InfoBrief
NCSES National Center for Science and Engineering Statistics

November 2016 ■ NSF 17-304

Federal Budget Authority for R&D Continued to Move Upward in FYs 2015 and 2016, with a Further Increase Proposed for FY 2017

by Mark Boroush[1]

New data indicate that federal budget authority for research and development and R&D plant together totaled an estimated $149.0 billion (current dollars, preliminary data) in FY 2016, an increase of $10.5 billion (7.5%) over the FY 2015 level (table 1). This follows a $2.4 billion increase (1.8%) in FY 2015 and a $3.7 billion increase (2.8%) in FY 2014. Data are from the National Center for Science and Engineering Statistics, National Science Foundation. (All amounts and calculations are in current dollars, unless otherwise noted.)

The president's proposed budget for the federal government in FY 2017 calls for $153.9 billion in funding for R&D and R&D plant, a $4.9 billion increase (3.3%) over the previous year. The discretionary funding component of this proposal ($149.7 billion) shows only a small increase over the previous fiscal year; instead, most of the year's rise comes from added funding in mandatory programs ($4.2 billion). As this report is published, the president and Congress remain in debate on the spending authorities for FY 2017.

Recent Trends in Overall Budget Authority

Total of R&D and R&D Plant

Federal budget authority for the total of R&D and R&D plant reached $149.0 billion in FY 2010, after numerous years of yearly increases (figure 1, table 1).[2] However, this trend of increases reversed noticeably for the several years thereafter, as FYs 2011–13 were successive years of decline. The R&D and R&D plant total was down by $4.6 billion in FY 2011, down by $0.6 billion in FY 2012, and down $11.3 billion in FY 2013. Cumulatively, the FY 2013 total was down by 11% from the FY 2010 level (or down by 16% accounting for inflation).

For FYs 2014–16, however, the trend reversed again. The FY 2014 level increased by $3.7 billion over FY 2013, the FY 2015 level was higher by $2.4 billion, and FY 2016 was up by $10.5 billion. On a current dollar basis, these successive decreases (FYs 2011–13) and then successive increases (FYs 2014–16) offset each other, with both FY 2010 and FY 2016 levels at $149.0 billion (table 1). However, this appearance of regaining the past levels fares less well when current dollars are adjusted for inflation. The FY 2016 total for R&D and R&D plant in constant dollars is below the FY 2010 level by about 10% (figure 1).

These notable ups and downs of the totals for federal funding for R&D since FY 2010 reflect, in part, what has been a more challenging policy environment as the president and Congress have sought to agree upon levels and priorities for the annual federal government budget. In addition, Congress enacted the Budget Control Act (BCA) in 2011, which established a schedule of budget caps and spending cuts to continue over a 10-year period beginning with FY 2012. These factors had much to do with the aforementioned successive years of decline in federal funding for R&D and R&D plant in FYs 2011–13.[3] Following negotiations between the Senate and the House of Representatives in the fall of 2013, the Bipartisan Budget Act of 2013 tempered the previously set BCA limits on discretionary spending in FYs 2014 and 2015. Increases in total funding for R&D and R&D plant resulted in both fiscal years.

TABLE 1. Federal budget authority for R&D and R&D plant, by budget function category: FYs 2010–17

