



National Center for Science and
Engineering Statistics

FFRDC Research and Development Expenditures: Fiscal Year 2023

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General Notes

The FFRDC Research and Development Survey is the primary source of information on R&D expenditures that are separately accounted for at federally funded research and development centers (FFRDCs) in the United States. Conducted annually for university-administered FFRDCs since FY 1953 and all FFRDCs since FY 2001, the survey collects information on R&D expenditures by source of funds and types of research and expenses. The survey is an annual census of the full population of eligible FFRDCs. See <https://www.nsf.gov/statistics/ffrdclist/> for the Master Government List of FFRDCs.

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Federally funded research and development center (FFRDC) expenditures

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TABLE 1

R&D expenditures at federally funded research and development centers, by source of funds: FYs 2001–23

(Dollars in thousands)

Fiscal year	All R&D expenditures	Federal government	State and local government	Business	Nonprofit organizations	All other sources ^a
2001	10,071,307	9,709,221	19,389	144,043	na	198,654
2002	11,536,424	11,095,110	31,423	134,251	na	275,640
2003	12,126,880	11,681,318	33,301	138,685	na	273,576
2004	12,632,207	12,321,652	29,959	119,843	na	160,753
2005	13,254,522	12,917,206	32,339	129,036	na	175,941
2006	13,218,497	12,824,552	30,122	170,879	na	192,944
2007	13,824,987	13,401,081	32,072	172,592	na	219,242
2008	15,616,390	15,177,347	32,188	202,534	na	204,321
2009	16,390,111	15,942,851	35,442	189,721	na	222,097
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
2017	20,038,307	19,667,804	29,029	192,107	46,526	102,841
2018	21,171,529	20,770,388	43,458	197,975	43,630	116,078
2019	22,737,500	22,338,855	51,167	180,583	48,238	118,657
2020	23,514,241	23,133,501	43,995	172,866	47,056	116,823
2021	24,921,476	24,509,691	43,774	195,954	49,016	123,041
2022	26,006,971	25,605,479	38,591	207,483	49,120	106,298
2023	29,316,897	28,880,018	35,407	224,361	42,292	134,819

na = not applicable; data from nonprofit organizations were not collected separately.

^a Prior to FY 2010, R&D expenditures from nonprofit organizations were collected under All other sources.**Source(s):**

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

TABLE 2

Total and federally financed R&D expenditures at federally funded research and development centers, by type of R&D: FYs 2001–23

(Dollars in millions and percent)

Fiscal year	Total								Federally financed							
	All R&D expenditures	Basic research		Applied research		Experimental development		All R&D expenditures	Basic research		Applied research		Experimental development			
		Amount	Percent	Amount	Percent	Amount	Percent		Amount	Percent	Amount	Percent	Amount	Percent		
2001	10,071	3,875	38.5	na	na	na	na	9,709	3,726	38.4	na	na	na	na		
2002	11,536	4,744	41.1	na	na	na	na	11,095	4,523	40.8	na	na	na	na		
2003	12,127	5,122	42.2	na	na	na	na	11,681	4,880	41.8	na	na	na	na		
2004	12,632	4,931	39.0	na	na	na	na	12,322	4,790	38.9	na	na	na	na		
2005	13,255	5,110	38.5	na	na	na	na	12,917	4,977	38.5	na	na	na	na		
2006	13,218	5,197	39.3	na	na	na	na	12,825	5,048	39.4	na	na	na	na		
2007 ^a	13,825	5,296	38.3	3,479	25.2	4,411	31.9	13,401	5,151	38.4	3,314	24.7	4,319	32.2		
2008	15,616	5,379	34.4	3,992	25.6	6,245	40.0	15,177	5,210	34.3	3,825	25.2	6,143	40.5		
2009	16,390	5,871	35.8	4,545	27.7	5,974	36.4	15,943	5,714	35.8	4,346	27.3	5,884	36.9		
2010	18,881	6,655	35.2	5,191	27.5	7,034	37.3	18,454	6,487	35.2	5,031	27.3	6,935	37.6		
2011	18,671	6,582	35.3	5,175	27.7	6,914	37.0	18,276	6,439	35.2	5,006	27.4	6,830	37.4		
2012	18,281	6,153	33.7	5,382	29.4	6,746	36.9	17,875	6,013	33.6	5,209	29.1	6,653	37.2		
2013	17,667	4,186	23.7	6,818	38.6	6,663	37.7	17,285	4,081	23.6	6,636	38.4	6,568	38.0		
2014	17,719	4,195	23.7	6,839	38.6	6,684	37.7	17,331	4,098	23.6	6,648	38.4	6,585	38.0		
2015	18,458	4,094	22.2	7,292	39.5	7,072	38.3	18,097	4,012	22.2	7,118	39.3	6,968	38.5		
2016	19,220	4,224	22.0	7,527	39.2	7,468	38.9	18,856	4,136	21.9	7,373	39.1	7,347	39.0		
2017	20,038	4,111	20.5	7,931	39.6	7,996	39.9	19,668	4,039	20.5	7,756	39.4	7,873	40.0		
2018	21,172	4,180	19.7	8,391	39.6	8,600	40.6	20,770	4,099	19.7	8,205	39.5	8,466	40.8		
2019	22,738	4,536	19.9	9,200	40.5	9,002	39.6	22,339	4,455	19.9	9,014	40.4	8,869	39.7		
2020	23,514	4,712	20.0	9,433	40.1	9,369	39.8	23,134	4,637	20.0	9,257	40.0	9,239	39.9		
2021	24,921	5,021	20.1	9,951	39.9	9,949	39.9	24,510	4,945	20.2	9,765	39.8	9,799	40.0		
2022	26,007	5,232	20.1	10,369	39.9	10,407	40.0	25,605	5,159	20.1	10,185	39.8	10,261	40.1		
2023	29,317	5,856	20.0	11,922	40.7	11,539	39.4	28,880	5,771	20.0	11,715	40.6	11,394	39.5		

na = not applicable; separate data for applied research and experimental development were not collected before FY 2007.

^a FY 2007 detail does not add to total because one institution was unable to provide a breakout of applied research and experimental development expenditures.**Note(s):**

Because of rounding, detail may not add to total.

