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Federal Budget Authority for R&D in FYs 2014 and 2015 Turns Modestly Upward, but Extent of Increase in FY 2016 Uncertain

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New data indicate that federal budget authority for research and development and R&D plant together totaled an estimated $137.2 billion (current dollars, preliminary data) in FY 2015, an increase of $1.0 billion (0.7%) over the FY 2014 level (table 1). This follows a $3.7 billion increase (2.8%) in FY 2014 over the FY 2013 level. Nevertheless, this pair of increases only modestly offsets the successive declines experienced in FY 2011 (down $4.6 billion), FY 2012 (down $0.6 billion), and FY 2013 (down $11.3 billion). 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 2016 calls for $146.5 billion in funding for R&D and R&D plant, a $9.3 billion increase (6.8%) over the previous year. This level would represent a partial rollback of the spending reductions ("sequester") mandated for FY 2016 under the Budget Control Act of 2011. But implementation of this increased funding would require congressional action to raise the already enacted limits for discretionary spending. The specifics of the federal budget for FY 2016 remain in debate as this report is published.

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 a high-water mark of $164.3 billion in FY 2009 (table 1). This was a result of $145.6 billion through the normal congressional appropriation, as well as the one-time $18.7 billion increase through the American Recovery and Reinvestment Act of 2009 (ARRA). Over the prior decade, the yearly total was generally rising each year by several billion dollars or more (figure 1). However, after adjustment for inflation, the yearly increases are more gradual between FY 2004 and FY 2010, excluding the large ARRA increase in FY 2009 (figure 1).

This upward trend reversed noticeably after FY 2010. As observed earlier, FYs 2011–13 were successive years of decline. There were modest increases in both FY 2014 and FY 2015—$3.7 billion and $1.0 billion, respectively—but FY 2015 ended with the R&D and R&D plant total nearly $12 billion below the FY 2010 level. After adjustment for inflation (table 1, figure 1), the fall from the FY 2010 level is sharper, with the FY 2014 and FY 2015 levels more nearly flat. On this inflation-adjusted basis, the FY 2015 level is 15% below the FY 2010 level.

Setting annual levels of federal funding for science has been particularly difficult amidst the large policy differences on budgetary matters within the Congress and with the President. The FY 2011 federal budget (enacted April 2011) imposed $38.5 billion in reductions in FY 2011 spending levels throughout the government. This worked out to a decline of $4.6 billion in budget authority for R&D and R&D plant. In 2011, the Congress also enacted the Budget Control Act (BCA; passed August 2011), which established a schedule of budget caps and spending cuts to continue over a 10-year period beginning with FY 2012. Consistent with the Act's provisions, the FY 2012 budget (enacted November–December 2011) received a further $67 billion reduction in federal spending, although the associated reduction in budget authority for R&D and R&D plant proved to be only a modest $0.6 billion decline.

The FY 2013 federal budget was again affected by the budget-cutting provi-

TABLE 1. Federal budget authority for R&D and R&D plant, by budget function category: FYs 2006–16

