

## **Bush Proposes Large Increases for DOD, NIH R&D; Mix of Cuts and Increases for Other R&D Programs**

### AAAS Preliminary Analysis of R&D in the FY 2003 Budget

(All figures in this analysis are **preliminary** and will be revised in later AAAS releases. This analysis is a preview of the forthcoming *AAAS Report XXVII: Research and Development FY 2003*, a comprehensive look at the President's budget for R&D in FY 2003. More tables and continually updated supplemental materials on R&D in the FY 2003 budget can be found on the AAAS R&D Web site at <http://www.aaas.org/spp/R&D>.)

On February 4, President Bush released a FY 2003 budget request containing overall increases for the federal investment in R&D, especially for the high-priority areas of defense, health, and homeland security against terrorism. In sharp contrast to the financial optimism of last year's budget when budget projections forecast endless surpluses, the FY 2003 budget assumes a deficit in FY 2002 and proposes deficit spending for FY 2003.

Citing the war on terrorism and a recessionary economy as justification for a return to deficit spending, President Bush's proposals for further tax cuts and large increases in discretionary spending follow on even larger increases in FY 2002. Discretionary spending, the one-third of the budget subject to annual appropriations decisions by Congress and the President, is the part of the budget out of which nearly all federal R&D is funded. The FY 2003 budget calls for overall discretionary spending to rise 6.8 percent or \$49 billion in FY 2003 to \$767 billion, on top of an FY 2002 total already inflated by emergency appropriations approved in the immediate aftermath of September 11. But in a repeat of last year's request, nearly the entire increase would go just to the Department of Defense (DOD) and the National Institutes of Health (NIH), leaving all other discretionary programs, including R&D programs outside NIH and DOD, with flat or declining funding overall.

#### **R&D in the FY 2003 Budget: DOD and NIH Increases Lead to Record Totals**

Because DOD and NIH are the two largest funding sources of federal R&D, the special treatment given to them in the budget would allow overall federal R&D to increase substantially in FY 2003. But the other R&D funding agencies would share in flat funding for nondefense discretionary spending. (All figures in this release are preliminary and will be revised in later AAAS releases with revised agency data.)

- The request for **total federal R&D** in FY 2003 is a record \$111.8 billion, \$8.6 billion or 8.3 percent more than FY 2002 (see Table 1). As was the case last year, the proposed increases for DOD (\$5.4 billion) and NIH (\$3.9 billion) account for more than the overall increase, leaving all other R&D funding agencies combined with less money than in FY 2002.
- There are no clear patterns in the mix of increases and decreases for the other R&D funding agencies (see Figure 1). Unlike last year, when most R&D funding agencies would have seen their R&D funding decline, FY 2003 would see increases and decreases scattered even within agency portfolios as agencies try to prioritize in an environment of scarce resources. Some cuts are due to the Bush Administration's campaign to eliminate congressional R&D earmarks, which reached \$1.5 billion in FY 2002. Other cuts would be declines to more normal funding levels from FY 2002 totals inflated by post-September 11 counter-terrorism appropriations; while counter-terrorism R&D would see increases at some agencies such as NIH, other agencies with one-time laboratory security upgrades in FY 2002 would see their counter-terrorism R&D funds decline sharply in FY 2003.
- **Nondefense R&D** would increase by 7.8 percent or \$3.8 billion to \$53.2 billion. NIH would make up almost half of the entire nondefense R&D portfolio with another large increase, the fifth and final

installment of a plan to double the NIH budget in the five years to FY 2003. **Excluding NIH, however, all other nondefense R&D would fall by 0.4 percent** to \$26.7 billion.

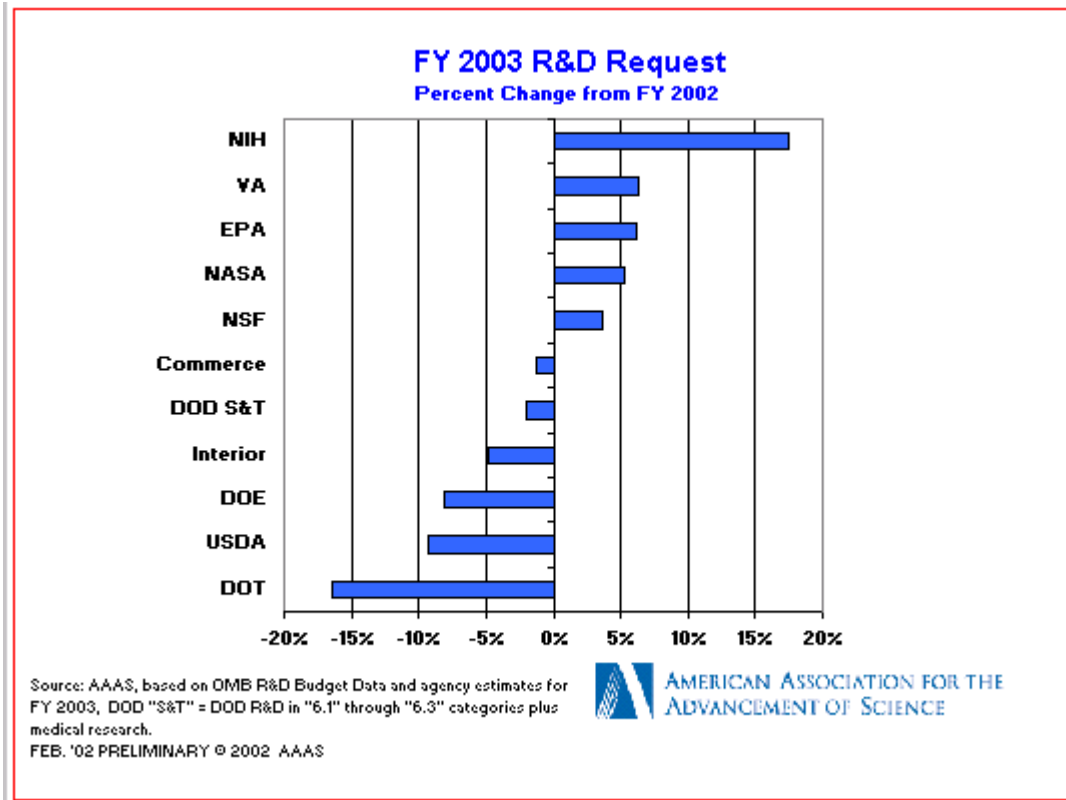


Figure 1.

