



## Most R&D Agencies Prepare for Cuts in FY 2006

### Supplement to the AAAS Analysis of the Outyear Projections for R&D in the FY 2005 Budget

On May 19, the Office of Management and Budget (OMB) notified federal agencies that if President Bush wins reelection, next year's FY 2006 budget request would cut spending for nearly all domestic programs as projected in February's FY 2005 budget, and that agencies should prepare to make cuts for most domestic programs when they prepare their initial FY 2006 proposals. The OMB memo leaked to the media this week as agencies begin preparing their FY 2006 requests.

**Nearly all federal R&D programs outside the priority areas of defense, space, and homeland security would see their budgets decline in FY 2006** under the scenario that OMB directs agencies to follow, even programs that would receive increases in FY 2005.

As detailed in an April **AAAS analysis of the outyear projections for R&D in the FY 2005 budget** (attached), the Bush Administration's plan to reduce the federal deficit in half over the next five years would cut R&D funding for 9 out of the 12 largest R&D funding agencies in real terms over the next five years, with the steepest cuts in FY 2006 after this year's elections.

For FY 2006, the OMB guidance memo means all R&D funding agencies except the Department of Defense (DOD), the National Aeronautics and Space Administration (NASA), the Department of Energy (DOE), and the Department of Homeland Security (DHS) must plan for cuts to their R&D portfolios as they begin preparing their FY 2006 requests, even for programs that are proposed to receive increases in FY 2005. The National Science Foundation (NSF) and the National Institutes of Health (NIH), proposed to receive increases in FY 2005, would see their gains reversed in FY 2006.

Although the FY 2005 budget process has just barely started at a snail's pace in Congress, federal agencies have already started formulating their FY 2006 budget requests. Federal agencies and OMB will be working together to draft agencies' FY 2006 requests from now until the official release of the FY 2006 budget proposal next winter. Although the specific program cuts outlined in the AAAS analysis are not binding, the OMB guidance memo tells agencies the broad budgetary targets they must hit; this year's memo leaves agencies with little room to maneuver because it states that any increases to a program above the projected FY 2006 level would have to be offset by a cut in another program in the agency.

While the internal give-and-take between OMB and the agencies is just beginning and will involve several months of negotiations and appeals, it appears clear that the first budget of the potential second term of this Bush Administration would follow the course outlined by the President earlier this year: cuts in domestic spending accompanied by increases in defense and homeland security, further tax cuts, and unrestrained growth in entitlements spending. Although the specific program cuts outlined in the budget projections will change over the next several months of negotiations, it is clear that nondefense R&D outside NASA and DHS would decline steeply in FY 2006 unless there is either a change in the White House or a major change in Bush Administration policy.

### **FY 2006 R&D Projections**

The April **AAAS analysis of the outyear projections in the FY 2005 budget** focused on the five-year outlook for federal R&D out to FY 2009. Below are some highlights of the projections just for FY 2006, illustrating the scenario that OMB directs the federal agencies to follow:

- While NASA, DOD, DHS, and DOE would see increases in their R&D funding between the proposed FY 2005 budget and the projected FY 2006 funding level, **all the other R&D funding agencies would see their R&D funding decline next year.**

- **NIH must plan for a 2 percent or \$600 million cut in FY 2006** after a 2.6 percent increase in FY 2005, leaving the agency with a total budget of \$28.2 billion, barely above this year's \$28.0 billion budget. After factoring in expected inflation, NIH's FY 2006 budget would be 2 percent below this year's funding level.

- **NSF would see its proposed gains in FY 2005 reversed the next year** with a 2 percent or \$85 million cut for its R&D programs in FY 2006, leaving NSF R&D below this year's funding level after adjusting for inflation.

- Although DOE would see a gain in its R&D budget in FY 2006 because of projected increases for its defense and energy R&D portfolios, **DOE's Office of Science would see its budget fall 2.4 percent or \$81 million in FY 2006** following a proposed cut in FY 2005. The Office of Science would see its R&D budget fall 5.4 percent in just two years after adjusting for inflation.

- Other R&D funding agencies would see further cuts in FY 2006 following proposed cuts in FY 2005. R&D in the U.S. Department of Agriculture (USDA, down 8.3 percent over two years after inflation), the Environmental Protection Agency (EPA; down 11.6 percent), Commerce's National Oceanic and Atmospheric Administration (NOAA, down 6.2 percent), Commerce's National Institute of Standards and Technology (NIST, down 13.8 percent), and the Department of the Interior (down 8.4 percent) would decline two years in a row, even before inflation.