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											
2006 actual	136,019	78,737	57,282	7,539	10,401	1,244	2,219	2,118	1,730	28,932	769	2,330
2007 actual	141,890	82,658	59,232	8,712	10,988	1,922	2,096	1,950	1,380	29,581	820	1,783
2008 actual	144,391	85,129	59,262	9,007	10,672	2,076	2,202	1,997	1,413	29,212	886	1,797
2009 total	164,292	85,642	78,650	14,128	9,060	3,794	2,615	2,249	1,461	42,051	943	2,349
Actual	145,553	85,342	60,211	9,941	8,374	2,234	2,371	2,073	1,357	30,989	943	1,929
ARRA	18,739	300	18,439	4,187	686	1,560	244	176	104	11,062	0	420
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 preliminary	137,172	71,030	66,142	10,679	11,629	2,427	2,414	2,142	1,330	31,443	1,090	2,988
2016 proposed	146,478	76,798	69,680	11,208	11,991	2,992	2,727	2,584	1,492	32,443	1,147	3,096
Average growth (%)												
2006–10[b]	2.3	2.5	2.1	8.7	-5.7	19.9	2.3	1.0	-3.2	2.3	7.7	-4.0
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
Percent 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
2014–15	0.7	0.1	1.5	1.5	3.6	0.8	3.7	3.1	4.1	1.1	-1.0	-4.4
2015–16	6.8	8.1	5.3	5.0	3.1	23.3	13.0	20.6	12.2	3.2	5.2	3.6
	FY 2009 constant $millions											
2006 actual	144,256	83,505	60,751	7,996	11,031	1,319	2,353	2,246	1,835	30,684	816	2,471
2007 actual	146,520	85,355	61,165	8,996	11,347	1,985	2,164	2,014	1,425	30,546	847	1,841
2008 actual	146,086	86,128	59,958	9,113	10,797	2,100	2,228	2,020	1,430	29,555	896	1,818
2009 total	164,292	85,642	78,650	14,128	9,060	3,794	2,615	2,249	1,461	42,051	943	2,349
Actual	145,553	85,342	60,211	9,941	8,374	2,234	2,371	2,073	1,357	30,989	943	1,929
ARRA	18,739	300	18,439	4,187	686	1,560	244	176	104	11,062	0	420
2010 actual	147,677	86,040	61,637	10,418	8,161	2,548	2,409	2,187	1,504	31,420	1,025	1,965
2011 actual	140,392	80,928	59,464	10,289	8,419	2,202	2,250	1,719	1,381	30,134	1,128	1,942
2012 actual	137,363	76,333	61,030	10,069	10,322	2,132	2,198	1,916	1,444	30,018	1,109	1,822
2013 actual	124,438	66,486	57,952	9,036	9,840	2,150	2,037	1,708	1,277	28,367	1,093	2,443
2014 actual	125,980	65,685	60,295	9,737	10,389	2,227	2,154	1,922	1,182	28,774	1,019	2,891
2015 preliminary	125,225	64,844	60,382	9,749	10,616	2,216	2,204	1,955	1,214	28,705	995	2,728
2016 proposed	131,630	69,013	62,617	10,072	10,776	2,689	2,451	2,322	1,341	29,154	1,031	2,782
Average growth (%)												
2006–10[b]	0.6	0.8	0.4	6.8	-7.3	17.9	0.6	-0.7	-4.9	0.6	5.9	-5.6
2010–13[b]	-5.5	-8.2	-2.0	-4.6	6.4	-5.5	-5.4	-7.9	-5.3	-3.3	2.2	7.5
Percent change												
2013–14	1.2	-1.2	4.0	7.8	5.6	3.6	5.7	12.5	-7.4	1.4	-6.8	18.3
2014–15	-0.6	-1.3	0.1	0.1	2.2	-0.5	2.3	1.7	2.7	-0.2	-2.4	-5.6
2015–16	5.1	6.4	3.7	3.3	1.5	21.3	11.2	18.8	10.5	1.6	3.6	2.0