- The federal investment in **basic research** would grow by 8.5 percent or \$2.0 billion to another all-time high of \$25.5 billion (see Table 2). NIH has supported the majority of federal basic research since FY 2000 and in FY 2003 would provide 57 percent of all federal support. NIH basic research would increase 9.7 percent, less than its overall R&D increase, because of a new emphasis in FY 2003 on applied research on cancer and bioterrorism. Most agencies would see their basic research funding increase in the FY 2003 budget request.
- The total federal investment in **research** (basic and applied research) would increase 8.8 percent to \$51.8 billion in FY 2002 (see Table 2), with a large increase for NIH (up 16.1 percent to \$25.7 billion) responsible for most of the increase. **Without NIH, total federal research would increase moderately by 2.5 percent** or \$645 million to \$26.1 billion.
- The high priority placed by the Bush Administration on defense and health is evident in Table 4, which shows federal **R&D by mission area**. Defense and health R&D together make up more than three-quarters of the federal R&D portfolio, and their share is increasing. Defense R&D (up 8.8 percent) and health R&D (up 15.2 percent) would increase substantially in the request because of large increases for DOD and NIH. Most other national missions would see their R&D decline in the FY 2003 request, except for general science and space. Space R&D would increase 7.0 percent to \$9.2 billion because of substantial new investments in space science and space launch technologies in the NASA request, while general science R&D (up 2.6 percent) would benefit from the Bush Administration's favorable attitude toward NSF and its programs, including the transfer of three programs from other missions to the NSF portfolio.

- Three major multi-agency initiatives would receive increases in the FY 2003 budget. After jumping by more than \$100 million in FY 2002, funding for the **Nanoscale Science, Engineering, and Technology Initiative** would climb another \$100 million (or 17.3 percent) to \$679 million in FY 2003. NSF's lead contribution to the initiative would rise by 11.1 percent to \$221 million. NSF also continues its lead role in the **Networking and Information Technology R&D** initiative, which would see its budget edge up 2.5 percent to \$1.9 billion. NSF's contribution would be \$678 million, mostly in the Computer and Information Science and Engineering (CISE) directorate. The longstanding **U.S. Global Change Research Program** would climb 5.0 percent to \$1.8 billion. While NASA's Earth Science program continues to provide the bulk of funding (\$1.1 billion), the increases would go mostly to other agencies' contributions, including \$40 million in new funds for the Climate Change Research Initiative (CCRI) aimed at funding fundamental research to answer key gaps in knowledge in climate science.
- The Office of Management and Budget (OMB) again presents a 'Federal Science and Technology' (FS&T) budget in the FY 2003 budget (see Table 3). The **FS&T budget** is successor to the Clinton Administration's "21<sup>st</sup> Century Research Fund" and contains most of the same programs. FS&T is a collection of selected R&D and non-R&D programs that emphasize basic and applied research and the creation of new knowledge or technologies. It also includes some S&T education and training activities but excludes most development, and is designed to be an alternative measure for the federal investment in science and technology. FS&T would increase 8.9 percent to \$57.0 billion in FY 2002, with a mixed bag of increases and decreases for programs skewed toward the positive by the large increase for NIH.

#### Highlights of the Major R&D Funding Agencies

- The **National Institutes of Health (NIH)** would receive \$27.3 billion for its total budget in FY 2003, an unprecedented increase of \$3.7 billion (15.7 percent) that would fulfill the commitment to double the NIH budget between FY 1998 and 2003. NIH R&D would rise 17.4 percent to \$26.5 billion. The big winner would be the National Institute of Allergy and Infectious Diseases (NIAID) which would receive a boost of 57.3 percent to \$4.0 billion as NIH's lead institute for bioterrorism R&D and a key part of the Administration's homeland security request. NIAID is also the lead NIH institute in AIDS research, which would increase 10 percent over FY 2002 to \$2.8 billion. Cancer is another high priority for the Bush Administration; the FY 2003 cancer research budget would be \$5.5 billion, of which \$4.7 billion would go to the National Cancer Institute (NCI; up 12.2 percent). Another high priority would be Buildings and Facilities, which would nearly double to \$633 million over an FY 2002 total already inflated by emergency counter-terrorism funds. The new funds would further improve NIH laboratory security, build new facilities for bioterrorism research, and finish construction of NIH's new Neuroscience Research Center. Most of the other institutes would receive increases between 8 and 9 percent. With the large increase, NIH hopes to offer a record 35,920 research project grants in FY 2003, with grants an average of 4.0 percent larger than FY 2002.
- The **Department of Defense (DOD)** would receive its second-largest dollar boost in history for its R&D to \$54.6 billion in FY 2003, an increase of \$5.4 billion or 10.9 percent coming after a record increase of \$7 billion last year. Most of the increase would go to the development of weapons systems in the services (the Air Force and Navy in particular) rather than research. Basic and applied research in DOD would remain flat despite the record increase in the overall DOD budget of 13.4 percent to \$380 billion; DOD S&T, which includes research plus generic technology development, would fall 2.0 percent down to \$9.7 billion (see Figures 1 and 2). After nearly doubling its budget in FY 2002, the Ballistic Missile Defense Organization (BMDO) would see its R&D budget decline slightly to \$6.7 billion, which would still be more than 50 percent above the FY 2001 funding level. The Defense Advanced Research Projects Agency (DARPA) is a big winner in the FY 2003 budget with a proposed 19.2 percent increase to \$2.7 billion across its broad portfolio of research programs aimed at expanding the frontiers of knowledge and military technology to provide future solutions to DOD's technology needs, including a 23 percent boost for Defense Research Sciences, DARPA's basic research portfolio.

