



Federal Science and Engineering Obligations to Universities and Colleges Drop by 11% in FY 2011

by Michael Yamaner¹

In FY 2011, federal agencies obligated \$31.4 billion to 1,134 academic institutions for science and engineering activities. The 11.0% decrease in current dollars from FY 2010 federal obligations (\$35.3 billion to 1,219 academic institutions) reflects the absence of American Recovery and Reinvestment Act of 2009 (ARRA) stimulus funds in FY 2011. The last ARRA funds were obligated in FY 2010 and accounted for \$5.1 billion (14.5%) of FY 2010 science and engineering (S&E) obligations to academic institutions. If ARRA obligations are excluded from FY 2010 totals, FY 2011 S&E obligations to academic institutions increased \$1.2 billion (4.1%) (table 1). These statistics are from the National Science Foundation's (NSF's) National Center for Science and Engineering Statistics Survey of Federal Science and Engineering Support to Universities, Colleges, and Nonprofit Institutions.

After adjustment for inflation, federal S&E obligations to academic institutions declined by \$0.4 billion (1.4%) from FY 2009 to FY 2010, and by \$4.0 billion (12.8%) between FYs 2010 and 2011. Excluding the funding provided by ARRA, federal support for S&E to academic institutions increased by \$0.6 billion (2.1%) from FY 2010 to FY 2011

(table 1). For the remainder of this InfoBrief, changes in funding across years are in inflation-adjusted dollars unless noted.

Categories of Academic S&E Support

Federal academic S&E obligations include six categories: research and development (87%–90% of total federal academic S&E obligations annually over the past 5 years); R&D plant; facilities and equipment for instruction in S&E; fellowships, traineeships, and training grants; general support for S&E; and other S&E activities (table 1).

Federal academic R&D obligations decreased by \$2.9 billion (10.6%) between FYs 2010 and 2011 because all remaining ARRA funds had been obligated by the end of FY 2010. Excluding ARRA funding, federal academic R&D obligations showed a 1.3% increase over FY 2010. Four of the five remaining categories showed decreased funding in FY 2011; R&D plant experienced the second-largest decrease in dollar amounts (\$1.2 billion, or 81.0%). This decrease was primarily due to the absence of ARRA funds, which had provided

71.9% of R&D plant obligations in FY 2010 (table 1).

The only S&E category with a rise in funding level was other S&E activities, which increased by \$0.3 billion (23.7%) in FY 2011, despite having ARRA funding in FY 2010 (table 1). This increase was primarily driven by increased funding from the Department of Defense (DOD).

Agency Sources for Academic S&E Support

Collectively, the Department of Health and Human Services (HHS), NSF, and DOD provided 86.4% of all federally funded academic S&E obligations in FY 2011. Of these agencies, HHS accounted for 57.7% of all federally funded obligations; NSF, 16.3%; and DOD, 12.5%. The Department of Agriculture (USDA), Department of Energy, and National Aeronautics and Space Administration (NASA) provided most of the remaining academic S&E total (10.2%). Two of the six agencies (DOD and USDA) showed increased federal academic S&E obligations in FY 2011. DOD and USDA reported no academic S&E ARRA obligations in either FY 2010 or FY 2011 (table 2).

TABLE 1. Federal academic science and engineering obligations, by activity: FYs 2007–11

Fiscal year	All federal obligations		Research and development		R&D plant		Facilities and equipment for instruction in S&E		Fellowships, traineeships, and training grants		General support for S&E		Other S&E activities	
	ARRA	Non-ARRA	ARRA	Non-ARRA	ARRA	Non-ARRA	ARRA	Non-ARRA	ARRA	Non-ARRA	ARRA	Non-ARRA	ARRA	Non-ARRA
	Current \$millions													
2007	na	28,182	na	24,998	na	279	na	13	na	1,101	na	222	na	1,569
2008	na	28,389	na	25,489	na	275	na	4	na	916	na	300	na	1,405
2009	5,886	29,601	5,201	26,578	404	386	0	5	41	925	45	197	194	1,509
2010	5,138	30,190	3,578	27,055	1,194	467	0	6	32	1,103	212	142	121	1,417
2011	na	31,427	na	27,939	na	323	na	4	na	1,013	na	208	na	1,941
Constant FY 2005 \$millions														
2007	na	26,472	na	23,481	na	262	na	12	na	1,034	na	209	na	1,474
2008	na	26,062	na	23,399	na	252	na	4	na	841	na	275	na	1,290
2009	5,327	26,788	4,707	24,052	366	349	0	5	37	837	41	178	176	1,366
2010	4,607	27,071	3,208	24,260	1,071	419	0	5	29	989	190	127	109	1,271
2011	na	27,635	na	24,568	na	284	na	4	na	891	na	183	na	1,707

na = not applicable.

ARRA = American Recovery and Reinvestment Act of 2009; S&E = science and engineering.

NOTES: 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.