- Although DOD, DHS, and NASA would see increase every year over the next five years in their R&D portfolios, some of their programs would not be as fortunate. **DOD would cut its support of "S&T"** (basic and applied research plus technology development) steeply in FY 2005 and by another percentage point in FY 2006, leaving the DOD S&T portfolio 18 percent smaller after inflation than in FY 2004. And while NASA R&D would increase overall in FY 2006 to ramp up its moon-and-Mars activities, NASA funding for biological and physical research and earth science would fall steeply in FY 2006.

For details of the outyear projections for FY 2006 and other years, including tables and charts, see the accompanying **AAAS analysis of the outyear projections in the FY 2005 budget.**

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## **Bush Proposes to Cut Nondefense R&D Over the Next Five Years to Reduce Deficit**

### **AAAS Analysis of the Outyear Projections for R&D in the FY 2005 Budget**

(This analysis is a preview of *AAAS Report XXIX: Research and Development FY 2005*, a comprehensive look at the President's budget for R&D in FY 2005. More tables and continually updated supplemental materials on R&D in the FY 2005 budget can be found on the AAAS R&D Web site at [www.aaas.org/spp/rd](http://www.aaas.org/spp/rd).)

President Bush released his fiscal year (FY) 2005 budget proposal in February. The focus of the budget continues to be record-breaking projections of budget deficits; with a deficit of about \$500 billion expected this year, a major focus of the budget is the Administration's promise to halve the deficit within five years. In order to do so, the President proposes to keep domestic discretionary spending growth well below the expected rate of inflation while continuing to lavish resources on defense and homeland security discretionary programs, proposing \$1.1 trillion in tax cuts over the next decade, and after signing into law a new Medicare prescription drug benefit costing \$539 billion over the next 10 years. The Administration's proposal to reduce the budget deficit through restraints on domestic spending could have severe consequences for federal support of research and development (R&D). As this AAAS analysis shows, nondefense R&D funding would decline steadily over the next five years under the Bush budget proposals, and nearly every federal R&D program outside the priority areas of defense, homeland security, and space would see reduced funding over the next five years.

#### **Projections for R&D in the FY 2005 Budget:**

#### **All R&D Funding Agencies Decline Over Next Five Years Except DOD, NASA, and DHS**

The FY 2005 budget contains detailed projections for federal spending to FY 2009; they provide the detailed assumptions behind the Bush Administration's goal of reducing the budget deficit in half over the next five years. There was controversy in February when the Bush Administration chose not to publish these projections in the FY 2005 budget, though they are traditionally made public. Instead, only aggregate totals were published. The detailed projections are only available in an unpublished computer printout circulating around Washington, which AAAS has obtained. Although these projections are mostly extrapolations of current policies, they are far from mechanical exercises; as this analysis shows, the projections show widely differing budget trajectories for agencies, and even programs within agencies. They are a statement of the Bush Administration's budgetary priorities and their implications for the future of federal R&D. The AAAS analysis of these outyear projections reveals that the Bush budget would cut R&D funding for all but three (out of 24) federal agencies over five years, and that the steepest cuts would fall in FY 2006 after this year's elections.

- Federal support for R&D is projected to increase from \$126.5 billion this year to \$137.5 billion in FY 2009, a slight (0.0) percent increase after adjusting for expected inflation (see Table 1). **But the increases would be concentrated in the three high priority areas of national defense, homeland security, and the space program. All other R&D programs would see their funding decline over the next five years**, with even modest increases in FY 2005 reversed the next year and remaining below current levels after that.

- **9 out of the 12 largest R&D funding agencies would see their budgets fall in real terms** in the Bush budget plans, with only the Department of Defense (DOD), the Department of Homeland Security (DHS), and the National Aeronautics and Space Administration (NASA) staying ahead of inflation.

- Nondefense R&D would increase from \$56.0 billion this year to \$60.5 billion by FY 2009, a 0.5 percent cut after adjusting for expected inflation (see Table 1). Large projected increases in NASA and DHS would offset steep projected cuts in all other nondefense R&D agencies. Excluding the NASA and DHS increases, however, the remaining nondefense R&D portfolio would fall 6.7 percent over the time period.

- Defense R&D would climb to a record-breaking \$77.0 billion in FY 2009, a slight (0.5) percent inflation-adjusted gain over FY 2004. R&D in DOD, the defense-related activities of the Department of Energy (DOE), and the defense-related R&D in DHS would all increase under the budget projections. But DOD increases would be confined to development activities; **DOD support for basic research (“6.1”) would fall 17 percent** over five years, while applied research (“6.2”) would fall 11 percent.

