

Chapter 29

Federal Research and Development in Nevada

- Approximately \$380 million of federal R&D funds are spent each year in Nevada.
- Nevada ranks 27th among the 50 states, District of Columbia, and Puerto Rico in terms of the amount of federal R&D dollars received annually.
- Approximately 14 percent of all federal funds spent in Nevada each year on matters other than the direct support of individuals (i.e., such entitlements as retirement, disability, and housing assistance) is spent on R&D.

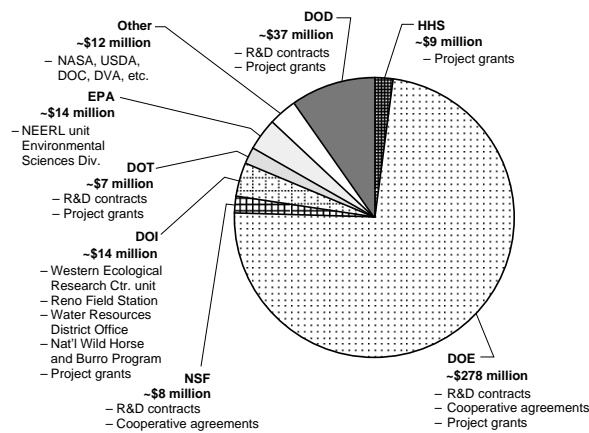


Figure 29.1 – Sources of Federal R&D Dollars Spent in Nevada (Total Federal R&D ~\$380 million)

BACKGROUND

In recent years, the federal government has spent in the neighborhood of \$380 million annually in Nevada on research and development (R&D) activities. On average, federal R&D dollars account for approximately 14 percent of all federal funds spent in Nevada each year on matters other than the direct support of individuals (i.e., such entitlements as retirement, disability, and housing assistance).

Most major federal agencies that currently support federal R&D efforts provide funding for R&D activities in Nevada. Foremost among these agencies is the Department of Energy (DOE), which accounts for 73 percent of all federal R&D dollars spent in the state. The Department of Defense (DOD), the Environmental Protection Agency (EPA), and the Department of Interior (DOI) account for an additional 10, 4, and 4 percent of all federal R&D dollars spent in Nevada, respectively. The remaining federal R&D dollars come collectively from the National Science Foundation (NSF), the Department of Transportation (DOT), and several other federal agencies.²⁹

All federal R&D dollars spent in Nevada either cover the costs of operating federal R&D units in the state, including paying the salaries of federal R&D personnel working at these units, or are awarded as grants, contracts, or cooperative agreements to entities in the state. The following is an overview of what becomes of these federal R&D dollars once they arrive in Nevada.

FEDERAL R&D UNITS IN NEVADA

Carson City, Nevada, is home to DOI's Nevada District Office of Water Resources.

- The Nevada District Office of Water Resources is a unit of DOI's U.S. Geological Survey (USGS). It oversees the R&D activities of USGS's National Water-Quality Assessment (NAWQA), Ground-Water Resources Assessment, Toxic Substances Hydrology, and Federal State Cooperatives programs.

²⁹ For a complete agency-by-agency breakdown of these R&D dollars, see Appendix C.

The NAWQA program conducts research on the nation's surface and groundwater resources to better understand the effect of pesticides, erosion, and bacterial contamination on water quality. The Ground-Water Resources Assessment program studies groundwater systems to develop models and simulations to better understand the workings of these systems. The Toxic Substances Hydrology program studies the behavior of toxic substances in hydrologic environments. These research activities investigate subsurface contamination at local releases and aquatic ecosystem contamination on a watershed and regional scale. The Federal State Cooperatives program studies the effects of agricultural chemicals, floods, droughts, and waste disposal on water supply and groundwater quality. This federal unit annually receives approximately \$2.3 million in federal R&D funds.

Las Vegas, Nevada is home to a unit of DOI's Western Ecological Research Center.

