

## NSF Budget Climbs 11 Percent in Senate Plan

### AAAS R&D Funding Update on NSF R&D in FY 2008 Senate Appropriations

#### Highlights

- **The Senate would go along with the Bush Administration's proposal to boost funding for the National Science Foundation (NSF) as part of the American Competitiveness Initiative, and would add even more money to education programs. The Senate would give NSF \$6.6 billion for its budget in 2008 (see Table), \$638 million or 10.8 percent more than the current year and \$124 million more than the request.**

- In preliminary action, the House would give \$6.5 billion to NSF, again adding to the request for education programs and agreeing with requested increases for research programs. In both the House and Senate proposals, most of NSF's research directorates would receive increases between 4 and 9 percent for the second year in a row.

- **NSF R&D investments (excluding education, training, and overhead costs) would total \$4.9 billion in the Senate appropriation, a 9.1 percent increase to an all-time high in real terms.**

- All the research directorates would be able to increase average award sizes, numbers of research grants, and success rates for research grant applications in 2008.

- NSF's Education and Human Resources (E.H.R.) budget would jump 22 percent to \$851 million in the 2008 Senate plan, well above a 7.5 percent requested increase, but would still remain below the 2004 funding level in real terms.

#### NSF R&D in FY 2008 Senate Appropriations

On June 28, the Senate Appropriations Committee approved its version of the FY 2008 Commerce-Justice-Science appropriations bill (S 1745) providing funding for the Department of Commerce, the National Science Foundation (NSF), and the National Aeronautics and Space Administration (NASA), for consideration by the full Senate in July. The House has drafted its own version of the bill for consideration by the House Appropriations Committee consideration in July. Both the House and Senate bills contain close to \$54 billion in 2008 discretionary spending, \$3 to \$4 billion more than the current year and between \$2 and \$3 billion more than the President's request for these programs.

Over a year ago, President Bush announced a proposal to substantially increase funding for key physical sciences research agencies over ten years as part of an "American Competitiveness Initiative" (ACI), designed in part to address a growing wave of concern about the state of U.S. innovation. The National Science Foundation (NSF) was one of three ACI agencies (the others are the DOE Office of Science, and the National Institute of Standards and Technology laboratories) to receive increases in 2007 for the first year of the ACI. The FY 2008 NSF budget builds on the first year of the ACI with a second year of increases for most programs. The 110<sup>th</sup> Congress has so far supported these ACI increases, first by giving NSF the entire request for 2007 when it wrapped up 2007 appropriations in February, and now with initial House and Senate appropriations for NSF in 2008. **The Senate would give NSF \$6.6 billion in 2008 for its total budget, a large 10.8 percent or \$638 million increase over 2007 and \$124 million more than what NSF requested (see Table).** The \$124 million addition to the request includes \$100 million above the request for NSF's education programs and \$18 million more than requested for oceans research.

After adjusting for inflation, the pending 2008 Senate increase would enable NSF funding to reach an all-time high (see Figure 1). After peaking in 2004, NSF funding fell in 2005 and 2006 but would rise for the second year in a row in 2008. The draft House appropriation would give NSF just slightly less than the Senate with \$6.5 billion to bring NSF to an all-time high.