- **DHS would see its R&D budget climb** from \$1.1 billion this year to \$1.2 billion next year, with small increases each year thereafter, resulting in a 25.0 percent boost over five years after adjusting for inflation, with most of the increase coming in FY 2005 (see Figure 2).

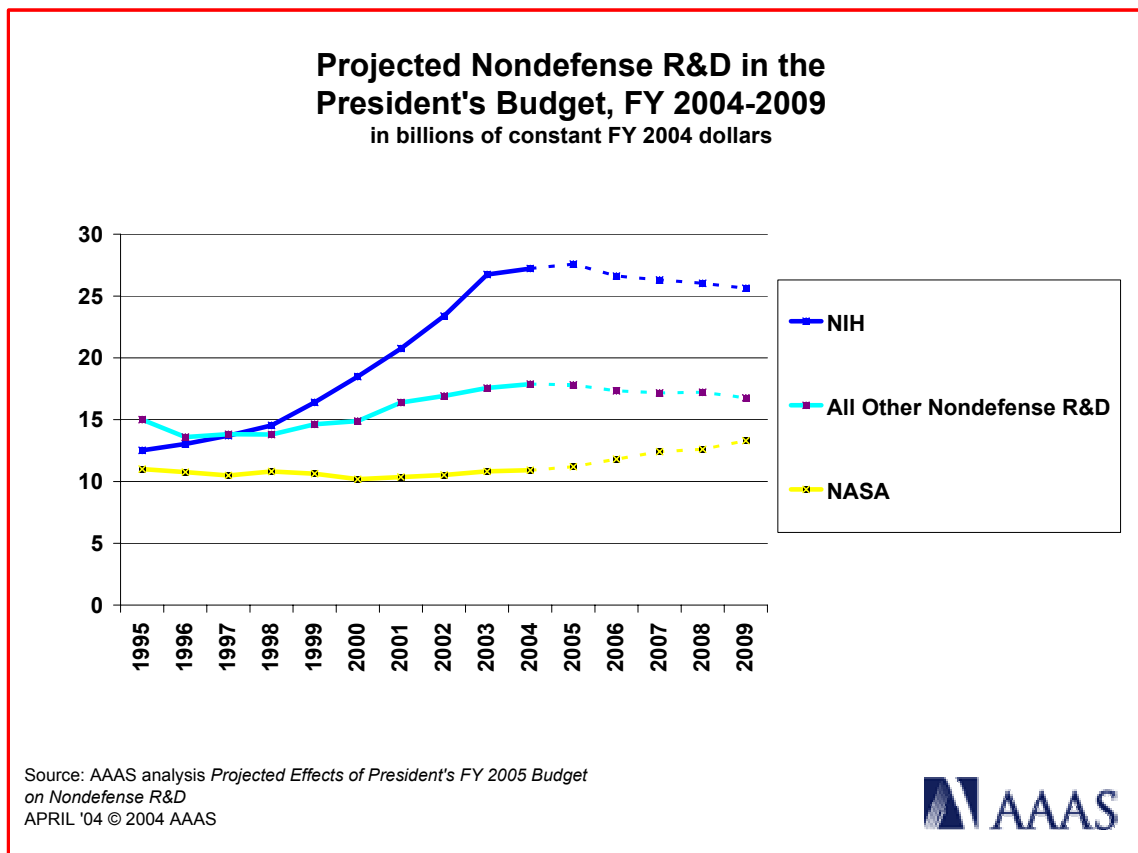


Figure 1. (click on the image to view or download a full-page color PDF version)

- **NASA is in store for large increases over the next few years, but only for space exploration programs.** Other NASA funding areas would see their R&D funding decline dramatically. NASA R&D would increase from \$10.9 billion in FY 2004 to \$14.4 billion in FY 2009 (up 21.9 percent after inflation; see Figure 1). NASA plans a dramatic expansion of the Space Science program from \$4.0 billion this year to \$5.6 billion in FY 2009 (up 28.9 percent after inflation). NASA’s new Exploration Systems program, which will begin to develop technologies for a human return to the moon, would double from \$1.6 billion to \$3.3 billion over the next five years (up 85 percent after inflation). And the Space Station project would go from \$1.5 billion this year to \$2.1 billion in FY 2009 (up 30 percent). But other NASA programs would

decline steeply over the next five years, including Earth Science (down 15.9 percent), aeronautics R&D (down 16.2 percent), and Biological and Physical Research (down 11.8 percent after inflation).

