

**A Preview
of
AAAS Report XXII:
Research and Development FY 1998**

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This document, ordering information for AAAS Report XXII,
the Colloquium program and registration materials,
and other information on federal funding for
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(This document supersedes previous preliminary AAAS analyses
of R&D in the FY 1998 Budget (2/97, 3/97) and incorporates
revised estimates for R&D)

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HIGHLIGHTS

- The President's budget request for fiscal year (FY) 1998 includes \$75.0 billion for research and development (R&D), 1.8 percent or \$1.3 billion more than the current FY 1997 funding level. With inflation projected at 2.6 percent over the coming year, this represents a decline of 0.8 percent in real terms (see Table 1).
- The FY 1998 R&D figures include \$1.2 billion in up-front funding for Department of Energy (DOE) facilities projects. Nearly \$900 million of this request would go for project costs in FY 1999 and later. Subtracting these future costs results in an adjusted FY 1998 total of \$74.1 billion, only 0.6 percent above FY 1997. This represents a 1.9 percent cut after inflation.
- Despite the President's proposed increases, federal R&D funding would continue its downward slide of the past several years. Constant dollar R&D funding levels in all agencies except the National Institutes of Health (NIH) and the National Science Foundation (NSF) would be lower in FY 1998 than they were in FY 1994 (see Table 2).
- Outyear projections in the budget call for additional cuts, beyond those that have already occurred. The AAAS analysis of the President's latest balanced budget plan projects a 14.0 percent cut in total R&D funding between FY 1997 and 2002, after adjusting for inflation (Table 6). Nondefense R&D would fall by 9.4 percent, while defense R&D would drop 17.8 percent.
- The Department of Defense (DOD), by far the largest sponsor of federal R&D, would continue its decline of the past several years, dropping by 1.8 percent to \$36.8 billion in FY 1998. The "Science and Technology" part of its budget, which funds nearly 90 percent of DOD's support for R&D at colleges and universities and encompasses basic research, applied research, and technology development activities, would fall further than other R&D activities, declining by 4.7 percent to \$7.4 billion.
- Federal support for basic research would stay just ahead of inflation with a 3.0 percent increase to \$15.3 billion in FY 1998 (see Table 4). NIH would continue to be the dominant supporter of basic research (\$7.0 billion, up 2.8 percent). Larger increases would go to basic research in DOD (\$1.2 billion, up 7.8 percent) and DOE (\$2.1 billion, up 5.0 percent).
- Funding for R&D at colleges and universities would increase 2.4 percent to \$13.3 billion, an increase that is less than the rate of inflation (Table 5). There would be cuts in the support of academic research at DOD and the Department of the Interior, balanced by increases at NIH, NSF, and the National Aeronautics and Space Administration (NASA).

R&D IN THE FY 1998 BUDGET

The President's budget would provide \$75.0 billion for the federal investment in R&D, an increase of 1.8 percent or \$1.3 billion from the current FY 1997 estimate (see Table 1). With 2.6 percent inflation projected over the next year, the total federal R&D portfolio would lose purchasing power.

The 1.8 percent increase may overstate the year-to-year trend because the \$75.0 billion total includes approximately \$1.2 billion in DOE to fully fund construction costs for a number of R&D facilities projects in advance. Approximately \$883 million of these funds would not be spent until FY 1999 and later. The President requested similar up-front facilities funding in DOE, NASA, and NIH in the FY 1997 budget, but Congress rejected these proposals and appropriated only the current year's costs.

Subtracting the outyear costs from DOE's request results in an adjusted FY 1998 total of \$74.1 billion, which would be only 0.6 percent more than FY 1997, or 1.9 percent less after inflation (see bottom of Table 1).

Nondefense R&D would increase by 3.3 percent to \$34.6 billion in FY 1998, an increase that is mostly unaffected by the DOE facilities request. Every major civilian R&D agency except Agriculture would enjoy an increase at or greater than the rate of inflation. Defense R&D would increase by 0.5 percent to \$40.5 billion because of the up-front facilities request in DOE. Without the DOE request for construction costs in FY 1999 and later, defense R&D would decline by 1.5 percent.

