



Federal Funding for Research Increases by 6% in FY 2014; Total Federal R&D Up 4%

by Michael Yamaner¹

Current-dollar federal obligations for research increased 6% from FY 2013 to FY 2014, from \$59.2 billion to \$62.9 billion. Research is estimated to remain relatively flat at \$63.4 billion in FY 2015 and is projected to increase by \$2.7 billion (4%) to \$66.2 billion in FY 2016 (table 1).

Total federal R&D obligations increased 4% to \$130.3 billion from FY 2013 to FY 2014. R&D obligations were estimated to decrease 1% to \$129.4 billion in FY 2015 and were projected

to increase 6% to \$137.7 billion in FY 2016 (table 1).

Data are from the National Center for Science and Engineering Statistics (NCSES) at the National Science Foundation (NSF). Figures for FY 2014 are actual amounts; for FY 2015, preliminary; and for FY 2016, projected.

Federal Funding for Research

In FY 2014, research accounted for 47% of all federal obligations for

R&D and R&D plant. Obligations for research by all federal agencies increased by \$3.7 billion to \$62.9 billion from FY 2013 to FY 2014 (table 1). This increase was primarily driven by a \$1.3 billion increase in research funding by the Department of Health and Human Services (HHS) (table 2).

Basic Research

Basic research obligations accounted for 24% of total projected R&D and R&D plant in FY 2014. Basic research obligations increased 6% to \$31.6

TABLE 1. Federal obligations for research and development and R&D plant, by type of R&D: FYs 2012–16

Type of R&D	Current \$millions					Constant 2009 \$millions				
	2012	2013	2014	Preliminary 2015	Projected 2016	2012	2013	2014	Preliminary 2015	Projected 2016
All R&D and R&D plant	140,629	127,291	132,496	132,752	140,479	134,393	119,837	122,898	121,058	125,765
R&D	138,483	125,386	130,279	129,435	137,659	132,342	118,044	120,841	118,033	123,240
Research	61,945	59,198	62,909	63,420	66,169	59,198	55,732	58,352	57,833	59,238
Basic	30,959	29,779	31,588	31,925	33,042	29,586	28,035	29,300	29,113	29,581
Applied	30,986	29,419	31,321	31,495	33,127	29,612	27,696	29,052	28,721	29,657
Development	76,538	66,188	67,370	66,015	71,489	73,144	62,312	62,490	60,200	64,001
Science and technology	14,878	13,471	14,313	14,659	14,973	14,218	12,682	13,276	13,368	13,405
Major systems ^a	61,660	52,717	53,057	51,356	56,516	58,926	49,630	49,213	46,832	50,596
R&D plant	2,146	1,905	2,218	3,317	2,820	2,051	1,793	2,057	3,025	2,525

^a To better differentiate between the part of the federal R&D budget that supports science and technologies (including technologies for military and nondefense applications) and the part that primarily supports development, testing, and evaluation of defense-related systems, the National Science Foundation collects data on development dollars from the Department of Defense in two categories: advanced technology development and major systems development.

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.

billion from FY 2013 to FY 2014 (table 1). HHS, NSF, and the Department of Energy (DOE) combined accounted for 72% of the \$1.8 billion increase in FY 2014 (table 2). Basic research was estimated to increase 1% to \$31.9 billion in FY 2015 and was projected to increase 3% to \$33.0 billion in FY 2016 (table 1).

Applied Research

Applied research obligations accounted for 24% of the total federal R&D and R&D plant budget in FY 2014. Applied research obligations increased 6% to \$31.3 billion in FY 2014 (table 1). HHS, DOE, and the Department of Defense (DOD) combined accounted for 86% of the \$1.9 billion increase in FY 2014 (table

2). Applied research was estimated to increase by 1% in FY 2015 and projected to increase by 5% in FY 2016 (table 1).

Agencies' Funding for Research

Health and Human Services

HHS's obligations for research rose 4% to \$30.6 billion from FY 2013 to

TABLE 2. Federal obligations for research, by agency and type of research in FY 2014 rank order: FYs 2012–16

