



## Federal Research and Development and R&D Plant Funding Drop by 9% in FY 2013

by Michael Yamaner<sup>1</sup>

**D**ata from the National Science Foundation (NSF) show funds obligated by federal agencies for research and development and R&D plant (facilities and fixed equipment) dropped from \$141 billion to \$127 billion, or 9%, in current dollars from FY 2012 to FY 2013. Research, development, and R&D plant funding fell—by 4%, 14%, and 11%, respectively—in current-dollar terms from FY 2012. Federal obligations for R&D and R&D plant are estimated to rise 3% (\$4 billion in current dollars) in FY 2014 and are projected to rise 2% in FY 2015 by \$3 billion in current dollars (table 1).

The data presented here are from the NSF Survey of Federal Funds for Research and Development: FYs 2013–15. Data reported for FY 2013 are actual, data for FY 2014 are preliminary, and data for FY 2015 are projected.

### Federal Funding for Research and Development, by Agency

This section covers obligated funds, by selected agency, for federal R&D performed by agencies (intramural R&D), and federally-funded R&D performed by others. Overall FY 2013

federally-funded R&D performed by industry amounts to \$50 billion (40%) and intramural R&D activities total \$33 billion (26%) (table 2). As discussed below, agency-specific distributions by type of performer vary considerably.

### Department of Defense

The Department of Defense (DOD) accounted for 51% (\$64 billion in current dollars) of all federal R&D obligations in FY 2013. DOD R&D obligations fell by 14% in current dollars (\$10 billion) between FY 2012 and FY 2013. DOD is the largest federal funder of intramural R&D (61%) and

TABLE 1. Federal obligations for research and development and R&D plant, by character of work: FYs 2011–15

Character of work	2011	2012	2013	2014	2015	2011	2012	2013	2014	2015
				preliminary	projected				preliminary	projected
Current \$millions						Constant 2009 \$millions				
All R&D and R&D plant	139,662	140,636	127,297	130,808	133,740	135,805	134,400	119,843	121,332	121,959
R&D	135,491	138,485	125,388	128,588	130,637	131,749	132,344	118,046	119,273	119,129
Research	58,024	61,947	59,200	62,663	62,595	56,422	59,200	55,733	58,124	57,081
Basic	29,314	30,959	29,779	31,602	31,456	28,504	29,586	28,035	29,313	28,685
Applied	28,710	30,988	29,420	31,061	31,140	27,917	29,614	27,697	28,811	28,397
Development	77,467	76,538	66,188	65,925	68,041	75,328	73,144	62,312	61,149	62,047
R&D plant	4,171	2,151	1,910	2,220	3,103	4,056	2,056	1,798	2,059	2,830

NOTES: Gross domestic product implicit price deflators for 2009 were used to convert current to constant dollars. Detail may not sum to total due to rounding.

SOURCE: National Science Foundation, National Center for Science and Engineering Statistics, Survey of Federal Funds for Research and Development.

TABLE 2. Total federal obligations for research and development, by performer and percentage distribution: FYs 2011–15  
(Current dollars in millions)

Agency and performer	2011	2012	2013	2014	2015	2011	2012	2013	2014	2015
				preliminary	projected					
All agencies, all performers	135,491	138,485	125,388	128,588	130,637	100.0	100.0	100.0	100.0	100.0
Intramural	35,145	34,368	32,965	33,211	32,386	25.9	24.8	26.3	25.8	24.8
Industry	53,550	58,910	49,538	50,963	52,945	39.5	42.5	39.5	39.6	40.5
FFRDCs	10,786	10,058	10,080	10,277	11,092	8.0	7.3	8.0	8.0	8.5
Universities and colleges	27,680	27,510	25,772	26,960	26,978	20.4	19.9	20.6	21.0	20.7
Other nonprofit institutions	6,637	6,347	5,915	6,010	6,021	4.9	4.6	4.7	4.7	4.6
State and local governments	716	453	386	381	412	0.5	0.3	0.3	0.3	0.3
Foreign	977	840	732	787	804	0.7	0.6	0.6	0.6	0.6

FFRDC = federally funded research and development center.

NOTE: Detail may not sum to total due to rounding.

SOURCE: National Science Foundation, National Center for Science and Engineering Statistics, Survey of Federal Funds for Research and Development.

of industry-performed R&D (79%). DOD's industry-performed R&D decreased 19% (\$9 billion in current dollars) in FY 2013. Total DOD R&D funding is estimated to have increased less than one percent (\$47 million in current dollars) in FY 2014 and is projected to increase 3% (\$2 billion) in FY 2015 (table 3).

