



# Science + Technology

## IN CONGRESS

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SPECIAL UPDATE

### FY '04 R&D Budget Proposes Modest Growth

Total federal research and development (R&D) in the FY 2004 budget request sets another record at \$122.5 billion, or 4.4 percent more than FY 2003 (see table on page 3). The increases, however, would primarily go to priority programs in the Department of Defense (DOD) and the Department of Homeland Security (DHS), with a mixture of flat funding, cuts, and modest increases for other R&D programs.

Because of the wartime and homeland security focus, two agencies may have to adjust to diminished expectations after years of favored treatment. On the heels of an almost-completed five-year doubling campaign involving 15 percent increases for each of the past five years, growth in the National Institutes of Health (NIH) budget would slow sharply to just 2.7 percent in FY 2004. Although President Bush signed an authorization bill in December that called for the National Science Foundation (NSF) budget to double over five years, the request of \$5.5 billion in FY 2004 would fall far short of the 'doubling track' level; the 3.2 percent increase over FY 2003 follows a 10 percent increase last year instead of the nearly 15 percent increases for both years envisioned in the authorization.

The newest department in the executive branch, DHS, would become a dominant R&D funding source in FY 2004 with an R&D

budget of \$1.0 billion, a dramatic increase of 49.6 percent from the estimated FY 2003 level for comparable programs. On March 1, several R&D programs from existing agencies such as the Departments of Transportation (DOT), Energy (DOE), and Agriculture (USDA) transferred to DHS, but most of the FY 2004 R&D growth would come from the brand-new Homeland Security Advanced Research Projects Agency (HSARPA) within DHS.

#### Agency Highlights

**National Institutes of Health • NIH** would receive \$27.9 billion for its total budget in FY 2004, an increase of \$726 million or 2.7 percent over the just-completed FY 2003 budget that would slow NIH budget growth after a five-year doubling effort. NIH R&D would rise 2.7 percent to \$26.9 billion, slightly ahead of the 1.9 percent projected inflation rate. The big winner would again be the National Institute of Allergy and Infectious Diseases (NIAID) which would receive a boost of 17.0 percent to \$4.3 billion as NIH's lead institute for its \$1.6 billion bioterrorism R&D portfolio. Most NIH institutes would receive increases between 3 and 5 percent within the tight overall funding environment because Buildings and Facilities funding would fall from \$629 mil-

lion in FY 2003 down to \$80 million; in FY 2004, NIH would discontinue FY 2003 one-time funding for facilities construction, including funding for extramural and intramural biodefense research laboratories and NIH facilities improvements. NIH would also discontinue a \$120 million program for extramural construction in the National Center for Research Resources (NCRR) in FY 2004, leaving NCRR the only NIH institute to see its budget decline (down 7.5 percent to \$1.1 billion).

**Department of Defense • DOD**, the largest federal sponsor of R&D, would see its R&D budget grow to \$62.8 billion, an increase of \$4.2 billion or 7.1 percent, with all of the increase going to the development of weapons systems, coming after record increases of \$8.8 billion and \$6.7 billion the previous two years. The big winner in DOD would be the missile defense program, a high priority for the Bush Administration. Missile defense development would jump 22 percent to \$8.3 billion in FY 2004, mostly in the Missile Defense Agency; funding for other big development projects would also climb, particularly a \$4.4 billion development request for the Joint Strike Fighter (up 28 percent). DOD "Science and Technology," which includes research, medical research, and technology development, would fall 8.3

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See the AAAS R&D Website for detailed analyses of congressional action on R&D in FY 2003 and the FY 2004 R&D budget request:  
[www.aaas.org/spp/rd](http://www.aaas.org/spp/rd)

## FY 2004 R&D Budget

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percent to \$10.3 billion, below even the FY 2002 funding level. The Defense Advanced Research Projects Agency would see its R&D funding increase to \$3.0 billion in FY 2004, an increase of \$264 million or 9.8 percent.

### **Department of Homeland Security •**

The newly launched DHS's R&D budget of \$1.0 billion leaves the DHS R&D portfolio nearly four times larger than two years ago. Most of the FY 2004 R&D growth would

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*The NSF budget would total \$5.5 billion, an increase of 3.2 percent, but well short of the \$6.4 billion FY 2004 authorization.*

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come from HSARPA, DHS's own R&D funding agency closely modeled on DOD's DARPA. The majority of DHS R&D would be in the new Directorate of Science and Technology with an R&D budget of \$801 million in FY 2004, including the new HSARPA as well as programs formerly housed in USDA, DOD, and DOE. Nearly all of the remaining R&D portfolio would consist of R&D programs in the Transportation Security Administration and the Coast Guard, transferred from the Department of Transporta-

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*The Columbia disaster throws the proposed budget in disarray and could result in significant repercussions for all NASA programs.*

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tion. The total DHS budget would be \$36.2 billion in FY 2004.

