the smelter the town was built to support was shutdown. The site is 400,000 acres and includes a 640-acre township with over 300 homes.

- The playas facility is currently used for training and research purposes often directly related to national security initiatives. The site supports law enforcement and military exercises as well as a test environment for cyberwarfare activities.
- The playas site supports numerous grants and contracts which the university would otherwise be unable to execute.

The **New Mexico Bureau of Geology and Mineral Resources** serves as the geological survey for the State of New Mexico. The Bureau of Geology conducts research across a broad cross-section of the earth sciences, including mapping the state's geology and mineral and groundwater resource potential. The Legislature provided an increase of $1.1 million in FY25 for the Bureau's water programs, including aquifer mapping and monitoring, the New Mexico water data initiative, and the New Mexico water leaders education program.

- The Bureau has a total of $12.4 million in contracts across program areas including geological mapping, water mapping and monitoring, critical mineral inventories, and carbon sequestration programs.

The **Petroleum Recovery Research Center** conducts research focused on improved methods of enhanced oil and gas recovery and diversified energy technologies related to the oil and gas industry.

- PRRC staff note that half of the current research centers on carbon capture and sequestration with the remaining half split between produced water treatment and traditional hydrocarbon extraction.
- The PRRC research is funded through partnerships with both the federal government and a number of private-sector companies.
- PRRC recently received a $52 million federal grant through the Department of Energy for a characterization study for a carbon storage hub and a $1.9 million grant supporting water purification and lithium extraction.

National Radio Astronomy Observatory Research and Development

The federally funded National Radio Astronomy Observatory operates the **Very Large Array** in New Mexico, one of the world's premier astronomical radio observatories, consisting of 27 radio antennas in a Y-shaped configuration on the Plains of San Agustin 50 miles west of Socorro.

- The array operations center is located on the New Mexico Tech campus and houses scientific, engineering, technical, computer and support staff for both the Very Large Array and the Very Long Baseline Array (VLBA). The VLBA is the world's largest full-time astronomical instrument consisting of antennas located from St. Croix in the Virgin Islands to Mauna Kea on the island of Hawaii.