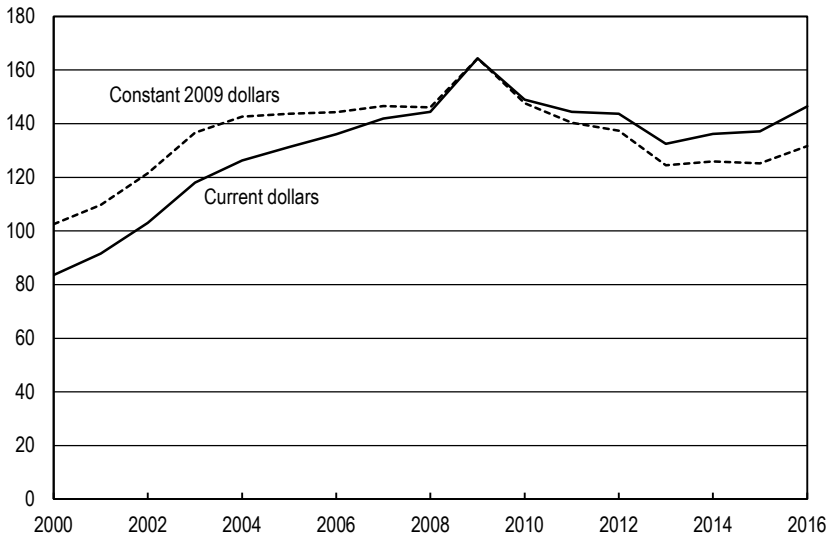
ARRA = American Recovery and Investment Act of 2009.

[a] Other includes 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 2015.

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.

FIGURE 1. Federal budget authority for R&D and R&D plant: FYs 2000–16



NOTES: Data show budget information collected through July 2015. Data for FY 2000–14 are final appropriations, those for FY 2015 are preliminary, those for FY 2016 are as proposed by the President's *Budget of the United States Government, Fiscal Year 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.

sions of the Budget Control Act; the enacted spending bills also brought on a new round of budget caps and cuts covering a second 10-year period starting in FY 2013. Congress and the Obama administration were unable to agree on alternative budget plans to meet the discretionary spending caps, and the automatic across-the-board spending cuts ("budget sequestration") on security and nonsecurity programs specified by the BCA began to take effect in summer 2013. This time, the impact on budget authority for R&D and R&D plant was an $11.3 billion decline—most of which resulted from these government-wide budget cuts, although the Congress also imposed additional R&D-specific funding reductions through the regular appropriations process.

More favorable circumstances emerged in FYs 2014 and 2015, when negotiations between the Senate and House of Representatives in fall 2013 yielded the Bipartisan Budget Act of 2013, which tempered the previously set BCA limits on discretionary spending in FYs 2014 and 2015. The FY 2014 budget (enacted January 2014) yielded a $3.7 billion increase over the FY 2013 level in the total funding for R&D and R&D plant. The FY 2015 budget (enacted December 2014) provides an estimated $1.0 billion increase in the R&D and R&D plant funding level (which does not, however, outpace the rate of inflation).

The President's proposed budget for the federal government in FY 2016 calls for a $9.3 billion funding increase for R&D and R&D plant, to $146.5 billion (6.8% higher than FY 2015). With the terms of the Bipartisan Budget Act expired, the schedule of budget caps and funding cuts imposed by the BCA would return in FY 2016 and beyond. The President's proposed budget for FY 2016 departs from the BCA terms and would increase the spending cap by $71 billion. Such a budget departure would require legislation from the Congress. Even with the President's proposed increase, the total of R&D and R&D plant in FY 2016 would still be about 11% below the FY 2010 level, after adjustment for inflation.

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 $136.2 billion total for federal budget authority in FY 2014 consisted of $133.5 billion for R&D and $2.6 billion for R&D plant (table 2). The corresponding levels in FY 2015 were $134.7 billion for R&D and $2.4 billion for R&D plant. The President's proposed levels for FY 2016 are $143.7 billion for R&D and $2.8 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 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 that year (table 1, table 3). In FY 2014, amidst the sizable drop in budget authority to $71.0 billion, the National defense category was still 52.1% of the $136.2 billion total that year.