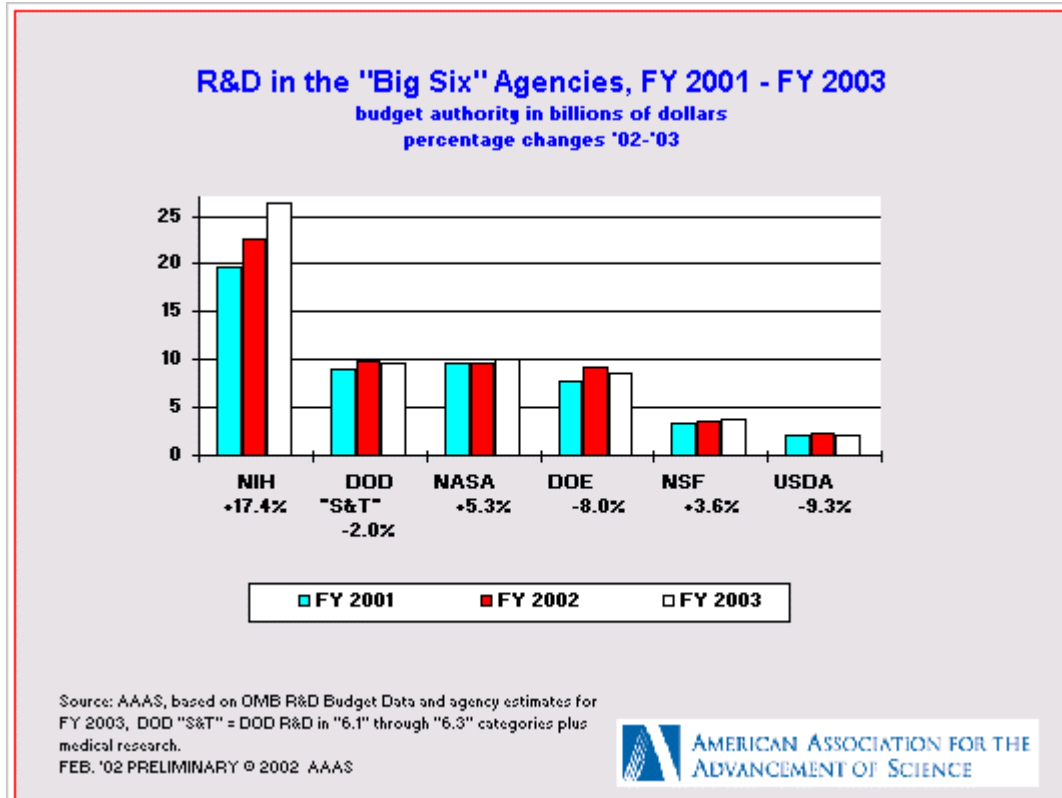


Figure 2.

- The **National Science Foundation (NSF)** wins praise from the Bush Administration for its management, and increases for its R&D programs. The NSF budget would total \$5.0 billion in FY 2003, an increase of 5.0 percent. Excluding NSF's non-R&D education activities, NSF R&D would be \$3.7 billion, a boost of 3.6 percent or \$129 million. More than half of the increase is due to the NSF Geosciences directorate's acquisition of the National Sea Grant program from Commerce, hydrologic sciences from Interior, and environmental education from EPA. The three programs account for \$76 million of the \$129 million increase. Most disciplinary programs in the research directorates would receive small increases or cuts. While mathematical sciences would receive a substantial 20 percent increase to \$182 million, other programs in Mathematical and Physical Sciences (MPS) such as chemistry, physics, and astronomy would all decline. Another big winner would be Information Technology Research (up 9.9 percent), though at the expense of other computer sciences research. Funding for the Major Research Equipment and Facility Construction account would fall \$13 million to \$126 million, with one new start (EarthScope) more than offset by proposals not to renew two FY 2002 congressionally earmarked projects. In the non-R&D education programs, NSF would boost funding for the Administration's high-priority Math and Science Partnerships from \$160 million to \$200 million, but would cut most other education and human resources programs.
- The **National Aeronautics and Space Administration (NASA)** would see its total budget increase by 1.4 percent to \$15.1 billion in FY 2003, but NASA's R&D (two-thirds of the agency's budget) would climb 5.3 percent to \$10.1 billion. Although spending on Human Space Flight, which includes the International Space Station and the non-R&D Space Shuttle, would decline, R&D in Science, Aeronautics and Technology (SAT) would climb 10.3 percent to \$8.9 billion. While the much-delayed International Space Station would receive \$1.5 billion for construction, down from \$1.7 billion, most science programs would receive increases. Space Science funding would climb 13 percent to \$3.4 billion. While canceling the Outer Planets program (including Pluto and Europa missions), NASA proposes a New Frontiers program to select promising planetary missions through competitive proposals and would also make major new investments in new propulsion technology development to

enable future missions. The Biological and Physical Research program expanded greatly last year to take on all Space Station research; BPR funding would rise 2.8 percent in FY 2003 to \$851 million. Aero-Space Technology would climb 11.7 percent to \$2.9 billion, including \$759 million (up 63 percent) for the Space Launch Initiative to continue efforts to develop new technologies for space launch to replace the Space Shuttle. The NASA request would eliminate most R&D earmarks added on to the budget in FY 2002, resulting in a nearly 50 percent cut to Academic Programs, a perennial home to congressional earmarks.

