



November 30, 2005 -
November Status Report on R&D in FY 2006 Appropriations

Congress Races To Finish FY 2006 Appropriations, Adds Funds for R&D Programs

(This analysis is an update of the October Status Report, and covers developments since early October. The complete series of AAAS R&D Funding Updates, including continually updated analyses of R&D by agency in FY 2006 appropriations, is available on the AAAS R&D Web Site (<http://www.aaas.org/spp/rd>) in the “FY 2006 R&D” or the “What’s New” sections.)

Congress picked up the pace on final negotiations over the FY 2006 appropriations bills before its Thanksgiving recess, and hopes to finish work in mid-December. Congressional appropriators have reached final budget agreements on 10 of the 12 largest R&D funding agencies, and are struggling to wrap up work on the Department of Defense (DOD) and the National Institutes of Health (NIH), the two largest federal sponsors of R&D. Appropriators thought they had reached a final agreement on the NIH budget, but the House rejected the Labor-HHS appropriations bill on November 17 and sent appropriators back to the drawing board, while the DOD budget is still in final negotiations. The other major R&D funding agencies’ 2006 budgets have been signed into law. But in an added wrinkle to a confusing budget process, Congress is preparing to include an across-the-board cut of up to 2 percent for all programs in the last FY 2006 spending bill, which will trim R&D funding even for agencies whose budgets have already been signed into law.

Based on appropriations action so far, Congress is set to increase the total federal R&D investment by 2.4 percent to \$135.8 billion in 2006, adding \$3.5 billion to the President’s FY 2006 request, **but \$3.0 billion of the \$3.2 billion increase over 2005 would go to weapons development in DOD and space exploration R&D in the National Aeronautics and Space Administration (NASA; see Table 1). Funding for all other federal R&D programs outside weapons and space exploration would barely increase under current plans,** and would actually fall if congressional discussions of an across-the-board cut bear fruit in December. The nondefense R&D total depends on the outcome of final negotiations on the NIH budget and a possible across-the-board cut, but the current total of \$57.7 billion represents a 2.1 percent increase that just matches the expected inflation rate. Yet nearly two-thirds of the \$1.2 billion increase goes to NASA efforts to develop new space exploration technologies for its moon and Mars plans, leaving all other nondefense R&D programs collectively with a small increase that could disappear entirely in December.

For the federal research portfolio (excluding development and R&D facilities), **congressional appropriations for basic and applied research total \$57.1 billion, an increase of \$1.2 billion or 2.1 percent over 2005** (see Table 2). But again, NASA applied research investments accounts for a majority of the increase, leaving most agency research portfolios with modest increases falling short of inflation. Subtracting the big NASA applied research gains leaves federal basic research investments barely even with last year. Federal support of basic research in 2006 totals \$27.0 billion currently, barely 0.4 percent more than 2005.

So far, congressional negotiators have treated R&D programs better than many observers had feared, juggling priorities and shifting money from defense to domestic programs to give most R&D programs flat funding or modest increases (see Table 1 and Figure 1). R&D funding has been unaffected by the unanticipated billions of dollars for hurricane disaster relief until now, but the pain could be felt in December as Congress makes across-the-board cuts to domestic and possibly defense programs, in part to

offset the emergency dollars. Other emerging emergencies such as heating assistance and preparations for pandemic flu could also add to the financial pressures.

Included in these FY 2006 R&D appropriations are record-breaking amounts for R&D earmarks, which significantly cut into core program funding in certain R&D programs. R&D earmarks total \$2.1 billion in 2006 appropriations so far (see Table A), already ahead of the record-setting 2005 total even though the DOD budget, which is sure to contain nearly \$1 billion in earmarks, is unfinished.