**National Science Foundation •** The NSF budget would total \$5.5 billion in FY 2004, an increase of 3.2 percent over the final FY 2003 budget, but well short of the \$6.4 billion FY 2004 authorization. Excluding NSF's non-R&D education activities, NSF R&D would be \$4.0 billion, a boost of 2.8 percent. Some of the research directorates would see declining or flat funding. The Biological Sciences (BIO) directorate would see its budget fall 1.6 percent to \$562 million, while

the Geosciences (GEO) budget would inch up 0.5 percent in FY 2004 to \$688 million. There would be an emphasis on NSF support of the physical sciences, with the Directorate of Mathematical and Physical Sciences (MPS) receiving a 2.6 percent boost to \$1.1 billion, including double-digit percentage boosts for NSF support of mathematics and multidisciplinary physical sciences. The Major Research Equipment and Facilities Construction account would also enjoy a sizeable increase, going from \$149 million to \$202 million. The largest beneficiaries of this increase would be the Atacama Large Millimeter Array, the IceCube Neutrino Observatory, and EarthScope. NSF is once again the only federal agency to receive "green lights" for its implementation of the Bush Administration's management agenda, getting high marks in the areas of financial performance and E-government.

**National Aeronautics and Space Administration •** NASA's budget proposal was finalized before the *Columbia* shuttle disaster; the loss of seven astronauts and the shuttle throws the proposed FY 2004 budget in disarray and could result in significant repercussions for all NASA programs. The FY 2004 total NASA budget, already proposed for a dramatic restructuring even before the shuttle disaster, would rise to \$15.5 billion, but the budget likely will have to be reallocated or augmented in the coming weeks. NASA's R&D (two-thirds of the agency's budget) would edge up just 0.2 percent to \$11.0 billion because non-R&D programs, of which the largest is the Space Shuttle, would have higher priority. Space Science R&D is proposed for a 12.7 percent boost to \$4.0 billion, including a 27 percent increase for exploration of the solar system as well as funds for developing new propulsion systems using nuclear technology, and missions to Mercury, the asteroids, a comet, Pluto, and the Kuiper Belt. Biological sciences research would also be a high priority, increasing from \$312 million to \$359 million. The International Space Station would receive \$1.7 billion, down from \$1.8 billion, but the construction schedule of the station is now in serious doubt; all shuttle flights in 2003 except for *Columbia*'s were planned for station construction.

**Department of Energy •** DOE would see

its R&D funding increase 4.0 percent to \$8.5 billion in FY 2004, with the entire increase going to DOE's defense activities. On the nondefense side, funding for the Office of Science (OS) would remain essentially flat at \$3.3 billion for the fourth year in a row, affecting programs in high-energy physics, nuclear physics, fusion research, and advanced computing. There would be a large

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boost in nanoscale science in OS, offset by a planned drop in construction costs of the Spallation Neutron Source. Overall funding for energy R&D would remain flat in FY 2004 but there would be significant shifts in funds based on Bush Administration priorities. The recently announced FreedomCAR and Freedom Fuel programs to develop efficient, hydrogen-powered automobiles would receive \$1.5 billion over five years, including \$272 million in R&D funds in FY 2004, of which \$68 million would be new funds. Coal R&D (including new spending on carbon sequestration research) and nuclear energy R&D would also increase, balanced by cuts in non-coal fossil fuels R&D and energy conservation R&D. DOE's defense R&D programs would jump 8.6 percent to \$4.2 billion, including substantial increases for R&D in inertial confinement fusion and advanced scientific computing as well as DOE's core stockpile stewardship.

**Department of Agriculture •** USDA R&D would fall \$223 million or 10.3 percent from the recently completed FY 2003 budget to

\$1.9 billion. The R&D total in FY 2003 was a high \$2.1 billion because of the inclusion of hundreds of congressionally designated projects, which USDA proposes to eliminate in FY 2004. USDA's National Research Initiative of competitively awarded grants would receive \$200 million in FY 2004, well above the \$166 million FY 2003 funding level. USDA would hold the mostly earmarked Special Research Grants to \$23 million, down from \$112 million in FY 2003. USDA's intramural research would decline 5.6 percent to \$1.0 billion because of the deletion of earmarks, with a steeper drop for Buildings and Facilities (down 80 percent to \$24 million) from the proposed cancellation of congressionally designated projects.

**Department of Commerce** • The FY 2004 budget would again propose to eliminate two key programs at Commerce. The budget would zero out the Advanced Technology Program at the National Institute of Standards and Technology (NIST), which has a budget of \$179 million in FY 2003. The budget would also close out the \$106 million non-R&D Manufacturing Extension Partnership at NIST. Similar proposals failed in FY 2003. Intramural R&D in the NIST laboratories would increase 7.3 percent to \$330 million. The total NIST R&D budget would fall 22.1 percent to \$410 million. National Oceanic and Atmospheric Administration (NOAA) R&D would decline by 1.4 percent to \$675 million. The Oceanic and Atmospheric Research account in NOAA would fall 2.1 percent to \$367 million.