Agency	Current \$millions					Constant 2009 \$millions				
	2012	2013	2014	Preliminary 2015	Projected 2016	2012	2013	2014	Preliminary 2015	Projected 2016
All agencies	61,945	59,198	62,909	63,420	66,169	59,198	55,732	58,352	57,833	59,238
Basic	30,959	29,779	31,588	31,925	33,042	29,586	28,035	29,300	29,113	29,581
Applied	30,986	29,419	31,321	31,495	33,127	29,612	27,696	29,052	28,721	29,657
HHS	31,124	29,315	30,587	30,888	31,857	29,744	27,598	28,371	28,167	28,520
Basic	15,977	15,288	16,005	16,061	16,505	15,269	14,393	14,846	14,646	14,776
Applied	15,147	14,026	14,582	14,827	15,353	14,475	13,205	13,526	13,521	13,745
DOE	7,361	7,333	8,092	8,419	9,232	7,035	6,904	7,506	7,677	8,265
Basic	3,957	3,851	4,075	4,088	4,245	3,782	3,625	3,780	3,728	3,800
Applied	3,404	3,482	4,017	4,331	4,987	3,253	3,278	3,726	3,949	4,465
DOD	6,663	5,955	6,704	6,902	6,760	6,368	5,606	6,218	6,294	6,052
Basic	2,036	1,863	2,074	2,236	2,144	1,946	1,754	1,924	2,039	1,919
Applied	4,627	4,093	4,631	4,666	4,616	4,422	3,853	4,296	4,255	4,132
NSF	5,170	4,956	5,403	5,562	5,864	4,941	4,666	5,012	5,072	5,250
Basic	4,652	4,362	4,725	4,834	5,062	4,446	4,107	4,383	4,408	4,532
Applied	517	594	678	728	802	494	559	629	664	718
NASA	5,100	5,422	5,336	4,868	5,094	4,874	5,105	4,949	4,439	4,560
Basic	2,606	2,824	3,023	2,934	3,180	2,490	2,659	2,804	2,676	2,847
Applied	2,494	2,598	2,313	1,934	1,914	2,383	2,446	2,145	1,764	1,714
USDA	1,964	1,868	2,060	2,214	2,404	1,877	1,759	1,911	2,019	2,152
Basic	851	844	908	964	1,040	813	795	842	879	931
Applied	1,113	1,024	1,152	1,250	1,364	1,064	964	1,069	1,140	1,221
Other	4,563	4,349	4,727	4,568	4,959	4,361	4,094	4,385	4,166	4,440
Basic	879	747	778	808	867	840	703	722	737	776
Applied	3,685	3,602	3,948	3,761	4,092	3,522	3,391	3,662	3,430	3,663

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 = 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 following: Department of Commerce, Department of Education, Department of Homeland Security, Department of Housing and Urban Development, Department of the Interior, Department of Justice, Department of Labor, Department of State, Department of Transportation, Department of the Treasury, Department of Veterans Affairs, Agency for International Development, Appalachian Regional Commission, Consumer Product Safety Commission, Environmental Protection Agency, Federal Communications Commission, Federal Trade Commission, Library of Congress, National Archives and Records Administration, Nuclear Regulatory Commission, Smithsonian Institution, and Social Security Administration.

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

FY 2014. HHS has accounted for about one-half of all agency-funded research since FY 2012 and has maintained a 52%-to-48% split between basic and applied research over the same time frame (table 2). Nearly all (96%) of the HHS research total (\$30.6 billion) is obligated by the National Institutes of Health (table 3); 84% (\$25.7 billion) of FY 2014 HHS research funding is planned in support of the life sciences (table 4).

Department of Energy

DOE's obligations for research rose 10% to \$8.1 billion from FY 2013 to FY

2014. DOE research obligations for FY 2014 were rather evenly split between basic and applied (table 2). Most of the department's FY 2014 research dollars were obligated by the Office of Science (\$4.1 billion) and various defense programs (\$2.5 billion). These two components account for 81% of the department's projected total FY 2014 research obligations (table 3). Most of the money is slated to support research in engineering (\$3.5 billion) and in the physical sciences (\$2.7 billion), which together account for more than three-fourths of the department's total research budget (table 4).

Department of Defense

Federal research dollars obligated by DOD increased by 13% (\$0.7 billion) from FY 2013 to 2014, are estimated to increase 3% in FY 2015, and are projected to decrease by 2% in FY 2016. DOD's share of total agency-funded research was 11% (\$6.7 billion) in FY 2014 (table 2).

The Departments of the Air Force, Army, and Navy and the Defense Advanced Research Projects Agency account for most (90%) of DOD research dollars (table 3). Of the total FY 2014 DOD research funding, 44%

TABLE 3. Federal obligations for research, by largest agency funders: FYs 2012–16
(Millions of current dollars)