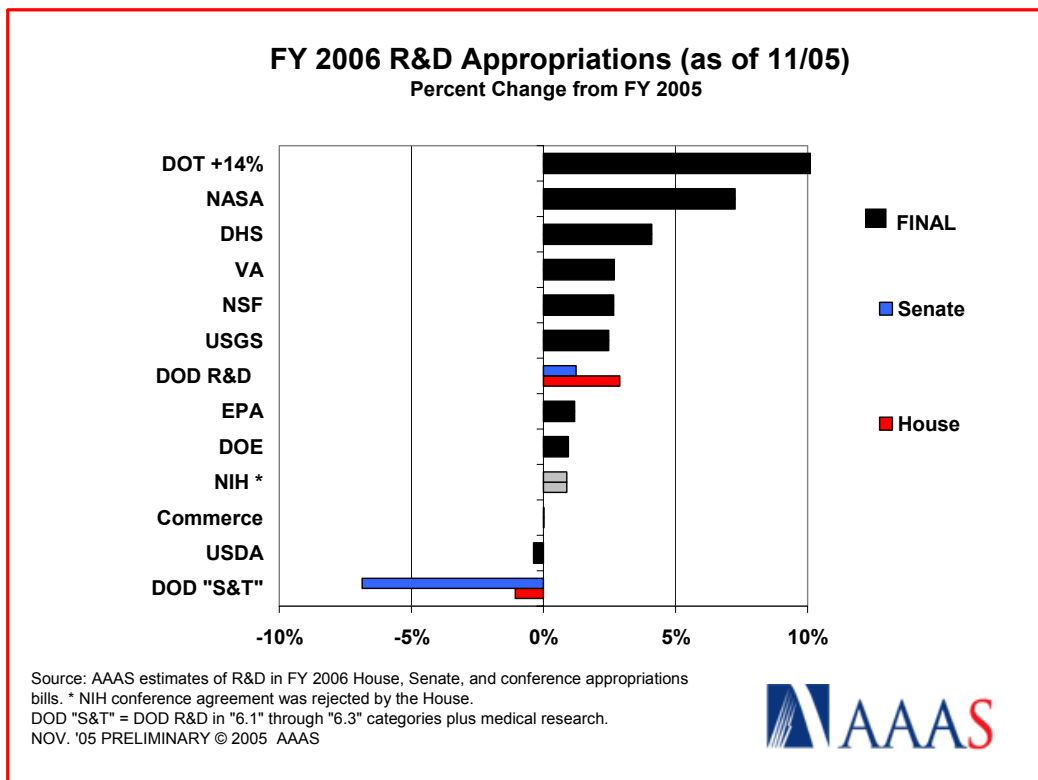


Figure 1. (click on the image for PDF version)

Highlights of Recent Action on FY 2006 R&D Appropriations

Congress is still working through the FY 2006 appropriations process to determine program-by-program funding allocations for R&D programs for the fiscal year which began on October 1. Congress has concluded House-Senate conferences on 10 of the 11 appropriations bills for FY 2006, but before Thanksgiving the House rejected the conference report (final version) of the Labor-HHS appropriations bill containing funding for NIH and other Department of Health and Human Services (HHS) agencies. President Bush has signed the 9 bills into law, giving 10 of the top 12 R&D funding agencies (all except DOD and NIH) their final 2006 budgets. But final may not mean final: an across-the-board cut could be attached to the final appropriations bill approved by Congress, reducing funding even for agencies whose budgets have already been signed into law. Table 1 provides details of R&D in FY 2006 appropriations so far, including the rejected compromise on the HHS, Education, and Labor budgets; the House version of the DOD budget; and enacted appropriations for the other agencies. Table 2 provides estimates for the basic and applied research portion of the federal R&D investment. Table A provides the latest estimates for R&D earmarks contained in these appropriations.

- Congress is set to provide \$135.8 billion for the total federal R&D portfolio in 2006, an increase of \$3.2 billion or 2.4 percent and a \$3.5 billion boost over the request (see Table 1). Nearly the entire increase would go to DOD weapons development (up \$2.2 billion) and NASA space exploration R&D (up \$776 million), leaving all other federal R&D essentially flat. The total could change significantly in

December depending on final action on the DOD budget, a renegotiated NIH budget, and a possible across-the-board cut.

