



Federal Budget Authority for R&D in FY 2014 Rises Slightly Above the FY 2013 Level; Extent of Increase in FY 2015 Uncertain

by Mark Boroush¹

New data indicate that federal budget authority for research and development and R&D plant together totaled an estimated \$135.7 billion (current dollars, preliminary data) in FY 2014, an increase of \$3.2 billion (2.4%) over the FY 2013 level (table 1). Nonetheless, this increase only partially offset the successive declines experienced in FY 2011 (down \$4.6 billion), FY 2012 (down \$0.6 billion), and FY 2013 (down \$11.3 billion). These funding cuts have fallen much more heavily on National defense than on the nondefense budget functions.

The President's proposed budget for the federal government in FY 2015 calls for \$136.5 billion in funding for R&D and R&D plant, an increase of \$0.8 billion over the previous year. The President's budget also proposes a separate Opportunity, Growth, and Security Initiative (OGSI) that includes an additional \$5.3 billion for R&D and R&D plant in FY 2015.² Implementation of this added funding, however, would require congressional action to raise the spending limit already enacted for discretionary spending that year. The specifics of the federal budget for FY

2015 remain in debate in the Congress as this report is published.

Recent Trends in Overall Budget Authority

Total of R&D and R&D Plant

Fiscal years 2005–10 marked a period of consistently increasing federal funding for R&D. Budget authority for the total of R&D and R&D plant rose by several billion dollars or more in each of these years (table 1). Year-over-year increases averaged 2.6% annually (or 0.5% annually, when adjusted for inflation). The \$164.3 billion in budget authority for FY 2009 remains a high-water mark—the result of \$145.6 billion for R&D and R&D plant through the normal congressional appropriations process, along with a one-time \$18.7 billion increase through the American Recovery and Reinvestment Act of 2009 (ARRA).

In stark contrast, since FY 2010 there has been continuing decline in the level of federal R&D funding. Budget authority for R&D and R&D plant dropped by \$4.6 billion in FY 2011, down to a total of \$144.4 billion. In FY 2012, there was an additional decline

of \$0.6 billion, down to \$143.7 billion. In FY 2013, there was an even steeper decline of \$11.3 billion, down to \$132.5 billion for the year. The preliminary FY 2014 level increased by \$3.2 billion, up to \$135.7 billion, but this only partially offset the cumulative loss since FY 2010. When adjusted for inflation (table 1), the FY 2014 total is 15% below the FY 2010 level.

The federal budget for FY 2011 (enacted April 2011) imposed \$38.5 billion in reductions in FY 2011 spending levels throughout the government, which then gave rise to a decline of \$4.6 billion in budget authority for R&D and R&D plant. Congress also enacted the Budget Control Act of 2011 (passed August 2011), which was intended to address the then-ongoing national debt ceiling crisis. This act established a schedule of budget caps and spending cuts to continue over a 10-year period beginning with FY 2012. The FY 2012 budget (enacted November–December 2011), in keeping with the Budget Control Act's provisions, imposed a further \$67 billion reduction in federal spending. The associated reduction in budget authority

TABLE 1. Federal budget authority for R&D plus R&D plant, by budget function: FYs 2005–15