- The **Department of Energy (DOE)** would see its R&D fall 8.0 percent to \$8.5 billion from an FY 2002 total inflated with one-time emergency R&D funds. Funding for the Office of Science would remain flat at \$3.3 billion, but most programs (including the physics programs, Basic Energy Sciences, and computing research) would receive increases, offset by cuts in R&D earmarks and a planned reduction in Spallation Neutron Source construction. While overall funding for Solar and Renewables R&D would remain level, there would be many program shifts toward hydrogen, hydropower, and wind research and away from other areas. In Fossil Energy R&D, there would be steep cuts of up to half in R&D on natural gas and petroleum technologies, with a continuing shift in emphasis toward coal R&D. In Energy Conservation, DOE would abandon the Partnership for a New Generation of Vehicles (PNGV) to develop high-mileage gas-powered vehicles and would replace it with FreedomCAR, a collaborative effort with U.S. auto companies to develop hydrogen-powered fuel cell vehicles. DOE's defense R&D programs would fall 13.5 percent to \$4.0 billion because the FY 2002 total is inflated with one-time counter-terrorism emergency funds for the defense weapons labs and nonproliferation R&D, and because funding for construction of the National Ignition Facility would decline in FY 2003 to \$214 million. Many ongoing defense R&D programs such as advanced scientific computing R&D and stockpile R&D would receive increases.
- R&D in the **U.S. Department of Agriculture (USDA)** would fall \$218 million or 9.3 percent to \$2.1 billion, mostly because of steep cuts to R&D earmarks and the loss of one-time FY 2002 emergency anti-terrorism funds. Funding for competitive research grants in the National Research Initiative (NRI) would double from \$120 million to \$240 million, offsetting steep cuts in earmarked Special Research Grants from \$103 million down to \$7 million. The large NRI increase would partially make up for the Administration's decision to block a \$120 million mandatory competitive research grants program from spending any money in FY 2003, as in FY 2002. In the intramural Agricultural Research Service (ARS) programs, Buildings and Facilities funding would fall from \$119 million down to \$17 million because FY 2002 emergency anti-terrorism security upgrades and congressionally earmarked construction projects would not be renewed; ARS research would fall \$30 million to \$1.0 billion, but selected priority research programs would receive increases, offset by the cancellation of R&D earmarks.
- **Department of Commerce** R&D programs would decline 1.3 percent in FY 2003 to \$1.1 billion. While last year's budget would have eliminated the Advanced Technology Program (ATP) at the **National Institute of Standards and Technology (NIST)**, the FY 2003 budget would keep it alive, though at a greatly reduced level. NIST would instead redirect funds to intramural R&D in the NIST laboratories, which would receive a \$70 million increase to \$402 million, including funding to make a new Advanced Measurement Laboratory operational. **National Oceanic and Atmospheric Administration (NOAA)** R&D would decline by 2.2 percent or \$14 million because of a transfer of the \$62 million (in FY 2002) National Sea Grant program from NOAA to NSF in FY 2003. Overall, NOAA R&D programs would see increases.
- R&D in the **Department of the Interior** would fall 4.8 percent to \$628 million, but steeper cuts would fall on Interior's lead science agency, the **U.S. Geological Survey (USGS)**. USGS R&D would fall 7.0 percent or \$41 million to \$542 million. Hardest hit would be programs in Water Resources as a result of reductions in the National Water Quality Assessment Program and the Toxic Substances Hydrology Program; these programs provide data and research-based information to state and federal regulatory agencies such as the EPA. Included in the Toxics Program is a \$10 million transfer to NSF to initiate a competitive grants process to address water quality issues.

- The **Environmental Protection Agency (EPA)** R&D budget would rise 6.2 percent to \$650 million in FY 2003. Much of this increase may be attributed to the \$77.5 million set aside for research in homeland security, which could include developments in dealing with biological and chemical incidents. The total EPA budget would decline from \$8.2 billion in FY 2002 to \$7.7 billion in FY 2003, a 5.5 percent drop.
- **Department of Transportation (DOT)** R&D funding would fall 16.4 percent to \$725 million. These numbers should be viewed with caution, however, as the transfer of some functions (including R&D) to the new **Transportation Security Administration** has yet to be fully reflected in agency budget documents.

### **The Budgetary Context for FY 2003: Big Increases for Defense, Flat Funding for Other Programs, and Deficits are Back**

The FY 2002 Bush budget proposes **discretionary spending of \$767 billion** in FY 2003, a large increase of \$49 billion or 6.8 percent over FY 2002 (see Figure 3), following on an even larger increase in FY 2002, boosted in part by emergency funds to respond to the September 11 terrorist attacks. Much of the emergency spending on homeland security would continue in FY 2003. Nearly all of the increase, however, would go to the Department of Defense (DOD, up \$45 billion). Two other agencies, the National Institutes of Health (NIH, up \$3.7 billion) and the Department of Education (up \$0.5 billion) would also rank as high priorities and would receive increases. Just like last year's budget, this would leave all other discretionary programs with slightly less than FY 2002. Non-NIH nondefense R&D joins other programs such as foreign aid, immigration, justice programs, national parks, and environmental protection in a competition for shrinking resources. Not surprisingly, then, in the FY 2003 R&D request NIH and DOD R&D programs would receive substantial increases while other agencies' R&D programs would be flat overall, with increases balanced out by cuts.

