

FEDERAL R&D FUNDING DOWN IN FY 2007

by Melissa Pollak¹

The National Science Foundation (NSF) tracks federal funds obligated annually for research and development and R&D plant. The most recent data, for FY 2007, show an estimated \$116.4 billion in total obligations, almost the same level (\$116.9 billion) reported for the previous year. However, when the data are adjusted for inflation, they reflect a nearly 3% decrease in R&D and R&D plant obligations, the first such decline since FY 2000 (table 1). Both research (\$55.1 billion) and development (\$57.7 billion) are expected to be down from prior-year totals—2.2% and 3.5%, respectively—after adjustment for inflation.

Data presented here are from the NSF Survey of Federal Funds for Research and Development FY 2005–07. FY 2005 figures in this report are actual data, FY 2006 figures are preliminary, and FY 2007 figures are projections provided by the agencies surveyed. For the remainder of this report, discussions of changes in funding across years will be in terms of inflation-adjusted (or constant) dollars, and discussions of 2007 funding levels will be in current dollars.

Federal Funding for Research and Development

Federal research obligations have dropped each year since FY 2004, when these obligations were at their peak. Total research obligations dropped an estimated 7.2% between FY 2004 and FY 2007, with the largest decline attributable to the Department of Health and Human Services (HHS). HHS is the leading federal agency in terms of research support, accounting for an estimated 52% of the total federal research budget in FY 2007. Estimated HHS obligations for research in FY 2007 are

5.6% below FY 2004 (figure 1, table 1). Research obligations of most federal agencies have dropped or shown negligible increases between FY 2004 and FY 2007.

In addition to HHS, with an estimated \$28.8 billion in total FY 2007 research obligations, the leading research-funding agencies are Defense (\$6.5 billion), Energy (\$6.0 billion), the National Aeronautics and Space Administration (\$4.1 billion), the National Science Foundation (\$4.0 billion), and Agriculture (\$1.8 billion). Together, these six agencies account for 93% of projected FY 2007 federal research dollars (table 2).

Basic Research

After adjusting for inflation, no growth is expected in federal obligations for basic research between FY 2004 and FY 2007—in contrast to the periods FY 1998–2001 and 2001–04, when basic research obligations rose at average annual rates of 10.2% and 3.7%, respectively. Basic research obligations account for about one-fourth (24.3%) of total projected R&D and R&D plant in FY 2007, several percentage points higher than levels registered throughout the 1990s, but less than the 26.3% share recorded in FY 2002.

Applied Research

Federal obligations for applied research show a trend similar to that for basic research. After periods of substantial increases, especially during the early part of this decade, an average annual decline of 3.3% is expected between FY 2004 and FY 2007. Applied research obligations, as a percentage of the entire federal



R&D and R&D plant budget, are expected to fall from a peak of 27.1% in 2001 to 23.0% in 2007.

Development

FY 2007 obligations for development are expected to decline slightly to a level of \$57.7 billion. DOD accounts for most of federal development funding—an estimated 86.4% (or \$49.9 billion), due mostly to DOD's major

systems development projects, which are expected to amount to \$44.1 billion in FY 2007. DOD's funding of advanced technology development (\$5.8 billion) is expected to account for 10% of total federal development obligations. NASA is the second largest supporter of development (\$4.0 billion), followed by DOE (\$1.9 billion). After several years of substantial growth, averaging 10.8% per year between FY 2002 and FY 2005,

TABLE 1. Federal obligations for research and development and R&D plant, by character of work: FY 1990–2007