Fiscal year	Nondefense											
	All functions	National defense (050)	Total	General science, basic research (251)	Space flight, research, supporting activities (252)	Energy (270)	Natural resources, environment (300)	Agri-culture (350)	Trans- portation (400)	Health (550)	Veterans benefits, services (700)	Other ^a
Current \$millions												
2005 actual	131,259	74,641	56,618	7,477	9,656	1,324	2,245	2,094	1,866	29,129	742	2,085
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 preliminary	135,665	70,724	64,941	10,207	11,015	2,399	2,378	2,088	1,367	31,196	1,173	3,118
2015 proposed	136,457	70,753	65,704	10,279	11,124	2,679	2,459	2,143	1,348	31,491	1,178	3,003
Average annual growth, 2005–10 ^b (%)	2.6	3.1	1.9	7.0	-3.1	14.2	1.6	1.0	-4.1	1.7	6.9	-1.0
Percent change												
2010–11	-3.1	-4.1	-1.6	0.7	5.2	-11.9	-4.8	-19.9	-6.4	-2.2	12.2	0.8
2011–12	-0.4	-4.0	4.4	-0.4	24.8	-1.5	-0.6	13.4	6.4	1.4	0.0	-4.5
2012–13	-7.8	-11.4	-3.4	-8.7	-3.0	2.6	-5.7	-9.3	-10.1	-3.9	0.3	36.4
2013–14	2.4	-0.1	5.3	6.1	5.1	4.8	9.6	14.9	0.6	3.3	0.8	19.9
2014–15	0.6	0.0	1.2	0.7	1.0	11.7	3.4	2.6	-1.4	0.9	0.4	-3.7
FY 2009 constant \$millions												
2005 actual	143,735	81,736	62,000	8,188	10,574	1,450	2,458	2,293	2,043	31,898	813	2,283
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	124,719	66,636	58,083	9,057	9,863	2,155	2,042	1,712	1,279	28,432	1,096	2,449
2014 preliminary	125,837	65,601	60,237	9,468	10,217	2,225	2,206	1,937	1,268	28,936	1,088	2,892
2015 proposed	124,436	64,520	59,916	9,374	10,144	2,443	2,242	1,954	1,229	28,717	1,074	2,738
Average annual growth, 2005–10 ^b (%)	0.5	1.0	-0.1	4.9	-5.0	11.9	-0.4	-0.9	-5.9	-0.3	4.7	-3.0
Percent change												
2010–11	-4.9	-5.9	-3.5	-1.2	3.2	-13.6	-6.6	-21.4	-8.2	-4.1	10.0	-1.2
2011–12	-2.2	-5.7	2.6	-2.1	22.6	-3.2	-2.3	11.5	4.6	-0.4	-1.7	-6.2
2012–13	-9.2	-12.7	-4.8	-10.1	-4.4	1.1	-7.1	-10.6	-11.4	-5.3	-1.2	34.4
2013–14	0.9	-1.6	3.7	4.5	3.6	3.2	8.0	13.1	-0.9	1.8	-0.7	18.1
2014–15	-1.1	-1.6	-0.5	-1.0	-0.7	9.8	1.6	0.9	-3.1	-0.8	-1.3	-5.3

ARRA = American Recovery and Reinvestment 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), and Administration of justice (750).^b Calculated as the compound average annual growth rate over the 2005–10 period.

NOTES: Data show budget information collected through July 2014. Data for FYs 2005–13 are final appropriations. The President's budget for FY 2015 also proposed an additional \$5.3 billion for R&D and R&D plant as part of the Opportunity, Growth, and Security Initiative. There is, however, insufficient information to break down this extra package by budget function, and this spending is not included above.

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.

for R&D and R&D plant, however, proved to be only a modest \$0.6 billion decline.

The FY 2013 federal budget (enacted through spending bills in September 2012 and March 2013) was also influenced by the budget-cutting provisions of the Budget Control Act and brought on further budget caps and cuts covering a second 10-year period starting in FY 2013. The American Taxpayer Relief Act of 2012 (enacted January 2013) included provisions that slightly delayed (from January to March 2013) the onset of the mandatory spending cuts for FY 2013 under the Budget Control Act. Nonetheless, 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 Budget Control Act 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 the comprehensive budget cuts, although Congress did also impose some further R&D-specific funding reductions through the regular appropriations process.

Senate and House of Representatives negotiations in fall 2013 yielded the Bipartisan Budget Act of 2013, which tempered the previously set limits on discretionary spending in FYs 2014 and 2015. The FY 2014 budget (enacted January 2014) was more favorable for R&D and R&D plant funding, yielding a \$3.2 billion increase over the FY 2013 level.

The President’s proposed budget for the federal government in FY 2015 calls for funding for R&D and R&D plant totaling \$136.5 billion (0.6%

higher than FY 2014). This amount is consistent with the House and Senate budget agreement in late December 2013 (Bipartisan Budget Act of 2013). Even so, this increase would be well behind the expected rate of inflation (1.7%) in FY 2015. Should Congress act favorably on the President’s OIGSI proposal, there would be an additional \$5.3 billion for R&D and R&D plant in FY 2015, bumping up that year’s budget authority total to \$141.8 billion, a 4.5% rise over the FY 2014 level.

R&D Plant

R&D plant is an essential input for R&D activity, even if R&D is by far the more sizable component in the funding picture. The \$132.5 billion total for federal budget authority in FY 2013 consisted of \$130.9 billion for R&D and \$1.6 billion for R&D plant (table 2). The corresponding levels in FY 2014 were \$133.1 billion for R&D and \$2.6 billion for R&D plant. The President’s proposed levels for FY 2015 are \$134.0 billion for R&D and \$2.5 billion for R&D plant.