- **In nondefense R&D, the current total of \$57.7 billion represents a 2.1 percent increase, but two-thirds of the increase goes to NASA for space exploration technologies (see Table 1).** Most nondefense R&D agencies are set to receive increases at or just below the 2.0 percent inflation rate (see Figure 1), but these increases could be reduced or erased in December.

- **The federal research portfolio (basic and applied) would be \$57.1 billion in 2006 under current plans, 2.1 percent or \$1.2 billion more than last year and \$2.0 billion more than the request (see Table 2), but the majority of the increase goes to NASA applied research.** NASA research climbs 12.2 percent to \$5.4 billion, but the increase goes entirely to applied research on technologies needed for the agency’s moon and Mars missions. NASA’s basic research investments in areas such as space science, earth science, and biological and physical research fall steeply by 7.3 percent. Other basic research efforts fare better, but total federal basic research would increase just 0.4 percent to \$27.0 billion, with the final total dependent on final action on the NIH and DOD budgets. Most agencies’ basic research investments would either decline or increase by less than 1 percent in 2006, with the notable exception of the National Science Foundation (NSF) with a 2.8 percent increase. But even NSF’s increase follows a similarly sized cut in 2005.

- **Appropriators are on a record-setting pace for R&D earmarks with \$2.1 billion so far, already exceeding last year’s record total (see Table A and Figure 2).** The earmarks are concentrated in four agencies (DOD, \$563 million; USDA, \$334 million; DOE, \$529 million; and NASA, \$321 million) with 84 percent of the total, while NIH, NSF, DHS, and other agencies are earmark-free. Earmarks make up more than 1 out of every 5 program dollars in areas such as National Oceanic and Atmospheric Administration (NOAA) R&D, energy R&D, and extramural agricultural research. The final DOD budget will almost certainly push the total even higher.

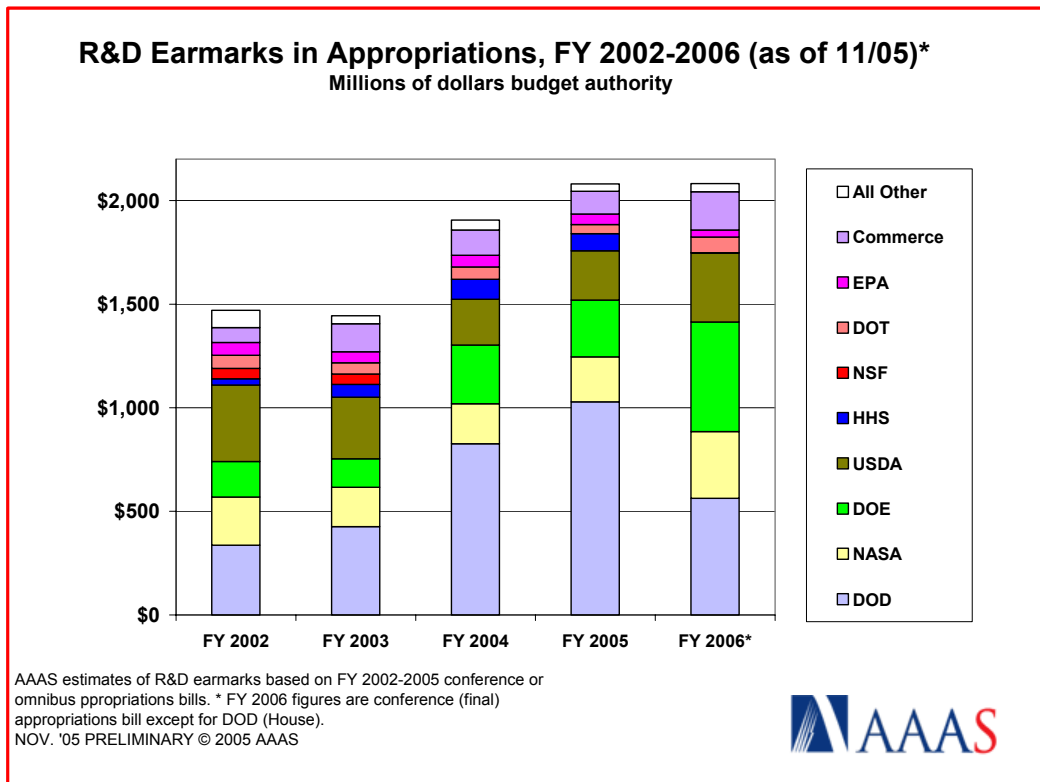


Figure 2. (click on the image for PDF)