The balance of the budget authority total ($62.2 billion in FY 2010, and $65.2 billion in FY 2014) 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

TABLE 2. Federal budget authority for R&D and R&D plant, by funding category: FYs 2006–16
(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)	Agri-culture (350)	Trans-portation (400)	Health (550)	Veterans benefits and services (700)	Other[a]
						R&D						
2006 actual	131,624	78,037	53,587	6,691	8,204	1,195	2,120	1,869	1,711	28,797	769	2,231
2007 actual	138,087	82,272	55,815	7,809	9,024	1,893	1,936	1,857	1,361	29,461	820	1,654
2008 actual	140,113	84,713	55,400	8,234	8,323	1,896	2,106	1,864	1,394	29,063	886	1,634
2009 total	156,009	85,166	70,843	11,840	6,891	3,318	2,245	1,935	1,440	40,389	943	1,842
Actual	140,903	84,866	56,037	8,885	6,205	2,014	2,171	1,935	1,336	30,827	943	1,721
ARRA	15,106	300	14,806	2,955	686	1,304	74	0	104	9,562	0	121
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 preliminary	134,749	70,770	63,979	9,607	11,565	2,407	2,209	1,991	1,305	31,271	1,059	2,565
2016 proposed	143,686	76,376	67,310	10,030	11,854	2,970	2,395	2,255	1,460	32,264	1,114	2,968
						R&D plant						
2006 actual	4,395	700	3,695	848	2,197	49	99	249	19	135	0	99
2007 actual	3,803	386	3,417	903	1,964	29	160	93	19	120	0	129
2008 actual	4,278	416	3,862	773	2,349	180	96	133	19	149	0	163
2009 total	8,283	476	7,807	2,288	2,169	476	370	314	21	1,662	0	507
Actual	4,650	476	4,174	1,056	2,169	220	200	138	21	162	0	208
ARRA	3,633	0	3,633	1,232	0	256	170	176	0	1,500	0	299
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 preliminary	2,423	260	2,163	1,072	64	20	205	151	25	172	31	423
2016 proposed	2,792	422	2,370	1,178	137	22	332	329	32	179	33	128

ARRA = American Recovery and Investment Act of 2009.

[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 2015.

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still large, at $31.1 billion (22.8%) in FY 2014. The Space flight, research, and supporting activities and General science and basic research categories are also sizable: $11.2 billion (8.2%) and $10.5 billion (7.7%), respectively, in FY 2014. Energy, Natural resources and environment, Agriculture, Transportation, and Veteran's 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; and Medicare.

The National defense category has borne the brunt of the declines in the R&D and R&D plant total since FY 2010. National defense dropped from $86.8 billion in FY 2010 to $71.0 billion in FY 2014, while the nondefense total

TABLE 3. Distribution of federal budget authority for R&D and R&D plant budget, by budget function: FYs 2006–16
(Percent)

2014 rank	Budget function	2006 actual	2007 actual	2008 actual	2009 Actual	2009 ARRA	2010 actual	2011 actual	2012 actual	2013 actual	2014 actual	2015 preliminary	2016 proposed
	All functions conducting R&D	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1	National defense (050)	57.9	58.3	59.0	58.6	1.6	58.3	57.6	55.6	53.4	52.1	51.8	52.4
2	Health (550)	21.3	20.8	20.2	21.3	59.0	21.3	21.5	21.9	22.8	22.8	22.9	22.1
3	Space flight, research, and related (252)	7.6	7.7	7.4	5.8	3.7	5.5	6.0	7.5	7.9	8.2	8.5	8.2
4	General science and basic research (251)	5.5	6.1	6.2	6.8	22.3	7.2	7.3	7.3	7.3	7.7	7.8	7.7
5	Energy (270)	0.9	1.4	1.4	1.5	8.3	1.7	1.6	1.6	1.7	1.8	1.8	2.0
6	Natural resources and environment (300)	1.6	1.5	1.5	1.7	1.3	1.6	1.6	1.6	1.6	1.7	1.8	1.9
7	Agriculture (350)	1.6	1.4	1.4	1.4	0.9	1.5	1.2	1.4	1.4	1.5	1.6	1.8
8	Transportation (400)	1.3	1.0	1.0	0.9	0.6	1.0	1.0	1.1	1.0	0.9	1.0	0.8
9	Veterans benefits and services (700)	0.6	0.6	0.6	0.7	0.0	0.7	0.8	0.8	0.9	0.8	0.8	0.9
10	Commerce and housing credit (370)	0.3	0.4	0.4	0.4	2.2	0.4	0.5	0.5	0.6	0.7	0.6	0.9
11	Administration of justice (750)	0.7	0.3	0.2	0.2	0.0	*	0.1	0.1	0.6	0.8	0.7	0.4
12	Education, training, employment, and social services (500)	0.4	0.4	0.4	0.4	0.1	0.4	0.4	0.4	0.4	0.4	0.4	0.4
13	International affairs (150)	0.2	0.2	0.2	0.2	0.0	0.1	0.1	0.2	0.3	0.3	0.3	0.3
14	Medicare (570)	na	na	na	*	0.0	*	0.1	0.1	0.1	*	*	0.0
15	Community and regional development (450)	*	*	*	*	0.0	0.1	0.1	*	*	*	0.1	0.1
16	Income security (600)	*	*	*	*	0.0	0.1	*	*	*	*	0.1	0.1