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

Distribution of Funding, by Budget Function

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 2013, despite a sizable drop in budget authority to \$70.8 billion, the National

defense category was still 53.4% of the \$132.5 billion total that year.

The balance of the budget authority total (\$62.2 billion in FY 2010, and \$61.7 billion in FY 2013) falls among 15 or more nondefense functional categories. Health is the largest of these—substantially fewer dollars than National defense, but still large, at \$30.2 billion (22.8%) in FY 2013. The Space flight, research, and supporting activities and General science and basic research categories are also sizable: \$10.5 billion (7.9%) and \$9.6 billion (7.3%), respectively, in FY 2013. Energy, Natural resources and environment, Agriculture, Transportation, and Veteran’s benefits and services each have budget authority in the range from \$1 billion to several billion dollars annually. Budget authority ranges from somewhat under to well under \$1 billion annually for the remaining nondefense categories: Education, training, employment, and social services; Commerce and housing credit; International affairs; Administration of justice; Medicare; Community and regional development; and Income security (table 1).

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 \$70.7 billion in FY 2014, while the nondefense total increased modestly from \$62.2 billion in FY 2010 to \$64.9 billion in FY 2014 (table 1). The effect is more apparent when the dollars are adjusted for inflation, as seen in figure 1, which provides time-series plots for the budget authority total, National defense, and the sum of all the nondefense categories. The nondefense categories account for most of the increase from the ARRA funding in FY 2009 and then remain largely flat over the next five fiscal years.

TABLE 2. Federal budget authority for R&D and R&D plant, by budget function and funding category: FYs 2005–15
(Millions of current dollars)

Fiscal year	Nondefense											
	All functions	National defense (050)	Total	General science, basic research (251)	Space flight, research, supporting activities (252)	Energy (270)	Natural resources, environment (300)	Agriculture (350)	Transportation (400)	Health (550)	Veterans benefits, services (700)	Other ^a
R&D												
2005 actual	126,601	74,047	52,554	6,570	7,300	1,296	2,168	1,820	1,847	28,824	742	1,987
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 preliminary	133,103	70,338	62,765	9,188	10,847	2,379	2,205	2,020	1,348	31,024	1,173	2,581
2015 proposed	134,005	70,319	63,686	9,271	11,053	2,660	2,249	2,076	1,307	31,319	1,178	2,573
R&D plant												
2005 actual	4,658	594	4,064	907	2,356	28	77	274	19	305	0	98
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 ^b	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 preliminary	2,562	386	2,176	1,019	168	20	173	68	19	172	0	537
2015 proposed	2,452	434	2,018	1,008	71	19	210	67	41	172	0	430

ARRA = American Recovery and Reinvestment Act of 2009.

^a Other includes International affairs (150), Commerce and housing credit (370), Community and regional development (450), Education, training, employment, and social services (500), Medicare (570), Income security (600), and Administration of justice (750).

^b The Agricultural Research Service received \$82 million for R&D plant in FY 2011, but this was offset by \$230 million of rescissions in prior-year R&D plant funding.

NOTES: Data show budget information collected through July 2014. Data for FYs 2005–13 are final appropriations. The President's budget for FY 2015 also proposed an additional \$5.3 billion for R&D and R&D plant as part of the Opportunity, Growth, and Security Initiative. There is, however, insufficient information to break down this extra package by budget function, and this spending is not included above.

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.

Developments in the Largest Budget Functions: FYs 2013–15

National Defense

Budget authority for R&D and R&D plant directed at National defense objectives in FY 2014 totaled \$70.7

billion, a slight decrease from \$70.8 billion in FY 2013 (table 1, figure 2). The proposed level for FY 2015 rises back to \$70.8 billion. By comparison, this category was \$86.8 billion in FY 2010. (Note: the data for FY 2015 cited here and thereafter reflect only the President's base funding proposal of

\$136.5 billion. The added \$5.3 billion under OGSi was not spelled out by the President's budget proposal in agency or budget function detail and could not be included.)