TABLE 2. Federal academic science and engineering obligations, by agency in FY 2011 rank order: FYs 2007–11

Fiscal year	All agencies		HHS		NSF		DOD		USDA		DOE		NASA		Other agencies ^a	
	ARRA	Non-ARRA	ARRA	Non-ARRA	ARRA	Non-ARRA	ARRA	Non-ARRA	ARRA	Non-ARRA	ARRA	Non-ARRA	ARRA	Non-ARRA	ARRA	Non-ARRA
	Current \$millions															
2007	na	28,182	na	17,527	na	4,210	na	2,820	na	1,253	na	814	na	553	na	1,005
2008	na	28,389	na	17,263	na	4,404	na	2,823	na	1,252	na	1,089	na	673	na	883
2009	5,886	29,601	3,173	17,528	2,132	4,697	5	3,174	0	1,307	504	1,172	11	720	60	1,002
2010	5,138	30,190	4,087	17,211	417	4,949	0	3,553	0	1,389	330	1,404	14	615	289	1,071
2011	na	31,427	na	18,130	na	5,113	na	3,923	na	1,450	na	1,160	na	593	na	1,059
Constant FY 2005 \$millions																
2007	na	26,472	na	16,463	na	3,955	na	2,649	na	1,177	na	765	na	519	na	944
2008	na	26,062	na	15,848	na	4,043	na	2,592	na	1,149	na	1,000	na	618	na	811
2009	5,327	26,788	2,871	15,862	1,929	4,251	5	2,872	0	1,183	456	1,061	10	652	54	907
2010	4,607	27,071	3,665	15,433	374	4,438	0	3,186	0	1,246	296	1,259	13	551	259	960
2011	na	27,635	na	15,943	na	4,496	na	3,450	na	1,275	na	1,020	na	521	na	931

na = not applicable.

ARRA = American Recovery and Reinvestment Act of 2009; 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 Includes data for the Departments of Commerce, Education, Homeland Security, Housing and Urban Development, the Interior, Labor, and Transportation; the Agency for International Development; the Environmental Protection Agency; the Appalachian Regional Commission; the Nuclear Regulatory Commission; the Office of Justice Programs (part of the Department of Justice); and the 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.

University Shares of Academic S&E Support

The Johns Hopkins University (including its Applied Physics Laboratory) continued to be the leading academic recipient of federal S&E obligations: \$1.7 billion in FY 2011. Together, HHS and DOD provided Johns Hopkins with 90.8% of its federal S&E funds. The leading 20 universities, ranked in terms of federal

academic S&E obligations, accounted for 36.2% of the FY 2011 federal total. Of these universities, 19 were also ranked among the top 20 recipients in FY 2010. In FY 2011, Cornell University moved from 21st to 20th, exchanging places with Vanderbilt University, Harvard University's rank fell from 8th to 12th, and the University of Minnesota's (all campuses) rank rose from 17th to 7th (table 3).

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. During FY 2011, federal agencies obligated \$7.3 billion to 1,088 nonprofit institutions, a decrease of 17.8% from the \$8.8 billion reported in FY 2010 (current dollars). HHS

TABLE 3. Federal academic science and engineering obligations to the 20 universities receiving the largest amounts, by agency: FY 2011 (Millions of current U.S. dollars)

Academic institution	All federal obligations	HHS	NSF	DOD	USDA	DOE	NASA	Other agencies ^a
All academic institutions	31,427.1	18,129.6	5,113.0	3,922.7	1,450.0	1,159.9	592.6	1,059.2
Top 20 academic institutions	11,378.2	7,543.4	1,180.8	1,650.0	173.4	316.3	227.3	287.0
Johns Hopkins U. ^b	1,672.2	679.7	36.8	839.3	0.0	4.5	93.1	18.7
U. WA	694.7	475.6	80.7	55.6	19.3	20.6	9.2	33.7
U. MI	694.7	471.5	80.1	49.5	5.6	36.3	10.4	41.1
U. CA, San Diego	583.2	398.4	82.3	61.4	0.6	17.5	5.0	17.9
U. CA, San Francisco	560.3	537.8	1.5	18.5	0.0	0.7	0.9	0.9
U. PA	551.5	480.4	32.8	26.5	0.2	7.3	1.7	2.7
U. MN	539.5	273.1	144.9	29.0	33.6	10.6	2.7	45.6
PA State U.	524.8	110.1	53.3	259.0	35.6	45.9	6.8	14.1
U. CA, Los Angeles	521.3	380.2	69.5	36.5	0.0	22.2	10.8	2.0
Stanford U.	502.5	347.4	54.4	65.3	0.1	23.3	9.9	2.0
U. Pittsburgh	494.3	437.1	21.8	26.1	0.0	3.7	0.4	5.1
Harvard U.	485.6	393.7	39.4	31.9	0.0	8.5	6.7	5.3
U. WI, Madison	479.6	267.7	87.1	16.6	33.2	51.4	7.9	15.7
Columbia U. in the City of New York	479.1	350.7	77.4	15.6	0.0	10.3	9.5	15.6
Duke U.	457.1	368.3	46.8	25.2	0.8	9.8	1.6	4.5
Yale U.	449.6	387.3	29.1	21.6	0.3	9.5	1.7	0.1
U. NC, Chapel Hill	448.8	386.7	36.0	10.3	0.6	3.7	0.0	11.5
U. CO	443.4	239.3	72.9	37.5	0.8	10.1	39.4	43.4
Washington U., St. Louis	408.9	375.6	12.4	6.5	0.1	8.7	5.5	0.1
Cornell U.	387.1	182.6	121.4	18.1	42.4	11.7	4.0	6.9
All other academic institutions	20,049.0	10,586.2	3,932.2	2,272.7	1,276.6	843.6	365.3	772.3