Source(s):

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

TABLE 3

Federally financed R&D expenditures from federal agencies: FY 2023

(Dollars in thousands)

Federal agency	R&D expenditures
All federal agencies	28,880,018
Agency for International Development	15,211
Architect of the Capitol	132
Central Intelligence Agency	2,525
Consumer Product Safety Commission	491
Department of Agriculture	5,676
Department of Commerce	101,903
Department of Defense	5,976,325
Department of Energy	16,379,939
Department of Health and Human Services	1,318,421
Department of Homeland Security	619,487
Department of Justice	27,976
Department of Labor	373
Department of State	93,119
Department of the Interior	19,922
Department of the Treasury	151,893
Department of Transportation	213,764
Department of Veterans Affairs	127,237
Environmental Protection Agency	6,379
Executive Office of the President	539
General Services Administration	2,300
National Aeronautics and Space Administration	2,921,144
National Credit Union Administration	198
National Science Foundation	382,460
Nuclear Regulatory Commission	25,928
Office of the Director of National Intelligence	14,795
Other agencies not listed ^a	471,881

^a Some funding sources were not identified for security reasons or because the original source was not known.

Source(s):

National Center for Science and Engineering Statistics, FFRDC Research and Development Survey, FY 2023.

TABLE 4

R&D expenditures at federally funded research and development centers, by source of funds and FFRDC: FY 2023

(Dollars in thousands)

FFRDC	All R&D expenditures	Federal government	State and local government	Business	Nonprofit organizations	All other sources
All FFRDCs	29,316,897	28,880,018	35,407	224,361	42,292	134,819
University-administered FFRDCs	8,179,862	8,010,234	16,149	74,776	12,430	66,273
Ames Laboratory	40,638	40,091	65	462	0	20
Argonne National Laboratory	1,234,635	1,205,264	652	21,824	491	6,404
Fermi National Accelerator Laboratory	402,122	400,573	0	673	53	823
Green Bank Observatory	12,326	11,909	0	45	14	358
Jet Propulsion Laboratory	2,671,305	2,671,305	0	0	0	0
Lawrence Berkeley National Laboratory	1,190,504	1,131,175	10,428	23,119	5,995	19,787
Lincoln Laboratory	1,265,060	1,234,615	176	14,596	543	15,130
National Center for Atmospheric Research	210,233	184,647	2,932	8,704	3,378	10,572
National Radio Astronomy Observatory	102,863	102,104	0	295	370	94
National Solar Observatory	39,856	39,719	0	0	0	137
NSF's National Optical-Infrared Astronomy Research Laboratory (NSF's NOIRLab)	94,257	92,841	0	0	0	1,416
Princeton Plasma Physics Laboratory	131,042	127,260	0	352	0	3,430
SLAC National Accelerator Laboratory	483,193	469,601	244	4,264	1,572	7,512
Software Engineering Institute	130,141	130,141	0	0	0	0
Thomas Jefferson National Accelerator Facility	171,687	168,989	1,652	442	14	590
Nonprofit-administered FFRDCs	10,052,536	9,879,651	18,428	93,455	29,210	31,792
Aerospace Federally Funded Research and Development Center	1,259,428	1,251,725	0	5,066	0	2,637
Arroyo Center	42,433	42,433	0	0	0	0
Brookhaven National Laboratory	691,417	678,623	4,277	6,529	93	1,895
Center for Advanced Aviation System Development	186,163	166,246	2,311	3,210	1,642	12,754
Center for Communications and Computing	77,391	77,391	0	0	0	0
Center for Enterprise Modernization	258,155	258,155	0	0	0	0
Center for Naval Analyses	96,103	96,103	0	0	0	0
Center for Nuclear Waste Regulatory Analyses	4,405	3,467	12	802	0	124
CMS Alliance to Modernize Healthcare	281,709	281,709	0	0	0	0
Homeland Security Operational Analysis Center	66,264	66,264	0	0	0	0
Homeland Security Systems Engineering and Development Institute	217,908	216,456	264	365	490	333
Idaho National Laboratory	653,100	642,971	1,169	6,293	254	2,413
National Biodefense Analysis and Countermeasures Center	41,321	41,321	0	0	0	0
National Cybersecurity Center of Excellence	23,010	23,010	0	0	0	0
National Defense Research Institute	67,157	67,157	0	0	0	0
National Renewable Energy Laboratory	718,852	648,671	5,050	49,546	15,585	0
National Security Engineering Center	1,370,949	1,367,998	0	531	0	2,420
Oak Ridge National Laboratory	2,019,259	2,000,646	424	9,172	2,658	6,359
Pacific Northwest National Laboratory	1,449,496	1,424,969	4,921	8,723	8,488	2,395
Project Air Force	48,729	48,729	0	0	0	0
Savannah River National Laboratory	244,736	241,518	0	3,218	0	0
Science and Technology Policy Institute	9,977	9,977	0	0	0	0
Systems and Analyses Center	224,574	224,112	0	0	0	462
Industry-administered FFRDCs	11,084,499	10,990,133	830	56,130	652	36,754
Frederick National Laboratory for Cancer Research	929,754	929,754	0	0	0	0
Lawrence Livermore National Laboratory	2,110,938	2,079,762	148	12,693	652	17,683
Los Alamos National Laboratory	3,768,323	3,742,718	0	25,605	0	0
Sandia National Laboratories	4,275,484	4,237,899	682	17,832	0	19,071

FFRDC = federally funded research and development center; NSF = National Science Foundation.

Source(s):

National Center for Science and Engineering Statistics, FFRDC Research and Development Survey, FY 2023.

TABLE 5

Federally financed R&D expenditures at federally funded research and development centers, by federal agency and FFRDC: FY 2023

(Dollars in thousands)

FFRDC	All federal R&D expenditures	DOD	DOE	HHS	DHS	DOT	NASA	NSF	Other
All FFRDCs	28,880,018	5,976,325	16,379,939	1,318,421	619,487	213,764	2,921,144	382,460	1,068,478
University-administered FFRDCs	8,010,234	1,304,978	3,400,432	45,944	68,927	34,755	2,704,050	374,958	76,190
Ames Laboratory	40,091	122	39,592	0	0	0	0	0	377
Argonne National Laboratory	1,205,264	30,665	1,114,827	8,694	20,967	6,802	683	0	22,626
Fermi National Accelerator Laboratory	400,573	1,353	399,204	0	0	0	3	13	0
Green Bank Observatory	11,909	0	0	0	0	0	75	11,834	0
Jet Propulsion Laboratory	2,671,305	0	0	0	0	0	2,671,305	0	0
Lawrence Berkeley National Laboratory	1,131,175	16,553	1,085,067	22,336	1,558	1,185	2,596	0	1,880
Lincoln Laboratory	1,234,615	1,154,563	8,511	2,466	15,692	22,246	15,181	0	15,956
National Center for Atmospheric Research	184,647	4,906	4,712	0	0	4,252	10,404	135,298	25,075
National Radio Astronomy Observatory	102,104	681	0	0	0	0	355	101,068	0
National Solar Observatory	39,719	24	0	0	0	0	843	38,852	0
NSF's National Optical-Infrared Astronomy Research Laboratory (NSF's NOIRLab)	92,841	87	4,261	0	0	0	1,299	87,194	0
Princeton Plasma Physics Laboratory	127,260	316	125,885	0	0	0	1,010	49	0
SLAC National Accelerator Laboratory	469,601	8,299	448,382	11,165	173	0	296	650	636
Software Engineering Institute	130,141	87,409	1,002	1,283	30,537	270	0	0	9,640
Thomas Jefferson National Accelerator Facility	168,989	0	168,989	0	0	0	0	0	0
Nonprofit-administered FFRDCs	9,879,651	3,173,584	4,839,352	321,207	445,675	177,059	145,341	7,337	770,096
Aerospace Federally Funded Research and Development Center	1,251,725	1,080,782	26,945	0	789	4,466	100,321	313	38,109
Arroyo Center	42,433	42,433	0	0	0	0	0	0	0
Brookhaven National Laboratory	678,623	3,782	646,750	5,130	714	0	9,353	0	12,894
Center for Advanced Aviation System Development	166,246	0	0	0	0	166,244	2	0	0

