

Chapter 52

# Federal Research and Development in Wyoming

- Approximately \$41 million of federal R&D funds are spent each year in Wyoming.
- Wyoming ranks 51st among the 50 states, District of Columbia, and Puerto Rico in terms of the amount of federal R&D dollars received annually.
- Approximately 3 percent of all federal funds spent in Wyoming 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.

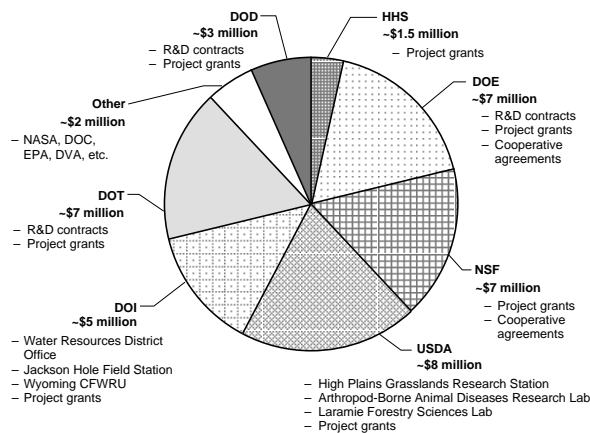


Figure 52.1 – Sources of Federal R&D Dollars Spent in Wyoming (Total Federal R&D ~\$41 million)

## Background

In recent years, the federal government has spent in the neighborhood of \$41 million annually in Wyoming on research and development (R&D) activities. On average, federal R&D dollars account for approximately 3 percent of all federal funds spent in Wyoming 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 Wyoming. Foremost among these agencies are the Departments of Agriculture (USDA), Energy (DOE), and Transportation (DOT) and the National Science Foundation (NSF), which account for 20, 18, 17, and 17 percent of all federal R&D dollars spent in the state, respectively. The Departments of Defense (DOD) and Health and Human Services (HHS) account for an additional 7 and 4 percent of the federal R&D dollars spent in Wyoming, respectively. The remaining federal R&D dollars come collectively from the National Aeronautics and Space Administration (NASA), the Environmental Protection Agency (EPA), and several other federal agencies.<sup>52</sup>

All federal R&D dollars spent in Wyoming 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 Wyoming.

## Federal R&D Units in Wyoming

Cheyenne, Wyoming, is home to USDA's High Plains Grasslands Research Station and the Department of Interior's (DOI's) Wyoming District Office of Water Resources.

- The High Plains Grasslands Research Station is part of USDA's Agricultural Resources Service (ARS). It conducts research on

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<sup>52</sup> For a complete agency-by-agency breakdown of these R&D dollars, see Appendix C.

grazingland soils, livestock, and vegetation. Specific research activities of the unit focus on such areas as soil loss through erosion, reclaiming of mined lands, and the impact of livestock on grasslands. This federal R&D unit annually receives approximately \$1.8 million of federal R&D funds and has about 25 FTEs.

- The Wyoming 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. 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 \$1.2 million in federal R&D funds.

Jackson Hole, Wyoming, is home to DOI's Jackson Hole Field Station.

- The Jackson Field Research Station is a unit of the Columbia Environmental Research Center inside DOI's USGS. It conducts research on the influences of mining operations, energy exploration, energy development and production, acid deposition, and metals on fisheries and aquatic ecosystem health. Specific research activities of this unit include such areas as the effect of humans on greater Yellowstone ecosystem water quality, deep-shaft mine waste, and river contamination from ore deposits.

This federal R&D unit annually receives approximately \$145,000 of federal R&D funds and has about four FTEs.

Laramie, Wyoming, is home to USDA's Arthropod-Borne Animal Diseases Research Laboratory and Laramie Forestry Sciences Lab and DOI's Wyoming Cooperative Fish and Wildlife Research Unit.