- Even a past favorite such as NIH would see its R&D funding rise modestly in FY 2005 to \$27.9 billion, but then fall to \$27.4 billion in FY 2006 and increase only slowly thereafter, never returning to the FY 2005 funding level. **Over five years, NIH R&D would fall 5.8 percent after adjusting for inflation (see Figure 1)**; because NIH's biodefense research would increase during that time, non-biodefense NIH programs would lose more than 7 percent over the next five years. **NSF R&D** would also rise slightly next year to \$4.2 billion, but then fall to \$4.1 billion in FY 2006 and never recover lost ground, ending up 4.7 percent below this year's funding level by FY 2009 after inflation (see Figure 2).

- **Other agencies would see even more dramatic reductions in their R&D portfolios.** DOE's Office of Science, which has already seen its budget stagnate for the past four years, would see its R&D portfolio decline from \$3.2 billion to \$3.1 billion in FY 2009, a cut of 9.5 percent after inflation. U.S. Department of Agriculture R&D would fall 11.3 percent; Commerce R&D would fall 13.6 percent; R&D in the U.S. Geological Survey would fall 13.2 percent; and EPA's R&D portfolio would plummet 15.0 percent over the coming five years (see Figures 2 and 3).

- **Several R&D funding programs would face steep cuts over the next five years.** DOE's energy R&D portfolio would face dramatic cuts, including DOE's support of energy supply R&D (down 21 percent by FY 2009), fossil energy R&D (down 22 percent), and energy conservation R&D (down 26 percent). The Administration budget plan would cut USDA intramural research by 19 percent and extramural research grants by an even steeper 28 percent. The Bush Administration would eliminate the Advanced Technology Program (ATP) in the Department of Commerce in FY 2005. Commerce's National Oceanic and Atmospheric Administration (NOAA) would see its R&D portfolio fall 10.5 percent by FY 2009.

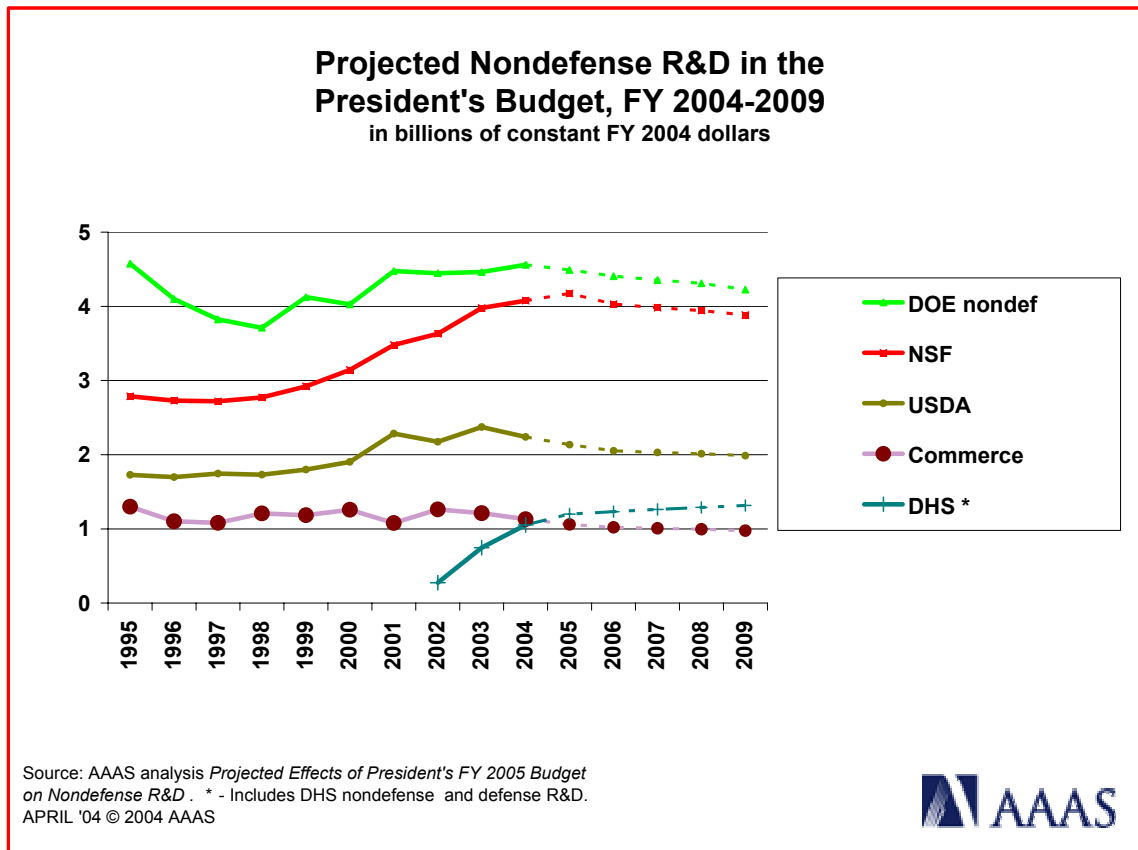


Figure 2. (click on the image to view or download a full-page version of this chart)