Table 3 shows R&D spending by functional category. R&D supporting every functional category would increase in FY 1998, except for Agriculture because of the decision not to renew congressionally designated facilities. Support for General Science (\$3.5 billion, up 3.3 percent) and Energy R&D (\$2.7 billion, up 9.2 percent) would increase in part because of the up-front request for DOE facilities. Natural Resources and Environment R&D would jump by 4.2 percent due to a substantial increase in R&D funded by EPA and a smaller increase for the Department of the Interior.

Table 4 shows federal support for basic research by agency. Total support for basic research in FY 1998 would barely stay ahead of inflation at \$15.3 billion, a 3.0 percent increase. NIH would continue to be the dominant supporter of basic research in FY 1998. NIH's support of basic research would increase by 2.8 percent to reach \$7.0 billion. All other agencies except NASA would also increase their support of basic research. NSF is committed to increasing its support of basic research, mostly through competitive merit-reviewed grants, by shifting resources away from facilities and instrumentation support, a commitment that shows in its 3.8 percent increase for basic research to \$2.1 billion. DOE would provide \$2.1 billion for basic research, up 5.0 percent, due to increases for Computational Technology Research and Basic Energy Sciences. DOD would increase its support for basic research by 7.8 percent to \$1.2 billion, after several years of decline from the peak funding level of \$1.3 billion in FY 1993.

Table 1. R&D in the FY 1998 Budget by Agency
(budget authority in millions of dollars)

| | FY 1996 | FY 1997 | FY 1998 | % Chg. FY 97-98 | |
|---|---------------|---------------|---------------|-----------------|--------------|
| | Actual | Estimate | Budget | Current \$ | Constant \$ |
| Total R&D (Conduct and Facilities) - see notes at end of table | | | | | |
| Defense (military) | 35,783 | 37,461 | 36,780 | -1.8% | -4.3% |
| <i>Science & Technology (6.1-6.3)</i> | 7,544 | 7,752 | 7,392 | -4.7% | -7.1% |
| <i>All Other DOD R&D</i> | 28,239 | 29,708 | 29,389 | -1.1% | -3.6% |
| Health and Human Services | 12,033 | 12,920 | 13,226 | 2.4% | -0.2% |
| <i>Nat'l Institutes of Health</i> | 11,425 | 12,206 | 12,531 | 2.7% | 0.1% |
| NASA | 9,432 | 9,315 | 9,604 | 3.1% | 0.5% |
| Energy * | 6,273 | 6,129 | 7,250 | 18.3% | 15.3% |
| Nat'l Science Foundation | 2,391 | 2,424 | 2,519 | 3.9% | 1.3% |
| Agriculture | 1,488 | 1,544 | 1,484 | -3.9% | -6.3% |
| Commerce | 992 | 1,016 | 1,088 | 7.1% | 4.4% |
| Interior | 571 | 581 | 608 | 4.7% | 2.0% |
| Transportation | 601 | 650 | 684 | 5.2% | 2.6% |
| Environ. Protection Agency | 482 | 510 | 554 | 8.5% | 5.8% |
| All Other | 1,186 | 1,150 | 1,229 | 6.9% | 4.2% |
| Total R&D * | 71,232 | 73,700 | 75,028 | 1.8% | -0.8% |
| Defense R&D * | 38,465 | 40,236 | 40,457 | 0.5% | -2.0% |
| Nondefense R&D * | 32,767 | 33,464 | 34,571 | 3.3% | 0.7% |
| Basic Research | 14,442 | 14,857 | 15,297 | 3.0% | 0.4% |
| Applied Research | 14,107 | 14,511 | 15,052 | 3.7% | 1.1% |
| Development | 40,557 | 42,132 | 41,602 | -1.3% | -3.8% |
| R&D Facilities * | 2,125 | 2,200 | 3,077 | 39.9% | 36.3% |

Source: AAAS, based on OMB data for R&D for FY 1998, agency budget justifications, and information from agency budget offices.

Constant dollar estimates based on OMB's GDP deflators.

* - DOE figures include proposed upfront funding for fixed assets.