Although the discretionary spending proposals look similar to last year's Bush budget, the overall budgetary context could not be more different. Last year, budget projections showed \$5.6 trillion in projected surpluses over the next 10 years, with surpluses growing each year into the future. This allowed President Bush to propose large tax cuts, which were enacted into law last June. As recently as August, Democrats and Republicans were united in the commitment to keep the federal budget in balance even without counting the Social Security program's surpluses, thus allowing Social Security surpluses to pay down and possibly even erase the national debt. Although they were bitterly divided about how to do so, the task seemed possible even as the first signs of an economic slowdown manifested themselves in falling tax revenues and the first installments of the June tax cut bill flowed out of the Treasury. But the September 11 terrorist attacks, a recession now judged to have begun in March 2001, and the need for emergency funds for war, homeland security, and disaster relief blew large holes in all previous budget scenarios.

The federal budget is now back in deficit and looks to stay that way for several years to come, as shown in Figure 4. Thirty years of deficits gave way to four years of surpluses beginning in FY 1998, but it now seems certain that the federal government will end FY 2002 in deficit. And although both parties committed to balancing the budget even without the Social Security surplus (the lower line in Figure 4), that commitment was fulfilled only in FY 1999 and FY 2000; the non-Social Security accounts fell into deficit in FY 2001. In a sign of just how much things have changed over the past year, the FY 2002 non-Social Security deficit is now projected to reach \$262 billion. Instead of paying down the national debt, the federal government is again adding to it.

President Bush's FY 2003 budget is the first budget in five years to propose deficit spending for the coming year, even though it would have been possible to propose a balanced budget. Asserting that the first priority of the federal government is to provide for national defense, homeland defense, and economic security, the FY 2003 budget proposals would lead to a unified deficit of \$80 billion (and a non-Social Security deficit of \$259 billion). Although the large spending increases for defense and homeland security within discretionary spending contribute to the deficit, the FY 2003 budget contains proposals for another series of

tax cuts in an economic stimulus package that would reduce tax revenues by \$77 billion in FY 2003 and far larger amounts in future years.

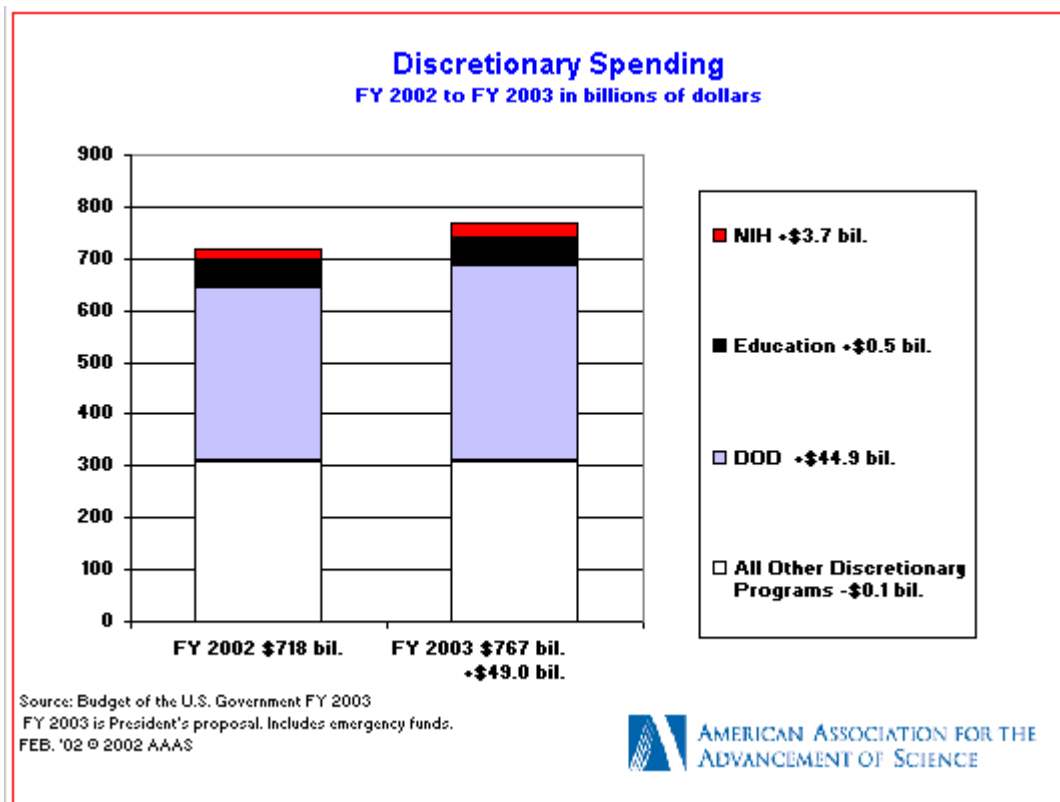


Figure 3.

Without the controversial economic stimulus proposals, it would have been relatively easy to erase a remaining \$3 billion deficit to present a balanced budget. The fact that the budget proposes a deficit, however, gives Congress and the President more flexibility to reduce taxes or increase spending by whatever amounts they feel are necessary, without the constraint of forcing the budget to balance. Gone for now, of course, are any ideas about balancing the budget without the Social Security surplus.