Fiscal year	All functions	National defense (050)	Nondefense									
			Total	General science, basic research (251)	Space flight, research, and related (252)	Energy (270)	Natural resources and environment (300)	Agriculture (350)	Transportation (400)	Health (550)	Veterans benefits and services (700)	Other[a]
	Current $millions											
2010 actual	148,962	86,789	62,173	10,509	8,232	2,570	2,430	2,206	1,517	31,693	1,034	1,982
2011 actual	144,379	83,226	61,153	10,581	8,658	2,265	2,314	1,768	1,420	30,990	1,160	1,997
2012 actual	143,737	79,875	63,862	10,536	10,801	2,231	2,300	2,005	1,511	31,411	1,160	1,907
2013 actual	132,477	70,781	61,696	9,620	10,476	2,289	2,169	1,818	1,359	30,200	1,164	2,601
2014 actual	136,159	70,992	65,167	10,524	11,228	2,407	2,328	2,077	1,278	31,099	1,101	3,125
2015 actual	138,544	72,950	65,594	11,088	10,928	3,173	2,358	2,149	1,389	30,495	1,178	2,836
2016 preliminary	148,999	78,669	70,330	11,422	12,811	3,455	2,599	2,356	1,404	32,353	1,220	2,710
2017 proposed	153,920	80,480	73,440	12,152	12,227	4,789	2,682	2,628	1,770	33,206	1,252	2,734
% avg growth 2010–13[b]	-3.8	-6.6	-0.3	-2.9	8.4	-3.8	-3.7	-6.2	-3.6	-1.6	4.0	9.5
% change 2013–14	2.8	0.3	5.6	9.4	7.2	5.2	7.3	14.2	-6.0	3.0	-5.4	20.1
% change 2014–15	1.8	2.8	0.7	5.4	-2.7	31.8	1.3	3.5	8.7	-1.9	7.0	-9.2
% change 2015–16	7.5	7.8	7.2	3.0	17.2	8.9	10.2	9.6	1.1	6.1	3.6	-4.4
% change 2016–17	3.3	2.3	4.4	6.4	-4.6	38.6	3.2	11.5	26.1	2.6	2.6	0.9
	FY 2009 constant $millions											
2010 actual	147,663	86,032	61,631	10,417	8,160	2,548	2,409	2,187	1,504	31,417	1,025	1,965
2011 actual	140,269	80,857	59,412	10,280	8,412	2,201	2,248	1,718	1,380	30,108	1,127	1,940
2012 actual	137,141	76,209	60,931	10,052	10,305	2,129	2,194	1,913	1,442	29,969	1,107	1,819
2013 actual	124,263	66,392	57,871	9,024	9,826	2,147	2,035	1,705	1,275	28,328	1,092	2,440
2014 actual	125,573	65,473	60,101	9,706	10,355	2,220	2,147	1,916	1,179	28,681	1,015	2,882
2015 actual	126,064	66,379	59,685	10,089	9,944	2,887	2,146	1,955	1,264	27,748	1,072	2,581
2016 preliminary	133,464	70,467	62,997	10,231	11,475	3,095	2,328	2,110	1,258	28,980	1,093	2,427
2017 proposed	135,445	70,820	64,625	10,693	10,759	4,214	2,360	2,313	1,558	29,220	1,102	2,406
% avg growth 2010–13[b]	-5.6	-8.3	-2.1	-4.7	6.4	-5.5	-5.5	-8.0	-5.4	-3.4	2.1	7.5
% change 2013–14	1.1	-1.4	3.9	7.6	5.4	3.4	5.5	12.4	-7.5	1.2	-7.1	18.1
% change 2014–15	0.4	1.4	-0.7	3.9	-4.0	30.0	0.0	2.0	7.2	-3.3	5.6	-10.4
% change 2015–16	5.9	6.2	5.5	1.4	15.4	7.2	8.5	7.9	-0.5	4.4	2.0	-6.0
% change 2016–17	1.5	0.5	2.6	4.5	-6.2	36.2	1.4	9.6	23.8	0.8	0.8	-0.9

[a] Other functions include International affairs (150), Commerce and housing credit (300), Community and regional development (450), Education, training, employment, and social services (500), Medicare (570), Income security (600), Administration of justice (750), and General government (800).

[b] Calculated as the compound average annual growth rate over the periods noted.

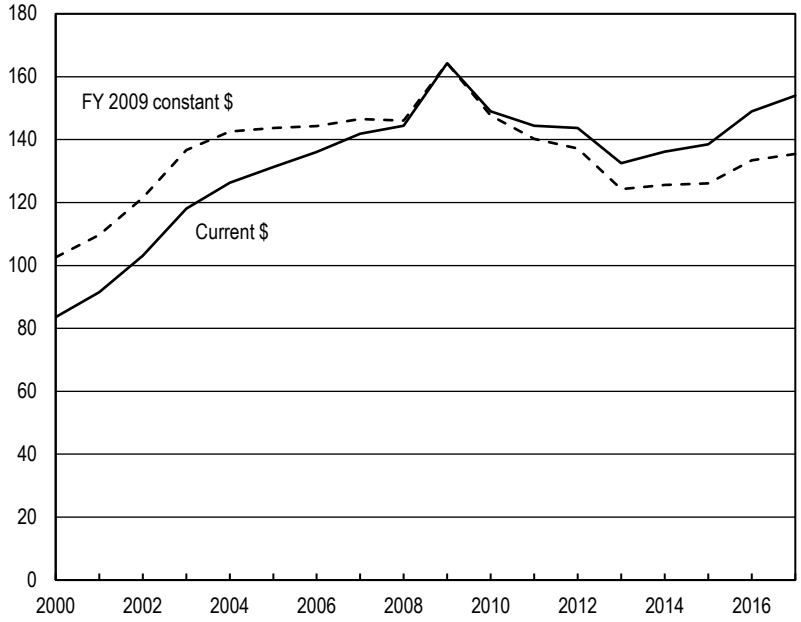
NOTE: Data show budget information collected through July 2016.