- The Las Vegas Field Station is a unit of the Western Ecological Research Center inside DOI's USGS. It conducts research on the plants and animals that occur at the margins of the geographic and physiological limits of the ecotone between the Mojave, Great Basin, and Sonoran deserts and are challenged by rapid urban growth. Specific research activities of this field station include studying the translocation, reproduction, density estimation, and monitoring of the desert tortoise; effects of fire and invasive plants on Sonoran and Mojave desert ecosystems; and effects of increased atmospheric carbon dioxide on Mojave Desert vegetation. This federal R&D unit annually receives approximately \$230,000 of federal R&D funds and has about two FTEs.

Reno, Nevada is home to USDA's Reno Forestry Sciences Laboratory and Landscape Ecology of Temperate Desert Rangelands Laboratory, DOI's Reno Field Station and National Wild Horse and Burro Program, EPA's Environmental Sciences Division, and a Department of Veterans Affairs (DVA) R&D unit.

- The Reno Forestry Science Laboratory is a unit of the Rocky Mountain Research Station inside USDA's Forest Service. It conducts research on woodland ecology and ecosystem management. Specific research activities of this lab include developing woodland classification schemes, determining ecological relationships in Great Basin piñon and juniper woodland ecosystems, and evaluating site responses to management alternatives. This federal R&D unit annually receives approximately \$464,000 in federal R&D funds and has about five employees.
- The Landscape Ecology of Temperate Desert Rangelands Laboratory is a unit of USDA's Agricultural Research Service (ARS). It conducts research on exotic and invasive weeds and local wildlife to develop the best strategies for establishing native plants on the range. Specific research activities of this unit include finding, studying, and releasing organisms that will control weed activity. The funds supporting this federal R&D unit are included in those detailed for the laboratory headquarters in Albany, California. It has about six employees.
- The Reno Field Station is a unit of the Western Fisheries Research Center inside DOI's USGS. It conducts research on fish population viability. The laboratory investigates the influence of water manipulation, habitat modification, and nonindigenous fish introduction on native fish populations. Specific research activities of this field station include population dynamics, basic life history, interspecific interactions between native and introduced species, and status and trends of threatened and endangered fishes. This federal R&D unit annually receives approximately \$129,000 of federal R&D funds and has about two full-time equivalent employees (FTEs).
- The National Wild Horse and Burro Program is a unit of DOI's Bureau of Land Management, dedicated to the management, protection, and control of wild horses and burros. In FY 1998, this federal unit received approximately \$50,000 of federal R&D funds to support research in furtherance of this objective.

- The Environmental Sciences Division is a unit of EPA's National Exposure Research Laboratory headquartered in Research Triangle Park, North Carolina. It conducts research, development, and technology transfer programs on environmental exposures to ecological and human receptors. The division develops methods for characterizing chemical and physical stressors, with special emphasis on ecological exposure. It also develops landscape and regional assessment capabilities through the use of remote sensing and advanced spatial analysis techniques. In addition, the division conducts analytical chemistry research and applies advanced monitoring technology to issues involving surface and subsurface contamination. This federal R&D unit annually receives approximately \$17.2 million in federal R&D funds and has about 77 FTEs.
- While the principal focus of the VA Sierra Nevada Health Care System facility, the VA Medical Center in Reno, is providing medical care to veterans, it is also the location of a number of research activities. In a recent year, this federally owned and operated facility was the site of 87 projects with total funding of approximately \$280,000. These R&D activities focus on a wide range of topics, including stress disorders, neurology, oncology, and cardiology.

FEDERAL R&D GRANTS TO NEVADA ENTITIES

Every major institution of higher education in Nevada is the recipient of significant federal R&D dollars each year through grants made by federal agencies to faculty, graduate students, and research centers. The vast majority of the R&D grants are made by HHS, NSF, and DOE to individual faculty members and therefore ultimately inure to the benefit of the University and Community College System of Nevada (UCCSN). The UCCSN consists of the University of Nevada at Las Vegas, the University of Nevada at Reno, four community colleges, and the Desert Research Institute. Because the Desert Research Institute is primarily a research, not an educational, entity, grants pro-

vided to it are listed separately. The table below shows the number of R&D grants active in FY 1998, highlighting those made by HHS, NSF, and DOE to parties at UCCSN and estimates of the total dollars transferred to them in FY 1998 pursuant to the terms of these grants. The grants in the “Other Agencies” category going to the UCCSN include \$2 million from USDA and \$1 million from DOD, and most of the remainder is distributed among EPA, NASA, and the Department of Justice.