Recent Highlights in FY 2006 R&D Appropriations

(For details on individual agency appropriations, please see the agency R&D Funding Updates on the AAAS R&D Web site. These highlights only cover recent congressional actions; other agencies' budgets (DOD, DHS, EPA, and Interior) have not changed since the October status report. The on-line version of this document contains links.)

- On November 16, appropriators thought they had agreed on a final budget bill for the **National Institutes of Health (NIH)** and other health, education, and labor agencies. But the next day, the House rejected the bill because of its steep cuts to many health and education programs. The agreement included \$28.8 billion for NIH in 2006, a slight 0.9 percent increase over last year that would mark the first time in 24 years the NIH budget would fail to keep pace with general inflation. NIH R&D would rise 0.9 percent to \$28.0 billion, failing to keep pace with general inflation for the first time in 24 years. Most NIH institutes would receive increases of between 0.3 and 0.7 percent. In December, Congress is likely to reaffirm the latest NIH budget proposal, but Congress could also fund NIH at last year's levels or increase funding to the Senate's earlier proposal for a 3.7 percent increase.

- Congress has agreed on a final **Department of Energy (DOE)** budget containing \$8.7 billion for DOE's R&D activities in FY 2006, a slight increase of 0.9 percent that could be erased in later across-the-board cuts. Although DOE's Office of Science receives a modest 0.6 percent increase in its R&D portfolio to \$3.4 billion instead of a requested cut of 4.5 percent, the difference is due to \$130 million in congressional earmarks and a boost in computing research. Earlier congressional attempts to boost utilization of scientific user facilities did not make it into the final budget, leaving many DOE facilities with sharply reduced operating times. Energy-related R&D appears to gain 10.7 percent to \$1.3 billion because of a rescission in 2005, but actual funding declines slightly. Congress supports Administration priorities in coal and nuclear energy R&D, but there are cuts in other energy areas including the Administration priorities of hydrogen and fuel cells.

- The **National Science Foundation (NSF)** budget rebounds to \$5.6 billion after declining in 2005. But inflation and new costs for polar icebreakers leave NSF with less money in real terms than in 2004, and leave the agency far short of the \$8.5 billion authorized by law. In the final congressional budget, NSF R&D funding ends up slightly higher than 2004 with \$4.2 billion, 2.7 percent more than 2005 after a cut last year. The main Research and Related Activities (R&RA) account totals \$4.4 billion, an increase of 3.7 percent, but much of the increase goes to Polar Programs to pay for polar icebreakers formerly paid for by the Coast Guard. Most NSF research directorates receive increases between 2 and 4 percent in 2006, bringing their budgets barely above 2004 levels. Most of NSF's education and training programs suffer steep cuts for the second year in a row.

- The **National Aeronautics and Space Administration (NASA)** continues to juggle its many missions within a flat budget of \$16.4 billion in 2006. But NASA's R&D funding climbs 7.3 percent to \$11.5 billion as an expected decline in Space Shuttle costs frees up money for NASA R&D. The entire increase goes to a dramatic expansion of applied research to develop the next generation of human space vehicles. Even from a 2005 base reduced by mid-year cuts, there are further cuts in NASA's aeronautics research portfolio (down 2.5 percent to \$938 million), the earth sciences portfolio (down 7.3 percent to \$2.1 billion), and especially biological and physical sciences research (down 13.6 percent to \$799 million). The largest increases go to applied research on human space flight technologies. The Constellation Systems program to develop a new Crew Exploration Vehicle and Crew Launch Vehicle for human exploration sees its budget nearly triple to \$1.1 billion, while efforts to develop supporting technologies also receive large increases.