SOURCES: Agencies' submissions to the Office of Management and Budget per MAX Schedule C, agencies' budget justification documents, and supplemental data obtained from agencies' budget offices.

The sizable increase of $10.5 billion (to $149.0 billion) in federal funding for R&D and R&D plant in FY 2016 resulted from, first, the Bipartisan Budget Act of 2015 (enacted in early November 2015, which established increases in overall federal spending in FYs 2016 and 2017) and, subsequently, by the Consolidated Appropriations Act, 2016 (enacted mid-December 2015, which set the specific spending levels for FY 2016).

The president's proposed budget for the federal government in FY 2017 calls for $153.9 billion in funding for R&D and R&D plant, a $4.9 billion increase (3.3%) over the previous year. This proposed funding complies with the agreed-upon discretionary cap imposed for FY 2017 by the BCA—which would have resulted in only a small increase for R&D over the previous year. But the president's proposal draws on mandatory funding components to increase R&D funding in FY 2017 by $4.2 billion in addition to the small discretionary funding increase. Whether Congress will concur with this overall funding proposal, mainly

FIGURE 1. Federal budget authority for R&D and R&D plant: FYs 2000–17
Billions of dollars



NOTES: Data show budget information collected through July 2016. Data for FYs 2000–15 are final appropriations. Those for FY 2016 are preliminary. The FY 2017 data are as proposed by the president's *Budget of the United States Government, Fiscal Year 2017*.

SOURCE: Agencies' submissions to the Office of Management and Budget per MAX Schedule C, agencies' budget justification documents, and supplemental data obtained from agencies' budget offices.

through a mandatory spending route, is presently unclear.

R&D Plant

R&D plant is an essential input for R&D activity, even if R&D is by far the more sizable funding component. The $138.5 billion total for federal budget authority in FY 2015 consisted of $136.1 billion for R&D and $2.5 billion for R&D plant (table 2). The corresponding levels in FY 2016 were $146.4 billion for R&D and $2.6 billion for R&D plant. The president's proposed levels for FY 2017 are $151.3 billion for R&D and $2.7 billion for R&D plant.

Over the past several years, the largest share of federal funding for R&D plant (around $1.1 billion) has been within the General science and basic research function (table 2). This reflects mainly investment in new or upgraded facilities and large-scale equipment for basic research (in various fields) by the Department of Energy's Office of Science and the National Science Foundation.

Relative Roles of Defense and Nondefense Budget Functions

National defense has typically accounted for half or more of the annual federal budget authority for the total of R&D and R&D plant. In FY 2010, National defense was $86.8 billion, or 58.3% of the $149.0 billion total (table 1, table 3). In FY 2013, with a substantially downsized budget authority level of $70.8 billion, the National defense category was still 53.4% of the $132.5 billion total. In FY 2016, the National defense category was $78.7 billion, or 52.8% of the $149.0 billion federal R&D funding total.

The balance of the budget authority total ($62.2 billion in FY 2010, and $70.3 billion in FY 2016) falls among 15 or more nondefense functional categories (table 1, table 3). Health is the largest of these—with substantially fewer dollars than National defense, but still large, at $32.4 billion (21.7%) in FY 2016. The Space flight, research, and supporting activities and General science and basic research categories are also sizable: $12.8 billion (8.6%) and $11.4 billion (7.7%), respectively, in FY 2016. Funding in the Energy category has been increasing in the past several years, reaching $3.5 billion (2.3%) in FY 2016. Natural resources and environment, Agriculture, Transportation, and Veterans benefits and services each have budget authority that range from $1 billion to several billion dollars annually. Budget authority is under $1 billion annually for the remaining nondefense categories: Administration of justice; Commerce and housing credit; Education, training, employment, and social services; International affairs; Community and regional development; Income security; Medicare; and General government.