There is a special DOE request of \$1.2 billion, of which \$883 million is reserved for project costs in FY 1999 and later. Subtracting the FY 1999- costs results in the following R&D totals, which may more accurately reflect year-to-year trends in R&D:

| | FY 1996 | FY 1997 | FY 1998 | % Chg. FY 97-98 | |
|---------------------------------|---------|----------|---------|-----------------|-----------|
| | Actual | Estimate | Budget | Current \$ | Const. \$ |
| Total R&D (adjusted) | 71,232 | 73,700 | 74,145 | 0.6% | -1.9% |
| Defense R&D (adjusted) | 38,465 | 40,236 | 39,613 | -1.5% | -4.0% |
| Nondefense R&D (adjusted) | 32,767 | 33,464 | 34,531 | 3.2% | 0.6% |
| Energy (adjusted) | 6,273 | 6,129 | 6,367 | 3.9% | 1.3% |
| R&D Facilities (adjusted) | 2,125 | 2,200 | 2,194 | -0.3% | -2.8% |

Despite their comparatively modest share of federal R&D funding, colleges and universities have long played a key role in the nation's R&D effort. Academia serves as a primary site for the performance of basic research and the training of future scientists and engineers. Sixty percent of the R&D performed by colleges and universities is funded by the federal government, with most of the rest coming from the institutions' own funds.

Table 5 shows agencies' estimates for their support of R&D in colleges and universities, most of which is for basic research. Total federal support of R&D at colleges and universities is expected to increase by 2.4 percent to \$13.3 billion, an increase lower than the expected rate of inflation. DOD, Interior, and Transportation would reduce their support of academic R&D, while NASA, NSF, NIH, and DOE would keep their academic R&D ahead of the rate of inflation.

DOD provides nearly half of all federal support for mathematics, engineering, and computer sciences research at universities and colleges. Based on historical trends, over half of this support would be for basic research, and nearly 90 percent of this support would come from the "Science and Technology" accounts, which fund basic research, applied research, and technology development. The "Science and Technology" account would decline by 4.7 percent to \$7.4 billion. (The remainder of DOD's R&D is for the development, testing, and evaluation of weapons systems, and management and support costs.) Despite the increase in its basic research, DOD's academic R&D would share in the decline, falling by 6.1 percent to \$1.3 billion.

EPA would boost its academic R&D by 20.0 percent for an FY 1998 total of \$186 million because of increases for the Science to Achieve Results (STAR) program of academic fellowships and investigator-initiated research grants.

Impact of FY 1998 Proposals on R&D Trends

Despite the President's proposed increases for FY 1998, federal R&D funding would continue its downward slide of the past several years.

Between FY 1994 (the year prior to the first round of budget reductions voted by the 104th Congress) and FY 1997, total federal R&D funding declined 3.3 percent in constant, inflation-adjusted dollars. Nondefense R&D is down 4.8 percent, while defense R&D has fallen 2.1 percent. Every federal agency except for NIH and NSF has less to spend on R&D in FY 1997 than it did three years ago. As Table 2 shows, some agencies are down considerably from recent funding levels – EPA, down 19.1 percent; DOE, down 15.6 percent; NASA, down 7.7 percent; and Interior, down 23.5 percent. NIH, bastion of basic biomedical research, and the beneficiary of remarkably favorable appropriations action in the last two congressional sessions, is the lone significant gainer among R&D agencies, showing a 8.7 percent increase above FY 1994. NSF, primary supporter of academic basic research in most non-biomedical fields, is up just slightly, about 0.8 percent above the level of inflation in the past three years.

Table 2. Trends in R&D, FY 1994-1998

Change in Constant Dollars

| | FY 1994 | FY 1997 | FY 1998 | % Chg. FY 94-97 | % Chg. FY 94-98 |
|------------------------------------|---------|----------|---------|-----------------|-----------------|
| | Actual | Estimate | Budget | in Constant \$ | in Constant \$ |
| Dept. of Defense | 35,510 | 37,461 | 36,780 | -1.7% | -5.9% |
| Health and Human Serv. | 11,324 | 12,920 | 13,226 | 6.4% | 6.1% |
| <i>Nat'l. Institutes of Health</i> | 10,474 | 12,206 | 12,531 | 8.7% | 8.7% |
| NASA | 9,406 | 9,315 | 9,604 | -7.7% | -7.2% |
| Dept. of Energy * | 6,771 | 6,129 | 7,250 | -15.6% | -2.7% |
| Nat'l Science Foundation | 2,243 | 2,424 | 2,519 | 0.8% | 2.1% |
| Agriculture | 1,528 | 1,544 | 1,484 | -5.8% | -11.8% |
| Commerce | 1,022 | 1,016 | 1,088 | -7.3% | -3.3% |
| Interior | 708 | 581 | 608 | -23.5% | -21.9% |
| Transportation | 641 | 650 | 684 | -5.4% | -3.0% |
| EPA | 588 | 510 | 554 | -19.1% | -14.4% |
| All Other | 1,335 | 1,149 | 1,230 | -19.7% | -13.2% |
| Total R&D * | 71,074 | 73,700 | 75,028 | -3.3% | -4.1% |
| Defense R&D * | 38,299 | 40,236 | 40,457 | -2.1% | -4.0% |
| Nondefense R&D * | 32,775 | 33,464 | 34,571 | -4.8% | -4.2% |