- Congress agreed on a \$2.4 billion R&D portfolio in FY 2006 for the **U.S. Department of Agriculture (USDA)**, a slight cut of \$9 million or 0.4 percent that stands in sharp contrast to a requested 15 percent cut because of hundreds of millions of dollars in earmarks. Congress rejects USDA's proposals to slash formula funds in its extramural research portfolio, and instead preserves a balance between formula funds, competitive funds, and earmarks. The final Agriculture appropriations bill keeps Hatch Act formula funding for land-grant colleges at \$179 million, in contrast to a USDA proposal to eliminate half of this

funding and shift the funds to a new \$75 million competitive grants program. The National Research Initiative (NRI) of competitively awarded research grants increases slightly to \$183 million, well short of a \$250 million request.

- The **Department of Commerce** has \$1.1 billion for R&D in 2006, the same as 2005. The Advanced Technology Program (ATP) survives proposals to eliminate it. Intramural research at the National Institute of Standards and Technology (NIST) increases 5.4 percent to \$334 million. R&D in the National Oceanic and Atmospheric Administration (NOAA) increases 2.7 percent to \$668 million, but the increase is due to a new earmarked Alaskan fisheries R&D program, leaving other NOAA R&D down.

- **Department of Transportation (DOT)** R&D funding climbs dramatically in 2006 to \$850 million, a 14.2 percent or \$105 million increase, thanks to an August transportation reauthorization bill that guarantees large increases in highway funding as well as numerous congressional earmarks. R&D in the Federal Aviation Administration (FAA) increases 6.0 percent to \$279 million.

- Congress has once again rejected the **Department of Veterans Affairs' (VA)** proposal to reorganize its budget. VA federal R&D totals \$805 million in FY 2006, up 2.7 percent from last year and a similar boost over the request.

Budget Outlook and Next Steps

Congress returns to session in December to finish up FY 2006 appropriations and other legislative matters including legislation to cut entitlements spending and to extend tax cuts. For now, agencies with unfinished budgets such as NIH and DOD are operating under a continuing resolution (CR) through December 17 that temporarily allows them to spend money at the FY 2005, Senate-proposed FY 2006, or House-proposed FY 2006 funding levels, whichever is the lowest.

Although the outlook for R&D funding looks brighter than in February because Congress has shifted billions of dollars from defense to domestic programs compared to the President's request, the costs of responding to hurricanes, a jump in home heating prices, and a potential flu pandemic have changed the federal budget situation dramatically in recent weeks. As hurricane-related costs pile up, the Republican congressional majority has steadfastly refused to consider repealing tax cuts or enacting tax increases to pay for increased spending, and instead has tried to find offsets through cuts in regular domestic spending. So far, the additional spending for disaster relief, along with additional spending for Iraq and Afghanistan, has been borrowed. But there is growing pressure to offset at least some of the spending with across-the-board cuts in FY 2006 appropriations, and heading into December such a cut looks increasingly likely to appear in the final FY 2006 Defense appropriations bill in mid-December.

But the true test for domestic programs, including nondefense R&D, could come further into the future. Agencies and the Office of Management and Budget are well underway in drafting the FY 2007 budget. Even before the hurricanes, the Bush Administration had already signaled repeatedly that the FY 2007 budget would cut domestic spending below FY 2006 levels. If domestic spending is cut even further in FY 2007 to offset disaster relief, or if disaster-related spending is shoehorned into regular domestic spending, then the FY 2007 budget proposal to be released next February will feature steep cuts in many domestic programs that will make the challenges of FY 2006 look easy.