### **Department of Health and Human Services**

The Department of Health and Human Services (HHS) accounted for 23% of all federal R&D obligations in FY 2013 (\$29 billion in current dollars). HHS R&D obligations fell 6% (\$2 billion in current dollars) between FY 2012 and FY 2013. HHS is the largest federal R&D funder of universities and colleges (64%) and also of other nonprofit institutions (75%) in FY 2013. HHS R&D funding to both of these performing sectors decreased by 6% and 5% respectively in FY 2013. Total HHS R&D funding is estimated to have increased 3% (\$899 million in current dollars) in FY 2014 and is projected to increase 1% (\$192 million) in FY 2015 (table 3).

### **National Aeronautics and Space Administration**

The National Aeronautics and Space Administration (NASA) accounted for 8% (\$10 billion in current dollars) of all federal R&D obligations in FY 2013. NASA R&D obligations fell 3% (\$293 million in current dollars) between FY 2012 and FY 2013 with intramural and university and college performers showing the largest current-dollar decreases (\$108 million and \$91 million, respectively). Total NASA R&D funding is estimated to have increased 5% (\$564 million in current dollars) in FY 2014 and is projected to decrease 4% (\$394 million) in FY 2015 (table 3).

### **Department of Energy**

The Department of Energy (DOE) (8% of total FY 2013 R&D obligations) showed a small percentage decrease in R&D obligations at 1% (\$111 million in current dollars) between FY 2012 and FY 2013. While DOE's overall R&D obligations fell in FY 2013, its obligations to federally funded research and development centers (FFRDCs) increased 6% (\$407 million in current

dollars). DOE sponsors 15 FFRDCs, the most of any federal agency.<sup>2</sup> Total DOE R&D funding is estimated to have increased 5% (\$524 million in current dollars) in FY 2014 and is projected to increase 6% (\$658 million) in FY 2015 (table 3).

### **National Science Foundation**

NSF accounted for 4% (\$5 billion in current dollars) of all federal R&D obligations in FY 2013. NSF R&D obligations fell 4% (\$214 million in current dollars) between FY 2012 and FY 2013. NSF obligated 82% of its R&D funding to university and college performers in FY 2013. NSF's funding to these performers decreased less than one percent (\$20 million in current dollars) in FY 2013. Total NSF R&D funding is estimated to have increased 4% (\$207 million in current dollars) in FY 2014 and is projected to increase less than one percent (\$15 million) in FY 2015 (table 3).

### **Federal Funding for Research**

Federal obligations for research decreased 4% (\$3 billion in current

TABLE 3. Federal obligations for research and development, by performer and selected agency: FYs 2011–15