**Department of the Interior** • R&D in the Interior Department would rise a modest 1.0 percent over the just-finished FY 2003 budget to \$633 million, but there would be a cut of 4.2 percent to \$545 million for Interior's lead science agency, the U.S. Geological Survey (USGS). Hence, most

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**R&D in the FY 2004 Budget**  
(Budget authority in millions of dollars; March 7, 2003)

	FY 2002 Actual	FY 2003 Estimate*	FY 2004 Budget	Change FY 03-04 Amount	Percent
Defense (military)	49,877	58,646	<b>62,821</b>	4,175	7.10%
<i>SET (6.1-6.3 + medical)</i>	10,337	11,232	<b>10,297</b>	-935	-8.30%
<i>All Other DOD R&amp;D</i>	39,539	47,415	<b>52,524</b>	5,109	10.80%
Health and Human Services	24,016	27,550	<b>28,203</b>	653	2.40%
<i>Nat'l Institutes of Health</i>	22,714	26,245	<b>26,946</b>	700	2.70%
NASA	10,224	10,999	<b>11,025</b>	26	0.20%
Energy	8,078	8,205	<b>8,535</b>	330	4.00%
<i>NNSA and other defense</i>	3,761	3,849	<b>4,180</b>	330	8.60%
<i>Office of Science</i>	3,074	3,075	<b>3,066</b>	-9	-0.30%
<i>Energy programs</i>	1,244	1,281	<b>1,289</b>	8	0.60%
Nat'l Science Foundation	3,525	3,927	<b>4,035</b>	109	2.80%
Agriculture	2,112	2,166	<b>1,943</b>	-223	-10.30%
Commerce	1,227	1,248	<b>1,100</b>	-148	-11.90%
<i>NOAA</i>	677	684	<b>675</b>	-9	-1.40%
<i>NIST</i>	503	527	<b>410</b>	-117	-22.10%
Interior	623	627	<b>633</b>	6	1.00%
Transportation	778	702	<b>693</b>	-9	-1.20%
Environ. Protection Agency	592	643	<b>607</b>	-37	-5.70%
Veterans Affairs	756	800	<b>822</b>	22	2.80%
Education	265	315	<b>275</b>	-40	-12.80%
Homeland Security**	266	669	<b>1,001</b>	332	49.60%
All Other	760	798	<b>792</b>	-6	-0.70%
<b>Total R&amp;D</b>	<b>103,100</b>	<b>117,297</b>	<b>122,485</b>	<b>5,189</b>	<b>4.40%</b>
Defense R&D	53,731	62,986	<b>67,515</b>	4,530	7.20%
Nondefense R&D	49,368	54,311	<b>54,970</b>	659	1.20%
<i>Nondefense R&amp;D minus NIH</i>	26,654	28,066	<b>28,024</b>	-42	-0.10%
Basic Research	23,848	26,048	<b>26,861</b>	813	3.10%
Applied Research	24,407	26,878	<b>26,870</b>	-8	0.00%
Development	49,412	58,599	<b>64,284</b>	5,684	9.70%
R&D Facilities and Equipment	5,432	5,772	<b>4,471</b>	-1,301	-22.50%

SOURCE: AAAS, based on OMB data for R&D for FY 2004, agency budget justifications, and information from agency budget offices.

\*FY 2003 figures revised to reflect AAAS estimates of final FY 2003 appropriations.

\*\*DHS figures include programs to be transferred to DHS from other agencies.

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## FY 2004 R&D Budget

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USGS programs would receive flat funding or cuts.

### **Environmental Protection Agency •**

The EPA R&D budget would fall 5.7 percent to \$607 million in FY 2004; the FY 2003 total is inflated with one-time building decontamination research funding to respond to the anthrax attacks of 2001. There would be flat funding or small cuts for most EPA R&D programs for the second year in a row. The total EPA budget would decline to \$7.6 billion in FY 2004, down substantially from the recently finalized \$8.1 billion FY 2003 level.

### **Outlook**

Unlike the past two years, President Bush faces a Congress controlled in both chambers by his fellow Republicans, so it is much more likely than in past years that his FY 2004 proposal will be enacted in close to its proposed form. First, however, the Congress must grapple with setting discretionary

spending limits that take into account the administration's tax plans and supplemental needs to fund the war in Iraq. At press time, the House and the Senate separately have passed FY 2004 budget resolutions with the House version setting total discretionary spending at \$775.4 billion or \$6.6 billion short of the president's request. The Senate, meanwhile, passed a resolution that would provide \$791 billion, well above the President's \$782 billion discretionary request. Though initially distracted until mid-February by the need to finish the FY 2003 budget, Congress is making every effort to meet the April 15 statutory deadline for the budget resolution.

For federal R&D funding agencies, uncertainty reigns. Domestic agencies have only recently received their final FY 2003 appropriations, four and a half months into the fiscal year. Although most domestic R&D programs received more than the administration requested for FY 2003, this windfall

makes the FY 2004 request worse by comparison. For the FY 2004 budget, the major fights are likely to be over hot-button items such as tax cuts, Medicare, and supplemental funding for Iraq, pushing FY 2004 appropriations lower on the agenda. While few expect this year's budget process to drag on as long as the thirteen-month FY 2003 process, Congress may be distracted for most of the next few months with other battles.

*—Kei Koizumi, Director, AAAS R&D  
Budget and Policy Program*

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*AAAS R&D Website: [www.aaas.org/spp/rd](http://www.aaas.org/spp/rd)*