



Federally Funded R&D Centers Continue Increase to \$19.2 Billion in R&D Spending in FY 2016

by Ronda Britt¹

The nation's 42 federally funded research and development centers (FFRDCs) spent \$19.2 billion on R&D in FY 2016, an annual increase of just over 4% in current dollars for the second year in a row (table 1). In constant 2009 dollars, the total spent on R&D within FFRDCs rose 3.0% from FY 2015 to FY 2016 (figure 1). Following 5.2% average annual inflation-adjusted growth between FY 2001 and FY 2010, FFRDCs reported 4 straight years of constant dollar declines before the recent 3.0% annual increase over the past 2 years. These and the other statistics in this report come from the FY 2016 FFRDC Research and Development Survey, conducted by the National Center for Science and Engineering Statistics (NCSES) within the National Science Foundation (NSF).

R&D by Funding Source

FFRDCs are privately operated R&D organizations that are exclusively or substantially financed by the federal government.² Over 98% of FFRDCs' total FY 2016 R&D expenditures were funded by federal agency sources. The federally funded total grew 4.2% in FY 2016 to \$18.9 billion (table 1). The

remainder of the expenditures were funded by businesses (\$192 million), nonprofit organizations (\$40 million), state and local government (\$22 million), and all other sources (\$110 million), such as foreign or U.S. universities.

Federal Agency Sources of R&D Funding

NCSES added a new question to the FY 2016 survey that asked for the specific federal agency sources of the R&D expenditures reported by FFRDCs. Of the \$18.9 billion in federally funded R&D spending, 52% (\$9.8 billion) was funded by the Department

of Energy. Another 22% (\$4.2 billion) was funded by the Department of Defense (table 2).

R&D-Performing Laboratories

Five FFRDCs reported over \$1 billion each in R&D expenditures for FY 2016 (reporting a combined \$9.3 billion in FY 2016)—the National Aeronautics and Space Administration-sponsored Jet Propulsion Laboratory, and four Department of Energy-sponsored National Laboratories specializing in energy and the environment, national security, and

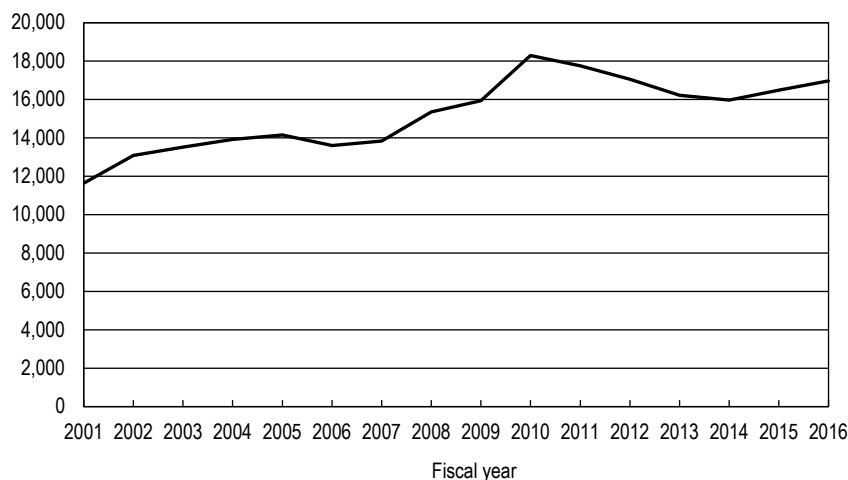
TABLE 1. R&D expenditures at federally funded research and development centers, by source of funds: FYs 2010–16

(Thousands of current dollars)

Fiscal year	All R&D expenditures	Federal government	State and local government	Business	Nonprofit organizations	All other sources
2010	18,880,609	18,453,552	52,871	168,561	23,665	181,960
2011	18,671,245	18,276,088	26,744	190,111	38,878	139,424
2012	18,280,943	17,875,012	39,428	184,434	45,926	136,143
2013	17,667,184	17,284,513	50,449	186,911	39,390	105,921
2014	17,718,556	17,331,396	28,337	220,735	37,182	100,906
2015	18,458,257	18,097,189	18,427	208,780	27,984	105,877
2016	19,219,702	18,855,593	21,556	192,239	40,195	110,119

SOURCE: National Science Foundation, National Center for Science and Engineering Statistics, FFRDC Research and Development Survey.

FIGURE 1. Total R&D expenditures at federally funded research and development centers: FYs 2001–16
(Constant 2009 \$millions)



SOURCE: National Science Foundation, National Center for Science and Engineering Statistics, FFRDC Research and Development Survey.

nuclear science: Sandia, Oak Ridge, Los Alamos, and Lawrence Livermore (table 3). All but Oak Ridge reported expenditure increases of 6% to 7% between FY 2015 and FY 2016. Oak Ridge National Laboratory reported

a decline of 3.5% in FY 2016. Of the remaining FFRDCs, seven also reported declines between FY 2015 and FY 2016. Overall, 34 of the 42 FFRDCs (81%) reported R&D spending increases in FY 2016.

TABLE 2. Federally financed R&D expenditures at federally funded research and development centers, by federal agency: FY 2016
(Thousands of current dollars)

FFRDC	All federal R&D expenditures
All FFRDCs	18,855,593
Department of Defense	4,194,659
Department of Energy	9,849,051
Department of Health and Human Services	867,042
Department of Homeland Security	504,086
Department of Transportation	162,645
National Aeronautics and Space Administration	2,013,307
National Science Foundation	244,042
Other	1,020,761

FFRDC = federally funded research and development center.