Source: AAAS Reports XX-XII, based on OMB R&D data and revised agency R&D estimates.

Adjusted for inflation according to OMB's GDP deflators.

* - FY 1998 figures include proposed up-front funding for fixed assets in DOE. Subtracting FY 1999-2002 costs would reduce total R&D 1.0 percent further to 5.1 percent below FY 1994. Defense R&D would be down 6.0 percent; nondefense R&D down 4.3 percent and DOE's adjusted percentage reduction would be 13.3 percent between FY 1994 and FY 1998.

Table 2 also shows the impact of the President's FY 1998 budget on these trends, an impact that is depicted graphically in Figure 1. Total R&D would lose additional ground to inflation, falling 4.1 percent below its FY 1994 level, the net of a further decline in defense R&D (down 4.0 percent from FY 1994 to FY 1998) and a slight improvement in nondefense R&D (down 4.2 percent from FY 1994, compared with the 4.8 percent decline between FY 1994 and FY 1997).

NIH would essentially hold level with inflation, retaining its 8.7 percent increase. NSF would gain a bit of ground, with a 2.1 percent increase between FY 1994 and FY 1998. As the table and figure show, however, constant dollar R&D funding levels in all other federal agencies would remain lower in FY 1998 than they were in FY 1994. Discounting the impact of DOE's request for full funding of R&D facilities construction to be carried out over the next several years would reduce total R&D by a full percentage point to 5.1 percent below FY 1994, with significant impacts on defense R&D and, of course, on DOE, as shown in the footnote to Table 2.