- In order to meet deficit reduction targets, R&D funding for most agencies would decline every year for the next five years (see Figure 3). Even agencies proposed to receive modest increases in FY 2005 such as NIH and NSF would see their R&D funding fall beginning in FY 2006. The steepest cuts would happen in FY 2006. In dollar terms R&D funding would rise for many agencies in FY 2005 but then immediately fall in FY 2006, including NIH and NSF (see Table 1). Thereafter, there would be dollar increases for many R&D programs, but they would be far smaller than necessary to keep pace with the average 1.5 percent annual inflation rate expected.

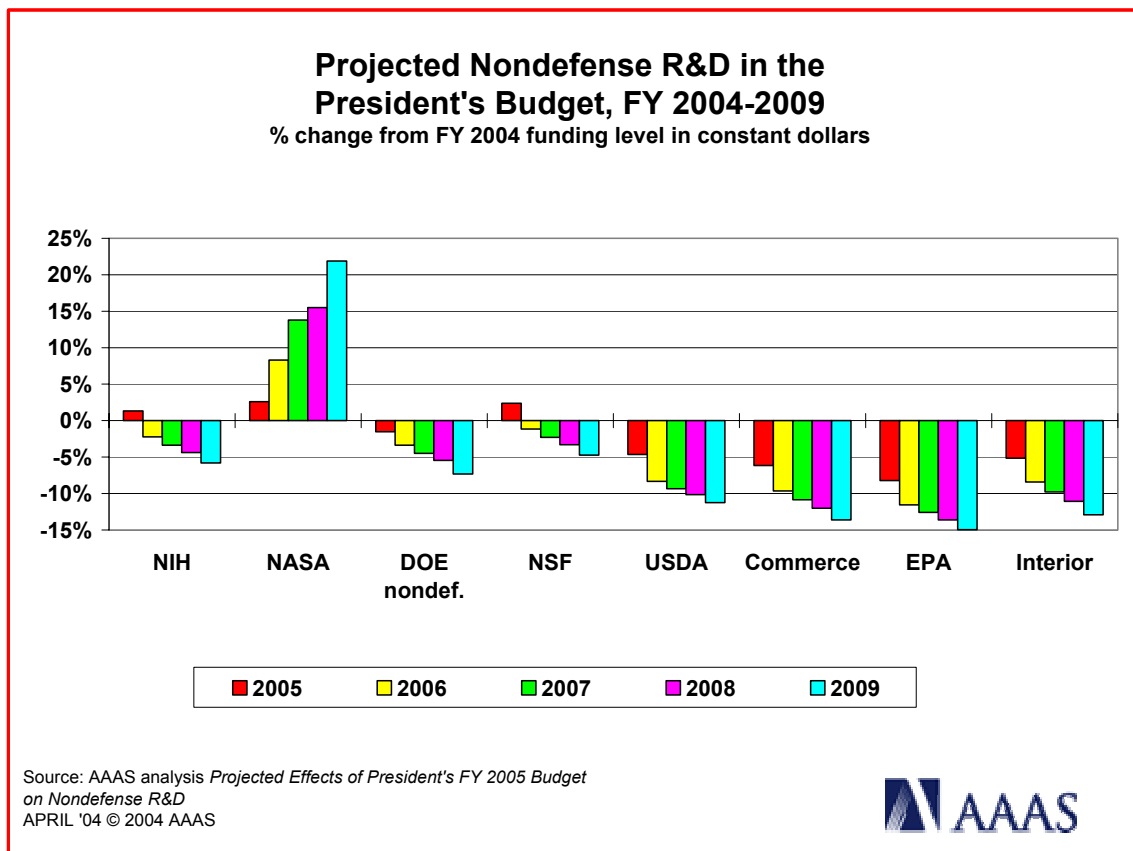


Figure 3. (click on the image to view or download a full-page version of this chart)

### The FY 2005 Outyear Projections in Historical Context

**The projected cuts to most nondefense R&D programs would leave key R&D programs with budgets well below recent historical levels.** As Figure 1 and Figure 2 show, budget increases in the late 1990s and early 2000s would be undone by the projected cuts.