Agency	2012	2013	2014	Preliminary 2015	Projected 2016	2014 % distribution within agency
All agencies	61,945	59,198	62,909	63,420	66,169	-
Department of Agriculture (USDA)	1,964	1,868	2,060	2,214	2,404	100
Agricultural Research Service	981	913	1,010	1,030	1,072	49
National Institute of Food and Agriculture	614	546	657	777	924	32
Forest Service	272	301	277	284	281	13
Other USDA agencies	97	108	117	123	127	6
Department of Defense (DOD)	6,663	5,955	6,704	6,902	6,760	100
Defense Advanced Research Projects Agency	1,496	1,268	1,537	1,554	1,589	23
Department of the Air Force	1,726	1,502	1,574	1,631	1,683	23
Department of the Army	1,333	1,257	1,418	1,457	1,346	21
Department of the Navy	1,414	1,296	1,483	1,449	1,452	22
Other DOD agencies	693	633	693	812	691	10
Department of Energy (DOE)	7,361	7,333	8,092	8,419	9,232	100
Energy Efficiency and Renewable Energy	441	530	540	512	823	7
National Nuclear Security Administration	2,339	2,404	2,770	3,150	3,492	34
Defense Programs	2,143	2,148	2,519	2,974	3,316	31
Nuclear Nonproliferation	195	256	251	176	176	3
Nuclear Energy	336	236	296	387	365	4
Office of Science	3,940	3,848	4,085	4,008	4,167	50
Other DOE agencies	306	315	400	363	385	5
Department of Health and Human Services (HHS)	31,124	29,315	30,587	30,888	31,857	100
National Institutes of Health	29,877	28,215	29,400	29,637	30,617	96
Other HHS agencies	1,247	1,099	1,188	1,251	1,240	4
National Aeronautics and Space Administration	5,100	5,422	5,336	4,868	5,094	100
National Science Foundation	5,170	4,956	5,403	5,562	5,864	100

NOTES: Not all agencies supporting research are listed here. 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.

(\$3.0 billion) is planned in support of engineering (table 4).

National Science Foundation

NSF obligations for research grew by 9% in FY 2014 after declining 4% from FY 2012 to FY 2013 (table 2). Of the total FY 2014 NSF research funding (\$5.4 billion), 23% is planned in support of environmental sciences (\$1.2 billion), 19% for computer science and mathematics (\$1.0 billion), 16% for engineering (\$876 million), 16% for physical sciences (\$867 million), and 13% for life sciences (\$685 million) (table 4).

National Aeronautics and Space Administration

Federal funds obligated for research by the National Aeronautics and Space Administration (NASA) decreased by 2% to \$5.3 billion between FY 2013

and FY 2014. Research obligations are estimated to decrease another 9% in FY 2015. NASA provided 87% of its total FY 2014 research funding in support of engineering (\$2.0 billion), physical sciences (\$1.4 billion), and environmental sciences (\$1.2 billion) (table 4).

Data Notes

The data presented here are from the NCSES, NSF Survey of Federal Funds for Research and Development. The 28 federal agencies that report R&D obligations to the survey submitted actual obligations for FY 2014, preliminary data for FY 2015, and projected data for FY 2016. Data were requested from agencies beginning in February 2015. 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

TABLE 4. Federal obligations for research, by broad field of science and engineering and agency in rank order: FY 2014 (Millions of current dollars)

Field	All agencies	HHS	DOD	DOE	NSF	NASA	USDA	Other
All fields	62,909	30,587	6,704	8,092	5,403	5,336	2,060	4,727
Life sciences	30,668	25,683	866	400	685	309	1,616	1,109
Engineering	11,888	1,445	2,966	3,531	876	2,023	79	968
Physical sciences	6,483	140	795	2,699	867	1,415	103	465
Environmental sciences	4,366	343	337	336	1,220	1,215	38	877
Computer sciences and mathematics	3,883	231	1,292	959	1,048	93	10	250
Other sciences nec ^a	2,218	806	346	164	487	260	0	155
Psychology	1,968	1,770	42	0	35	21	0	100
Social sciences	1,435	169	61	2	186	1	213	803

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; nec = not elsewhere classified; USDA = Department of Agriculture.

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

NOTES: Detail may not sum to total due to rounding. Other agencies includes the following: Department of Commerce, Department of Education, Department of Homeland Security, Department of Housing and Urban Development, Department of the Interior, Department of Justice, Department of Labor, Department of State, Department of Transportation, Department of the Treasury, Department of Veterans Affairs, Agency for International Development, Appalachian Regional Commission, Consumer Product Safety Commission, Environmental Protection Agency, Federal Communications Commission, Federal Trade Commission, Library of Congress, National Archives and Records Administration, Nuclear Regulatory Commission, Smithsonian Institution, and Social Security Administration.

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

design, development, and improvement of prototypes and new processes to meet specific requirements.

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 2014–16* at <http://www.nsf.gov/statistics/fedfunds/>. Individual detailed tables from the FYs 2014–16 survey may be available in advance of the full report. For more information, please contact the author.

Note

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