



Federal Obligations for Science and Engineering to Universities and Colleges Show Little Growth

by Michael Yamaner¹

The most recent statistics from the National Science Foundation (NSF) Survey of Federal Science and Engineering Support to Universities, Colleges, and Nonprofit Institutions show that in FY 2008 federal agencies obligated \$28.4 billion to 1,316 academic institutions for science and engineering (S&E) activities. Although this total represents a 0.9% increase in current dollars over FY 2007 levels, it represents a 1.4% decrease in inflation-adjusted 2005 dollars (henceforth, constant 2005 dollars). From FY 2004 to FY 2008 obligations increased by 4.0% in current dollars, but when measured in constant 2005 dollars, obligations fell by 7.5% (table 1). Unless otherwise stated, all percentage changes for federal obligations listed below are in current dollars.

Categories of Academic S&E Support

Federal academic S&E obligations include six categories: research and development, which has accounted for 87%–90% annually of total federal academic S&E obligations between FY 2004 and FY 2008; R&D plant; facilities and equipment for S&E instruction;

TABLE 1. Federal academic S&E obligations, by activity: FY 2004–08

Fiscal year	All federal obligations	Research and development	R&D plant	Facilities and equipment for S&E instruction	Fellowships, traineeships, and training grants	General support for S&E	Other S&E activities
2004	27,338	23,811	382	83	1,048	421	1,593
2005	28,042 r	24,684 r	422	40	1,046	389	1,462
2006	28,265 r	24,992 r	309	17	1,037	323	1,588
2007	28,182 r	24,998 r	279	13	1,101	222	1,569
2008	28,425	25,482	275	4	862	300	1,502
Constant 2005 dollars (millions)							
2004	28,230	24,588	394	86	1,082	435	1,645
2005	28,042	24,684	422	40	1,046	389	1,462
2006	27,330	24,166	299	16	1,003	312	1,535
2007	26,479	23,488	262	12	1,034	209	1,474
2008	26,102	23,399	253	4	792	275	1,379

r = data revised; replaces previously published data.

S&E = science and engineering.

NOTES: After the close of the FY 2007 survey cycle Department of Defense discovered a programming error made during the FY 2005 survey cycle that caused each advanced technology development dollar to be reported twice—once as advanced technology development and once as major systems development. Data for FY 2005–07 were revised to correct this error.

Gross domestic product implicit price deflators were used to convert current to constant dollars. Detail may not sum to total due to rounding.

SOURCE: National Science Foundation/National Center for Science and Engineering Statistics, Survey of Federal Science and Engineering Support to Universities, Colleges, and Nonprofit Institutions.

fellowships, traineeships, and training grants (FTTGs); general support for S&E; and other S&E activities (table 1).

Federal academic R&D obligations reached \$25.5 billion in FY 2008, a 1.9% current-dollar increase (a 0.4%

decrease in constant 2005 dollars) over the prior year. Between FY 2004 and FY 2008 R&D obligations increased by 7%. However, when measured in constant 2005 dollars, these obligations decreased by 4.8% (table 1).

Four of the five remaining S&E categories showed decreased funding levels in FY 2008 compared with FY 2007.

- Federal obligations for FTTGs decreased by 21.7% to \$862 million, almost all of which resulted from funding reductions by the Department of Health and Human Services (HHS) and NSF.

- Funds for facilities and equipment for S&E instruction fell by 69.2% to \$4 million, stemming entirely from decreased support from the Department of Defense (DOD).

- Funding for R&D plant projects totaled \$275 million in FY 2008, a 1.4% decrease over the previous year.

- Obligations for other S&E activities decreased by 4.3% to \$1.5 billion.

Three agencies—NSF (15%), DOD (10%), and HHS—provided 86% of total federal academic S&E funding. The Department of Agriculture, the National Aeronautics and Space Administration (NASA), and the Department of Energy (DOE) provided most of the remaining academic S&E total (11%). Of these six agencies, DOE, NASA, and NSF showed increased levels of inflation-adjusted obligations for academic S&E in FY 2008 (table 2).