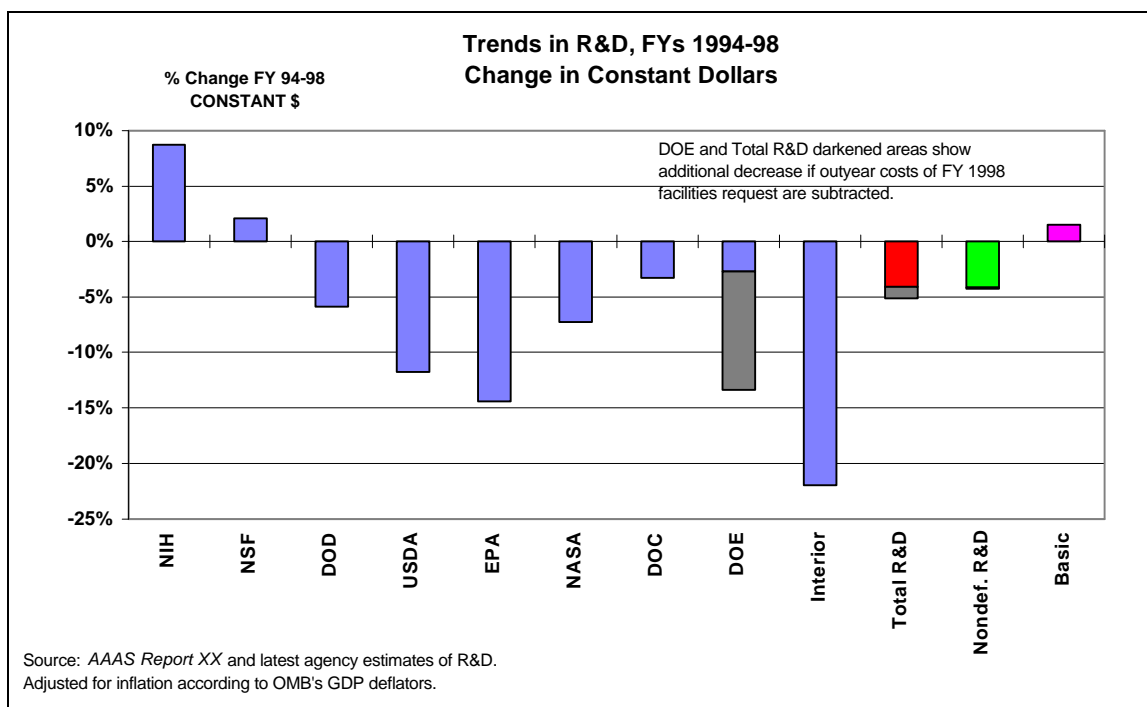


Figure 1. Trends in R&D, FY 1994-98

Table 3. Major Functional Categories of R&D¹
(budget authority in millions of dollars)

| | FY 1996 | FY 1997 | FY 1998 | % Change | % Share of |
|---------------------------|---------------|---------------|---------------|-------------|---------------|
| | Actual | Estimate | Budget | 1997-98 | Total (98) |
| Defense * | 38,465 | 40,236 | 40,457 | 0.5% | 53.9% |
| Nondefense * ² | 32,767 | 33,464 | 34,571 | 3.3% | 46.1% |
| Space | 8,117 | 8,032 | 8,235 | 2.5% | 11.0% |
| Health | 12,284 | 13,150 | 13,425 | 2.1% | 17.9% |
| Energy * | 2,743 | 2,469 | 2,696 | 9.2% | 3.6% |
| General Science * | 3,347 | 3,410 | 3,522 | 3.3% | 4.7% |
| Environment ³ | 1,827 | 1,882 | 1,960 | 4.2% | 2.6% |
| Agriculture | 1,307 | 1,361 | 1,301 | -4.4% | 1.7% |
| Transportation | 1,916 | 1,933 | 2,053 | 6.2% | 2.7% |
| Commerce | 443 | 452 | 515 | 13.8% | 0.7% |
| International | 253 | 191 | 247 | 29.3% | 0.3% |
| All Other | 530 | 583 | 616 | 5.7% | 0.8% |
| Total R&D * | 71,232 | 73,700 | 75,028 | 1.8% | 100.0% |

Source: Authors' estimates based on data from OMB and agency budget justifications. Constant FY 1997 dollars are based on OMB's GDP deflators. Classifications generally follow the government's budget function categories except health (which here includes health R&D in HHS and VA).

* - FY 1998 figures include upfront funding of fixed assets in DOE.

¹ Includes conduct of R&D and R&D facilities.

² Includes all R&D not in defense.

³ Includes natural resources R&D.

Table 4. Basic Research by Agency
(budget authority in millions of dollars)

| | FY 1996 | FY 1997 | FY 1998 | % Chg. FY 97-98 | |
|--------------------------------------|---------------|---------------|---------------|-----------------|-------------|
| | Actual | Estimate | Budget | Current \$ | Constant \$ |
| Health and Human Services | 6,395 | 6,826 | 7,015 | 2.8% | 0.2% |
| <i>Nat'l Institutes of Health</i> | 6,394 | 6,825 | 7,015 | 2.8% | 0.2% |
| Nat'l Science Foundation | 1,991 | 2,068 | 2,147 | 3.8% | 1.2% |
| Defense | 1,099 | 1,080 | 1,164 | 7.8% | 5.0% |
| Energy | 1,918 | 1,980 | 2,080 | 5.0% | 2.4% |
| NASA | 2,102 | 1,957 | 1,901 | -2.9% | -5.4% |
| Agriculture | 582 | 580 | 599 | 3.3% | 0.7% |
| Commerce | 37 | 39 | 40 | 2.6% | 0.0% |
| Interior | 56 | 57 | 65 | 14.8% | 11.9% |
| Transportation | 39 | 45 | 45 | 0.0% | -2.5% |
| Smithsonian | 134 | 134 | 139 | 3.7% | 1.1% |
| Environ. Protection Agency | 54 | 54 | 54 | 0.5% | -2.0% |
| All Other | 36 | 37 | 49 | 32.4% | 29.1% |
| Total Basic Research | 14,442 | 14,857 | 15,297 | 3.0% | -- |
| Total in FY 1997 Constant Dollars | 14,803 | 14,857 | 14,909 | -- | 0.4% |

Source: OMB data for R&D for FY 1998 and agency budget justifications.