Most of the R&D dollars in the National defense category support mili-

TABLE 3. Distribution of federal budget authority for R&D and R&D plant budget, by budget function: FYs 2005–15 (Percent)

2013 rank	Budget function	2005	2006	2007	2008	2009		2010	2011	2012	2013	2014	2015
		actual	actual	actual	actual	Actual	ARRA	actual	actual	actual	actual	preliminary	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)	56.9	57.9	58.3	59.0	58.6	1.6	58.3	57.6	55.6	53.4	52.1	51.9
2	Health (550)	22.2	21.3	20.8	20.2	21.3	59.0	21.3	21.5	21.9	22.8	23.0	23.1
3	Space flight, research, and supporting activities (252)	7.4	7.6	7.7	7.4	5.8	3.7	5.5	6.0	7.5	7.9	8.1	8.2
4	General science and basic research (251)	5.7	5.5	6.1	6.2	6.8	22.3	7.2	7.3	7.3	7.3	7.5	7.5
5	Energy (270)	1.0	0.9	1.4	1.4	1.5	8.3	1.7	1.6	1.6	1.7	1.8	2.0
6	Natural resources and environment (300)	1.7	1.6	1.5	1.5	1.7	1.3	1.6	1.6	1.6	1.6	1.8	1.8
7	Agriculture (350)	1.6	1.6	1.4	1.4	1.4	0.9	1.5	1.2	1.4	1.4	1.5	1.6
8	Transportation (400)	1.4	1.3	1.0	1.0	0.9	0.6	1.0	1.0	1.1	1.0	1.0	1.0
9	Veterans benefits and services (700)	0.6	0.6	0.6	0.6	0.7	0.0	0.7	0.8	0.8	0.9	0.9	0.9
10	Commerce and housing credit (370)	0.4	0.3	0.4	0.4	0.4	2.2	0.4	0.5	0.5	0.6	0.7	0.7
11	Administration of justice (750)	0.6	0.7	0.3	0.2	0.2	0.0	*	0.1	0.1	0.6	0.8	0.7
12	Education, training, employment, and social services (500)	0.4	0.4	0.4	0.4	0.4	0.1	0.4	0.4	0.4	0.4	0.4	0.4
13	International affairs (150)	0.2	0.2	0.2	0.2	0.2	0.0	0.1	0.1	0.2	0.3	0.2	0.2
14	Medicare (570)	na	na	na	na	*	0.0	*	0.1	0.1	0.1	0.1	0.1
15	Community and regional development (450)	*	*	*	*	*	0.0	0.1	0.1	*	*	*	0.1
16	Income security (600)	*	*	*	*	*	0.0	0.1	*	*	*	*	0.1

* = amount 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 2014. Data for FYs 2005–13 are final appropriations. The President's budget for FY 2015 also proposed an additional \$5.3 billion for R&D and R&D plant as part of the Opportunity, Growth, and Security Initiative. There is, however, insufficient information to break down this extra package by budget function, and this spending is not included above.

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tary research, development, test, and evaluation (RDT&E) programs at the Department of Defense (\$63.3 billion of the \$70.8 billion category total in FY 2013, and \$62.9 billion of \$70.7 billion in FY 2014). The Air Force and Navy have the largest shares, but the Army and several defense agencies (notably the Defense Advanced Research Projects Agency and the Missile Defense Agency) are also significantly involved.

R&D on atomic energy defense in the Department of Energy is a smaller but still sizable component of the defense category (\$4.2 billion in FY 2013, and \$4.4 billion in FY 2014). The two largest elements are weapons activities (\$3.0 billion in FY 2013, and \$3.1 billion in FY 2013) and development of naval reactors (\$0.9 billion in both FY 2013, and \$1.1 billion in 2014).

Health

Budget authority for Health R&D and R&D plant in FY 2014 was \$31.2 billion (23.0% of the total), nearly \$1 billion greater than the \$30.2 billion in FY 2013—a 3.3% increase, well ahead of the pace of inflation. The President's proposed funding (base) for FY 2015 is a small increase to \$31.5 billion but does not outpace inflation.

The National Institutes of Health is the predominant funder in this category: \$28.3 billion in FY 2013, \$29.3 billion in FY 2014, and a proposed \$29.5 billion in FY 2015. This category also includes the R&D programs of several other Department of Health and Human Services agencies (the Food and Drug Administration, Agency for Healthcare Research and Quality, Centers for Disease Control and Prevention); the