### Outlook for the FY 2003 Budget Process

The FY 2003 budget now moves to Congress. Congress is faced with task of approving a FY 2003 budget resolution, Congress' own blueprint of its budget priorities for FY 2003 and beyond. This task occurs in a far different Congress than last year. With the Senate now under Democratic control, the consensus on balancing the budget shattered, and the temporary partisan truce in the aftermath of September 11 long ended, the process is expected to be lengthy and contentious. Senate Democrats have already criticized the Bush budget for spending too little on domestic programs and are looking for ways to block another round of tax cuts, while on the other side there are conservative Republicans who criticize the Bush proposals for spending too much and would like to return to a balanced budget in FY 2003. But with President Bush having taken the lead to prepare the public for budget deficits for the next few years, the most likely outcome is that Congress will spend whatever it feels it needs in order to adequately fund defense, domestic programs, homeland security, other priorities, and its electoral hopes in the November 2002 elections. Since the difference between a deficit and a higher deficit is much more politically palatable than the difference between a deficit and a surplus, Congress will treat the Bush request as a base upon which it can add spending for its own priorities. This outcome became even more likely this week, when the Senate killed the economic stimulus package of tax cuts, freeing up more resources for spending.

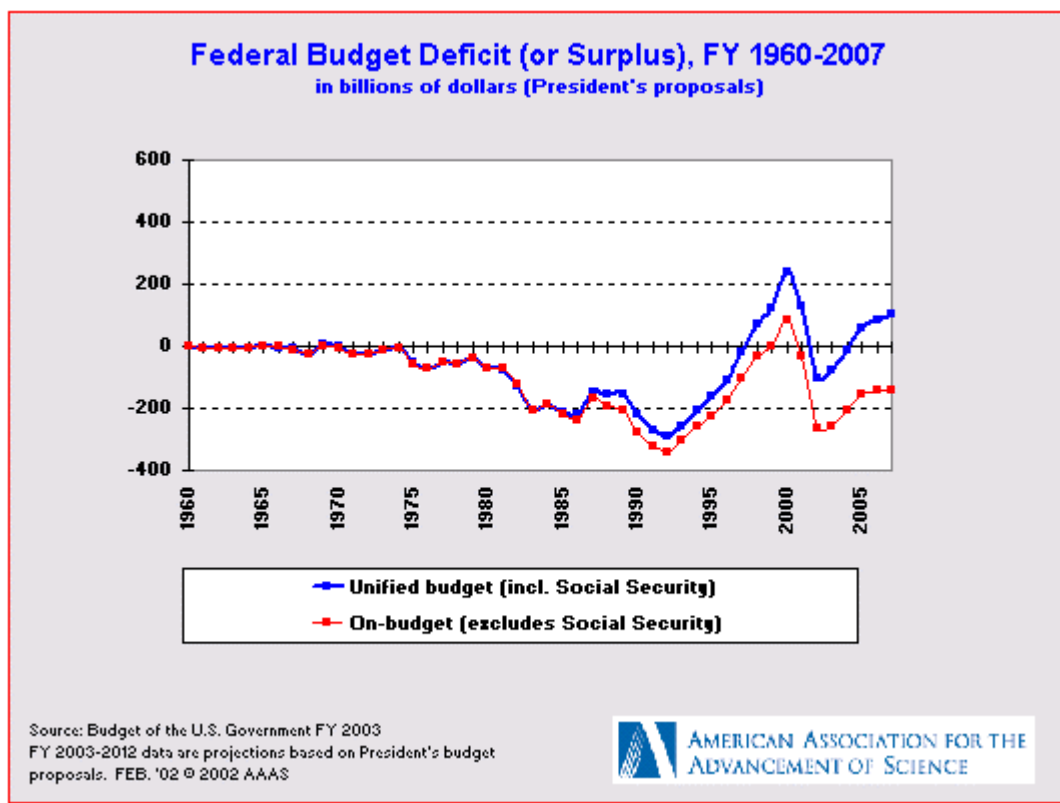


Figure 4.

For federal R&D programs, the only thing certain is that NIH will eventually receive its requested \$27.3 billion, and perhaps even more. For other agencies, congressional appropriators will disagree with the President, and at the moment it appears that, like last year, the President will offer little resistance to Congress adding in spending for its own priorities on top of the request. In an election year, the pressures for Congress to add on more money will be even greater than last year. Combined with the continuing crisis atmosphere on matters related to war and security and the near-disappearance of balancing the budget as a constraint, the President's budget will almost certainly be a floor rather than a ceiling for R&D appropriations action to come.

- February 7, 2002

(More materials on R&D in the FY 2003 budget, historical data and charts, and more information on AAAS *Report XXVII: Research and Development FY 2003*, can be found on the AAAS R&D Web site at <http://www.aaas.org/spp/R&D>, or by calling 202-326-6607.)

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AAAS Preliminary Analysis of R&D in the FY 2003 Budget