Agency and performer	2014					2015				
	2011	2012	2013	preliminary	projected	2011	2012	2013	preliminary	projected
	Current \$millions					Constant 2009 \$millions				
All agencies, all performers	135,491	138,485	125,388	128,588	130,637	131,749	132,344	118,046	119,273	119,129
Department of Defense										
All performers	75,157	73,804	63,558	63,605	65,291	73,081	70,531	59,836	58,997	59,539
Intramural	23,074	20,512	20,243	19,522	19,030	22,437	19,602	19,058	18,108	17,354
Industry	45,040	48,145	39,215	39,911	42,225	43,796	46,010	36,919	37,020	38,505
FFRDCs	2,435	1,682	1,206	1,097	1,088	2,368	1,607	1,135	1,018	992
Universities and colleges	2,705	2,493	2,073	2,206	2,086	2,630	2,382	1,952	2,046	1,902
Other nonprofit institutions	839	416	389	373	369	816	398	366	346	336
State and local governments	400	54	27	38	21	389	52	25	35	19
Foreign	665	503	405	458	472	647	481	381	425	430
Department of Health and Human Services										
All performers	30,849	31,196	29,383	30,282	30,474	29,997	29,813	27,662	28,088	27,790
Intramural	5,693	6,449	6,086	6,276	6,277	5,536	6,163	5,730	5,821	5,724
Industry	1,769	1,681	1,468	1,499	1,497	1,720	1,606	1,382	1,390	1,365
FFRDCs	530	361	449	464	468	515	345	423	430	427
Universities and colleges	17,727	17,584	16,542	17,066	17,214	17,237	16,804	15,573	15,830	15,698
Other nonprofit institutions	4,758	4,674	4,423	4,556	4,595	4,627	4,467	4,164	4,226	4,190
State and local governments	119	185	151	152	152	116	177	142	141	139
Foreign	254	262	263	270	271	247	250	248	250	247
National Air and Space Administration										
All performers	6,571	10,661	10,368	10,932	10,538	6,390	10,188	9,761	10,140	9,610
Intramural	1,037	1,684	1,576	1,643	1,571	1,008	1,609	1,484	1,524	1,433
Industry	3,901	6,221	6,205	6,571	6,342	3,793	5,945	5,842	6,095	5,783
FFRDCs	856	1,336	1,328	1,461	1,409	832	1,277	1,250	1,355	1,285
Universities and colleges	573	970	879	930	907	557	927	828	863	827
Other nonprofit institutions	199	418	361	308	291	194	399	340	286	265
State and local governments	1	5	2	2	2	1	5	2	2	2
Foreign	4	27	17	17	16	4	26	16	16	15
Department of Energy										
All performers	9,946	9,952	9,841	10,365	11,023	9,671	9,511	9,265	9,614	10,052
Intramural	697	880	538	774	630	678	841	506	718	575
Industry	1,613	1,671	1,632	1,819	1,749	1,568	1,597	1,536	1,687	1,595
FFRDCs	6,446	6,285	6,692	6,760	7,651	6,268	6,006	6,300	6,270	6,977
Universities and colleges	1,009	962	864	907	909	981	919	813	841	829
Other nonprofit institutions	163	139	100	88	72	158	133	94	82	66
State and local governments	15	14	13	16	12	15	13	12	15	11
Foreign	4	2	2	1	*	4	2	2	1	*
National Science Foundation										
All performers	5,146	5,170	4,956	5,163	5,178	5,004	4,941	4,666	4,789	4,722
Intramural	84	88	18	18	18	82	84	17	17	16
Industry	295	286	208	216	219	287	273	196	200	200
FFRDCs	211	203	207	215	216	205	194	195	199	197
Universities and colleges	4,101	4,103	4,083	4,254	4,265	3,988	3,921	3,844	3,946	3,889
Other nonprofit institutions	403	437	408	425	427	392	418	384	394	389
State and local governments	21	25	15	15	15	20	24	14	14	14
Foreign	30	28	18	19	19	29	27	17	18	17
Other agencies <sup>a</sup>										
All performers	7,823	7,703	7,283	8,242	8,132	7,607	7,361	6,857	7,645	7,416

\* = amount greater than \$0 but less than \$500,000.

FFRDC = federally funded research and development center.

<sup>a</sup> Includes data for the Departments of Agriculture, Commerce, Education, Homeland Security, Housing and Urban Development, the Interior, Justice, Labor, State, Transportation, Treasury, and Veterans Affairs; the Agency for International Development; the Appalachian Regional Commission; the Consumer Product Safety Commission; the Environmental Protection Agency; the Federal Communications Commission; the Federal Trade Commission; the Library of Congress; the National Archives and Records Administration; the Nuclear Regulatory Commission; the Smithsonian Institution; and the Social Security Administration.

NOTES: Gross domestic product implicit price deflators for 2009 were used to convert current to constant dollars. Detail may not sum to total due to rounding.

SOURCE: National Science Foundation, National Center for Science and Engineering Statistics, Survey of Federal Funds for Research and Development.

dollars) between FY 2012 and FY 2013. HHS, which accounted for 50% of federal research obligations in FY 2013, had the largest current-dollar decrease between FY 2012 and 2013 at \$2 billion, followed by DOD (down \$708 million). NSF's research funding was down \$214 million, the U.S. Department of Agriculture's (USDA) was down \$97 million, and DOE's was down \$28 million.

With a 6% increase (\$322 million), NASA was the only one of the top six

research funding agencies to show an improvement in funding. Federal research funding is estimated to have increased 6% (\$3 billion in current dollars) in FY 2014 but is projected to decrease less than one percent (\$68 million) in FY 2015 (table 4).