SOURCE: National Science Foundation, National Center for Science and Engineering Statistics, FFRDC Research and Development Survey, FY 2016.

Data Sources, Limitations, and Availability

The statistics on FFRDC R&D presented in this report come from the FY 2016 FFRDC R&D Survey. This annual survey is completed by FFRDC administrators and collects data from FFRDCs on R&D expenditures by source of funds (federal, state and local, business, nonprofit organizations, or other), type of R&D (basic research, applied research, or experimental development), and type of cost (salaries, software, equipment, subcontracts, or indirect costs). This survey has been a census of the full population of FFRDCs since FY 2001. For more information on the survey methodology, see the technical notes in *FFRDC Research and Development Survey: Fiscal Year 2016*.

The full set of data tables from this survey are available at <https://ncesdata.nsf.gov/ffrdc/2016/>.

Notes

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2. For a description of the federal guidelines and definitions governing FFRDCs, see the “General Notes” section of the NSF’s Master Government List of FFRDCs at <https://www.nsf.gov/statistics/ffrdclist/#gennotes>.

The Master Government List of FFRDCs is accessible at <https://www.nsf.gov/statistics/ffrdclist/>.

TABLE 3. R&D expenditures at federally funded research and development centers, by FFRDC: FYs 2013–16
(Thousands of current dollars)

FFRDC	2013	2014	2015	2016	% change 2015–16
All FFRDCs	17,667,184	17,718,556	18,458,257	19,219,702	4.1
University-administered FFRDCs	5,232,872	5,279,306	5,483,466	5,669,908	3.4
Ames Laboratory	34,234	41,824	45,845	46,886	2.3
Argonne National Laboratory	708,501	719,459	719,521	733,377	1.9
Fermi National Accelerator Laboratory	376,472	334,522	319,700	323,507	1.2
Jet Propulsion Laboratory	1,519,258	1,664,539	1,749,689	1,852,369	5.9
Lawrence Berkeley National Laboratory	768,563	762,601	792,457	797,831	0.7
Lincoln Laboratory	872,298	830,076	914,071	949,138	3.8
National Center for Atmospheric Research	172,527	162,259	166,385	177,422	6.6
National Optical Astronomy Observatory	30,021	25,161	23,660	24,917	5.3
National Radio Astronomy Observatory	93,253	85,327	89,689	90,411	0.8
National Solar Observatory	10,648	10,039	11,752	12,783	8.8
Princeton Plasma Physics Laboratory	85,088	97,768	81,348	82,246	1.1
SLAC National Accelerator Laboratory	327,005	316,646	310,167	313,031	0.9
Software Engineering Institute	134,973	123,217	131,146	145,981	11.3
Thomas Jefferson National Accelerator Facility	100,031	105,868	128,036	120,009	-6.3
Nonprofit-administered FFRDCs	5,953,968	5,945,266	6,121,483	6,128,058	0.1
Aerospace Federally Funded Research and Development Center	835,068	838,708	888,119	909,868	2.4
Arroyo Center	32,789	33,391	40,594	44,616	9.9
Brookhaven National Laboratory	529,634	573,364	587,194	579,087	-1.4
Center for Advanced Aviation System Development	146,860	149,054	155,696	156,644	0.6
Center for Communications and Computing	51,477	63,199	56,478	61,625	9.1
Center for Enterprise Modernization	202,319	158,069	145,442	146,436	0.7
Center for Naval Analyses	86,132	80,283	80,358	84,232	4.8
Center for Nuclear Waste Regulatory Analyses	12,331	12,314	12,636	8,600	-31.9
CMS Alliance to Modernize Healthcare	17,521	70,458	168,142	141,860	-15.6
Homeland Security Studies and Analysis Institute	22,452	20,866	16,965	22,038	29.9
Homeland Security Systems Engineering and Development Institute	75,530	94,353	77,176	101,628	31.7
Judiciary Engineering and Modernization Center	6,399	2,299	4,318	9,289	115.1
National Biodefense Analysis and Countermeasures Center	29,849	30,310	30,716	32,902	7.1
National Cybersecurity Center of Excellence	na	na	7,843	13,076	66.7
National Defense Research Institute	59,460	62,073	56,736	62,848	10.8
National Renewable Energy Laboratory	347,368	359,998	378,436	362,087	-4.3
National Security Engineering Center	928,614	885,382	919,441	966,542	5.1
Oak Ridge National Laboratory	1,451,684	1,293,722	1,333,332	1,283,729	-3.7
Pacific Northwest National Laboratory	934,491	1,021,912	951,099	914,747	-3.8
Project Air Force	36,003	39,351	44,393	49,165	10.7
Science and Technology Policy Institute	5,010	10,949	8,724	7,459	-14.5
Systems and Analyses Center	142,977	145,211	157,645	169,580	7.6
Industry-administered FFRDCs	6,480,344	6,493,984	6,853,308	7,421,736	8.3
Frederick National Laboratory for Cancer Research	433,900	448,500	495,300	642,165	29.7
Idaho National Laboratory	496,818	479,801	476,376	521,618	9.5
Lawrence Livermore National Laboratory	1,313,293	1,170,571	1,273,066	1,363,525	7.1
Los Alamos National Laboratory	1,708,000	1,767,000	1,865,000	1,987,000	6.5
Sandia National Laboratories	2,412,476	2,507,099	2,621,891	2,781,547	6.1
Savannah River National Laboratory	115,857	121,013	121,675	125,881	3.5

na = not applicable.

FFRDC = federally funded research and development center.

SOURCE: National Science Foundation, National Center for Science and Engineering Statistics, FFRDC Research and Development Survey.