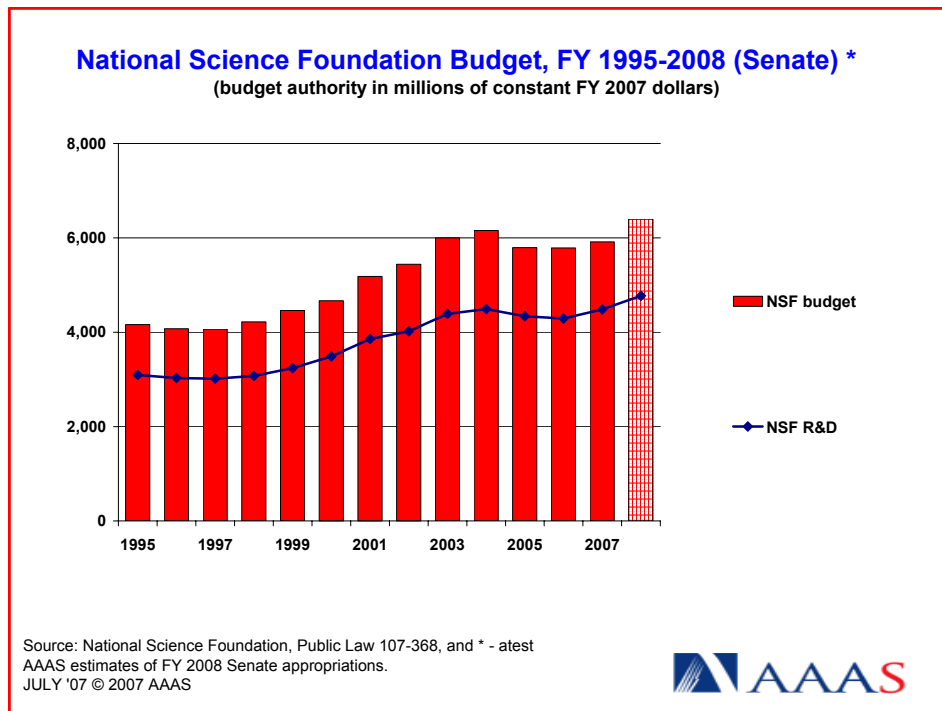


Figure 1. (click on the image for PDF)

**NSF’s R&D funding, which excludes NSF’s education and training activities and overhead costs (such as polar logistics and administrative salaries), would total \$4.9 billion in the Senate plan, a gain of \$406 million or 9.1 percent over 2007 that would bring the R&D total above 2004 in inflation-adjusted terms (see Figure 1), after cuts in 2005 and 2006 and a rebound in 2007. The Senate would allocate \$32 million more than requested, primarily for oceans research.**

NSF’s main **Research and Related Activities (R&RA)** account, which funds nearly all of NSF’s basic and applied research and contains NSF’s discipline-based research directorates, would climb 8.2 percent to \$5.2 billion in the Senate (see Table). Most research directorates would receive increases between 4 and 9 percent for the second year in a row after several years of flat or declining funding (see Figure 2). The Senate would agree to larger increases for some key programs: the new Office of Cyberinfrastructure (OCI), a recent spin-off from the Computer and Information Science and Engineering (CISE) directorate, would see its funding climb 9.6 percent to \$200 million. OCI supports the procurement, development, and operation of state-of-the-art cyberinfrastructure resources for the entire research community. Its sister CISE directorate would gain 9.0 percent. The Mathematical and Physical Sciences (MPS) and Engineering (ENG), strong supporters along with CISE and OCI of the physical sciences broadly defined that are the ACI’s focus, would gain 8.9 percent and 8.7 percent, respectively. Moving away from the physical sciences, the gains become smaller, dropping to modest increases for the Biological Sciences (BIO) directorate (up 4.1 percent) and Social, Behavioral, and Economic Sciences (SBE; up 3.9 percent). But the Senate would add funding for the Geosciences (GEO) directorate, allocating \$18 million more than requested for a total of \$810 million, an 8.8 percent boost. The additional \$18 million is for oceans research.

Within R&RA, the Integrative Activities (IA) account would climb 17.2 percent to \$269 million, primarily from a \$24 million or 27.2 percent increase in Major Research Instrumentation (MRI), a program to

distribute competitively awarded instrumentation grants to institutions for state-of-the-art research instrumentation that would be too costly to be funded through regular NSF research awards. The Experimental Program to Stimulate Competitive Research (EPSCoR) would move to IA and receive \$121 million in the Senate, up \$18 million. EPSCoR assists research institutions and states that have traditionally been underrepresented in federal R&D funding to build research capacity. The program is currently open to 24 states, Puerto Rico, and the U.S. Virgin Islands; collectively, the EPSCoR states received just 10.4 percent of NSF R&D funds in FY 2004.

The Office of Polar Programs (OPP), which funds polar research but also provides logistical support for research activities at both poles and maintains the South Pole Station, would receive \$465 million in the request, House, and Senate plans, a boost of 6.1 percent. The OPP increase would build on a larger increase in 2007 to ramp up research during the International Polar Year (2007-2008) and for increased logistics costs to support that research.