### Basic Research

Federal obligations for basic research declined 4% (\$1 billion in current dollars) between FY 2012 and FY 2013. Five of the six agencies funding

the most basic research in FY 2013 (HHS, 51% of total; NSF, 15%; DOE, 13%; DOD, 6%; and USDA, 3%) each reported current-dollar decreases between FY 2012 and FY 2013. NASA accounted for 10% of federal basic research obligations in FY 2013 and reported a 8% (\$218 million in current dollars) increase in basic research funding between FY 2012 and FY 2013. Federal basic research funding is estimated to have increased 6% (\$1 billion in current dollars) in FY 2014

TABLE 4. Federal obligations for research, by selected agency in FY 2013 rank order: FYs 2011–15

Agency	Current \$millions					Constant 2009 \$millions				
	2011	2012	2013	2014 preliminary	2015 projected	2011	2012	2013	2014 preliminary	2015 projected
All agencies	58,024	61,947	59,200	62,663	62,595	56,422	59,200	55,733	58,124	57,081
Basic	29,314	30,959	29,779	31,602	31,456	28,504	29,586	28,035	29,313	28,685
Applied	28,710	30,988	29,420	31,061	31,140	27,917	29,614	27,697	28,811	28,397
HHS	30,771	31,124	29,315	30,216	30,411	29,921	29,744	27,598	28,027	27,732
Basic	16,066	15,977	15,288	15,742	15,858	15,622	15,269	14,393	14,602	14,461
Applied	14,704	15,147	14,026	14,474	14,553	14,298	14,475	13,205	13,425	13,271
DOE	7,350	7,361	7,333	7,680	8,144	7,147	7,035	6,904	7,124	7,427
Basic	3,962	3,957	3,851	4,102	4,174	3,853	3,782	3,625	3,805	3,806
Applied	3,388	3,404	3,482	3,579	3,970	3,294	3,253	3,278	3,320	3,620
DOD	6,596	6,663	5,955	6,826	6,498	6,414	6,368	5,606	6,332	5,926
Basic	1,885	2,036	1,863	2,094	2,034	1,833	1,946	1,754	1,942	1,855
Applied	4,710	4,627	4,093	4,732	4,464	4,580	4,422	3,853	4,389	4,071
NASA	1,575	5,100	5,422	5,823	5,406	1,532	4,874	5,105	5,401	4,930
Basic	857	2,606	2,824	3,343	3,080	833	2,490	2,659	3,101	2,809
Applied	718	2,494	2,598	2,481	2,326	698	2,383	2,446	2,301	2,121
NSF	5,146	5,170	4,956	5,163	5,178	5,004	4,941	4,666	4,789	4,722
Basic	4,691	4,652	4,362	4,549	4,553	4,561	4,446	4,107	4,219	4,152
Applied	455	517	594	614	625	442	494	559	570	570
USDA	2,125	1,966	1,869	2,215	2,131	2,066	1,879	1,760	2,055	1,943
Basic	963	851	844	993	960	936	813	795	921	875
Applied	1,162	1,114	1,025	1,222	1,171	1,130	1,065	965	1,133	1,068
Other	4,462	4,563	4,349	4,739	4,829	4,339	4,361	4,094	4,396	4,404
Basic	890	879	747	780	798	865	840	703	723	728
Applied	3,572	3,683	3,602	3,958	4,031	3,473	3,520	3,391	3,671	3,676

DOD = Department of Defense; DOE = Department of Energy; HHS = Department of Health and Human Services; NASA = National Aeronautics and Space Administration; NSF = National Science Foundation; USDA = U.S. Department of Agriculture.

NOTES: Gross domestic product implicit price deflators for 2009 were used to convert current to constant dollars. Detail may not sum to total due to rounding. Other agencies includes the Departments of Commerce, Education, Homeland Security, Housing and Urban Development, the Interior, Justice, Labor, State, Transportation, the Treasury, and Veterans Affairs; the Agency for International Development; the Appalachian Regional Commission; the Consumer Product Safety Commission; the Environmental Protection Agency; the Federal Communications Commission; the Federal Trade Commission; the Library of Congress; the National Archives and Records Administration; the Nuclear Regulatory Commission; the Smithsonian Institution; and the Social Security Administration.

SOURCE: National Science Foundation, National Center for Science and Engineering Statistics, Survey of Federal Funds for Research and Development.

but is projected to decrease less than one percent (\$146 million) in FY 2015 (table 4).

### Applied Research

Federal obligations for applied research decreased 5% (\$2 billion in current dollars) between FY 2012 and FY 2013. HHS, DOD, and USDA accounted for 65% of federal applied research obligations in FY 2013. In current dollars, applied research obligations for these agencies decreased by \$1 billion, \$534 million, and \$89 million, respectively, between FY 2012 and FY 2013. Applied research obligations increased for NASA, DOE, and NSF by a combined \$259 million in current dollars between FY 2012 and FY 2013. Federal applied research funding is estimated to have increased 6% (\$2 billion in current dollars) in FY 2014 and projected to increase less than one percent (\$79 million) in FY 2015 (table 4).