* = less than 0.05%; na = not applicable.

ARRA = American Recovery and Reinvestment Act of 2009.

NOTES: Detail may not add to total because of rounding. Data show budget information collected through July 2015. Data for FY 2006–14 are final appropriations, those for FY 2015 are preliminary, those for FY 2016 are as proposed by the President's *Budget of the United States Government, Fiscal Year 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.

increased modestly from $62.2 billion in FY 2010 to $65.2 billion in FY 2014 (table 1). These differences are more apparent when the dollars are adjusted for inflation (table 1, figure 2).

Funding Trends in the Largest Budget Functions: FYs 2014–16[2]

National Defense

Budget authority for R&D and R&D plant directed at National defense in FY 2015 totaled an estimated $71.0 billion, only slightly above the FY 2014 level (table 1, figure 3). The President's proposed level for FY 2016 is an increase to $76.8 billion (higher by 8.1%, well ahead of an expected 1.6% inflation rate). By comparison, this category was $86.8 billion in FY 2010.

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 ($66.0 billion of the $71.0 billion category total in FY 2014, and $66.3 billion of $71.0 billion in FY 2015). RDT&E funding includes a broad spectrum of activities ranging from basic research to operational system development (OSD). In recent years, the latter has accounted for 37%, or $24 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.

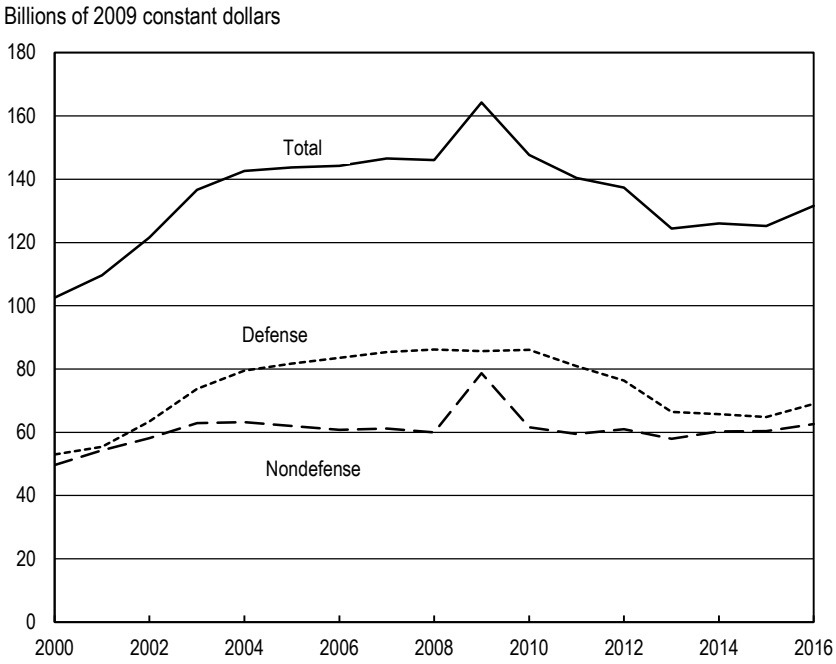
R&D on atomic energy defense in the Department of Energy is a smaller but still sizable component of the defense category ($5.0 billion in FY 2014, and $4.8 billion in FY 2015). The two largest elements are weapons activities ($3.6 billion in FY 2014, and $3.3 billion in FY 2015) and development of naval reactors ($1.1 billion in FY 2014 and $1.2 billion in 2015).