Agency Sources

HHS accounted for 60% of all federal FY 2008 academic S&E obligations.

University Shares

The Johns Hopkins University (including its Applied Physics Labo-

TABLE 2. Federal academic S&E obligations, by agency in FY 2008 rank order: FY 2004–08

Fiscal year	All agencies	HHS	NSF	DOD ^a	USDA	DOE	NASA ^b	Other ^c
Current dollars (millions)								
2004	27,338	16,499	4,188	2,470	1,154	804	1,176	1,048
2005	28,042 r	17,216	3,950	2,396 r	1,229	940	1,091	1,221
2006	28,265 r	17,163	4,099	2,570 r	1,263	902	975	1,293
2007	28,182 r	17,527	4,210	2,820 r	1,253	814	553	1,005
2008	28,425	17,180	4,404	2,823	1,251	1,089	673	1,003
Constant 2005 dollars (millions)								
2004	28,230	17,037	4,325	2,551	1,192	830	1,214	1,082
2005	28,042	17,216	3,950	2,396	1,229	940	1,091	1,221
2006	27,330	16,595	3,963	2,485	1,221	872	943	1,250
2007	26,479	16,468	3,956	2,650	1,177	765	520	944
2008	26,102	15,776	4,044	2,592	1,149	1,000	618	921

r = data revised; replaces previously published data.

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; S&E = science and engineering; USDA = Department of Agriculture.

^a After the close of the FY 2007 survey cycle Department of Defense discovered a programming error made during the FY 2005 survey cycle that caused each advanced technology development dollar to be reported twice—once as advanced technology development and once as major systems development. Data for FY 2005–07 were revised to correct this error.

^b Between FY 2006 and FY 2007 NASA's R&D obligations decreased for two reasons: (1) In FY 2007 NASA excluded projects that were operational in nature that were not excluded in FY 2006, and (2) there was an overall decrease in obligations between FY 2006 and FY 2007, which accounts for the remainder of the decrease.

^c Includes data for the following agencies: Departments of Commerce, Education, Homeland Security, Housing and Urban Development, the Interior, Labor, and Transportation; Agency for International Development; Environmental Protection Agency; Appalachian Regional Commission; Nuclear Regulatory Commission; Office of Justice Programs (part of Department of Justice); and Social Security Administration.

NOTE: Detail may not sum to total due to rounding.

SOURCE: National Science Foundation/National Center for Science and Engineering Statistics, Survey of Federal Science and Engineering Support to Universities, Colleges, and Nonprofit Institutions.

ratory) continued to be the leading academic recipient of federal S&E obligations in FY 2008. Together, HHS and DOD provided Johns Hopkins with 92% of its federal S&E funds. The leading 20 universities ranked in terms of federal academic S&E obligations accounted for 34% of the federal academic S&E total in FY 2008 (table 3). All 20 of these academic recipients were also ranked among the top 20 recipients in FY 2007.

Federal S&E Support to Nonprofit Institutions

NSF collects statistics on federal obligations to independent nonprofit institutions for two of the six S&E categories—R&D and R&D plant. Between FY 2007 and FY 2008 federal S&E obligations to nonprofit institutions decreased from \$6.9 billion to \$6.5 billion (5.8% decrease). DOD was the main source of the decrease in funding (\$214 million of the \$401

million decrease, or 53%). The MITRE Corporation received the most federal funds for R&D and R&D plant (\$323 million) among nonprofits in FY 2008, with DOD providing almost 100% of this funding (table 4).