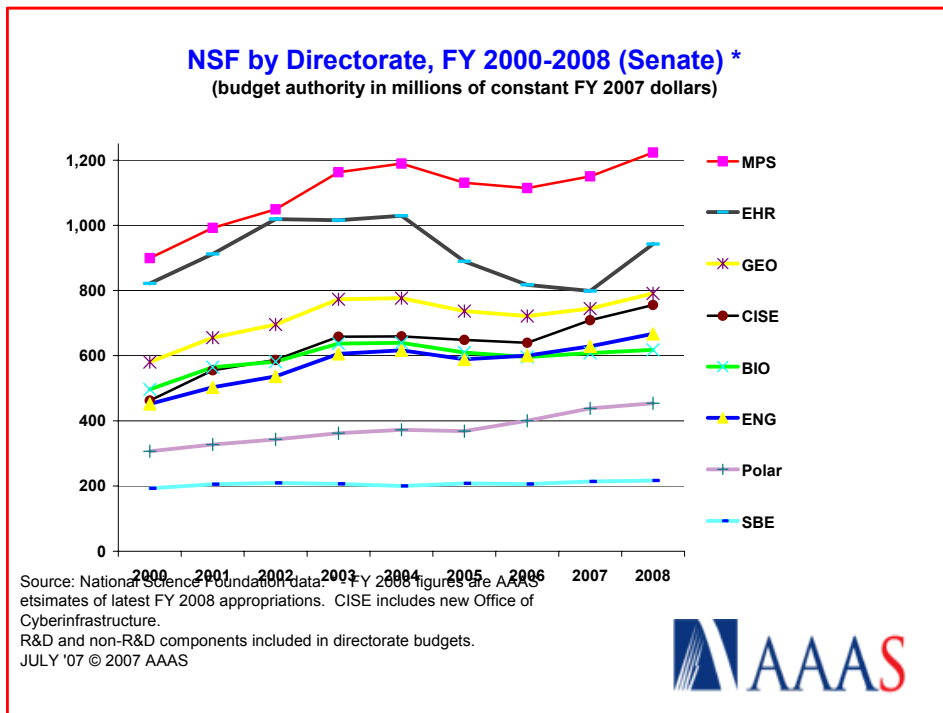


Figure 2. (click on the image for PDF)

**After substantial 2007 and 2008 increases, funding for most research directorates would climb above 2004 levels in real terms** after budget cuts in 2005 and 2006 (see Figure 2). In real terms, funding for the Biological Sciences (BIO) would remain below 2004 levels, while the computer sciences, social sciences, mathematics and physical sciences, polar, and engineering directorates would reach new highs, though just narrowly. The extra Senate dollars would also bring GEO funding to a new high.

The Major Research Equipment and Facilities Construction (MREFC) account would receive a \$54 million boost to \$245 million in 2008 to fund 7 projects (see Table). MREFC funds only the construction of large scientific facilities; smaller facilities projects, planning and design for future facilities, research instrumentation grants, and facilities operations are funded in R&RA by the research directorates. In addition to six ongoing projects, in 2008 NSF would start the Advanced Laser Interferometer Gravitational Wave Observatory (AdvLIGO), an upgrade to the existing LIGO in Washington and West Virginia of the world's most sophisticated optical interferometers, with a \$33 million allocation.

**The Senate would be especially generous with NSF's education and human resources programs, boosting funding 22 percent to \$851 million. The large increase, however, would still leave funding**

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**below 2004 levels in real terms after steep cuts in 2005 and 2006 and flat funding in 2007** (see Figure 2). The Senate would provide \$75 million for the Math and Science Partnerships (MSP) program, a joint Department of Education (ED)-NSF program. The NSF contribution was \$139 million in 2004 but has declined steadily since then and declined further to just \$46 million in 2007; the 2008 request would stay at \$46 million, but the Senate \$75 million appropriation would bring funding closer to past levels. In separate action, the Senate would give \$184 million in 2008 for the ED program, slightly more than the request.

### **NSF Funding Mechanisms**

**The large proposed increases for the research directorates, now endorsed by the Senate, would mean a second year of gains to reverse recent declines in competitively awarded research grants.** Looking only at competitively awarded research grants, NSF's core funding mechanism, NSF expects to fund 7,435 research grants next year, an 8 percent increase, while at the same time increasing the average award size to \$147,200 (up 3.0 percent) after several years of flat funding. After several years of declining success rates, NSF projects that it will fund 21 percent of research grant proposals, up slightly from 20 percent in 2007. The broad-based increases would allow every research directorate (excluding the new OCI) to increase the three key measures of the number of research grants, the average grant size, and the projected success rate.

### **Outlook and Next Steps**

The full Senate is expected to debate and approve the Commerce-Justice-Science bill in July, while the House Appropriations Committee is expected to consider its version in July, also. Congress will try to send a final version of the bill to President Bush before the October 1 start of FY 2008. The President has threatened to veto any 2008 appropriations bill that exceeds his request, as the Senate bill does by more than \$3 billion, so the bill may have a long way to go before its funding levels become final.