The National defense category bore the brunt of the declines in the R&D and R&D plant total from FY 2010 to FY 2013. National defense dropped significantly from $86.8 billion in FY 2010 to $70.8 billion in FY 2013, while the nondefense total declined far more narrowly, from $62.2 billion in FY 2010 to $61.7 billion in FY 2013 (table 1). However, the cumulative sums of the increases in FYs 2014–16 were more evenly split: the National defense category is up by $7.9 billion, the nondefense categories are up $8.6 billion. These differences are more apparent when the dollars are adjusted for inflation (table 1, figure 2).

TABLE 2. Federal budget authority for R&D and R&D plant, by funding category: FYs 2010–17
(Millions of current dollars)

Fiscal year	All functions	National defense (050)	Nondefense: Total	General science, basic research (251)	Space flight, research, and related (252)	Energy (270)	Natural resources and environment (300)	Agriculture (350)	Transportation (400)	Health (550)	Veterans benefits and services (700)	Other[a]
						R&D						
2010 actual	146,596	86,517	60,079	9,280	8,232	2,455	2,237	2,043	1,496	31,488	1,034	1,814
2011 actual	142,457	82,972	59,485	9,483	8,398	2,233	2,171	1,916	1,395	30,903	1,160	1,826
2012 actual	141,450	79,559	61,891	9,304	10,661	2,197	2,147	1,920	1,486	31,243	1,160	1,773
2013 actual	130,861	70,620	60,241	8,802	10,476	2,269	2,020	1,753	1,337	30,044	1,164	2,376
2014 actual	133,547	70,611	62,936	9,482	11,055	2,387	2,172	1,967	1,261	30,927	1,101	2,584
2015 actual	136,090	72,560	63,530	10,068	10,875	3,153	2,161	1,989	1,363	30,331	1,178	2,412
2016 preliminary	146,425	78,362	68,063	10,198	12,789	3,436	2,340	2,008	1,369	32,182	1,220	2,521
2017 proposed	151,268	79,998	71,270	10,898	12,189	4,745	2,470	2,412	1,735	32,992	1,252	2,577
						R&D plant						
2010 actual	2,366	272	2,094	1,229	0	115	193	163	21	205	0	168
2011 actual	1,922	254	1,668	1,098	260	32	143	-148	25	87	0	171
2012 actual	2,287	316	1,971	1,232	140	34	153	85	25	168	0	134
2013 actual	1,616	161	1,455	818	0	20	149	65	22	156	0	225
2014 actual	2,612	381	2,231	1,042	173	20	156	110	17	172	0	541
2015 actual	2,454	390	2,064	1,020	53	20	197	160	26	164	0	424
2016 preliminary	2,574	307	2,267	1,224	22	19	259	348	35	171	0	189
2017 proposed	2,652	482	2,170	1,254	38	44	212	216	35	214	0	157

[a] Other functions include International affairs (150), Commerce and housing credit (300), Community and regional development (450), Education, training, employment, and social services (500), Medicare (570), Income security (600), Administration of justice (750), and General government (800).

NOTE: Data show budget information collected through July 2016.

SOURCES: Agencies' submissions to the Office of Management and Budget per MAX Schedule C, agencies' budget justification documents, and supplemental data obtained from agencies' budget offices.

Funding Trends in the Largest Budget Functions: FYs 2015–17[4]

National Defense

Budget authority for R&D and R&D plant directed at National defense in FY 2016 totaled an estimated $78.7 billion, a sizable increase (7.8%) over the FY 2015 level of $73.0 billion (table 1, figure 3). The president's proposed level for FY 2017 is a further increase (2.3%) to $80.5 billion. Both of these increases exceed the corresponding annual rates of inflation: 1.6% in FY 2016 and an expected 1.8% in FY 2017. By comparison, the funding level for this category in FY 2010 was $86.8 billion.