TABLE 5

Federally financed R&D expenditures at federally funded research and development centers, by federal agency and FFRDC: FY 2023

(Dollars in thousands)

FFRDC	All federal R&D expenditures	DOD	DOE	HHS	DHS	DOT	NASA	NSF	Other
Center for Communications and Computing	77,391	77,391	0	0	0	0	0	0	0
Center for Enterprise Modernization	258,155	0	2	0	0	0	918	0	257,235
Center for Naval Analyses	96,103	96,103	0	0	0	0	0	0	0
Center for Nuclear Waste Regulatory Analyses	3,467	11	129	0	0	87	0	0	3,240
CMS Alliance to Modernize Healthcare	281,709	0	0	281,709	0	0	0	0	0
Homeland Security Operational Analysis Center	66,264	0	0	0	65,674	0	0	0	590
Homeland Security Systems Engineering and Development Institute	216,456	0	0	0	201,186	0	0	0	15,270
Idaho National Laboratory	642,971	91,415	509,880	0	21,217	1,772	336	0	18,351
National Biodefense Analysis and Countermeasures Center	41,321	401	0	1,533	26,737	0	0	0	12,650
National Cybersecurity Center of Excellence	23,010	0	0	0	0	0	0	0	23,010
National Defense Research Institute	67,157	62,235	0	0	0	581	0	0	4,341
National Renewable Energy Laboratory	648,671	16,694	609,883	0	4,810	862	715	0	15,707
National Security Engineering Center	1,367,998	1,168,542	0	0	0	0	0	0	199,456
Oak Ridge National Laboratory	2,000,646	55,208	1,768,996	6,696	9,265	3,047	31,385	252	125,797
Pacific Northwest National Laboratory	1,424,969	199,322	1,068,347	25,432	99,217	0	1,453	317	30,881
Project Air Force	48,729	48,729	0	0	0	0	0	0	0
Savannah River National Laboratory	241,518	29,269	206,719	0	2,609	0	0	0	2,921
Science and Technology Policy Institute	9,977	202	119	707	0	0	699	6,455	1,795
Systems and Analyses Center	224,112	201,065	1,582	0	13,457	0	159	0	7,849
Industry-administered FFRDCs	10,990,133	1,497,763	8,140,155	951,270	104,885	1,950	71,753	165	222,192
Frederick National Laboratory for Cancer Research	929,754	118	0	929,635	0	0	0	0	1

TABLE 5

Federally financed R&D expenditures at federally funded research and development centers, by federal agency and FFRDC: FY 2023

(Dollars in thousands)

FFRDC	All federal R&D expenditures	DOD	DOE	HHS	DHS	DOT	NASA	NSF	Other
Lawrence Livermore National Laboratory	2,079,762	360,585	1,673,949	8,069	22,915	0	7,886	0	6,358
Los Alamos National Laboratory	3,742,718	77,067	3,483,875	11,510	5,916	0	62,957	165	101,228
Sandia National Laboratories	4,237,899	1,059,993	2,982,331	2,056	76,054	1,950	910	0	114,605

DHS = Department of Homeland Security; DOD = Department of Defense; DOE = Department of Energy; DOT = Department of Transportation; FFRDC = federally funded research and development center; HHS = Department of Health and Human Services; NASA = National Aeronautics and Space Administration; NSF = National Science Foundation.

Source(s):

National Center for Science and Engineering Statistics, FFRDC Research and Development Survey, FY 2023.

TABLE 6

Total and federally financed R&D expenditures at federally funded research and development centers, by type of R&D and FFRDC: FY 2023

(Dollars in thousands)