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

^b Includes funding for the 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 2011.

accounted for \$0.8 billion (51.0%) of the decrease. ARRA funds accounted for \$5.9 billion, or 66.8%, of the FY 2010 total. The MITRE Corporation received the most federal R&D and R&D plant funds (\$458 million) among nonprofits in FY 2011, with DOD providing 99.9% of this funding (table 4).

In FY 2011, the 10 leading nonprofit institutions in terms of federal obligations received 34.8% of the total funding to all nonprofits. Six of these recipients were hospitals or medical research institutes. Eight of these leading 10 nonprofits also ranked among the top 10 in FY 2010. The Dana-Farber Cancer Institute (ranked 11th in FY 2010 and 10th in FY 2011) and the Henry M. Jackson Foundation for the Advancement of Military Medicine (ranked 13th in FY 2010 and 8th

in FY 2011) moved into the top 10, and Research Triangle International (ranked 5th in FY 2010 and 15th in FY 2011) and the Association of Universities for Research in Astronomy (ranked 6th in FY 2010 and 42nd in FY 2011) fell out of the top 10 (table 4).

Data Sources, Definitions, and Availability

Gross domestic product implicit price deflators were used to convert current to constant FY 2005 dollars in this InfoBrief. The data on federal S&E obligations to academic and nonprofit institutions presented here were obtained from 19 agencies that responded to both the FY 2010 and FY 2011 Surveys 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:

- *R&D* includes all direct, indirect, incidental, or related costs resulting from or necessary to perform 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* includes all programs

TABLE 4. Federal R&D and R&D plant obligations to the 10 independent nonprofit institutions receiving the largest amounts, by agency: FY 2011 (Thousands of current U.S. dollars)

Nonprofit institution	All federal obligations	HHS	DOD	NSF	NASA	DOE	Other agencies ^a
All nonprofit institutions	7,260,474.5	4,513,232.9	1,736,866.4	338,556.0	200,604.5	130,077.6	341,137.1
Top 10 nonprofit institutions	2,526,715.0	1,371,556.5	1,118,276.0	12,943.8	0.0	21,138.7	2,800.2
MITRE Corp.	458,466.6	88.8	458,190.5	0.0	0.0	0.0	187.3
MA General Hospital	345,971.4	342,069.9	3,151.7	749.8	0.0	0.0	0.0
Brigham and Women's Hospital	286,955.6	285,781.7	1,164.1	9.8	0.0	0.0	0.0
Battelle Memorial Institute	281,048.5	43,704.7	214,947.2	0.0	0.0	20,235.1	2,161.6
Fred Hutchinson Cancer Research Ctr.	262,061.9	261,855.4	5.0	201.6	0.0	0.0	0.0
SRI International	214,452.5	45,341.6	156,968.5	11,238.8	0.0	903.6	0.0
Mayo Foundation for Medical Education and Research	214,388.7	212,826.8	1,110.6	0.0	0.0	0.0	451.3
Henry M. Jackson Foundation for the Advancement of Military Medicine	183,418.7	41,576.4	141,098.5	743.8	0.0	0.0	0.0
IIT Research Institute	150,628.2	10,463.9	140,164.3	0.0	0.0	0.0	0.0
Dana-Farber Cancer Institute	129,322.9	127,847.3	1,475.6	0.0	0.0	0.0	0.0
All other nonprofit institutions	4,733,759.5	3,141,676.4	618,590.4	325,612.2	200,604.5	108,938.9	338,336.9

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 Departments of Agriculture, Commerce, Education, Homeland Security, Housing and Urban Development, the Interior, Labor, and Transportation; the Agency for International Development; the Environmental Protection Agency; the Nuclear Regulatory Commission; the Office of Justice Programs (part of the Department of Justice); and the 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, FY 2011.

whose principal purpose is to provide support for construction; acquisition; renovation; modification; repair; or rental of facilities, land, works, or equipment for use in S&E instruction.

- *Fellowships, traineeships, and training grants* includes 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* includes funds used for scientific projects and

support for activities within a specified discipline; their explicit purpose is not specified.

- *Other S&E activities* includes 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 statistical tables from the FY 2010 and FY 2011 Surveys of Federal Science and Engineering

Support to Universities, Colleges, and Nonprofit Institutions will be available online at <http://nsf.gov/statistics/fedsupport/>. Individual tables may be available in advance of the full report. For more information, please contact the author.

Note

1. Michael Yamaner, Research and Development Statistics Program, National Center for Science and Engineering Statistics, National Science Foundation, 4201 Wilson Boulevard, Suite 965, Arlington, VA 22230 (myamaner@nsf.gov; 703-292-7815).

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