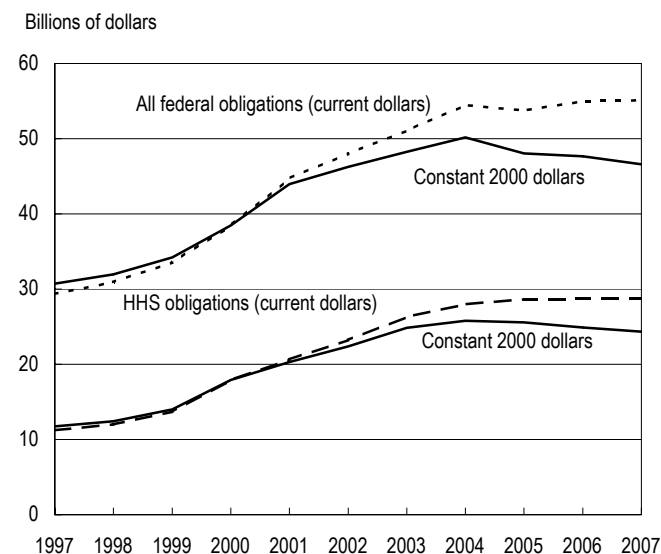
Fiscal year	All R&D and R&D plant	Research			Development	R&D plant
		Total	Basic	Applied		
Current \$millions						
1990	65,831	21,622	11,286	10,337	41,937	2,272
1991	64,148	23,968	12,171	11,798	37,327	2,853
1992	68,577	24,491	12,490	12,001	41,102	2,985
1993	70,415	26,890	13,399	13,491	40,424	3,101
1994	69,451	27,411	13,523	13,888	39,824	2,215
1995	70,443	28,434	13,877	14,557	39,752	2,256
1996	69,399	28,260	14,464	13,796	39,393	1,746
1997	71,753	29,365	14,942	14,423	40,461	1,927
1998	73,914	30,922	15,613	15,309	41,178	1,813
1999	77,386	33,528	17,444	16,084	41,813	2,046
2000 ^a	77,356	38,471	19,570	18,901	34,393	4,493
2001	84,003	44,714	21,958	22,756	35,219	4,070
2002	90,158	48,007	23,668	24,338	37,846	4,305
2003	97,928	51,072	24,751	26,320	42,589	4,267
2004	105,371	54,450	26,121	27,237	48,019	3,994
2005	112,995	53,738	27,140	26,598	55,485	3,771
2006 preliminary	116,873	54,964	27,680	27,284	58,352	3,557
2007 projected	116,417	55,089	28,264	26,825	57,741	3,587
Constant 2000 \$millions						
1990	81,053	26,622	13,895	12,727	51,634	2,797
1991	76,122	28,442	14,443	14,000	44,294	3,385
1992	79,381	28,349	14,458	13,891	47,577	3,455
1993	79,727	30,447	15,171	15,276	45,769	3,511
1994	76,971	30,379	14,988	15,391	44,136	2,455
1995	76,427	30,850	15,056	15,794	43,129	2,448
1996	73,915	30,099	15,405	14,694	41,957	1,860
1997	75,103	30,736	15,639	15,097	42,350	2,017
1998	76,405	31,964	16,139	15,825	42,566	1,874
1999	78,958	34,208	17,798	16,410	42,662	2,087
2000 ^a	77,356	38,471	19,570	18,901	34,393	4,493
2001	82,558	43,945	21,580	22,364	34,614	4,000
2002	86,899	46,272	22,813	23,459	36,478	4,149
2003	92,489	48,236	23,377	24,859	40,224	4,030
2004	97,107	50,179	24,072	25,101	44,253	3,681
2005	100,996	48,032	24,258	23,774	49,594	3,371
2006 preliminary	101,338	47,658	24,001	23,657	50,596	3,084
2007 projected	98,449	46,587	23,902	22,685	48,829	3,033

^a In FY 2000 the National Institutes of Health (NIH) reclassified as research the activities that it had previously classified as development. Also in FY 2000, the National Aeronautics and Space Administration (NASA) reclassified Space Station as a physical asset, reclassified Space Station Research as equipment, and transferred funding for the program from R&D to R&D plant. NIH and NASA data for FY 2000 forward reflect these changes.

NOTES: Gross domestic product implicit price deflators were used to convert current to constant dollars. Agencies reported preliminary obligations for FY 2006 and projected obligations for FY 2007 during FY 2006.

SOURCE: National Science Foundation/Division of Science Resources Statistics, Survey of Federal Funds for Research and Development: FY 2005–07.

FIGURE 1. Federal and HHS research obligations: FY 1997–2007



HHS = Department of Health and Human Services.

NOTE: In FY 2000 the National Institutes of Health (NIH), part of HHS, reclassified as research the activities that it had previously classified as development; NIH data for FY 2000 forward reflect this change.

SOURCE: National Science Foundation/Division of Science Resources Statistics, Survey of Federal Funds for Research and Development: FY 2005–07.

obligations for development increased an estimated 2% between FY 2005 and 2006 and are expected to fall 3.5% in FY 2007 (table 1).