FFRDC	Sponsor	Location	Total				Federally financed			
			All R&D expenditures	Basic research	Applied research	Experimental development	All R&D expenditures	Basic research	Applied research	Experimental development
All FFRDCs	-	-	29,316,897	5,855,982	11,921,680	11,539,235	28,880,018	5,771,324	11,714,841	11,393,853
University-administered FFRDCs	-	-	8,179,862	3,077,984	2,085,061	3,016,817	8,010,234	3,004,289	2,029,324	2,976,621
Ames Laboratory	DOE	Ames, IA	40,638	19,651	20,140	847	40,091	19,651	19,949	491
Argonne National Laboratory	DOE	Argonne, IL	1,234,635	196,930	502,891	534,814	1,205,264	196,930	475,156	533,178
Fermi National Accelerator Laboratory	DOE	Batavia, IL	402,122	399,159	2,963	0	400,573	398,145	2,428	0
Green Bank Observatory	NSF	Green Bank, WV	12,326	11,686	295	345	11,909	11,504	74	331
Jet Propulsion Laboratory	NASA	Pasadena, CA	2,671,305	267,131	267,131	2,137,043	2,671,305	267,131	267,131	2,137,043
Lawrence Berkeley National Laboratory	DOE	Berkeley, CA	1,190,504	1,097,198	90,274	3,032	1,131,175	1,046,769	81,722	2,684
Lincoln Laboratory	DOD, OSD	Lexington, MA	1,265,060	11,972	1,130,346	122,742	1,234,615	11,972	1,130,346	92,297
National Center for Atmospheric Research	NSF	Boulder, CO	210,233	72,762	37,218	100,253	184,647	67,643	23,538	93,466
National Radio Astronomy Observatory	NSF	Charlottesville, VA	102,863	94,292	327	8,244	102,104	94,281	189	7,634
National Solar Observatory	NSF	Boulder, CO	39,856	39,856	0	0	39,719	39,719	0	0
NSF's National Optical-Infrared Astronomy Research Laboratory (NSF's NOIRLab)	NSF	Tucson, AZ	94,257	94,257	0	0	92,841	92,841	0	0
Princeton Plasma Physics Laboratory	DOE	Princeton, NJ	131,042	129,600	1,442	0	127,260	125,995	1,265	0
SLAC National Accelerator Laboratory	DOE	Menlo Park, CA	483,193	461,794	21,399	0	469,601	452,710	16,891	0
Software Engineering Institute	DOD, OSD	Pittsburgh, PA	130,141	10,009	10,635	109,497	130,141	10,009	10,635	109,497
Thomas Jefferson National Accelerator Facility	DOE	Newport News, VA	171,687	171,687	0	0	168,989	168,989	0	0
Nonprofit-administered FFRDCs	-	-	10,052,536	1,993,511	3,161,886	4,897,139	9,879,651	1,986,686	3,074,286	4,818,679
Aerospace Federally Funded Research and Development Center	DOD, Air Force	El Segundo, CA	1,259,428	27,386	132,141	1,099,901	1,251,725	27,001	124,823	1,099,901
Arroyo Center	DOD, Army	Santa Monica, CA	42,433	0	42,433	0	42,433	0	42,433	0
Brookhaven National Laboratory	DOE	Upton, NY	691,417	487,333	103,653	100,431	678,623	486,188	99,189	93,246
Center for Advanced Aviation System Development	DOT, FAA	McLean, VA	186,163	0	7,832	178,331	166,246	0	7,357	158,889
Center for Communications and Computing	DOD, NSA/CSS	Alexandria, VA	77,391	19,348	38,695	19,348	77,391	19,348	38,695	19,348
Center for Enterprise Modernization	Treasury/IRS, VA, SSA, DOC	McLean, VA	258,155	0	13,602	244,553	258,155	0	13,602	244,553
Center for Naval Analyses	DOD, Navy	Arlington, VA	96,103	0	96,103	0	96,103	0	96,103	0
Center for Nuclear Waste Regulatory Analyses	NRC	San Antonio, TX	4,405	0	4,405	0	3,467	0	3,467	0
CMS Alliance to Modernize Healthcare	HHS, CMS	Baltimore, MD	281,709	0	6,275	275,434	281,709	0	6,275	275,434
Homeland Security Operational Analysis Center	DHS, S&T	Arlington, VA	66,264	0	66,264	0	66,264	0	66,264	0
Homeland Security Systems Engineering and Development Institute	DHS, S&T	McLean, VA	217,908	0	4,849	213,059	216,456	0	4,817	211,639
Idaho National Laboratory	DOE	Idaho Falls, ID	653,100	39,187	346,142	267,771	642,971	38,579	340,774	263,618
National Biodefense Analysis and Countermeasures Center	DHS, S&T	Frederick, MD	41,321	0	41,321	0	41,321	0	41,321	0
National Cybersecurity Center of Excellence	DOC, NIST	Rockville, MD	23,010	0	525	22,485	23,010	0	525	22,485
National Defense Research Institute	DOD, OSD	Santa Monica, CA	67,157	0	67,157	0	67,157	0	67,157	0
National Renewable Energy Laboratory	DOE	Golden, CO	718,852	64,867	398,878	255,107	648,671	64,867	356,769	227,035

TABLE 6

Total and federally financed R&D expenditures at federally funded research and development centers, by type of R&D and FFRDC: FY 2023

(Dollars in thousands)

FFRDC	Sponsor	Location	Total				Federally financed			
			All R&D expenditures	Basic research	Applied research	Experimental development	All R&D expenditures	Basic research	Applied research	Experimental development
National Security Engineering Center	DOD,OSD	Bedford, MA/McLean, VA	1,370,949	0	80,471	1,290,478	1,367,998	0	80,383	1,287,615
Oak Ridge National Laboratory	DOE	Oak Ridge, TN	2,019,259	1,075,698	943,561	0	2,000,646	1,075,698	924,948	0
Pacific Northwest National Laboratory	DOE	Richland, WA	1,449,496	267,455	361,931	820,110	1,424,969	262,929	355,807	806,233
Project Air Force	DOD, Air Force	Santa Monica, CA	48,729	0	48,729	0	48,729	0	48,729	0
Savannah River National Laboratory	DOE	Aiken, SC	244,736	12,237	122,368	110,131	241,518	12,076	120,759	108,683
Science and Technology Policy Institute	NSF	Washington, DC	9,977	0	9,977	0	9,977	0	9,977	0
Systems and Analyses Center	DOD, OSD	Alexandria, VA	224,574	0	224,574	0	224,112	0	224,112	0
Industry-administered FFRDCs	-	-	11,084,499	784,487	6,674,733	3,625,279	10,990,133	780,349	6,611,231	3,598,553
Frederick National Laboratory for Cancer Research	HHS, NIH	Frederick, MD	929,754	186,273	467,234	276,247	929,754	186,273	467,234	276,247
Lawrence Livermore National Laboratory	DOE	Livermore, CA	2,110,938	114,519	1,567,884	428,535	2,079,762	112,429	1,538,798	428,535
Los Alamos National Laboratory	DOE	Los Alamos, NM	3,768,323	301,465	3,429,175	37,683	3,742,718	299,417	3,405,874	37,427
Sandia National Laboratories	DOE	Albuquerque, NM	4,275,484	182,230	1,210,440	2,882,814	4,237,899	182,230	1,199,325	2,856,344

CMS = Centers for Medicare and Medicaid Services; DHS = Department of Homeland Security; DOC = Department of Commerce; DOD = Department of Defense; DOE = Department of Energy; DOT = Department of Transportation; FAA = Federal Aviation Administration; FFRDC = federally funded research and development center; HHS = Department of Health and Human Services; IRS = Internal Revenue Service; NASA = National Aeronautics and Space Administration; NIH = National Institutes of Health; NIST = National Institute of Science and Technology; NRC = Nuclear Regulatory Commission; NSA/CSS = National Security Agency/Central Security Service; NSF = National Science Foundation; OSD = Office of the Secretary of Defense; S&T = Science and Technology Directorate; SSA = Social Security Administration; VA = Department of Veterans Affairs.

Source(s):

National Center for Science and Engineering Statistics, FFRDC Research and Development Survey, FY 2023.