Table 5. Estimated Support for Conduct of R&D at Colleges and Universities
(budget authority in millions)

| | FY 1996 | FY 1997 | FY 1998 | % Change FY 97-98 | |
|---|---------------|---------------|---------------|-------------------|--------------|
| | Actual | Estimate | Budget | Current \$ | Constant \$ |
| Health & Human Services | 7,004 | 7,425 | 7,645 | 3.0% | 0.4% |
| <i>Nat'l Institutes of Health</i> | 6,914 | 7,323 | 7,549 | 3.1% | 0.5% |
| Nat'l Science Foundation | 1,927 | 1,898 | 1,964 | 3.5% | 0.9% |
| Defense (Military) | 1,430 | 1,435 | 1,347 | -6.1% | -8.5% |
| NASA | 745 | 752 | 807 | 7.3% | 4.6% |
| Energy | 580 | 563 | 596 | 5.9% | 3.2% |
| Agriculture | 423 | 419 | 423 | 1.0% | -1.6% |
| EPA | 149 | 155 | 186 | 20.0% | 17.0% |
| Interior | 51 | 53 | 50 | -5.9% | -8.3% |
| Transportation | 61 | 63 | 49 | -22.2% | -24.2% |
| Commerce | 77 | 80 | 80 | 0.0% | -2.5% |
| Education | 117 | 120 | 129 | 7.5% | 4.8% |
| All Other | 12 | 12 | 12 | 0.0% | -2.5% |
| Total R&D at Colleges and Universities | 12,576 | 12,975 | 13,288 | 2.4% | -0.2% |

Source: AAAS, based on OMB supporting data for R&D and agency budget justifications. Constant FY 1997 dollars based on OMB's GDP deflators.