Table 29.1 – Sources of Federal R&D Grants to Higher Education in Nevada

Institution	HHS		NSF		DOE		Other Agencies		Total	
	Amount	#	Amount	#	Amount	#	Amount	#	Amount	#
UCCSN	\$8M	37	\$6M	105	\$5M	16	\$4M	140	\$23M	298

These activities are particularly significant because they fund much of the “basic research” so critical to expanding our knowledge and understanding of fundamental scientific phenomena. In addition, these funds account for a substantial portion of the dollars available each year to various academic departments within these institutions.

Several other nonacademic institutions in Nevada also receive a significant amount of federal R&D grants each year. Foremost among the institutions that received R&D grants in FY 1998 are the Desert Research Institute in Reno (\$3 million), the National Council of Juvenile and Family Court Judges in Reno (\$2 million), and the Sierra Biomedical Research Corporation in Reno (\$1 million).

Scattered among these grants, as well as among the contracts discussed in the section below, are small business innovative research (SBIR) awards. These are special awards made by the SBIR programs supported by the 10 federal agencies with annual budgets for extramural R&D of more than \$100 million. In a recent year, small businesses in Nevada received seven SBIR awards totaling \$2 million. Examples include a \$750,000 award from the Air Force to Johnson Rockets in Carson City to develop rocket engine analysis codes and a

\$600,000 award from the Navy to Opticomp Corp. in Zephyr Cove for work on volume photorefractive optical interconnect elements for C3I applications.

Also included among these grants are formula grants from federal agencies. Formula grants differ from the much more common project grants in that the money transmitted through formula grants is allocated to a state or one of its subdivisions in accordance with a distribution formula prescribed by law or regulation. Among the formula grants benefiting Nevada are ones valued at more than \$1.2 million from USDA's Cooperative State Research, Education, and Extension Service (CSREES) to State Agricultural Experiment Stations, forestry schools, and veterinary colleges for the support of research in agriculture, forestry, and animal health and disease. Similarly, a modest formula grant goes from DOI's USGS to the Water Resources Research Institute in Nevada every year to foster research in water and water-related problems.

OTHER FEDERAL R&D ACTIVITIES IN NEVADA

Several entities in Nevada also receive notable sums in the form of contracts or cooperative agreements from federal agencies for specific R&D efforts. By far the majority of these funds go to Bechtel, which annually receives approximately \$250 million to support the R&D activities taking place at the Nevada Test Site. The site is a massive outdoor facility that hosts some of the riskiest R&D experiments conducted by federal agencies. Specific R&D activities that take place at the site include hazardous chemical spill experiments, emergency response studies, conventional weapons testing, and waste management and environmental technology studies. Some parts of DOE do not consider any of the approximately \$300 million it provides annually to this site to be federal R&D dollars. This information is included in this report, however, because tens of millions of federal R&D dollars from DOD, NASA, EPA, and other federal agencies are annually spent at the site to cover the costs of conducting federal R&D experiments. Another sizable contract goes to UCCSN, which in FY 1998 received close to \$9 million in R&D contracts, primarily for work on a DOE contract

related to nonproliferation and verification R&D. In addition, Hodges Transportation, Inc. (\$2 million), GPS Solutions, Inc. (\$2 million), and Sierra Nevada Corp. (\$2 million) also received large R&D contracts from federal agencies in FY 1998. Note that these amounts are in addition to any federal R&D grants also received by these companies.

A total of \$7 million of federal R&D dollars was also received in FY 1998 by entities located in Nevada in the form of cooperative agreements. The largest of these cooperative agreements (\$2.8 million in FY 1998) came from DOC (NOAA) to UCCSN for its management of the Cooperative Institute for Atmospheric Sciences and Terrestrial Applications (CIASTA). Other federal agencies awarding cooperative agreements to Nevada-based entities include DOE and the Department of Justice.