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Table 1. R&D by Agency in FY 2006 Appropriations (as of Nov. '05)

Table 1. Total R&D by Agency
Congressional Action on R&D in the FY 2006 Budget (as of Nov. 28, 2005)
(budget authority in millions of dollars)

	FY 2005 Est. *	FY 2006 Request	House-Senate Conference				
			FY 2006 CONF.	Chg. from Request Amount	Chg. from Request Percent	Chg. from FY 2005 Amount	Chg. from FY 2005 Percent
Defense (military) * **	71,566	71,009	73,633	2,624	3.7%	2,067	2.9%
("S&T" 6.1,6.2,6.3 + Medical) * **	13,630	10,691	13,484	2,793	26.1%	-146	-1.1%
(All Other DOD R&D) * **	57,936	60,318	60,149	-169	-0.3%	2,213	3.8%
National Aeronautics & Space Admin.*	10,705	11,497	11,481	-16	-0.1%	776	7.3%
Energy	8,614	8,393	8,695	302	3.6%	81	0.9%
(Office of Science)	3,334	3,184	3,354	170	5.3%	20	0.6%
(Energy R&D)	1,141	1,179	1,263	85	7.2%	122	10.7%
(Atomic Energy Defense R&D)	4,138	4,031	4,078	47	1.2%	-60	-1.5%
Health and Human Services ^	29,084	29,139	29,158	19	0.1%	74	0.3%
(National Institutes of Health) ^	27,784	27,925	28,029	104	0.4%	245	0.9%
(All Other HHS R&D) ^	1,300	1,214	1,129	-85	-7.0%	-171	-13.2%
National Science Foundation	4,057	4,170	4,165	-5	-0.1%	108	2.7%
Agriculture	2,403	2,051	2,394	343	16.7%	-9	-0.4%
Homeland Security	1,243	1,287	1,294	7	0.5%	51	4.1%
Interior	615	581	631	50	8.6%	16	2.6%
(U.S. Geological Survey)	541	515	555	39	7.6%	13	2.5%
Transportation	744	807	850	42	5.2%	105	14.2%
Environmental Protection Agency	572	568	579	11	1.9%	7	1.2%
Commerce	1,148	983	1,148	166	16.9%	0	0.0%
(NOAA)	650	534	668	134	25.1%	18	2.7%
(NIST)	461	416	448	32	7.7%	-13	-2.7%
Education ^	297	261	261	0	0.0%	-36	-12.1%
Agency for Int'l Development	223	223	235	12	5.2%	12	5.2%
Department of Veterans Affairs	784	786	805	19	2.4%	21	2.7%
Nuclear Regulatory Commission	61	61	65	4	5.9%	4	5.9%
Smithsonian	139	142	141	-1	-0.4%	2	1.8%
All Other	304	287	258	-29	-10.2%	-46	-15.2%
TOTAL R&D	132,560	132,246	135,793	3,547	2.7%	3,233	2.4%
Defense R&D	76,032	75,379	78,068	2,689	3.6%	2,035	2.7%
Nondefense R&D	56,528	56,867	57,725	858	1.5%	1,197	2.1%
Nondefense R&D minus DHS	55,613	55,919	56,788	869	1.6%	1,175	2.1%
Nondefense R&D minus NIH	28,744	28,942	29,696	754	2.6%	952	3.3%
Basic Research	26,855	26,536	26,953	417	1.6%	98	0.4%
Applied Research	29,121	28,652	30,194	1,542	5.4%	1,074	3.7%
Total Research	55,976	55,188	57,148	1,959	3.6%	1,171	2.1%
Development	71,764	72,484	74,083	1,600	2.2%	2,320	3.2%
R&D Facilities and Capital Equipment	4,820	4,574	4,562	-12	-0.3%	-258	-5.4%
"FS&T"	61,321	60,961	62,969	2,009	3.3%	1,648	2.7%

AAAS estimates of R&D in FY 2006 appropriations bills. Includes conduct of R&D and R&D facilities.

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

* - FY 2005 figures for DOD and NASA have been adjusted since the release of AAAS Report XXX: R&D FY 2006 to reflect DOD FY 2005 emergency supplementals in Public Law 109-13 and the NASA May and July 2005 FY 2005 Operating Plans.

** - The DOD budget has not emerged from conference. FY 2006 Conf. figures represent House-approved funding levels.

^ - The Labor/HHS conference report was rejected by the House.