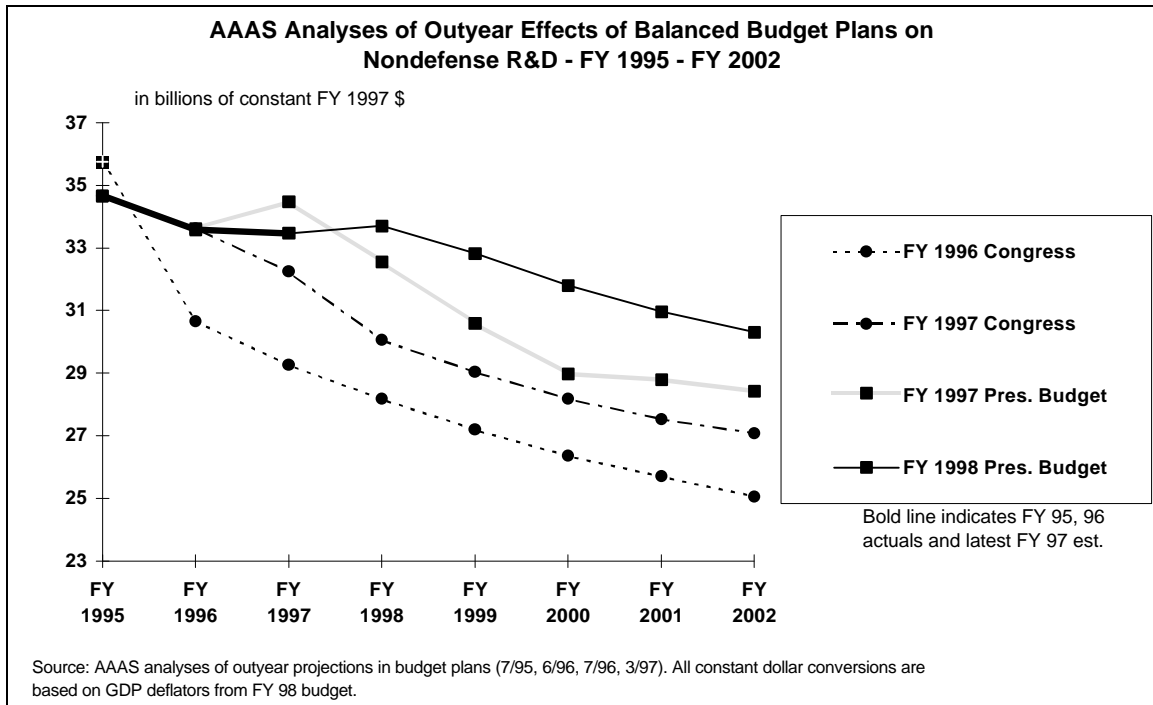


Figure 2. AAAS Analyses of Outyear Effects of Balanced Budget Plans

THE OUTLOOK FOR FEDERAL R&D TO FY 2002

The President's FY 1998 budget, like the FY 1997 budget, sets out a plan to balance the federal budget by FY 2002. Included in the budget are detailed proposals by budget account for discretionary spending, out of which all federal R&D is funded. The AAAS analysis, *Projected Effects of the President's FY 1998 Budget on Federal R&D* (see Table 6), calculates the effects of the President's latest budget proposals on federal R&D during the period FY 1997-2002.

The analysis, using the same methodology as previous analyses of the President's FY 1997 budget and the FY 1996 and 1997 congressional budget resolutions, shows that federal R&D would decline from \$73.7 billion in FY 1997 to \$72.1 billion in FY 2002, a 2.2 percent cut in nominal dollars. After taking into account expected inflation, the cut to total R&D would be 14.0 percent. Nondefense R&D would fall 9.4 percent after inflation. Defense R&D would fare far worse than nondefense R&D, with a 17.8 percent cut. Only two agencies, EPA and Commerce, would see their R&D budgets stay ahead of inflation during this time period.

It must be noted that this analysis presents only one possible scenario for the future of federal support of R&D. Outyear projections, whether from the Administration or Congress, have always been unreliable. Figure 2 shows that every successive budget plan over the past two years has allocated more to nondefense R&D than the plan before, in part because of continually improving economic forecasts but also because of concerted efforts to protect R&D programs from projected budget cuts.

Table 6.**AAAS Analysis of the Projected Effects of the President's FY 1998 Budget on Federal R&D**

(budget authority in millions of dollars)

| | FY 1997 | FY 1998 | FY 1999 | FY 2000 | FY 2001 | FY 2002 | % Change FY 97-02 | |
|---|---------------|---------------|---------------|---------------|---------------|---------------|-------------------|---------------|
| | Estimate | Budget | Projected | Projected | Projected | Projected | current \$ | constant \$ |
| Total R&D (Conduct and Facilities) | | | | | | | | |
| Defense (military) | 37,461 | 36,780 | 35,870 | 34,190 | 33,672 | 35,056 | -6.4% | -17.7% |
| Health & Human Services | 12,920 | 13,226 | 13,272 | 13,321 | 13,369 | 13,416 | 3.8% | -8.7% |
| <i>Nat'l Institutes of Health</i> | <i>12,206</i> | <i>12,531</i> | <i>12,583</i> | <i>12,635</i> | <i>12,687</i> | <i>12,738</i> | 4.4% | -8.2% |
| NASA | 9,315 | 9,604 | 9,537 | 9,387 | 9,293 | 9,331 | 0.2% | -11.9% |
| Energy | 6,129 | 7,250 | 6,185 | 5,967 | 5,962 | 5,886 | -4.0% | -15.5% |
| <i>Defense</i> | <i>2,775</i> | <i>3,676</i> | <i>2,543</i> | <i>2,514</i> | <i>2,585</i> | <i>2,556</i> | -7.9% | -19.0% |
| <i>Nondefense</i> | <i>3,353</i> | <i>3,574</i> | <i>3,642</i> | <i>3,453</i> | <i>3,377</i> | <i>3,330</i> | -0.7% | -12.7% |
| Nat'l Science Foundation | 2,424 | 2,519 | 2,530 | 2,536 | 2,543 | 2,550 | 5.2% | -7.5% |
| Agriculture | 1,544 | 1,484 | 1,463 | 1,475 | 1,482 | 1,494 | -3.3% | -14.9% |
| Commerce | 1,016 | 1,088 | 1,109 | 1,136 | 1,187 | 1,260 | 24.0% | 9.1% |
| Interior | 581 | 608 | 608 | 609 | 609 | 610 | 5.0% | -7.6% |
| Transportation | 650 | 684 | 684 | 684 | 684 | 684 | 5.2% | -7.4% |
| Environ. Protection Agency | 510 | 554 | 571 | 588 | 605 | 624 | 22.3% | 7.6% |
| All Other | 1,150 | 1,229 | 1,145 | 1,150 | 1,156 | 1,160 | 0.9% | -11.3% |
| Total R&D | 73,700 | 75,028 | 72,973 | 71,043 | 70,562 | 72,070 | -2.2% | -14.0% |
| Defense R&D | 40,236 | 40,457 | 38,412 | 36,703 | 36,257 | 37,611 | -6.5% | -17.8% |
| Nondefense R&D | 33,464 | 34,571 | 34,561 | 34,340 | 34,305 | 34,459 | 3.0% | -9.4% |