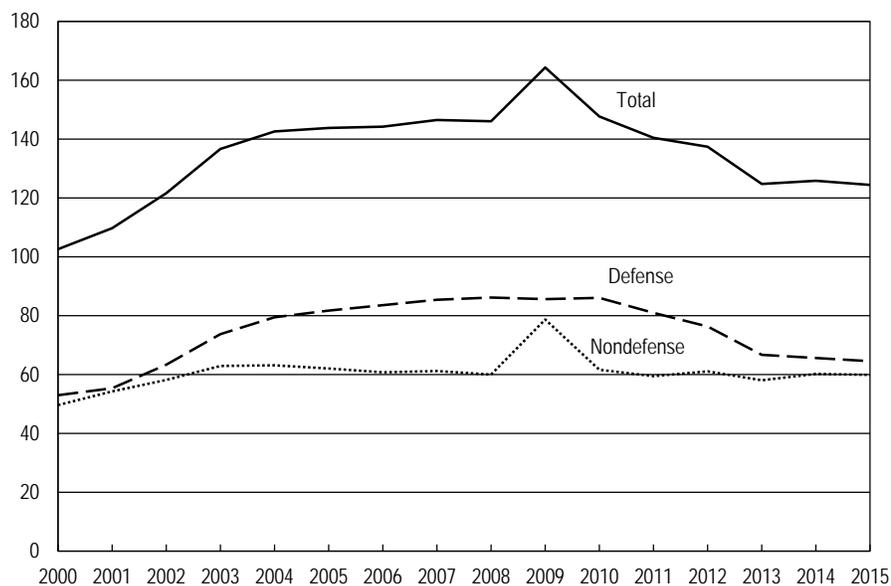
Consumer Product Safety Commission; and the Department of Labor's Occupational Safety and Health Administration.

Space Flight, Research, and Supporting Activities

Budget authority for Space flight, research, and supporting activities was \$11.0 billion in FY 2014, a 5.1% increase (exceeding the pace of inflation) over the FY 2013 level of \$10.5 billion. The President's proposed funding level for FY 2015 (base), however, is only slightly higher at \$11.1 billion (an increase that falls below the rate of inflation). National Aeronautics and Space Administration programs account for the entire amount. This category's share of the total was 7.9% in FY 2013 and 8.1% in FY 2014. The proposed funding for

FIGURE 1. Federal budget authority for R&D and R&D plant, defense and nondefense: FYs 2000–15

Billions of 2009 constant



NOTES: Data show budget information collected through July 2014. Data for FYs 2000–13 are final appropriations. The President’s budget for FY 2015 also proposed an additional \$5.3 billion for R&D and R&D plant as part of the Opportunity, Growth, and Security Initiative. There is, however, insufficient information to break down this extra package by budget function, and this spending is not included above.

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FY 2015 would put its share of the total at 8.2% (table 3).

General Science and Basic Research

Budget authority for R&D and R&D plant for the General science and basic research category totaled \$10.2 billion in FY 2014 and accounted for 7.5% of the total of R&D and R&D plant that year.³ This was an increase of \$0.6 billion over the \$9.6 billion level in FY 2013—up by 6.1%, and well ahead of the 1.5% rate of inflation. Nevertheless, it remains below the \$10.5 billion level in FY 2010. The level proposed for FY 2015 is an increase to \$10.3 billion; although 7.5% of the total, the increase did not surpass 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 \$5.3 billion in FY 2013, \$5.6 billion in FY 2014, and a proposed \$5.6 billion in FY 2015—somewhat over half of the category’s budget authority total throughout. The Department of Energy’s Office of Science was allotted \$4.3 billion in FY 2013, \$4.7 billion in FY 2014, and a proposed \$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 2014, a small increase over \$2.3 billion in FY 2013 but well ahead of the pace of inflation. The President’s proposed budget for FY 2015 calls for an increase to \$2.7 billion, which also well exceeds

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 under \$2.3 billion in FY 2014). This category also includes smaller R&D funding levels for the Nuclear Regulatory Commission and the Tennessee Valley Authority.