TABLE 7

Total R&D expenditures at federally funded research and development centers, by FFRDC: FYs 2001–23

(Dollars in thousands)

FFRDC	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011 ^a	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
National Solar Observatory	na	na	na	na	na	na	na	na	na	11,549	11,724	10,236	10,648	10,039	11,752	12,783	11,841	14,733	15,931	16,892	17,684	33,849	39,856
NSF's National Optical-Infrared Astronomy Research Laboratory (NSF's NOIRLab)	37,364	41,051	44,409	43,020	52,775	54,616	53,608	55,922	56,972	45,596	36,165	36,321	30,021	25,161	23,660	24,917	25,906	33,874	38,262	72,686	75,251	81,505	94,257
Oak Ridge National Laboratory	581,135	620,328	690,538	776,203	897,252	928,090	1,083,509	1,251,336	1,259,259	1,538,412	1,558,073	1,553,460	1,451,684	1,293,722	1,333,332	1,283,729	1,403,204	1,399,445	1,470,372	1,632,684	1,760,578	1,803,543	2,019,259
Pacific Northwest National Laboratory	562,000	608,500	679,000	692,370	779,522	749,365	851,512	885,984	1,064,230	1,116,648	1,095,923	1,033,768	934,491	1,021,912	951,099	914,747	983,962	956,193	1,012,136	1,071,249	1,168,268	1,294,614	1,449,496
Princeton Plasma Physics Laboratory	76,021	73,610	66,764	75,255	81,803	78,151	75,720	78,154	81,113	83,932	84,863	81,389	85,088	97,768	81,348	82,246	81,444	82,435	91,271	107,662	115,505	120,347	131,042
Project Air Force	29,361	32,439	33,555	33,049	35,742	39,107	39,315	41,794	45,162	43,957	44,171	41,031	36,003	39,351	44,393	49,165	48,521	48,858	48,325	46,936	47,966	46,517	48,729
Sandia National Laboratories	1,416,796	1,583,348	1,742,861	1,833,571	1,946,435	1,968,488	2,031,309	2,076,786	2,043,509	2,157,022	2,277,166	2,293,307	2,412,476	2,507,099	2,621,891	2,781,547	2,878,000	3,009,105	3,373,217	3,395,241	3,542,756	3,811,529	4,275,484
Savannah River National Laboratory	87,164	93,602	94,423	94,326	98,650	102,547	114,895	118,400	130,292	127,160	134,530	132,357	115,857	121,013	121,675	125,881	141,477	154,281	176,379	176,093	191,803	182,654	244,736
Science and Technology Policy Institute	7,311	8,878	6,710	3,681	5,415	6,800	5,600	6,000	5,100	6,000	8,700	7,547	5,010	10,949	8,724	7,459	8,401	8,086	9,080	9,256	9,784	10,593	9,977
SLAC National Accelerator Laboratory	145,979	171,343	164,747	206,402	205,690	214,026	231,960	234,316	294,421	354,393	327,716	329,747	327,005	316,646	310,167	313,031	327,453	341,615	368,938	382,264	396,780	432,078	483,193
Software Engineering Institute	37,052	45,088	45,412	57,920	62,262	75,636	80,566	80,963	89,077	99,334	107,837	113,371	134,973	123,217	131,146	145,981	132,967	142,891	140,954	141,291	120,443	129,316	130,141
Systems and Analyses Center	92,930	98,236	110,200	126,226	118,600	130,400	141,500	146,500	166,000	156,000	156,200	149,150	142,977	145,211	157,645	169,580	163,125	168,034	177,948	171,335	173,792	201,338	224,574
Thomas Jefferson National Accelerator Facility	102,202	106,305	106,966	104,659	113,349	96,228	81,242	82,254	88,834	90,456	90,456	94,167	100,031	105,868	128,036	120,009	107,320	118,631	125,796	130,850	139,479	152,832	171,687

e = estimated by institution. na = not applicable. NA = not available; data were not provided by institution.

FFRDC = federally funded research and development center; NSF = National Science Foundation.

^a R&D expenditures decreased in FY 2011 due to removal of expenditures for capital projects. In this survey, R&D expenditures do not include capital projects. In previous years, some FFRDCs included capital expenditures in their R&D totals. Previous years include an unknown amount of capital expenditures, estimated to be less than \$500 million per year.^b Prior to FY 2014, the Aerospace Corporation reported only internal R&D projects. After discussion with the National Center for Science and Engineering Statistics, the Aerospace Corporation agreed to report all R&D expenditures for FY 2014 and provide revised data to include all R&D expenditures for FYs 2010–13.^c Prior to the FY 2021 collection, the National Center for Science and Engineering Statistics discovered that the Green Bank Observatory had split from the National Radio Astronomy Observatory on 1 October 2016; both retained FFRDC status. For FYs 2017–20, R&D expenditures reported for the National Radio Astronomy Observatory included the expenditures for the Green Bank Observatory. The Green Bank Observatory began reporting separately on the FY 2021 survey.**Source(s):**

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

TABLE 8

Total and federally financed R&D expenditures at federally funded research and development centers, by FFRDC: FYs 2020–23

(Dollars in thousands)

FFRDC	Total				Federally financed			
	2020	2021	2022	2023	2020	2021	2022	2023
All FFRDCs	23,514,241	24,921,476	26,006,971	29,316,897	23,133,501	24,509,691	25,605,479	28,880,018
University-administered FFRDCs	7,003,132	6,850,276	7,165,067	8,179,862	6,867,741	6,700,555	7,015,547	8,010,234
Ames Laboratory	32,844	34,214	38,520	40,638	32,302	34,016	38,032	40,091
Argonne National Laboratory	859,658	856,568	962,973	1,234,635	840,237	832,400	934,724	1,205,264
Fermi National Accelerator Laboratory	300,002	319,051	330,294	402,122	299,811	317,812	329,131	400,573
Green Bank Observatory ^a	NA	8,629	10,752	12,326	NA	8,629	10,384	11,909
Jet Propulsion Laboratory	2,638,412	2,388,355	2,417,556	2,671,305	2,638,412	2,388,355	2,417,556	2,671,305
Lawrence Berkeley National Laboratory	916,082	966,972	1,031,716	1,190,504	862,965	910,428	971,554	1,131,175
Lincoln Laboratory	1,115,927	1,136,133	1,142,615	1,265,060	1,093,081	1,110,465	1,119,338	1,234,615
National Center for Atmospheric Research	188,484	181,010	188,238	210,233	175,316	161,163	171,310	184,647
National Radio Astronomy Observatory	100,078	94,202	92,476	102,863	98,458	93,313	91,913	102,104
National Solar Observatory	16,892	17,684	33,849	39,856	16,472	17,680	33,800	39,719
NSF's National Optical-Infrared Astronomy Research Laboratory (NSF's NOIRLab)	72,686	75,251	81,505	94,257	69,685	73,393	79,193	92,841
Princeton Plasma Physics Laboratory	107,662	115,505	120,347	131,042	103,856	113,591	119,828	127,260
SLAC National Accelerator Laboratory	382,264	396,780	432,078	483,193	366,936	382,252	419,094	469,601
Software Engineering Institute	141,291	120,443	129,316	130,141	141,291	120,443	129,316	130,141
Thomas Jefferson National Accelerator Facility	130,850	139,479	152,832	171,687	128,919	136,615	150,374	168,989
Nonprofit-administered FFRDCs	7,913,603	9,079,002	9,171,826	10,052,536	7,760,212	8,909,281	8,998,910	9,879,651
Aerospace Federally Funded Research and Development Center	1,114,741	1,128,241	1,152,833	1,259,428	1,109,291	1,121,569	1,147,041	1,251,725
Arroyo Center	35,248	38,304	40,856	42,433	35,248	38,304	40,856	42,433
Brookhaven National Laboratory	595,466	637,658	655,988	691,417	569,925	620,000	639,527	678,623
Center for Advanced Aviation System Development	180,634	230,484	189,490	186,163	163,497	207,828	164,992	166,246
Center for Communications and Computing	67,072	65,255	74,759	77,391	67,072	65,255	74,759	77,391
Center for Enterprise Modernization	190,408	263,661	235,436	258,155	190,408	263,661	235,317	258,155