November 28, 2005 - AAAS estimates of House and conference appropriations bills.

Table 2. Basic and Applied Research in FY 2006 Appropriations (as of Nov. '05)

Table 2. Estimated Research by Agency
Congressional Action on R&D in the FY 2006 Budget (as of Nov. 28, 2005)
(budget authority in millions of dollars)

	FY 2005 Est. *	FY 2006 Request	House-Senate Conference				
			FY 2006 CONF.	Chg. from Request Amount	Chg. from Request Percent	Chg. from FY 2005 Amount	Chg. from FY 2005 Percent
Basic Research:							
Health and Human Services ^	15,114	15,235	15,242	7	0.0%	129	0.9%
<i>National Institutes of Health</i> ^	15,111	15,235	15,242	7	0.0%	132	0.9%
National Science Foundation	3,416	3,464	3,510	46	1.3%	94	2.8%
Department of Defense * **	1,513	1,319	1,453	134	10.2%	-61	-4.0%
Department of Energy	2,824	2,712	2,884	171	6.3%	59	2.1%
<i>Office of Science</i>	2,787	2,682	2,851	169	6.3%	64	2.3%
National Aeronautics & Space Admin.*	2,382	2,199	2,209	11	0.5%	-173	-7.3%
Department of Agriculture	851	788	848	59	7.5%	-4	-0.4%
Department of the Interior	36	30	34	4	13.9%	-1	-3.4%
Department of Homeland Security	85	112	112	0	0.0%	27	31.8%
Smithsonian	115	121	120	-1	-0.4%	5	4.7%
Environmental Protection Agency	66	70	67	-3	-3.9%	1	1.2%
Department of Commerce (NIST)	61	74	63	-11	-15.1%	2	3.7%
All Other	392	411	411	0	-0.1%	19	4.7%
Total Est. Basic Research	26,855	26,536	26,953	417	1.6%	98	0.4%
RESEARCH (basic and applied):							
Health and Human Services ^	28,702	28,960	28,979	19	0.1%	277	1.0%
<i>National Institutes of Health</i> ^	27,487	27,805	27,909	104	0.4%	422	1.5%
National Science Foundation	3,695	3,741	3,791	50	1.3%	96	2.6%
Department of Defense * **	6,874	5,627	6,951	1,324	23.5%	77	1.1%
Department of Energy	5,636	5,403	5,623	220	4.1%	-13	-0.2%
<i>Office of Science</i>	2,787	2,682	2,851	169	6.3%	64	2.3%
National Aeronautics & Space Admin.*	4,804	5,430	5,390	-40	-0.7%	586	12.2%
Department of Agriculture	1,944	1,731	1,956	225	13.0%	12	0.6%
Department of the Interior	566	525	574	50	9.5%	9	1.5%
Department of Homeland Security	493	511	511	0	0.0%	18	3.6%
Environmental Protection Agency	431	455	436	-19	-4.1%	5	1.2%
Department of Commerce	912	819	919	100	12.2%	8	0.8%
NOAA	536	457	549	92	20.1%	13	2.5%
NIST	368	351	360	9	2.6%	-8	-2.1%
Department of Transportation	457	535	549	14	2.6%	92	20.1%
Department of Veterans Affairs	745	748	766	18	2.4%	21	2.8%
Department of Education ^	186	176	176	0	0.0%	-10	-5.4%
All Other	531	528	526	-2	-0.4%	-5	-1.0%
TOTAL EST. RESEARCH	55,976	55,188	57,148	1,959	3.6%	1,171	2.1%
<i>Research excluding DOD & DHS</i>	48,609	49,050	49,686	635	1.3%	1,077	2.2%
<i>Research excluding NIH</i>	28,489	27,383	29,239	1,855	6.8%	749	2.6%

AAAS estimates of basic and applied research in FY 2006 appropriations bills.

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

* - FY 2005 figures for DOD and NASA have been adjusted since the release of AAAS Report XXX: R&D FY 2006 to reflect

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