Most of the R&D dollars in the National defense category support military research, development, test, and evaluation (RDT&E) programs at the Department of Defense ($64.0 billion of the $73.0 billion category total in FY 2015, and $70.0 billion of $78.7 billion in FY 2016). RDT&E funding includes a broad spectrum of activities ranging from basic research to operational system development (OSD). In FYs 2015 and 2016, the latter has accounted for about 37%, or $24–$25 billion, of the annual RDT&E totals. The OSD budget is for development efforts to upgrade systems that have been fielded or have received approval for full rate production. The Air Force and Navy have the largest shares of RDT&E, but those for the Army and several defense agencies (notably the Missile Defense Agency) are also substantial.

R&D on atomic energy defense in the Department of Energy is a smaller but still sizable component of the defense category ($6.2 billion in FY 2015, and $5.7 billion in FY 2016). The two largest elements are weapons activities ($4.7 billion in FY 2015, and $4.1 billion in FY 2016) and development of naval reactors ($1.2 billion in FY 2015 and $1.4 billion in 2016).

TABLE 3. Distribution of federal budget authority for R&D and R&D plant budget, by budget function: FYs 2010–17
(Percent)

2015 rank	Budget function	2010 actual	2011 actual	2012 actual	2013 actual	2014 actual	2015 actual	2016 preliminary	2017 proposed
	All functions conducting R&D	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1	National defense (050)	58.3	57.6	55.6	53.4	52.1	52.7	52.8	52.3
2	Health (550)	21.3	21.5	21.9	22.8	22.8	22.0	21.7	21.6
3	General science and basic research (251)	7.2	7.3	7.3	7.3	7.7	8.0	7.7	7.9
4	Space flight, research, and related (252)	5.5	6.0	7.5	7.9	8.2	7.9	8.6	7.9
5	Energy (270)	1.7	1.6	1.6	1.7	1.8	2.3	2.3	3.1
6	Natural resources and environment (300)	1.6	1.6	1.6	1.6	1.7	1.7	1.7	1.7
7	Agriculture (350)	1.5	1.2	1.4	1.4	1.5	1.6	1.6	1.7
8	Transportation (400)	1.0	1.0	1.1	1.0	0.9	1.0	0.9	1.1
9	Veterans benefits and services (700)	0.7	0.8	0.8	0.9	0.8	0.9	0.8	0.8
10	Administration of justice (750)	*	0.1	0.1	0.6	0.8	0.7	0.4	0.4
11	Commerce and housing credit (370)	0.4	0.5	0.5	0.6	0.7	0.6	0.8	0.7
12	Education, training, employment, and social services (500)	0.4	0.4	0.4	0.4	0.4	0.4	0.3	0.3
13	International affairs (150)	0.1	0.1	0.2	0.3	0.3	0.2	0.2	0.2
14	Medicare (570)	*	0.1	0.1	0.1	*	0.1	*	0
15	Community and regional development (450)	0.1	0.1	*	*	*	*	*	0.1
16	Income security (600)	0.1	*	*	*	*	*	*	*

* = less than 0.05%.

NOTES: Detail may not add to total because of rounding. Data show budget information collected through July 2016.

SOURCES: Agencies' submissions to Office of Management and Budget per MAX Schedule C, agencies' budget justification documents, and supplemental data obtained from agencies' budget offices.

Health

Budget authority for Health R&D and R&D plant in FY 2016 was $32.4 billion (21.7% of the total), $1.9 billion above the $30.5 billion in FY 2015—a 6.1% increase, well ahead of the pace of inflation (although a small decline from the FY 2015 share of 22.0%). The president's proposed funding for FY 2017 is an increase to $33.2 billion, a 2.6% increase, also above the expected rate of inflation. This category's level in FY 2010 was $31.7 billion.

The National Institutes of Health (NIH) is the predominant recipient in this category: $28.8 billion in FY 2015, $30.6 billion in FY 2016, and a proposed $31.4 billion in FY 2017. This NIH funding is spread across multiple disease categories, with the National Cancer Institute and the National Institutes of Allergy and Infectious Diseases receiving the largest shares of the total. The Health category also includes the R&D programs of several other Health and Human Services agencies (the Food and Drug Administration, the Agency for Healthcare Research and Quality, and the Centers for Disease Control and Prevention), the Consumer Product Safety Commission, and the Department of Labor's Occupational Safety and Health Administration.