Health

Budget authority for Health R&D and R&D plant in FY 2015 was $31.4 billion (22.9% of the total), $0.3 billion above the $31.1 billion in FY 2014—a 1.1% increase, but behind the pace of inflation. The President's proposed funding for FY 2016 is an increase to $32.4 billion, a 3.2% increase, which does outpace the rate of inflation.

The National Institutes of Health (NIH) is the predominant recipient in this category: $29.3 billion in FY 2014,

FIGURE 2. Federal budget authority for R&D and R&D plant, defense and nondefense: FYs 2000–16



NOTES: Data show budget information collected through July 2015. Data for FY 2000–14 are final appropriations, those for FY 2015 are preliminary, those for FY 2016 are as proposed by the President's *Budget of the United States Government, Fiscal Year 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.

$29.5 billion in FY 2015, and a proposed $30.5 billion in FY 2016. This NIH funding is spread across multiple disease categories, with its National Cancer Institute (NCI) and National Institutes of Allergy and Infectious Diseases (NIAID) 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, Agency for Healthcare Research and Quality, 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 $11.6 billion in FY 2015, a 3.6% increase (ahead of the pace of inflation) over the FY 2014 level of $11.2 billion. The President's proposed funding level for FY 2016, however, is even higher at $12.0 billion. National Aeronautics and Space Administration programs account for the entire amount. This category's share of the total was 8.2% in FY 2014 and 8.5% in FY 2015 (table 3).

General Science and Basic Research

Budget authority for the General science and basic research category totaled $10.7 billion in FY 2015 and accounted for 7.8% of the total of R&D and R&D plant that year.[3] This was an increase of only $0.2 billion over the $10.5 billion level in FY 2014—up by 1.5%, only slightly ahead of the rate of inflation. The category's level in FY 2010 was $10.5 billion. The level proposed for FY 2016 is an increase to $11.2 billion—a rise of 5.0%, well ahead the rate of inflation. 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 $5.8 billion in FY 2014 and $6.0 billion in FY 2015—that is, over half of the category's budget authority total throughout. The Department of Energy's Office of Science was allotted $4.7 billion in FY 2014, and slightly below $4.7 billion in FY 2015.