The 10 nonprofit institutions that received the largest amounts of these federal funds in FY 2008 received 34% of the total funding that went to all nonprofits. Six of these 10 nonprofit

TABLE 3. Federal academic S&E obligations to the 20 universities receiving the largest amounts, by agency: FY 2008
(Dollars in millions)

Institution	All federal obligations	HHS	NSF	DOD	USDA	DOE	NASA	Other agencies ^a
All institutions	28,424.7	17,180.0	4,404.4	2,823.4	1,251.2	1,089.4	673.3	1,003.0
Top 20 institutions	9,779.7	7,023.7	1,035.7	963.7	137.1	289.8	189.8	140.2
Johns Hopkins U., The ^b	1,113.3	623.9	24.6	405.3	0.7	3.3	51.2	4.3
U. WA	613.4	417.6	81.4	49.7	3.6	22.1	10.7	28.3
U. MI all campuses	587.0	430.4	68.2	53.5	0.8	13.4	8.6	12.1
U. CA, San Francisco	522.5	514.1	1.2	4.6	0.0	1.0	0.8	0.7
U. PA	518.7	451.7	28.0	25.5	0.4	9.1	1.8	2.2
U. CA, San Diego	518.0	347.6	90.6	42.8	0.9	14.2	5.4	16.4
U. CA, Los Angeles	512.0	375.9	58.5	40.1	0.0	22.7	13.2	1.6
U. WI-Madison	453.1	254.2	89.2	12.4	27.8	51.1	8.3	10.3
Harvard U.	437.4	370.1	37.3	15.7	0.0	4.5	6.8	3.1
Columbia U. in the City of New York	433.1	317.6	74.1	10.0	0.0	9.3	8.6	13.5
Duke U.	430.9	368.9	35.1	11.2	0.0	9.4	1.3	5.0
U. Pittsburgh all campuses	429.9	386.1	20.1	16.8	0.5	3.3	1.1	2.2
Washington U. St. Louis	425.6	390.0	20.8	2.6	0.0	4.7	7.4	0.1
Yale U.	419.6	372.6	27.4	5.7	2.2	10.9	0.6	0.2
Stanford U.	419.2	297.5	50.4	32.4	0.0	15.9	20.4	2.7
U. NC Chapel Hill	410.0	360.9	28.2	6.4	0.4	3.5	0.5	10.1
MA Institute of Technology	405.8	210.7	57.1	49.4	1.8	58.8	20.8	7.2
U. MN all campuses	390.1	269.8	64.1	6.2	29.3	7.3	5.1	8.2
Cornell U. all campuses	373.8	173.0	128.2	16.4	36.3	8.1	5.6	6.2
PA State U. all campuses	366.3	91.1	51.2	157.0	32.4	17.2	11.6	5.8
All other academic institutions	18,644.8	10,156.1	3,368.6	1,859.6	1,114.1	799.7	483.7	863.1

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; S&E = science and engineering; USDA = Department of Agriculture.

^a Includes data for Departments of Commerce, Education, Homeland Security, Housing and Urban Development, the Interior, Labor, and Transportation; Agency for International Development; Environmental Protection Agency; Appalachian Regional Commission; Nuclear Regulatory Commission; Office of Justice Programs (part of Department of Justice); and Social Security Administration.

^b Includes funding for Applied Physics Laboratory.

NOTE: Detail may not sum to total due to rounding.

SOURCE: National Science Foundation/National Center for Science and Engineering Statistics, Survey of Federal Science and Engineering Support to Universities, Colleges, and Nonprofit Institutions, FY 2008.

TABLE 4. Federal research and development and R&D plant obligations to the 10 independent nonprofit institutions receiving the largest amounts, by agency: FY 2008
(Dollars in thousands)