- The Arthropod-Borne Animal Diseases Research Laboratory is a unit of USDA's ARS located on the campus of the University of Wyoming. It conducts research on diseases of domestic livestock that are transmitted by arthropods, including insects, ticks, and spiders. Specific research activities of the laboratory focus on such areas as the vectors of arboreal diseases; the genetic diversity and molecular biology of arboviruses; and the epidemiology, control, and pathogenesis of animal arbovirus. This federal R&D unit annually receives approximately \$2 million of federal R&D funds and has about 25 FTEs.
- The Laramie Forestry Science Laboratory is a unit of the Rocky Mountain Research Station inside USDA's Forest Service. It conducts research on how to sustain fish and watershed components of aquatic and riparian ecosystems in the central Rocky Mountains and northern Great Plains. Specific research activities of this unit include investigating the movement of nutrients and chemicals through forested watersheds. This federal R&D unit annually receives approximately \$711,000 of federal R&D funds and has about five employees.
- The Wyoming Cooperative Fish and Wildlife Research Unit is part of DOI's USGS. It is on the campus of the University of Wyoming. It conducts research on a range of topics from evaluating management techniques to developing population estimation models. Specific research activities of this unit include studying the habitats of sage grouse, behavior of black-footed ferrets, predator ecology and management, and salmonids in watersheds and regulated rivers. This federal R&D unit annually receives approximately \$296,000 of federal R&D funds and has about three FTEs.

## Federal R&D Grants to Wyoming Entities

Every major institution of higher education in Wyoming 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 NSF, DOD, USDA, and HHS to individual faculty members and therefore ultimately inure to the benefit of such institutions as the University of Wyoming. The table below shows the number of R&D grants active in FY 1998, highlighting those made by NSF, DOD, USDA, and HHS to parties at this institution and estimates of the total dollars transferred to them in FY 1998 pursuant to the terms of these grants. Most of the grants in the "Other Agencies" category come from NASA and EPA.

Table 52.1 – Sources of Federal R&D Grants to Higher Education in Wyoming

Institution	NSF		DOD		USDA		HHS		Other Agencies		Total	
	Amount	#	Amount	#	Amount	#	Amount	#	Amount	#	Amount	#
U of Wyoming	\$6M	79	\$2M	9	\$2M	52	\$2M	13	\$2M	34	\$14M	187

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.

Other nonacademic institutions in Wyoming also receive a significant amount of federal R&D grants each year. Foremost among these institutions are Wyoming Sawmills, Inc., in Sheridan (\$150,000), the County of Unita (\$100,000), Detection Limit, Inc., in Laramie (\$100,000), and Bowen Scientific Products in Laramie (\$100,000).

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 extra-

mural R&D of more than \$100 million. In a recent year, small businesses in Wyoming received seven SBIR awards totaling \$750,000. Examples include a \$225,000 award from USDA to Wyoming Sawmills in Sheridan to study the feasibility of creating structural laminated studs from low-grade lumber and a \$90,000 award from HHS to CC Technology in Laramie for work on the rapid detection of prenatal and neonatal metabolic disorders.

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 Wyoming are ones valued at more than \$1.5 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 Wyoming every year to foster research in water and water-related problems.

### Other Federal R&D Activities in Wyoming

Several entities in Wyoming also receive notable sums in the form of contracts or cooperative agreements from federal agencies for specific R&D efforts. A large portion of these funds go to the Shoshone and Arapaho Tribe, which in FY 1998 received close to \$1.5 million in R&D contracts from HHS for health-related activities. In addition, CHA Corp. (\$400,000) and Global Plastec LLC (\$300,000) also received R&D contracts from federal agencies in FY 1998. The University of Wyoming (\$1 million) also receives contracts from various federal agencies to conduct R&D for the federal government. Although this amount is notable, it does not come close to eclipsing the funds that this institution receives from federal R&D grants.

A total of \$6 million of federal R&D dollars was also received in FY 1998 by entities located in Wyoming in the form of cooperative

agreements. By far the largest of these cooperative agreements (\$2 million in FY 1998) came from DOE to the Western Research Institute in Laramie for work on clean coal technologies. Other federal agencies awarding cooperative agreements to Wyoming-based entities include NSF and DOI.