TABLE 8

Total and federally financed R&D expenditures at federally funded research and development centers, by FFRDC: FYs 2020–23

(Dollars in thousands)

FFRDC	Total				Federally financed			
	2020	2021	2022	2023	2020	2021	2022	2023
Center for Naval Analyses	95,874	96,391	93,567	96,103	95,874	96,391	93,567	96,103
Center for Nuclear Waste Regulatory Analyses	6,762	5,630	4,323	4,405	6,359	5,233	3,595	3,467
CMS Alliance to Modernize Healthcare	228,162	348,269	286,693	281,709	228,162	348,269	286,693	281,709
Homeland Security Operational Analysis Center	44,736	34,888	52,984	66,264	44,736	34,888	52,984	66,264
Homeland Security Systems Engineering and Development Institute	136,874	183,588	183,261	217,908	135,713	182,413	181,702	216,456
Idaho National Laboratory	494,094	516,691	637,579	653,100	481,146	503,977	630,446	642,971
Judiciary Engineering and Modernization Center	6,765	5,493	na	na	6,708	5,493	na	na
National Biodefense Analysis and Countermeasures Center	42,330	44,968	45,870	41,321	42,330	44,968	45,869	41,321
National Cybersecurity Center of Excellence	23,557	33,671	27,955	23,010	23,557	33,671	27,955	23,010
National Defense Research Institute	64,134	66,170	61,097	67,157	64,134	66,170	61,097	67,157
National Renewable Energy Laboratory	511,585	559,151	603,356	718,852	456,336	497,047	536,683	648,671
National Security Engineering Center	1,143,701	1,468,298	1,286,520	1,370,949	1,142,013	1,463,965	1,282,762	1,367,998
Oak Ridge National Laboratory	1,632,684	1,760,578	1,803,543	2,019,259	1,616,580	1,746,756	1,789,100	2,000,646
Pacific Northwest National Laboratory	1,071,249	1,168,268	1,294,614	1,449,496	1,053,982	1,142,925	1,266,328	1,424,969
Project Air Force	46,936	47,966	46,517	48,729	46,936	47,966	46,517	48,729
Savannah River National Laboratory ^b	na	191,803	182,654	244,736	na	189,428	179,848	241,518
Science and Technology Policy Institute	9,256	9,784	10,593	9,977	9,256	9,784	10,593	9,977
Systems and Analyses Center	171,335	173,792	201,338	224,574	170,949	173,320	200,679	224,112
Industry-administered FFRDCs	8,597,506	8,992,198	9,670,078	11,084,499	8,505,548	8,899,855	9,591,022	10,990,133
Frederick National Laboratory for Cancer Research	745,726	861,605	904,182	929,754	745,726	861,605	904,182	929,754
Lawrence Livermore National Laboratory	1,558,071	1,613,673	1,659,808	2,110,938	1,526,467	1,580,263	1,633,185	2,079,762
Los Alamos National Laboratory	2,722,375	2,974,164	3,294,559	3,768,323	2,701,388	2,950,380	3,273,429	3,742,718

TABLE 8

Total and federally financed R&D expenditures at federally funded research and development centers, by FFRDC: FYs 2020–23

(Dollars in thousands)

FFRDC	Total				Federally financed			
	2020	2021	2022	2023	2020	2021	2022	2023
Sandia National Laboratories	3,395,241	3,542,756	3,811,529	4,275,484	3,358,481	3,507,607	3,780,226	4,237,899
Savannah River National Laboratory ^b	176,093	na	na	na	173,486	na	na	na

na = not applicable. NA = not available; data were not provided by institution.

FFRDC = federally funded research and development center; NSF = National Science Foundation.

^a Prior to the FY 2021 collection, the National Center for Science and Engineering Statistics discovered that the Green Bank Observatory had split from the National Radio Astronomy Observatory on 1 October 2016; both retained FFRDC status. For FYs 2017–20, R&D expenditures reported for the National Radio Astronomy Observatory included the expenditures for the Green Bank Observatory. The Green Bank Observatory began reporting separately on the FY 2021 survey.

^b In FY 2021, Savannah River National Laboratory acquired a new nonprofit administrator: Battelle Savannah River Alliance, LLC. Prior to the FY 2021 collection, Savannah River National Laboratory was administered by an industrial firm administrator: Savannah River Nuclear Solutions, LLC.

Source(s):

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

Technical Notes

Survey Overview

Purpose. The FFRDC Research and Development Survey is conducted by the National Center for Science and Engineering Statistics (NCSES) within the U.S. National Science Foundation (NSF). It is the primary source of information on separately accounted for research and development (R&D) expenditures at federally funded research and development centers (FFRDCs) in the United States.

Data collection authority. The information is solicited under the authority of the NSF Act of 1950, as amended, and the America COMPETES Reauthorization Act of 2010. The Office of Management and Budget control number for the FY 2023 FFRDC R&D Survey is 3145-0100, with an expiration date of 31 July 2025.

Survey contractor. ICF.

Survey sponsor. NCSES.

Key Survey Information

Frequency. Annual.

Initial survey year. 2001.

Reference period. FY 2023.

Response unit. Establishment.

Sample or census. Census.

Population size. 42.

Sample size. The survey is a census of all known eligible FFRDCs.

Survey Design

Target population. All FFRDCs.

Sampling frame. The total survey universe is identified through the Master Government List of FFRDCs (<https://www.nsf.gov/statistics/ffrdclist/>). NSF is responsible for maintaining this list and queries all federal agencies annually to determine any changes to, additions to, or deletions from the list.

Sample design. The FFRDC R&D Survey is a census of all current FFRDCs identified on the Master Government List of FFRDCs.