(This analysis is one of a series of AAAS R&D Funding Updates on FY 2008 congressional appropriations. The complete series of AAAS R&D Funding Updates, including continually updated analyses of R&D in FY 2008 appropriations, is available on the AAAS R&D Web Site (<http://www.aaas.org/spp/rd>) in the "FY 2008 R&D" or the "What's New" sections.)

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Table. NSF R&amp;D in FY 2008 Senate Appropriations

**Table. National Science Foundation  
Senate Appropriations Committee Action on R&D in the FY 2008 Budget  
(budget authority in millions of dollars)**

	FY 2007 Estimate	FY 2008 Request	FY 2008 House	Action by Senate				
				FY 2008 Senate	Chg. from Request Amount	Percent	Chg. from FY 2007 Amount	Percent
Research and Related Activities (R&RA) 1/ :								
Mathematical and Physical Sciences	1,150	1,253	1,253	<b>1,253</b>	0	0.0%	103	8.9%
Engineering	629	683	683	<b>683</b>	0	0.0%	55	8.7%
Biological Sciences	608	633	633	<b>633</b>	0	0.0%	25	4.1%
Geosciences	745	792	792	<b>810</b>	18	2.3%	66	8.8%
Computer and Info. Science and Eng.	527	574	574	<b>574</b>	0	0.0%	47	9.0%
Office of Cyberinfrastructure	182	200	200	<b>200</b>	0	0.0%	18	9.6%
Social, Behavioral and Econ. Scis.	214	222	222	<b>222</b>	0	0.0%	8	3.9%
International Office	41	45	45	<b>45</b>	0	0.0%	4	10.8%
US Polar Programs 2/	438	465	465	<b>465</b>	0	0.0%	27	6.1%
Integrative Activities 3/	230	263	271	<b>269</b>	6	2.3%	39	17.2%
Arctic Research Commission	1	1	1	<b>1</b>	0	0.0%	0	2.8%
Total R&RA 1/	4,764	5,132	5,140	<b>5,156</b>	24	0.5%	392	8.2%
Major Research Equipment	191	245	245	<b>245</b>	0	0.0%	54	28.2%
Education and Human Resources R&D	63	69	76	<b>79</b>	9	13.3%	16	24.9%
Less Non-R&D in R&RA 1/	-536	-590	-591	<b>-592</b>	-1	0.2%	-56	10.4%
<b>TOTAL NSF R&amp;D</b>	4,482	4,856	4,870	<b>4,888</b>	32	0.7%	406	9.1%
Non-R&D Programs and Activities:								
Non-R&D in R&RA 1/	536	590	591	<b>592</b>	1	0.2%	56	10.4%
Other Education and Human Res. ( Total E.H.R. Budget )	635	681	746	<b>772</b>	91	13.3%	136	21.5%
	698	751	823	<b>851</b>	100	13.3%	152	21.8%
Agency Ops. & Award Management 4/	247	286	286	<b>286</b>	0	0.0%	39	15.7%
National Science Board	4	4	4	<b>4</b>	0	0.0%	0	2.0%
Inspector General	11	12	12	<b>12</b>	0	0.0%	1	8.8%
Total NSF Non-R&D Activities	1,434	1,573	1,639	<b>1,665</b>	92	5.8%	232	16.2%
<b>Total NSF Budget</b>	5,916	6,429	6,509	<b>6,553</b>	124	1.9%	638	10.8%

AAAS estimates based on FY 2008 appropriations bills. Includes conduct of R&D and R&D facilities.

FY 2007 and FY 2008 request figures based on OMB R&D data and supplemental agency budget data.

Figures are rounded to the nearest million. Changes calculated from unrounded figures.

1 R&RA funds are not appropriated by directorate. The FY 2008 Senate and House directorate figures are AAAS estimates based on report language in FY 2008 appropriations bills.

2 All figures include transfers of polar icebreakers costs to the Coast Guard.

3 Includes proposed transfer of EPSCOR program from E.H.R. to R&RA in all years.

4 Formerly Salaries & Expenses.

**July 2, 2007 - AAAS estimates of Senate Appropriations Committee-approved appropriations.**

**These figures may be amended or rejected by the full Senate.**

**FY 2008 House figures are preliminary House appropriations and may be amended.**