Agencies' Funding for Research

HHS

During the late 1990s and early 2000s, HHS obligations for research experienced several years of annual double-digit percentage increases, reflecting the government's goal during that period to double the National Institutes of Health (NIH) budget between FY 1998 and FY 2003.² Because of shifting R&D budget priorities, those gains seem to have ended. HHS has accounted for more than half of all agency-funded research since FY 2003, up from about one-third in 1990. Nearly all (96.2%) of the HHS research total is slated for the NIH (table 3); 82% (\$23.6 billion) of FY 2007 HHS research funding is planned in support of the life sciences (table 4).

Department of Defense

Federal research dollars obligated by the Department of Defense (DOD) are expected to increase about 5%

between FY 2005 and 2006 but then drop by approximately 2% between FY 2006 and 2007, continuing a general pattern of decline that began in FY 2002. DOD's share of total agency-funded research dropped from about 15% in FY 2001 to 11% in FY 2003, where it remained until FY 2005. It is expected to be up slightly in FY 2007 to 12%.

The Departments of the Air Force, Army, and Navy and the Defense Advanced Research Projects Agency account for most (92%) of DOD research dollars (table 3). Of total FY 2007 DOD research funding, 57% (\$3.6 billion) is planned in support of engineering (table 4).

Defense research in FY 2007 (defense research funding from both DOD and the Department of Energy) is expected to account for \$8.4 billion (15%) of the federally funded research total, about the same as the FY 2006 estimate (\$8.5 billion) (table 3).

Department of Energy

Department of Energy (DOE) obligations for research are expected to reach \$6.0 billion in FY 2007, up slightly over the expected 2006 level. DOE obligations grew each year between FY 1996 and FY 2005 but are expected to be nearly level between FY 2005 and FY 2007 (table 2). Most of the department's research dollars are obligated by the Office of Science (\$3.2 billion in FY 2007) and various defense programs (\$2.0 billion). These two components account for 54% and 32%, respectively, of the department's projected total FY 2007 research obligations (table 3). Most of the money is slated to support research in the physical sciences (\$2.4 billion) and in engineering (\$2.0 billion), which together account for nearly three-fourths of the department's total research budget (table 4).

National Aeronautics and Space Administration

Federal funds obligated for research by the National Aeronautics and Space Administration (NASA) are expected to increase about 4% between FY 2005 and FY 2007. These increases follow a 20% decline in FY 2005. NASA estimated it would provide 87% of its total FY 2007 research funding in support of engineering (\$1.5 billion), physical sciences (\$1.1 billion), and environmental sciences (\$1.0 billion) (table 4).