**Table 1.** R&D in the FY 2003 Budget by Agency  
(budget authority in millions of dollars)

	FY 2001 Actual	FY 2002 Estimate	FY 2003 Budget	Change FY 02-03	
				Amount	Percent
<b>Total R&amp;D (Conduct and Facilities)</b>					
Defense (military)	42,235	49,171	<b>54,544</b>	5,373	10.9%
<i>S&amp;T (6.1-6.3 + medical)</i>	8,933	9,877	<b>9,677</b>	-200	-2.0%
<i>All Other DOD R&amp;D</i>	33,302	39,294	<b>44,867</b>	5,573	14.2%
Health and Human Services	21,037	23,938	<b>27,683</b>	3,745	15.6%
<i>Nat'l Institutes of Health</i>	19,737	22,539	<b>26,472</b>	3,933	17.4%
NASA	9,675	9,560	<b>10,069</b>	509	5.3%
Energy	7,772	9,253	<b>8,510</b>	-743	-8.0%
<i>NNSA and other defense</i>	3,414	4,638	<b>4,010</b>	-628	-13.5%
<i>Energy and Science programs</i>	4,358	4,615	<b>4,500</b>	-115	-2.5%
Nat'l Science Foundation	3,363	3,571	<b>3,700</b>	129	3.6%
Agriculture	2,182	2,336	<b>2,118</b>	-218	-9.3%
Commerce	1,054	1,129	<b>1,114</b>	-15	-1.3%
<i>NOAA</i>	586	644	<b>630</b>	-14	-2.2%
<i>NIST</i>	412	460	<b>472</b>	12	2.6%
Interior	622	660	<b>628</b>	-32	-4.8%
Transportation	792	867	<b>725</b>	-142	-16.4%
Environ. Protection Agency	598	612	<b>650</b>	38	6.2%
Veterans Affairs	748	796	<b>846</b>	50	6.3%
Education	264	268	<b>311</b>	43	16.0%
All Other	922	1,021	<b>858</b>	-163	-16.0%
<b>Total R&amp;D</b>	91,264	103,182	<b>111,756</b>	8,574	8.3%
Defense R&D	45,649	53,809	<b>58,554</b>	4,745	8.8%
Nondefense R&D	45,615	49,373	<b>53,202</b>	3,829	7.8%
<i>Nondefense R&amp;D excluding NIH</i>	25,878	26,834	<b>26,730</b>	-104	-0.4%
Basic Research	21,330	23,542	<b>25,545</b>	2,003	8.5%
Applied Research	21,960	24,082	<b>26,290</b>	2,208	9.2%
Development	43,230	50,960	<b>55,520</b>	4,560	8.9%
R&D Facilities and Equipment	4,744	4,598	<b>4,401</b>	-197	-4.3%

Source: AAAS, based on OMB data for R&D for FY 2003, agency budget justifications, and information from agency budget offices.

**February 7, 2002 - PRELIMINARY - will be revised**

AAAS Preliminary Analysis of R&D in the FY 2003 Budget

**Table 2.** Research in the FY 2003 Budget  
(budget authority in millions of dollars)

	FY 2001	FY 2002	FY 2003	Change FY 02-03	
	Actual	Estimate	Budget	Amount	Percent
<b>BASIC RESEARCH</b>					
Defense (military)	1,271	1,305	<b>1,336</b>	31	2.4%
Health and Human Services	11,601	13,183	<b>14,467</b>	1,284	9.7%
<i>Nat'l Institutes of Health</i>	11,598	13,180	<b>14,464</b>	1,284	9.7%
NASA	1,652	1,909	<b>2,298</b>	389	20.4%
Energy	2,390	2,420	<b>2,517</b>	97	4.0%
Nat'l Science Foundation	2,894	3,093	<b>3,242</b>	149	4.8%
Agriculture	801	860	<b>880</b>	20	2.3%
Commerce (NIST)	50	52	<b>73</b>	21	40.4%
Interior	56	58	<b>55</b>	-3	-5.2%
Transportation	17	13	<b>25</b>	12	92.3%
Environ. Protection Agency	105	107	<b>101</b>	-6	-5.6%
Smithsonian	108	111	<b>114</b>	3	2.7%
Veterans Affairs	301	344	<b>367</b>	23	6.7%
All Other	84	87	<b>70</b>	-17	-19.5%
<b>Total Basic Research</b>	21,330	23,542	<b>25,545</b>	2,003	8.5%
<i>Basic research excluding NIH</i>	9,732	10,362	<b>11,081</b>	719	6.9%
<b>RESEARCH (basic + applied)</b>					
Defense (military; incl. medical)	4,944	4,961	<b>4,952</b>	-9	-0.2%
Health and Human Services	20,665	23,432	<b>26,846</b>	3,414	14.6%
<i>Nat'l Institutes of Health</i>	19,491	22,182	<b>25,748</b>	3,566	16.1%
NASA	4,185	4,675	<b>5,397</b>	722	15.4%
Energy	4,720	5,294	<b>5,383</b>	89	1.7%
Nat'l Science Foundation	3,075	3,285	<b>3,441</b>	156	4.7%
Agriculture	1,846	1,848	<b>1,826</b>	-22	-1.2%
Commerce	818	890	<b>868</b>	-22	-2.5%
NOAA	505	549	<b>542</b>	-7	-1.3%
NIST	305	334	<b>317</b>	-17	-5.1%
Interior	590	628	<b>596</b>	-32	-5.1%
Transportation	462	535	<b>421</b>	-114	-21.3%
Environ. Protection Agency	475	488	<b>532</b>	44	9.0%
Veterans Affairs	733	780	<b>829</b>	49	6.3%
Education	174	180	<b>213</b>	33	18.3%
Agency for Int'l Develop.	249	268	<b>182</b>	-86	-32.1%
Smithsonian	108	111	<b>114</b>	3	2.7%
All Other	246	249	<b>235</b>	-14	-5.6%
<b>Total Research</b>	43,290	47,624	<b>51,835</b>	4,211	8.8%
<i>Total research excluding NIH</i>	23,799	25,442	<b>26,087</b>	645	2.5%

Source: AAAS, based on OMB data for R&D for FY 2003, agency budget justifications, and information from agency budget offices.