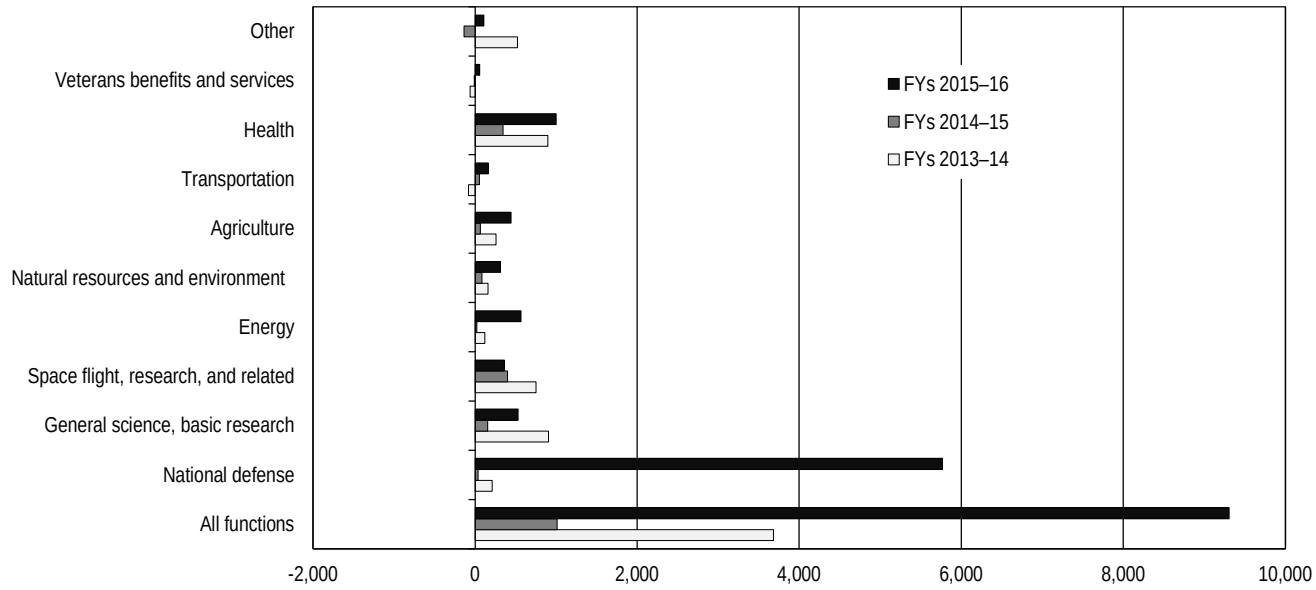
Energy

Budget authority for R&D and R&D plant in this functional category was $2.4 billion in FY 2015, a slight increase over the also $2.4 billion in FY 2014—and a slight decrease on an inflation-adjusted basis. The President's proposed budget for FY 2016 calls for an increase to $3.0 billion, which exceeds the rate of inflation. 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 (just over $2.3 billion in both FYs 2014 and 2015). 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 2015 was $2.4 billion, up from $2.3 billion in FY 2014. The proposed level for FY 2016 is $2.7 billion. Both of these increases 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

FIGURE 3. Federal budget authority for R&D and R&D plant, change over previous fiscal year: FYs 2013–16
(Millions of dollars)



NOTES: Data show budget information collected through July 2015. Data for FY 2006–14 are final appropriations, those for FY 2015 are preliminary, those for FY 2016 are as proposed by the President's *Budget of the United States Government, Fiscal Year 2016.* Other includes 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 the Office of Management and Budget per MAX Schedule C, agencies' budget justification documents, and supplemental data obtained from agencies' budget offices.

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.

Agriculture

Budget authority for this category was $2.1 billion in FY 2015, only slightly higher than the $2.1 billion in 2014. The proposed level for FY 2016 is $2.6 billion—a 20.6% 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.

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 experimental 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 chiefly 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 2015. The data through FY 2014 are final appropriations. The statistics for FY 2015 draw on the federal budget as enacted by the President and the Congress in December 2015 (through the Consolidated and Further Continuing Appropriations Act of 2015, P.L. 113-235) and on associated estimates of agency spending plans. Accordingly, these

budget numbers are marked "preliminary." The figures for FY 2016 draw mainly from the President's proposed budget of the U.S. government for FY 2016 (publicly released 2 February 2015), but these figures 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 2016* (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" (http://www.whitehouse.gov/sites/default/files/omb/assets/a11_current_year/s84.pdf).

A full set of detailed tables on federal budget authority for R&D in FYs 2014 and 2015 and also the President's proposed levels for FY 2016 are available in a companion statistical report, *Federal R&D Funding, by Budget Function: Fiscal Years 2014–16*, 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

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2. For agency and program details cited in this section see the companion NCSES report with detailed statistical tables mentioned just above.

3. 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 the category funding totals there.

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