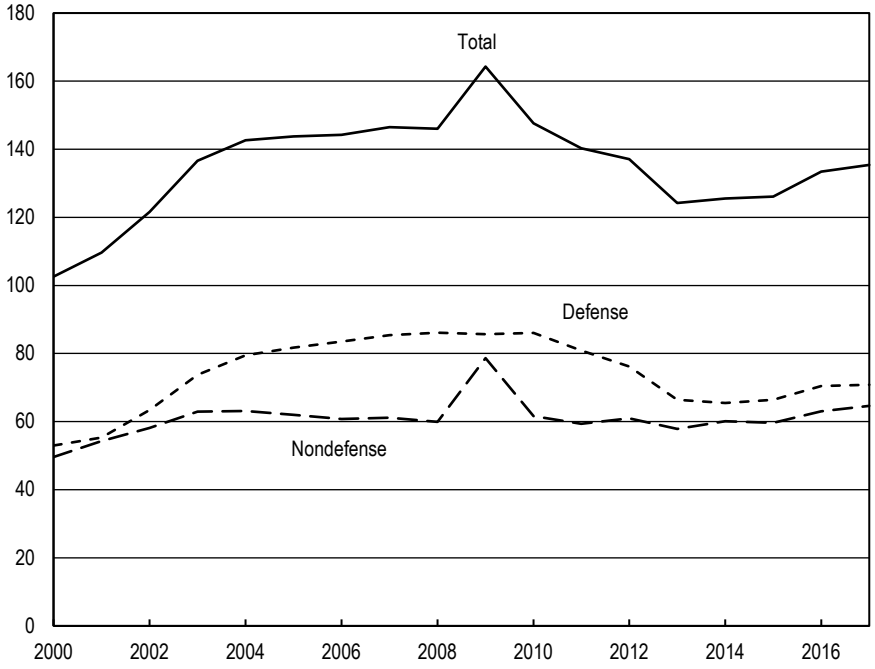
Space Flight, Research, and Supporting Activities

Budget authority for Space flight, research, and supporting activities was $12.8 billion in FY 2016, a 17.2% increase (way ahead of the pace of inflation) over the FY 2015 level of $10.9 billion. The president's proposed funding level for FY 2017, however, is a noticeable decline to $12.2 billion. National Aeronautics and Space Administration programs account for all of these amounts. This category's share of the total was 7.9% in FY 2015 and 8.6% in FY 2016. Its FY 2010 level was $8.2 billion.

General Science and Basic Research

Budget authority for the General science and basic research category totaled $11.4 billion in FY 2016 and accounted for 7.7% of the total of R&D and R&D plant that year.[5] This was an increase of only $0.3 billion over the $11.1 billion level in FY 2015—up by 3.0%, ahead of the rate of inflation. The level proposed for FY 2017 is an increase to $12.2 billion—a rise of 6.4%, again ahead of the rate of inflation. This category's share of the total

FIGURE 2. Federal budget authority for R&D and R&D plant, by budget function: FYs 2000–17
Billions of FY 2009 constant dollars



NOTES: Data show budget information collected through July 2016. Data for FYs 2000–15 are final appropriations. Those for FY 2016 are preliminary. The FY 2017 data are as proposed by the president's *Budget of the United States Government, Fiscal Year 2017* .

SOURCE: Agencies' submissions to the Office of Management and Budget per MAX Schedule C, agencies' budget justification documents, and supplemental data obtained from agencies' budget offices.

was 8.0% in FY 2015 and 7.7% in FY 2016. The category's level in FY 2010 was $10.5 billion.

This category includes mainly the R&D programs of the National Science Foundation and the Department of Energy's Office of Science. National Science Foundation programs accounted for $6.0 billion in FY 2015 and $6.1 billion in FY 2016—that is, over half of the category's budget authority total throughout. The Department of Energy's Office of Science was allotted $5.1 billion in FY 2015 and $5.3 billion in FY 2016.

Energy

Budget authority for R&D and R&D plant in this functional category was $3.5 billion in FY 2016, an 8.9% increase (well ahead of inflation) over the $3.2 billion in FY 2015. The president's proposed budget for FY 2017 calls for a large increase (38.6%) to $4.8 billion. Most of the proposed increase is for R&D on energy efficiency and renewable energy. The energy category's share of the total was 2.3% in both FY 2015 and FY 2016—and it would be 3.1% in FY 2017 with the proposed increase. The category's level in FY 2010 was $2.6 billion.