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## AAAS Preliminary Analysis of R&amp;D in the FY 2003 Budget

**Table 3. "Federal Science and Technology Budget" by Agency**

(budget authority in millions of dollars)

	FY 2001	FY 2002	FY 2003	Change FY 02-03	
	Actual	Estimate	Budget	Amount	Percent
Health and Human Services	20,438	23,433	<b>27,335</b>	3,902	16.7%
<i>(National Institutes of Health)</i>	20,438	23,433	<b>27,335</b>	3,902	16.7%
National Science Foundation	4,437	4,795	<b>5,036</b>	241	5.0%
Department of Energy	4,911	5,099	<b>5,027</b>	-72	-1.4%
<i>(Science programs)</i>	3,218	3,240	<b>3,285</b>	45	1.4%
<i>(Energy supply)</i>	631	630	<b>659</b>	29	4.6%
<i>(Energy conservation)</i>	619	641	<b>589</b>	-52	-8.1%
<i>(Fossil energy)</i>	443	588	<b>494</b>	-94	-16.0%
National Aeronautics & Space Admin.	7,789	8,113	<b>8,774</b>	661	8.1%
<i>(Space Science)</i>	2,760	3,034	<b>3,428</b>	394	13.0%
<i>(Earth Science)</i>	1,825	1,695	<b>1,639</b>	-56	-3.3%
<i>(Aero-Space Technology)</i>	2,260	2,556	<b>2,856</b>	300	11.7%
<i>(Biological and Physical Res.)</i>	944	828	<b>851</b>	23	2.8%
Department of Defense	4,944	4,961	<b>4,952</b>	-9	-0.2%
<i>(Basic Research)</i>	1,271	1,305	<b>1,336</b>	31	2.4%
<i>(Applied Research)</i>	3,673	3,656	<b>3,616</b>	-40	-1.1%
Agriculture	1,885	1,890	<b>1,913</b>	23	1.2%
<i>(CSREES Res. And Edu.)</i>	514	552	<b>563</b>	11	2.0%
<i>(Economic Research Service)</i>	69	70	<b>82</b>	12	17.1%
<i>(Agricultural Research Service)</i>	936	1,017	<b>1,014</b>	-3	-0.3%
<i>(Mandatory research grants (net))</i>	120	0	<b>0</b>	0	--
<i>(Forest Service Research)</i>	246	251	<b>254</b>	3	1.2%
Commerce	828	948	<b>861</b>	-87	-9.2%
<i>(Oceanic and Atmos. Res. NOAA)</i>	325	362	<b>297</b>	-65	-18.0%
<i>(NIST minus MEP)</i>	503	586	<b>564</b>	-22	-3.8%
Interior (USGS)	918	950	<b>904</b>	-46	-4.8%
Environ. Protection Agency (S&T)	746	750	<b>797</b>	47	6.3%
Veterans Affairs (Med. & Prosthetic)	363	373	<b>409</b>	36	9.7%
Education	363	377	<b>431</b>	54	14.3%
<i>(Spec. Edu. Res. And Innov.)</i>	77	78	<b>78</b>	0	0.0%
<i>(Disability and Rehab. Research)</i>	100	110	<b>110</b>	0	0.0%
<i>(Res., Dev., and Dissemination)</i>	186	189	<b>243</b>	54	28.6%
Transportation	521	651	<b>548</b>	-103	-15.8%
<i>(Highway Research)</i>	387	448	<b>421</b>	-27	-6.0%
<i>(FAA Res., Eng. And Develop.)</i>	134	203	<b>127</b>	-76	-37.4%
<b>Total "FS&amp;T"</b>	<b>48,143</b>	<b>52,340</b>	<b>56,987</b>	<b>4,647</b>	<b>8.9%</b>
<i>FS&amp;T excluding NIH</i>	<i>27,705</i>	<i>28,907</i>	<b>29,652</b>	<b>745</b>	<b>2.6%</b>

OMB data from the *Budget of the U.S. Government FY 2003: Analytical Perspectives* Chapter 8.

The programs in the Federal Science and Technology Budget do not correspond to definitions of R&amp;D.

The FS&T Budget contains selected R&D and non-R&D programs with an emphasis on basic and applied research and the creation of new knowledge or technologies. The programs in this table were selected by OMB, and differ from the original definitions of FS&T proposed by the National Academy of Sciences.

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AAAS Preliminary Analysis of R&D in the FY 2003 Budget

**Table 4.** Major Functional Categories of R&D  
(budget authority in millions of dollars)

	FY 2001	FY 2002	FY 2003	Change FY 02-03		% Share of Total ('03)
	Actual	Estimate	Budget	Amount	Percent	
Defense <sup>1</sup>	45,649	53,809	<b>58,554</b>	4,745	8.8%	52.4%
Nondefense <sup>2</sup>	45,615	49,373	<b>53,202</b>	3,829	7.8%	47.6%
Space	8,739	8,625	<b>9,232</b>	607	7.0%	8.3%
Health	21,757	24,710	<b>28,475</b>	3,765	15.2%	25.5%
Energy	1,431	1,677	<b>1,527</b>	-150	-9.0%	1.4%
General Science	6,372	6,600	<b>6,771</b>	171	2.6%	6.1%
Environment <sup>3</sup>	2,188	2,264	<b>2,229</b>	-35	-1.5%	2.0%
Agriculture	1,827	2,015	<b>1,824</b>	-191	-9.5%	1.6%
Transportation	1,728	1,802	<b>1,562</b>	-240	-13.3%	1.4%
Commerce	467	484	<b>483</b>	-1	-0.2%	0.4%
International	252	268	<b>182</b>	-86	-32.1%	0.2%
All Other	854	928	<b>917</b>	-11	-1.2%	0.8%
<b>Total R&amp;D</b>	<b>91,264</b>	<b>103,182</b>	<b>111,756</b>	<b>8,574</b>	<b>8.3%</b>	<b>100.0%</b>

Source: Authors' estimates based on data from OMB and agency budget justifications.

Classifications generally follow the government's budget function categories except health (which here includes health R&D in HHS and VA).

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

<sup>1</sup> Includes DOD and defense R&D in DOE.

<sup>2</sup> Includes all R&D not in defense.

<sup>3</sup> Includes natural resources R&D.

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