Source: AAAS analyses of defense and nondefense R&D, based on detailed budget account projections in the Public Budget Database of the *Budget of the United States Government FY 1998*.

FY 1997 figures represent latest agency estimates of R&D. FY 1998 figures represent latest revised agency requests. Constant dollar conversions based on GDP deflators from OMB.

The two detailed analyses (one for defense R&D and one for nondefense R&D) containing agency details and methodology, and other data on federal R&D are available on the World Wide Web at <http://www.aaas.org/spp/dspp/rd/rdwwwpg.htm>

In July 1995, a AAAS analysis of the FY 1996 Congressional budget resolution projected a 33 percent cut in nondefense R&D between FY 1995 and FY 2002, using the then-current inflation assumptions. Using this year's revised inflation assumptions, the cut would be 30 percent (lowest dotted line in Figure 2). Later that July, nearly \$1 billion in R&D rescissions reduced the FY 1995 funding level, thus lowering the projected cut from the new FY 1995 base (the bold marker on the FY 1995 axis) to 28 percent.

In April 1996, after a protracted showdown between the President and Congress, FY 1996 appropriations were finalized at levels far higher than projected in the budget resolution (first segment of the bold line). Both the President and Congress formulated

their FY 1997 budget plans from this higher funding base. The AAAS analysis of the FY 1997 budget resolution projected a 22 percent cut to nondefense R&D (middle dotted line). The President's FY 1997 budget would have led to a 18 percent cut over the same period (light solid line).

In September 1996, FY 1997 appropriations were finalized at a level approximately midway between the two projections (second segment of bold line). The FY 1998 budget relies on sustained economic growth over the past two years, more optimistic economic forecasts, and greater cuts in non-discretionary programs to call for still higher levels of discretionary spending than previous budget plans. The analysis of the FY 1998 budget shows a FY 1995-2002 cut of 13 percent (upper solid line - 9.4 percent between FY 1997 and 2002 plus 4.6 percent in cuts already enacted between FY 1995 and 1997). In total, the President's budget contains about \$50 billion more in FY 2002 in nondefense discretionary spending (out of which all nondefense R&D is funded) than the FY 1996 congressional budget resolution. Because of these additional funds, there is room for a \$5 billion improvement in projected nondefense R&D spending.

It is important to remember, however, that these projected additional funds are not increases, but merely smaller potential cuts that follow cuts that have already been enacted. While the outlook for federal R&D has improved somewhat from the gloomy forecasts of two years ago, all signs still point downward as long as both the Administration and Congress continue to press for a balanced budget through cuts in discretionary spending.

CONCLUSION

The U.S. R&D enterprise has contributed enormously to the quality of American life, to the nation's health and security, and to its world leadership in many areas of industrial technology. The United States today is faced with many challenges that will require continued strength in science and technology. In a very real sense, today's R&D is helping to create a better world for future generations. Most political leaders recognize this and support a strong R&D enterprise. Yet, the budget-balancing path on which the nation has embarked—as a means, ironically, of protecting future generations against the burden of a growing national debt—may well have the unintended effect of weakening U.S. science and technology. It is essential that those involved in policy decisions that will affect the future of government-supported science and technology have a solid understanding of the impact of these decisions on the S&T enterprise—as well as an appreciation of the fragility of that enterprise.