For defense R&D, Table 1 shows that recent trends of large increases would continue. Defense R&D is at an all-time inflation-adjusted high of \$70.5 billion this year (FY 2004); the Administration budget plan calls for continuing increases in DOD and other defense-related R&D up to \$77 billion by FY 2009, but would cut DOD's support of basic and applied research substantially.

**In nondefense R&D, projected cuts would reverse the gains of the last several years.** The NIH budget doubled between 1998 and 2003, as shown in Figure 1, but modest increases enacted in FY 2004 and proposed for FY 2005 would see the NIH investment level off, before planned cuts take hold that would reverse NIH's budget trajectory. Similarly, agencies such as NSF, DOE's nondefense programs, and USDA have all won increases in the last several years, but they would be reversed by the projected cuts (see Figure 2). Only the newly created DHS and NASA would be immune from these trends, though even

NASA’s proposed increases would be insufficient to pay for ambitious plans to return humans to the moon and resume construction of the Space Station, requiring offsetting cuts in NASA’s other program areas.

**The Budgetary Context for FY 2005: Record Deficits, New Entitlements, and Tax Cuts**

**The budget projects a record-breaking deficit of \$521 billion in the current fiscal year (FY 2004), far above the \$374 billion deficit last year.** The budget was in surplus as recently as three years ago (FY 2001). The budget foresees the deficit declining to \$237 billion (or half this year’s projected level) by FY 2009. The primary way the Administration proposes to reduce the deficit is by reducing discretionary spending, the one-third of the budget subject to the annual control of the President and the Congress, and also the part of the budget from which nearly all federal R&D is funded. To reduce discretionary spending on the defense side, the budget allots nothing for future costs in Iraq and Afghanistan. Figure 4 includes all such war, occupation, and reconstruction costs up to FY 2004, including the \$87 billion supplemental approved last fall that could run out this year. At least \$50 billion would be needed by the end of 2004, but President Bush has promised to postpone any further requests until after the November elections.

Figure 4 also shows that over the past several years, there have been dramatic increases in both defense and nondefense discretionary spending after nearly a decade of relative restraint in the 1990s. On the defense side, there have been large increases in the regular DOD budget topped off in the last four years by Iraq and Afghanistan costs. The FY 2005 budget achieves its deficit targets in part by assuming these costs end this year. On the nondefense side, there have been large increases in the relatively new category of homeland security spending over the past four years along with some additional funds for foreign aid to Iraq and Afghanistan; the FY 2005 budget achieves its deficit targets by assuming no further Iraq and Afghanistan aid, and by holding domestic spending increases below the inflation rate every year.