The Department of Energy's various energy programs and the Advanced Research Projects Agency–Energy (ARPA-E) account for the vast majority of this category total across all these budget years. This category also includes small R&D funding levels for the Nuclear Regulatory Commission and the Tennessee Valley Authority.

Natural Resources and Environment

Budget authority for this category as a whole in FY 2016 was $2.6 billion, up from $2.4 billion in FY 2015. The proposed level for FY 2017 is $2.7 billion. Both of these increases substantially exceed the pace of inflation. This functional category includes R&D across a range of purposes: conservation and land management, pollution control and abatement, recreational resources, water resources, and other natural resources. The majority of this funding is associated with R&D programs in the Department of Commerce (chiefly, the National Oceanic and Atmospheric Administration), the Environmental Protection Agency, the Department of the Interior (mainly, the U.S. Geological Survey, but also the Bureau of Reclamation and National Park Service), and the Department of Agriculture (notably, the Forest Service). The category total also includes R&D activities in the Army Corps of Engineers and the U.S. Coast Guard within the Department of Homeland Security.

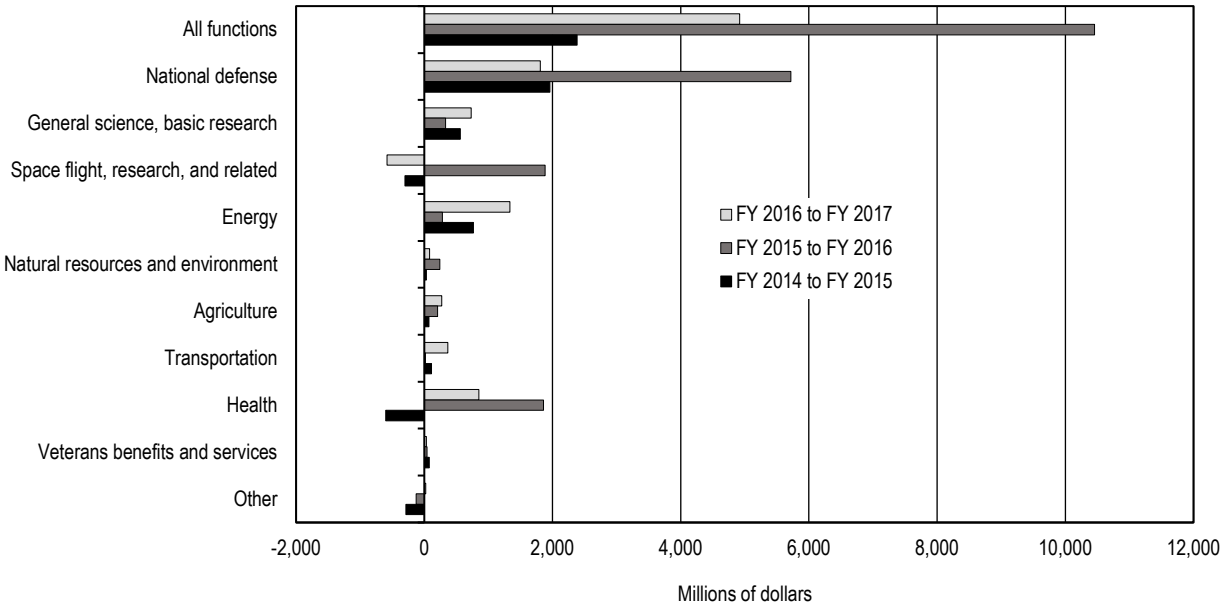
Agriculture

Budget authority for this category was $2.4 billion in FY 2016, a 9.6% increase from the $2.1 billion in 2015. The proposed level for FY 2017 is $2.6 billion—an 11.5% increase. This category is composed entirely of Department of Agriculture R&D programs (in particular, the R&D conducted by the Agricultural Research Service and the National Institute of Food and Agriculture).

Definitions

Budget authority is the primary source of legal authorization for a federal agency to enter into obligations that will result in outlays.

FIGURE 3. Federal budget authority for R&D and R&D plant, change over previous fiscal year: FYs 2014–17



NOTES: Data show budget information collected through July 2016. Data for FYs 2014–15 are final appropriations. Those for FY 2016 are preliminary. The FY 2017 data are as proposed by the president's *Budget of the United States Government, Fiscal Year 2017*. Other functions include International affairs (150), Commerce and housing credit (300), Community and regional development (450), Education, training, employment, and social services (500), Medicare (570), Income security (600), Administration of justice (750), and General government (800).