TABLE 2. Federal obligations for research, by agency: FY 1990–2007

Fiscal year	All agencies	HHS ^a	DOD	DOE	NASA ^b	NSF	USDA	Other
Current \$millions								
1990	21,622	7,467	3,529	2,570	3,061	1,690	1,069	2,236
1991	23,968	8,162	3,718	3,274	3,371	1,785	1,175	2,483
1992	24,491	7,946	4,073	3,413	3,229	1,868	1,261	2,700
1993	26,890	9,193	4,784	3,440	3,549	1,882	1,252	2,792
1994	27,411	9,736	4,241	3,283	3,841	2,040	1,323	2,948
1995	28,434	10,076	4,198	3,460	4,046	2,149	1,299	3,206
1996	28,260	10,546	3,996	3,362	3,878	2,188	1,220	3,070
1997	29,365	11,228	3,810	3,568	4,185	2,249	1,290	3,036
1998	30,922	12,019	3,970	3,788	4,414	2,289	1,334	3,109
1999	33,528	13,715	4,142	3,920	4,358	2,506	1,488	3,399
2000	38,471	17,913	4,920	4,101	3,964	2,726	1,612	3,235
2001	44,714	20,649	6,806	4,593	4,472	3,044	1,804	3,347
2002	48,007	23,231	6,265	5,062	4,839	3,260	1,810	3,539
2003	51,072	26,288	5,816	5,261	4,553	3,609	1,869	3,677
2004	54,450	27,991	5,698	5,498	4,499	3,771	1,919	5,074
2005	53,738	28,617	5,931	5,704	3,729	3,743	2,003	4,011
2006 preliminary	54,964	28,707	6,446	5,801	3,916	3,782	2,172	4,140
2007 projected	55,089	28,801	6,450	6,039	4,111	4,049	1,791	3,848
Constant 2000 \$millions								
1990	26,622	9,194	4,345	3,165	3,768	2,080	1,316	2,753
1991	28,442	9,686	4,412	3,885	4,000	2,118	1,395	2,946
1992	28,349	9,197	4,715	3,950	3,738	2,163	1,460	3,126
1993	30,447	10,408	5,416	3,895	4,018	2,131	1,417	3,161
1994	30,379	10,791	4,700	3,638	4,256	2,261	1,466	3,267
1995	30,850	10,932	4,555	3,754	4,390	2,332	1,409	3,478
1996	30,099	11,232	4,256	3,581	4,130	2,331	1,299	3,270
1997	30,736	11,752	3,988	3,734	4,380	2,353	1,350	3,178
1998	31,964	12,424	4,104	3,915	4,562	2,366	1,379	3,214
1999	34,208	13,993	4,226	3,999	4,446	2,557	1,518	3,468
2000	38,471	17,913	4,920	4,101	3,964	2,726	1,612	3,235
2001	43,945	20,294	6,689	4,514	4,395	2,991	1,773	3,289
2002	46,272	22,391	6,039	4,880	4,664	3,142	1,745	3,411
2003	48,236	24,828	5,493	4,968	4,301	3,408	1,765	3,472
2004	50,179	25,796	5,251	5,067	4,147	3,475	1,768	4,676
2005	48,032	25,578	5,302	5,098	3,333	3,345	1,790	3,585
2006 preliminary	47,658	24,891	5,589	5,030	3,395	3,279	1,883	3,590
2007 projected	46,587	24,356	5,454	5,107	3,477	3,424	1,515	3,254

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.

^a In FY 2000 the National Institutes of Health (NIH), part of HHS, reclassified as research the activities that it had previously classified as development; NIH data for FY 2000 forward reflect this change.

^b In FY 2000 NASA reclassified Space Station as a physical asset, reclassified Space Station Research as equipment, and transferred funding for the program from R&D to R&D plant; NASA data for FY 2000 forward reflect these changes.

NOTES: Gross domestic product implicit price deflators for 2000 were used to convert current to constant dollars. Agencies reported preliminary obligations for FY 2006 and projected obligations for FY 2007 during FY 2006.

SOURCE: National Science Foundation/Division of Science Resources Statistics, Survey of Federal Funds for Research and Development: FY 2005–07.

NSF

NSF obligations for research are expected to grow 4% in FY 2007 after declines in FY 2005 (-4%) and FY 2006 (-2%). Of total FY 2007 NSF research funding, 21% is planned in support of mathematics and computer science (\$840 million), 19% for physical sciences (\$766 million), 17% for engineering (\$694 million), 16% for environmental sciences (\$646 million), and 14% for life sciences (\$583 million) (table 4).

Data Collection and Availability

Definitions of research, development, and R&D plant as used in this InfoBrief are provided in the technical notes section of the detailed statistical tables reports for this survey. For the prior-year report, see <http://www.nsf.gov/statistics/nsf06313/>.

The 30 federal agencies that report R&D obligations to the NSF Survey of Federal Funds for Research and

TABLE 3. Federal obligations for research, by top agency funders: FY 2005–07
(Millions of current dollars)

Agency	FY 2005	FY 2006 preliminary	FY 2007 projected	FY 2007 % distribution
All agencies	53,738	54,963	55,089	-
Department of Agriculture	2,003	2,172	1,791	100.0
Agricultural Research Service	997	1,020	901	50.3
Cooperative State Research, Education, and Extension Service	652	762	543	30.3
Forest Service	255	287	240	13.4
Other	100	103	106	5.9
Department of Defense	5,931	6,446	6,450	100.0
Defense Advanced Research Projects Agency	1,260	1,705	1,742	27.0
Department of the Air Force	1,246	1,324	1,320	20.5
Department of the Army	1,700	1,563	1,778	27.6
Department of the Navy	1,233	1,355	1,104	17.1
Other	492	499	506	7.8
Department of Energy	5,704	5,801	6,039	100.0
Energy Efficiency and Renewable Energy	272	204	276	4.6
Fossil Energy	216	213	172	2.8
National Nuclear Security Administration	2,277	2,221	2,096	34.7
Defense Programs	2,193	2,076	1,951	32.3
Nonproliferation and Verification	84	145	145	2.4
Office of Science	2,712	2,896	3,246	53.7
Other	227	267	249	4.1
Department of Health and Human Services	28,617	28,707	28,801	100.0
National Institutes of Health	27,500	27,569	27,696	96.2
Other	1,117	1,138	1,105	3.8
National Aeronautics and Space Administration	3,729	3,916	4,111	-
National Science Foundation	3,743	3,782	4,049	-