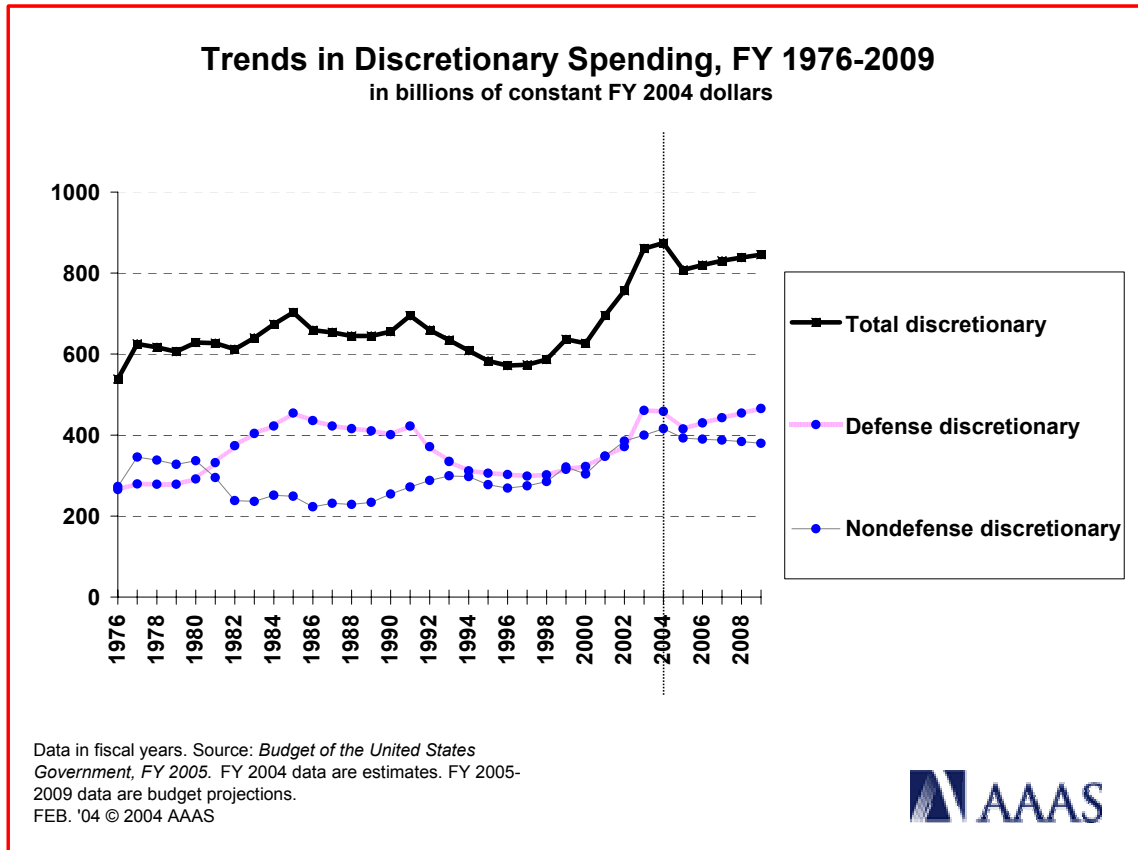


Figure 4. (click on the image to view or download a full-page color PDF version).

**While discretionary spending is proposed for cuts, spending on entitlement programs would increase dramatically.** Even with recent increases, discretionary spending as a share of the U.S. economy is still well below the levels of the 1980s and early 1990s when the budget deficit was last a big concern. The real growth in federal spending has been in entitlement and other mandatory programs, now two-thirds of the federal budget. Last December, President Bush signed into law a prescription-drug benefit for the Medicare entitlement program that is now estimated to cost \$534 billion over the next decade; spending on existing Medicare, Social Security, Medicaid, and other entitlements would continue to grow far faster than the rate of inflation. In addition, mandatory payments of interest on the national debt would also climb because the national debt is growing rapidly from the accumulation of record annual deficits.

**Even in times of record budget deficits, the FY 2005 budget proposes more tax cuts.** As a result of large tax cut laws enacted in each of the last three years, the federal government is expected to take in less than 16 percent of the U.S. Gross Domestic Product (GDP) in tax revenues this year, down sharply from nearly 21 percent just four years ago in 2000. These reduced revenues, primarily from tax cuts but also from slumping tax collections in a slowing economy, are the primary reason for record deficits. In order to make the total costs of past tax cut laws appear smaller, nearly all of the tax cut provisions enacted over the last three years expire over the next several years, with some income tax provisions expiring as early as 2005. The FY 2005 budget's tax proposals would reduce revenues by \$175 billion over the next five years, mostly from extending expiring tax provisions.

But the real costs of the FY 2005 budget lie beyond 2009. The Bush Administration proposals to extend expiring tax provisions would reduce revenues by \$1.1 trillion over the next decade, with more than 80 percent of the revenue losses in the second five years. Similarly, two-thirds of the Medicare drug benefit's ten-year costs come in the second five years. The fiscal impacts of these proposals would come just as current budget law already foresees enormous increases in Social Security, Medicare, and Medicaid costs as the Baby Boom generation begins to hit retirement age over the next decade.

The four years of surpluses between FY 1998 and FY 2001, backed up by bipartisan promises in the last presidential election to keep the federal budget balanced, now seem like a distant mirage. There is little appetite in Washington for making the hard choices necessary to get the budget back in balance. Only in the area of domestic discretionary spending, out of which nearly all the R&D funding agencies get their budgets, do lawmakers advocate some fiscal restraint. But since future discretionary spending levels need only be set in the aggregate, the hard program-level choices necessary to implement domestic spending cuts do not need to take place until well into the future.

Because appropriations decisions are made annually, projections are always wrong. They are not predictions. The FY 2005 appropriations process is just now getting under way in a Congress with different priorities than the President, and future appropriations will be decided one year at a time. But the projections illustrate the consequences of reducing the budget deficit almost exclusively by restraining growth in domestic discretionary spending rather than a balanced mix of entitlements reductions, increasing revenue, domestic spending cuts, and defense / homeland security cuts. **While the specific reductions contained in these projections are not inevitable, similar cuts will be necessary if future Congresses and Administrations focus on restraining domestic spending instead of considering other budget options.**

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AAAS Analysis of the Outyear Projections for R&D in the FY 2005 Budget

**Table 1.** AAAS Analysis of the Outyear Projections for R&D in the FY 2005 Budget  
(budget authority in millions of dollars)