Data Collection and Processing Methods

Data collection. The FY 2023 survey announcements were sent by e-mail to all FFRDCs in November 2023. The data collection period concluded in April 2024. Respondents could choose to complete a questionnaire downloaded from the Web or use a Web-based data collection system to respond to the survey. Every effort was made to maintain close contact with respondents to preserve the consistency and continuity of the resulting data. Survey data reports were available on the survey website for each FFRDC; these reports showed comparisons between the current year and the 2 prior years of data and noted any substantive disparities.

Respondents using the Web-based data collection system were asked to explain significant differences between current year reporting and past year reporting while completing the questionnaire. Questionnaires were carefully examined by survey staff for completeness upon receipt. Reviews focused on unexplained missing data and explanations provided for changes in reporting patterns. If additional explanations or data revisions were needed, respondents were sent personalized e-mails asking them to provide any necessary revisions before the final processing and tabulation of data. These e-mails included a link to the Web-based collection system, to help respondents view and correct their data.

Respondents were encouraged to correct prior year data, if necessary. When respondents updated or amended figures from past years, NCSES made corresponding changes to trend data in the FY 2023 data tables and to the underlying microdata. For accurate historical data, use only the most recently released data tables.

Mode. Respondents could respond to the survey by completing a PDF questionnaire downloaded from the Web or by using a Web-based data collection system. All FFRDCs submitted data using the Web-based survey.

Response rates. All 42 FFRDCs included on the Master Government List of FFRDCs during the FY 2023 survey cycle completed the key survey questions.

Data editing. The FFRDC R&D Survey was subject to very little editing; respondents were contacted and asked to resolve possible self-reporting issues themselves. Questionnaires were carefully examined by survey staff upon receipt. These reviews focused on unexplained missing data and explanations provided for changes in reporting patterns. If additional explanations or data revisions were needed, respondents were sent personalized e-mail messages asking them to provide any necessary revisions before the final processing and tabulation of data.

Imputation. No data were imputed for FY 2023.

Weighting. FFRDC R&D Survey data were not weighted.

Variance estimation. No variance estimation techniques were used.

Survey Quality Measures

Sampling error. Because the FY 2023 survey was a survey distributed to all organizations in the universe, there was no sampling error.

Coverage error. Given the availability of a comprehensive FFRDC list, there is no known coverage error for this survey. FFRDCs are identified through the NSF [Master Government List of FFRDCs](#). NSF is responsible for maintaining the master list and queries all federal agencies annually to determine changes to, additions to, or deletions from the list.

Nonresponse error. Most FFRDCs have incorporated the data needed to complete most of the survey questions into their record-keeping systems. Eleven FFRDCs chose not to complete any of Question 4 of the survey, which asks for expenditures by type of cost. Ten of those FFRDCs are managed by private companies for whom salary information is considered proprietary. One FFRDC, which is managed by a university, does not capture direct and indirect costs in its financial system in a way that is reportable on Question 4. Other FFRDCs did not answer all sections of Question 4: one FFRDC could not provide information on software, equipment, and other direct costs, another could not provide information on software and equipment expenditures, and one could not provide data on equipment expenditures. One FFRDC did not report its operating budget (Question 5). Eight FFRDCs chose not to complete Question 6 of the survey, which asks for full-time equivalents (FTEs) and headcounts for R&D staff. Six of those FFRDCs are managed by private companies for whom staffing structure information is considered proprietary. Variables for Questions 4, 5, and 6 are not tabulated and are not included in the public use file.

Measurement error. NCSES discovered during the FY 2011 survey cycle that seven FFRDCs were including capital project expenditures in the R&D totals reported on the survey. Corrections made for the FY 2011 survey cycle lowered total expenditures by \$468 million. However, previous years still include an unknown amount of capital expenditures in the total. The amount is estimated to be less than \$500 million per year.

Prior to the FY 2011 survey, the five FFRDCs administered by the MITRE Corporation had reported only internally funded R&D expenditures. After discussions with NCSES, these five FFRDCs agreed to report all FY 2011 operating expenditures for R&D and to revise their data for FYs 2008–10.

NCSES discovered during the FY 2013 survey cycle that Los Alamos National Laboratory (LANL) was reporting some expenditures that were not for R&D, as defined by this survey. Corrections made for the FY 2013 survey cycle lowered the laboratory's total expenditures by \$349 million. LANL also was incorrectly reporting that all expenditures were for basic research. In corrections made for FY 2013, LANL reported that \$1,554 million (91%) of its total research expenditures was for applied research. LANL data from previous years still include an unknown amount of expenditures that were not for R&D and categorize all expenditures as basic research.

Prior to FY 2014, the Aerospace FFRDC reported only expenditures on internal R&D projects. After discussions with NCSES, the Aerospace Corporation agreed to report all R&D expenditures for FY 2014 and provide revised data to include all R&D expenditures for FYs 2010–13. R&D expenditures increased by more than \$800 million each year.

Prior to the FY 2021 collection, NCSES discovered that the Green Bank Observatory had split from the National Radio Astronomy Observatory on 1 October 2016, both retained FFRDC status. For FY 2017–20, R&D expenditures reported for the National Radio Astronomy Observatory include the expenditures for the Green Bank Observatory. The Green Bank Observatory began reporting separately on the FY 2021 survey.

NCSES discovered during the FY 2022 survey cycle that two FFRDCs, Idaho National Laboratory and Savannah River National Laboratory, were incorrectly classified as industry-administered FFRDCs for select years. Idaho National Laboratory's industrial firm administrator, Bechtel BWXT Idaho, LLC, was replaced by a nonprofit administrator, Battelle Energy Alliance, LLC, in February 2005. The classification was corrected for FY 2022 and Idaho National Laboratory's FYs 2005–21 data were reclassified as coming from a nonprofit-administered FFRDC. Savannah River National Laboratory's industrial firm administrator, Savannah River Nuclear Solutions, LLC, was replaced by a nonprofit administrator, Battelle Savannah River Alliance, LLC, in December 2020. The classification was corrected for FY 2022 and Savannah River National Laboratory's FY 2021 data were reclassified as coming from a nonprofit-administered FFRDC.

NCSES discovered during the FY 2023 survey cycle that LANL reported non-R&D expenditures in the FY 2022 survey that should have been excluded. This included \$356.5 million in the federally funded expenditures and \$160.5 million in the business-funded expenditures. The FY 2022 LANL and national totals were revised in the FY 2023 publications, lowering the laboratory's total expenditures by \$517 million.

Data Comparability (Changes)

Annual data are available for FYs 2001–23. When the review for consistency between each year's data and submissions in prior years reveals discrepancies, it is sometimes necessary to modify prior year data. For accurate historical data, use only the most recently released data tables. Individuals wishing to analyze trends other than those in the most recent NCSES publication are encouraged to contact the Survey Manager for more information about the comparability of data over time.