NOTES: Agencies reported preliminary obligations for FY 2006 and projected obligations for FY 2007 during FY 2006. Not all agencies supporting research are listed here. Detail may not sum to total due to rounding.

SOURCE: National Science Foundation/Division of Science Resources Statistics, Survey of Federal Funds for Research and Development: FY 2005–07

TABLE 4. Federal obligations for research, by field of science and engineering and agency: FY 2007 projected
(Millions of current dollars)

Field	All agencies	HHS	DOD	DOE	NASA	NSF	USDA	Other
All fields	55,089	28,801	6,450	6,039	4,111	4,049	1,791	3,848
Environmental sciences	3,636	449	340	341	954	646	15	892
Life sciences	27,811	23,619	547	294	233	583	1,431	1,103
Mathematics and computer sciences	3,182	186	1,018	927	70	840	18	124
Physical sciences	5,648	415	521	2,417	1,132	766	93	303
Psychology	1,912	1,755	61	0	15	4	0	75
Social sciences	1,215	336	17	0	1	183	152	526
Other sciences, nec	2,199	1,120	299	13	210	334	10	213
Engineering	9,487	922	3,647	2,047	1,496	694	71	611

DOD = Department of Defense; DOE = Department of Energy; HHS = Department of Health and Human Services; NASA = National Aeronautics and Space Administration; nec = not elsewhere classified; NSF = National Science Foundation; USDA = Department of Agriculture.

NOTES: Agencies reported projected obligations for FY 2007 during FY 2006. Detail may not sum to total due to rounding.

SOURCE: National Science Foundation/Division of Science Resources Statistics, Survey of Federal Funds for Research and Development: FY 2005–07.

Development submitted actual obligations for FY 2005 and preliminary data for FY 2006 and FY 2007. Data were requested from agencies beginning in February 2006. Agencies later revise the preliminary data on the basis of actual changes in the funding levels of R&D programs. Further, agencies may provide changes in prior-year data to reflect program reclassifications or other data corrections.

In FY 2000 NIH reclassified as research the activities that it had previously classified as development. Also in FY 2000, NASA reclassified Space Station as a physical asset, reclassified Space Station Research as equipment, and transferred funding for the program from R&D to R&D plant. NIH and NASA data for FY 2000 forward reflect these changes.

In FY 2004 NASA implemented a full cost budget approach, which includes all of the direct and indirect costs for procurement, personnel, travel, and other infrastructure-related expenses relative to a particular program and project. NASA's data for FY 2004 and later years may not be directly comparable to its data for FY 2003 and earlier years.

Transition to the new system has delayed NASA's reporting of R&D data to NSF. Revisions in their methods of reporting R&D dollars have also delayed NIH and DOD responses to the survey. NIH has revised its financial database, and new records no longer contain

information regarding field of science and engineering. The research required to ascertain this information has slowed NIH's response to the survey. Beginning in FY 2004 DOD started requiring its reporting agencies to adhere to a new set of DOD standards when providing data to the survey. This new reporting method has slowed DOD's response time.

The full set of detailed tables from this survey will be available in the forthcoming report *Federal Funds for Research and Development: Fiscal Years 2005, 2006, and 2007* at <http://www.nsf.gov/statistics/fedfunds/>. Individual detailed tables from the 2005–07 survey may be available in advance of the full report. For further information, or for details on the survey methodology used, please contact Melissa Pollak.

Notes

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2. National Science Foundation, Division of Science Resources Statistics. 2002. *Proposed FY 2003 Budget Would Complete Plan to Double Health R&D Funding, Considerably Expand Defense R&D*. InfoBrief NSF 02-326. Arlington, VA. Available at <http://www.nsf.gov/statistics/infbrief/nsf02326/>.

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