### Research, by Broad Field of Science and Engineering

Six of the eight broad fields of science and engineering (S&E) experienced

decreased federal research funding between FY 2012 and FY 2013. The two fields experiencing the largest current-dollar decreases were life sciences (down \$2 billion, or 5%) and engineering (down \$455 million, or 4%). Two broad fields saw increased federal research funding between FY 2012 and FY 2013: social sciences (rose \$112 million, or 10%) and environmental sciences (rose \$157 million, or 4%) (table 5).

In FY 2013, three broad fields of S&E received 79% of FY 2013 total federal research dollars: life sciences (50% of total research obligations), engineering (18%), and physical sciences (11%) (table 5).

### Data Notes

The data presented here are from the NSF Survey of Federal Funds for Research and Development. The 27 federal agencies that report R&D obligations to the survey submitted actual obligations for FY 2013, preliminary data for FY 2014, and projected data for FY 2015. Data were requested from agencies beginning in February 2013.

Agencies later revise the preliminary data based on actual changes in the funding levels of R&D programs, and agencies may provide changes in prior-year data to reflect program reclassifications or other data corrections.

### Definitions

*Applied research* is defined as systematic study to gain knowledge or understanding necessary to determine the means by which a recognized and specific need may be met.

*Basic research* is defined as systematic study directed toward fuller knowledge or understanding of the fundamental aspects of phenomena and of observable facts without specific applications toward processes or products in mind.

*Development* is defined as systematic application of knowledge or understanding that is directed toward the production of useful materials, devices, and systems or methods, including design, development, and improvement of prototypes and new processes to meet specific requirements.

TABLE 5. Federal obligations for research, by broad field of science and engineering in FY 2013 rank order: FYs 2011–15 (Millions of dollars)

Field	Current \$millions					Constant 2009 \$millions				
	2011	2012	2013	2014 preliminary	2015 projected	2011	2012	2013	2014 preliminary	2015 projected
All fields	58,024	61,947	59,200	62,663	62,595	56,422	59,200	55,733	58,124	57,081
Life sciences	29,409	30,967	29,330	30,531	30,596	28,597	29,594	27,613	28,319	27,901
Engineering	10,057	11,403	10,948	11,496	11,650	9,779	10,897	10,307	10,663	10,624
Physical sciences	5,427	6,408	6,282	6,559	6,400	5,277	6,124	5,914	6,084	5,836
Environmental sciences	3,207	3,884	4,041	4,331	4,183	3,118	3,712	3,804	4,017	3,815
Computer sciences and mathematics	3,374	3,528	3,427	3,777	3,879	3,281	3,372	3,226	3,503	3,537
Other sciences nec <sup>a</sup>	3,401	2,546	1,999	2,554	2,542	3,307	2,433	1,882	2,369	2,318
Psychology	1,887	2,087	1,935	1,986	2,014	1,835	1,994	1,822	1,842	1,837
Social sciences	1,262	1,125	1,237	1,431	1,332	1,227	1,075	1,165	1,327	1,215

nec = not elsewhere classified.

<sup>a</sup> "Other sciences nec" is used for multidisciplinary or interdisciplinary projects that cannot be classified within one of the broad fields of science.

NOTES: Gross domestic product implicit price deflators for 2009 were used to convert current to constant dollars. Detail may not sum to total due to rounding.

SOURCE: National Science Foundation, National Center for Science and Engineering Statistics, Survey of Federal Funds for Research and Development.

*Obligations* represent the amounts for orders placed, contracts awarded, services received, and similar transactions during a given period, regardless of when the funds were appropriated and of when future payment of money is required.

### **Data Availability**

The full set of detailed tables from this survey will be available in the report *Federal Funds for Research and Development: Fiscal Years 2013–15* at

<http://www.nsf.gov/statistics/fedfunds/>. Individual detailed tables from the FYs 2013–15 survey may be available in advance of the full report. For more information, please contact the author.

### **Notes**

1. Michael Yamaner, Research and Development Statistics Program, National Center for Science and Engineering Statistics, National Science Foundation, 4201 Wilson Boule-

vard, Suite 965, Arlington, VA 22230 (myamaner@nsf.gov; 703-292-7815).

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 <http://www.nsf.gov/statistics/ffrdclist/#gennotes>. Current and previous versions of the Master Government List of FFRDCs are accessible at <http://www.nsf.gov/statistics/ffrdclist/>.

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