Changes in survey coverage and population. Most years, there are some changes to the FFRDC population that may affect trend analyses. FFRDCs have been created, decertified, renamed, or restructured, as described below:

- On 20 December 2006, the National Biodefense Analysis and Countermeasure Center was created.
- Prior to FY 2009, the Center for Enterprise Modernization was listed as the Internal Revenue Service FFRDC.

- On 5 March 2009, the Homeland Security Studies and Analysis Institute and the Homeland Security Systems Engineering and Development Institute were created. These new FFRDCs replaced the Homeland Security Institute.
- On 1 October 2009, the National Solar Observatory split from the National Optical Astronomy Observatory, with both retaining their FFRDC status.
- On 2 September 2010, the Judiciary Engineering and Modernization Center was created.
- Prior to FY 2011, the National Security Engineering Center was listed as C3I FFRDC.
- On 1 October 2011, the National Astronomy and Ionosphere Center was decertified as an FFRDC.
- Prior to FY 2012, the Frederick National Laboratory for Cancer Research was listed as the National Cancer Institute at Frederick.
- On 27 September 2012, the Centers for Medicare and Medicaid Services FFRDC was created. On 15 August 2013, its name was changed to the CMS Alliance to Modernize Healthcare.
- Prior to FY 2013, the Systems and Analyses Center was listed as the Studies and Analyses Center.
- On 19 September 2014, the National Cybersecurity Center of Excellence was created.
- On 15 September 2016, the Homeland Security Operational Analysis Center was created.
- On 1 October 2016, Green Bank Observatory was split out from the National Radio Astronomy Observatory, both retained FFRDC status.
- The Homeland Security Studies and Analysis Institute was phased out on 31 October 2016.
- In June 2020, the National Optical Astronomy Observatory changed its name to NSF's National Optical-Infrared Astronomy Research Laboratory or NSF's NOIRLab.
- The Judiciary Engineering and Modernization Center was decertified as an FFRDC in January 2021.

Changes in questionnaire. FFRDCs are asked to provide R&D expenditures by source of funding and type of R&D. In FY 2016, NCSES added a question asking for R&D expenditures funded by seven specific federal agencies. In FY 2019, NCSES added a question asking which federal agencies not specifically listed in the previous question funded the expenditures. In FY 2022, NCSES added a question (Question 6) asking for FTEs and headcounts for personnel by R&D function.

Changes in reporting procedures or classification. The FFRDC R&D Survey has been conducted annually for university-administered FFRDCs since FY 1953 and for all FFRDCs since FY 2001.

Definitions

- *Federal agency.* Any agency of the United States government. Expenditures were reported by seven specific agencies (Department of Defense; Department of Energy; Department of Health and Human Services, including the National Institutes of Health; Department of Homeland Security; Department of Transportation; National Aeronautics and Space Administration; and National Science Foundation). FFRDCs listed up to ten other agencies with corresponding expenditure amounts.
- *Fiscal year.* FFRDC's financial year.
- *Full-time equivalent (FTE).* Calculated as the total working effort spent on research during the fiscal year divided by the total effort representing a full-time schedule within the same period.
- *Headcount.* The number of personnel paid from R&D accounts during the fiscal year.

- *Research and development (R&D)*. R&D activity is creative and systematic work undertaken to increase the stock of knowledge—including knowledge of humankind, culture, and society—and to devise new applications of available knowledge. R&D covers three activities: basic research, applied research, and experimental development. R&D does not include outreach, non-research training programs, capital projects (i.e., construction or renovation of research facilities), routine testing, or policy development.
- *R&D expenditures*. Expenditures for R&D activities from the organization’s current operating funds that were separately accounted for. For the purposes of the survey, R&D includes expenditures from funds designated for research. Expenditures come from internal or external funding and include recovered and unrecovered indirect costs. Funds passed through to subrecipient organizations are also included.
- *R&D functions*.
 - *Researchers*. Professionals engaged in the conception or creation of new knowledge, products, processes, methods, and systems and in the management of the projects concerned. Researchers contribute more to the creative aspects of R&D, whereas technicians provide technical support.
 - *R&D technicians*. Persons whose main tasks require technical knowledge and experience in one or more fields of science or engineering, but who contribute to R&D by performing technical tasks such as computer programming, data analysis, ensuring accurate testing, operating lab equipment, and preparing and processing samples under the supervision of researchers.
 - *R&D support staff*. Employees not directly involved with the conduct of a research project but support the researchers and technicians. These employees might include clerical staff, financial and personnel administrators, report writers, patent agents, safety trainers, equipment specialists, and other related employees.
- *Source of funds*.
 - *U.S. federal government*. Any agency of the U.S. government. Federal funds that were passed through to the reporting organization to another organization were included.
 - *State and local government*. Any state, county, municipality, or other local government entity in the United States, including state health agencies.
 - *Business*. Domestic or foreign for-profit organizations. Funds from a company’s nonprofit foundation were not reported here; they were reported under Nonprofit organizations.
 - *Nonprofit organizations*. Domestic or foreign nonprofit foundations and organizations. Funds from universities and colleges were not reported here; they were reported in All other sources.
 - *All other sources*. Sources not reported in other categories, such as funds from foreign governments and foreign or U.S. universities.
- *Total operating budget*. Total executed operating budget excluding capital construction costs.
- *Type of cost*. R&D expenditures were reported in the following categories:
 - *Salaries, wages, and fringe benefits*. Compensation for all R&D personnel, whether full time or part time, temporary or permanent, including salaries, wages, and fringe benefits paid from organization funds and from external support.
 - *Software purchases*. Payments for all software, both purchases of software packages and license fees for systems.
 - *Equipment*. Payments for movable equipment, including ancillary costs such as delivery and setup.
 - *Subcontracts*. Payments to subcontractors or subrecipients for services on R&D projects.

- *Other direct costs.* Other costs that did not fit into one of the above categories, including (but not limited to) travel, computer usage fees, and supplies.
- *Indirect costs.* All indirect costs (overhead) associated with R&D projects.
- *Type of R&D.* R&D expenditures were reported in the following categories:
 - *Basic research.* Experimental or theoretical work undertaken primarily to acquire new knowledge of the underlying foundations of phenomena and observable facts, without any particular application or use in view.
 - *Applied research.* Original investigation undertaken to acquire new knowledge. It is directed primarily toward a specific, practical aim or objective.
 - *Experimental development.* Systematic work, drawing on knowledge gained from research and practical experience and producing additional knowledge, which is directed to producing new products or processes or to improving existing products or processes.

Acknowledgments and Suggested Citation

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