SOURCES: Agencies' submissions to Office of Management and Budget per MAX Schedule C, agencies' budget justification documents, and supplemental data obtained from agencies' budget offices.

Budget functions are categories defined by the Office of Management and Budget (OMB) into which all activities funded by the federal budget are classified.

Research and development (R&D) refers to basic research, applied research, and development in the sciences and engineering.

R&D plant refers to the acquisition of, construction of, major repairs to, or alterations in structures, works, equipment, facilities, or land for use in R&D activities.

Data Sources and Availability

The statistics described in this InfoBrief account for nearly all federally sponsored R&D activities and are based mainly on information that federal agencies provide to OMB. The underlying data are tabulated for the National Science Foundation by the American Association for the Advancement of Science and reflect federal budget information collected and analyzed through July 2016. The data through FY 2015 are final appropriations. The statistics for FY 2016 draw on the federal budget as enacted by the president and Congress in December 2015 (through the Bipartisan Budget Act of 2015, P.L. 114-74, November 2015, and the Consolidated Appropriations Act, 2016, P.L. 114-113, December 2015) and on associated estimates of agency spending plans. Accordingly, these budget numbers are marked "preliminary." The figures for FY 2017 draw mainly from the president's proposed budget of the U.S. government for FY 2017 (publicly released 9 February 2016), but also include subsequent information from the executive branch and agency budget offices. As a result, the budget numbers for individual activities, programs, or agencies may differ from those published in the president's proposed budget or agency budget documents.

There currently are 20 budget functions, most with a number of subfunctions. For a tally of the federal budget by function and subfunction, see table 5-1 in the Historical Tables section of the president's *Budget of the United States Government, Fiscal Year 2017* (http://www.whitehouse.gov/omb/budget/Historicals/).

R&D activities are currently present in 16 broad functional categories. The 17 categories discussed in this InfoBrief include 15 of these broad categories plus one of the broad categories separated into its two subfunctions. OMB's

broad category of General science, space, and technology (250) includes a pair of subfunctions: General science and basic research (251) and Space flight, research, and supporting activities (252). Given the intrinsic differences in these two R&D endeavors and the significant public interest in each, these subfunctions are discussed separately in this InfoBrief. For a further discussion of the recognition of R&D in these budget functions, see OMB's guidance in Circular A-11, MAX Schedule C, "Research and Development Activities" (see Section 84 in http://www.whitehouse.gov/sites/default/files/omb/assets/a11_current_year/a11_2015.pdf).

A full set of detailed tables on federal budget authority for R&D in FYs 2015 and 2016 and also the president's proposed levels for FY 2017 are available in a companion statistical report, *Federal R&D Funding, by Budget Function: Fiscal Years 2015–17,* accessible at http://www.nsf.gov/statistics/fedbudget/. Agency and program details on funding trends can be found in this report. For more information, contact the author.

Notes

1. Mark Boroush, Research and Development Statistics Program, National Center for Science and Engineering Statistics, National Science Foundation, 4201 Wilson Boulevard, Suite 965, Arlington, VA 22230 (mboroush@nsf.gov; 703-292-8726).

2. In FY 2009, the regular congressional appropriation for federal R&D funding was $145.6 billion. The higher level evident in figure 1 ($164.3 billion) came from the one-time $18.7 billion R&D funding step-up provided by the American Recovery and Reinvestment Act of 2009 (ARRA).

3. For additional detail on the federal budget developments affecting federal R&D funding in the FY 2011–15 period, see the previous edition of this NCSES report series: Mark Boroush, *Federal Budget Authority for R&D in FYs 2014 and 2015 Turns Modestly Upward, but Extent of Increase in FY 2016 Uncertain*, NSF 16-304, November 2015, available at http://www.nsf.gov/statistics/2016/nsf16304/.

4. For agency and program details cited in this section see the detailed statistical tables in *Federal R&D Funding, by Budget Function: Fiscal Years 2015–17,* available at http://www.nsf.gov/statistics/fedbudget/.

5. Despite the General science and basic research title, not all basic research funded by the federal government is classified in this single category. Federal funding for basic research arises in other functional categories—such as National defense or Health—and is included in those category funding totals.

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