	FY 2004 Estimate	FY 2005 Budget	FY 2006 Projected	FY 2007 Projected	FY 2008 Projected	FY 2009 Projected	% Change FY 04-09 current \$ constant \$	
<b>Total R&amp;D (Conduct and Facilities)</b>								
Defense (military)	65,970	69,928	72,005	71,735	72,669	71,661	8.6%	<b>0.0%</b>
<i>DOD S&amp;T ('6.1' - '6.3' &amp; med.)</i>	<i>12,567</i>	<i>10,622</i>	<i>10,534</i>	<i>10,899</i>	<i>11,044</i>	<i>11,211</i>	-10.8%	<b>-17.9%</b>
Health & Human Services	28,469	29,361	28,782	28,919	29,383	29,313	3.0%	<b>-5.2%</b>
<i>Nat'l Institutes of Health</i>	<i>27,220</i>	<i>27,923</i>	<i>27,353</i>	<i>27,481</i>	<i>27,713</i>	<i>27,852</i>	2.3%	<b>-5.8%</b>
NASA	10,909	11,334	12,142	12,970	13,417	14,448	32.4%	<b>21.9%</b>
Energy	8,804	8,880	9,030	9,239	9,374	9,461	7.5%	<b>-1.1%</b>
<i>Defense</i>	<i>4,244</i>	<i>4,333</i>	<i>4,502</i>	<i>4,689</i>	<i>4,783</i>	<i>4,870</i>	14.7%	<b>5.6%</b>
<i>Science</i>	<i>3,186</i>	<i>3,172</i>	<i>3,097</i>	<i>3,104</i>	<i>3,123</i>	<i>3,132</i>	-1.7%	<b>-9.5%</b>
<i>Energy</i>	<i>1,374</i>	<i>1,375</i>	<i>1,431</i>	<i>1,447</i>	<i>1,468</i>	<i>1,459</i>	6.1%	<b>-2.3%</b>
Nat'l Science Foundation	4,077	4,226	4,141	4,161	4,198	4,219	3.5%	<b>-4.7%</b>
Agriculture	2,240	2,163	2,110	2,121	2,143	2,160	-3.6%	<b>-11.3%</b>
Commerce	1,131	1,075	1,050	1,053	1,060	1,062	-6.1%	<b>-13.6%</b>
NOAA	617	610	595	596	599	600	-2.8%	<b>-10.5%</b>
NIST	471	426	417	420	422	423	-10.1%	<b>-17.3%</b>
Interior	675	648	635	636	639	639	-5.4%	<b>-12.9%</b>
Transportation	707	755	746	748	750	752	6.4%	<b>-2.1%</b>
Environ. Protection Agcy.	616	572	560	562	566	569	-7.6%	<b>-15.0%</b>
Homeland Security	1,053	1,216	1,267	1,319	1,374	1,430	35.8%	<b>25.0%</b>
Veterans Affairs	820	770	750	752	756	756	-7.8%	<b>-15.1%</b>
Education	290	304	296	297	298	299	3.1%	<b>-5.1%</b>
All Other	745	730	716	717	720	721	-3.2%	<b>-10.9%</b>
<b>Total R&amp;D</b>	<b>126,507</b>	<b>131,961</b>	<b>134,231</b>	<b>135,230</b>	<b>137,347</b>	<b>137,488</b>	<b>8.7%</b>	<b>0.0%</b>
Defense R&D	70,501	74,668	76,922	76,847	77,885	76,974	9.2%	<b>0.5%</b>
Nondefense R&D	56,005	57,293	57,309	58,383	59,463	60,514	8.1%	<b>-0.5%</b>
<i>Nondef. R&amp;D minus DHS &amp; NASA</i>	<i>44,043</i>	<i>44,743</i>	<i>43,901</i>	<i>44,094</i>	<i>44,672</i>	<i>44,636</i>	1.3%	<b>-6.7%</b>

Source: AAAS analyses of defense and nondefense R&D, based on detailed budget account projections accompanying the *Budget of the United States Government FY 2005*.

FY 2004 figures represent latest agency estimates of R&D, based on final FY 2004 appropriations.

FY 2005 figures represent latest revised agency requests.

Constant dollar conversions based on GDP deflators from OMB.

**AAAS - April 22, 2004 (revised May 7 with new DOD totals)**

The detailed analyses of defense and nondefense R&D containing agency details, methodology, and other outyear projections data are available on the World Wide Web at <http://www.aaas.org/spp/rd> in the "Guide to R&D Funding Data" section (see "Outyear Projections").