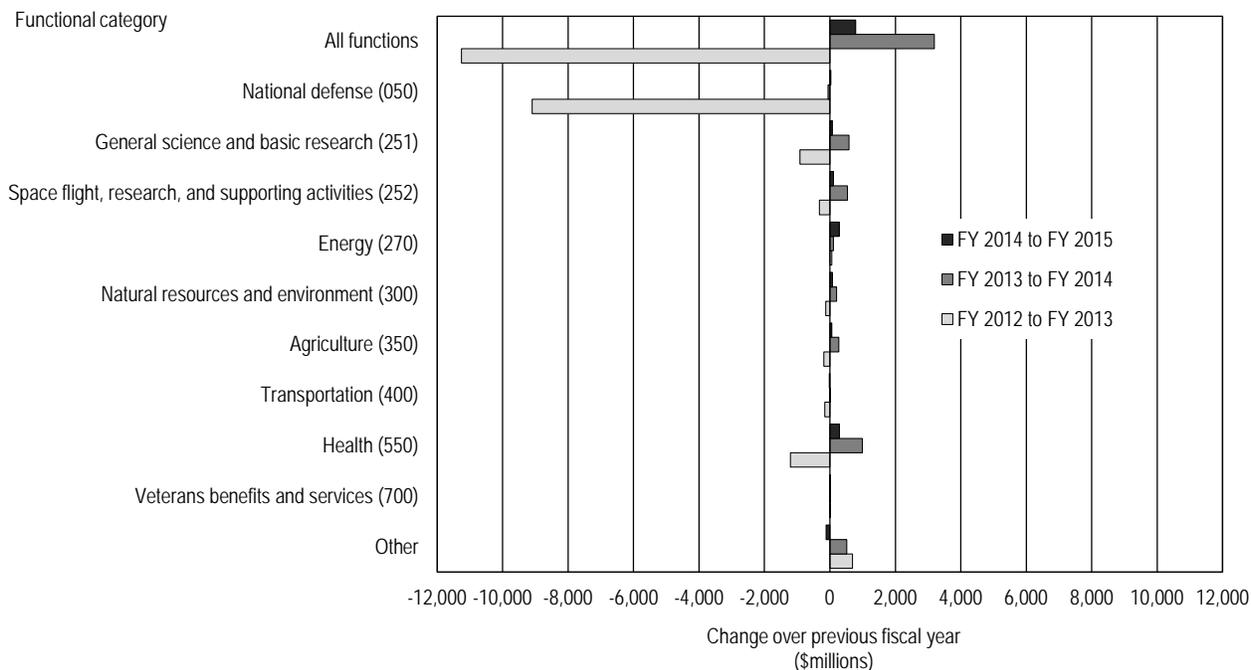
Natural Resources and Environment

Budget authority for this category in FY 2014 was \$2.4 billion, up from \$2.2 billion in FY 2013. The proposed level for FY 2015 is \$2.5 billion. Both of the 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 the Department of Commerce (chiefly, the National Oceanic and Atmospheric Administration); the Environmental Protection Agency, 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 2014, a nearly 15% increase over the \$1.8 billion in FY 2013. The proposed level for FY 2015 is somewhat over \$2.1 billion—a 2.6% increase, ahead of inflation. 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).

FIGURE 2. Federal budget authority for R&D and R&D plant, change over previous fiscal year: FYs 2012–15



NOTES: Data show budget information collected through July 2014. Data for FYs 2012–13 are final appropriations. The President's budget for FY 2015 also proposed an additional \$5.3 billion for R&D and R&D plant as part of the Opportunity, Growth, and Security Initiative. There is, however, insufficient information to break down this extra package by budget function, and this spending is not included above. "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), and Administration of justice (750).

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.

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. There currently are 20 such broad functional categories, most with a number of subfunctions. R&D activities are currently present in 16 of these broad functional categories. The 17 categories discussed in this report include 15 of these broad categories plus one of the broad categories separated into its two subfunctions (see

endnote 3 below). 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 2015* (<http://www.whitehouse.gov/omb/budget/Historicals/>). For a further discussion of the recognition of R&D in these budget functions, see OMB's guidance in *Circular A-II, MAX Schedule C, "Research and Development Activities"* (http://www.whitehouse.gov/sites/default/files/omb/assets/a11_current_year/s84.pdf).

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 report 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 2014. The data through FY 2013 are final appropriations. The statistics for FY 2014 draw on the federal budget as enacted by Congress in January 2014 (through the Consolidated Appropriations Act of 2014) and on estimates of agency spending plans. Accordingly, these budget numbers are marked “preliminary.” The figures for FY 2015 draw mainly from the President’s proposed budget of the U.S. government for FY 2015 (publicly released 4 March 2014), 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.

A full set of detailed tables on federal budget authority for R&D in FYs

2013 and 2014 and also the President’s proposed levels for FY 2015 are available in a companion statistical report, *Federal R&D Funding, by Budget Function: Fiscal Years 2013–15*, accessible at <http://www.nsf.gov/statistics/fedbudget/>. 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. The President’s proposed Opportunity, Growth, and Security Initiative is described in fuller detail in *Budget of the United States Government, Fiscal Year 2015* (March 2014). See, in particular, <http://www.whitehouse.gov/omb/budget/>

presidents-message and <http://www.whitehouse.gov/sites/default/files/omb/budget/fy2015/assets/opportunity.pdf>.

3. The Office of Management and Budget’s broad category of General science, space, and technology (250) divides into 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 report. Furthermore, 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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