Institution	All federal obligations	HHS	DOD	NSF	NASA	DOE	Other agencies ^a
All nonprofit institutions	6,471,044	4,019,551	1,413,207	418,133	199,577	189,080	231,496
Top 10 nonprofit institutions	2,206,143	1,145,147	860,036	160,363	3,135	23,298	14,164
MITRE Corp.	322,882	0	322,105	199	0	384	194
Massachusetts General Hospital	316,173	298,575	15,761	1,262	575	0	0
Battelle Memorial Institute	307,733	1,600	268,557	64	948	22,914	13,650
Brigham and Women's Hospital	254,107	250,905	1,768	0	1,114	0	320
Fred Hutchinson Cancer Research Ctr.	224,163	223,385	595	183	0	0	0
Mayo Foundation	187,372	184,519	2,355	0	498	0	0
Henry M. Jackson Foundation for the Advancement of Military Medicine	156,160	41,717	114,183	260	0	0	0
Associated Universities Inc.	155,333	0	0	155,333	0	0	0
IIT Research Institute	142,003	8,078	133,925	0	0	0	0
Dana-Farber Cancer Institute	140,217	136,368	787	3,062	0	0	0
All other nonprofit institutions	4,264,901	2,874,404	553,171	257,770	196,442	165,782	217,332

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.

^a Includes data for the following agencies: Departments of Commerce, Education, Homeland Security, Housing and Urban Development, the Interior, Labor, and Transportation; Agency for International Development; Environmental Protection Agency; Appalachian Regional Commission; Nuclear Regulatory Commission; Office of Justice Programs (part of Department of Justice); and Social Security Administration.

SOURCE: National Science Foundation/National Center for Science and Engineering Statistics, Survey of Federal Science and Engineering Support to Universities, Colleges, and Nonprofit Institutions, FY 2008.

recipients were hospitals or medical research institutes. Eight of these leading 10 nonprofits in FY 2008 also ranked among the top 10 in the prior year. The Henry M. Jackson Foundation for the Advancement of Military Medicine (ranked 7th in FY 2008, after being 11th the prior year) and Associated Universities Inc. (ranked 8th in FY 2008, after being ranked 13th the prior year) were part of the top 10, whereas the Charles Stark Draper Laboratories (ranked 60th in FY 2008, after being 5th in FY 2007) and SRI International (ranked 11th in FY 2008, after being 10th in FY 2007) fell out of the top 10. Of all nonprofit recipients that were hospitals or medical research institutes, Massachusetts General Hospital received the largest amount (\$316 million) of federal R&D and R&D plant obligations (table 4).

Data Sources and Limitations

The data on federal S&E obligations to academic and nonprofit institutions presented in this InfoBrief were obtained from 19 agencies that participated in the FY 2008 Survey of Federal Science and Engineering Support to Universities, Colleges, and Nonprofit Institutions. The survey collects federal S&E support data by funding agency, institution, type of activity, type of institution, and geographic location. The six funding categories of federal S&E support are defined as follows:

- *Research and development* includes all direct, indirect, incidental, or related costs resulting from or necessary to performing R&D by private individuals and organizations under grant, contract, or cooperative agreement.

- *R&D plant* includes all projects whose principal purpose is to provide support for construction, acquisition, renovation, modification, repair, or rental of facilities, land, works, or fixed equipment for use in scientific or engineering R&D.
- *Facilities and equipment for S&E instruction* include all programs whose principal purpose is to provide support for construction, acquisition, renovation, modification, repair, or rental of facilities, land, works, or equipment for use in instruction in S&E.
- *Fellowships, traineeships, and training grants* include all fellowship, traineeship, and training grant programs that are directed primarily toward the development

and maintenance of the scientific workforce.

- *General support for S&E* are funds used for scientific projects and support for activities within a specified discipline; explicit purpose is not specified.
- *Other S&E activities* include all academic S&E obligations that cannot be assigned elsewhere and activities in support of technical

conferences, teacher institutes, and programs aimed at increasing precollege and undergraduate students' scientific knowledge.

The full set of detailed tables from this survey will be available in the report *Federal Science and Engineering Support to Universities, Colleges, and Nonprofit Institutions: FY 2008* at <http://nsf.gov/statistics/fedsupport/>. Individual detailed tables from the FY 2008 survey may be available in

advance of the full report. For more information, please contact the author.

Note

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