

AAAS R&D Budget and Policy Program

**Congressional Action
on
Research and Development
in the
FY 2000 Budget**

**Kei Koizumi
Albert H. Teich
Stephen D. Nelson
Joanne Padrón Carney**

in cooperation with the
Intersociety Working Group

**American Association for the
Advancement of Science**

The AAAS Board of Directors, in accordance with Association policy, has approved publication of this report as a contribution to the understanding of an important process. The interpretations and conclusions are those of the authors and do not purport to represent the views of the Board or the Council of the Association.

Printed in the United States of America

International Standard Serial Number 1041-8857

Copyright © 1999 by the

American Association for the Advancement of Science

Printed on recycled, acid-free paper

Contents

Foreword	v
Intersociety Working Group	vi
PART I: Congressional Action	
Chapter 1: Highlights	3
Chapter 2: Overview of R&D Trends	5
The FY 2000 Congressional Budget Process	5
Figure 1. FY 2000 R&D Appropriations	10
Figure 2. Trends in R&D, FY 1994-2000	11
Table A. Trends in R&D, FY 1994-2000	12
Trends in Total R&D	13
Agency Highlights	16
Total U.S. R&D in 1999	19
Table B. Total U.S. R&D, 1997-1999	21
Figure 3. U.S. R&D Funding by Source, 1953-1999	22
Chapter 3: Agency R&D Budgets	23
Department of Defense	23
National Institutes of Health	25
National Aeronautics and Space Administration	28
Department of Energy	31
National Science Foundation	34
Other Agencies	36
PART II: Tables	
Table 1: Total R&D by Agency	44
Table 2: Basic Research by Agency	46
Table 3: Major Functional Categories of R&D	47
Table 4: Department of Defense, by Program	48
Table 5: Department of Defense, by Agency	49
Table 6: National Aeronautics and Space Administration	50
Table 7: Department of Energy	52
Table 8: National Institutes of Health	56
Table 9: Department of Health and Human Services	58
Table 10: National Science Foundation	59
Table 11: Department of Commerce	61
Table 12: Department of Agriculture	62

Table 13: Department of Transportation 64
Table 14: Department of the Interior 65
Table 15: Environmental Protection Agency 66

PART III: Appendices

Appendix 1: Methodology and Data Sources 69
Appendix 2: Definitions 71
Appendix 3: Other AAAS Publications 73

Foreword

This *Congressional Action* report describes the results of congressional action on President Clinton's proposed budget for research and development (R&D) for fiscal year (FY) 2000. It reviews the course of events taken by the congressional budget process during the past year and compares the congressionally approved FY 2000 funding levels for major R&D agencies and programs with the President's request and with estimated FY 1999 levels.

The *Congressional Action* report completes the series of AAAS reports on R&D in the FY 2000 budget. It is a companion piece and follow-up to *AAAS Report XXIV: Research and Development FY 2000*, published in April 1999. Supplementary information, including historical data and the complete text of both reports, is available on the AAAS R&D Web site (see Appendix 3). Readers of these two reports will also be interested in the *AAAS Science and Technology Policy Yearbook 2000*, which is a collection of articles on the major science and technology policy issues of the past year. The above-named reports, as well as the three-book series from previous years, are available for purchase from the AAAS Distribution Center, P.O. Box 521, Annapolis Junction, MD 20701 (phone 1-800-222-7809; fax 301-206-9789.)

This report was prepared in collaboration with the Intersociety Working Group, whose organizations are listed on the following page, and under the auspices of the AAAS Committee on Science, Engineering, and Public Policy, which initiated the R&D Budget and Policy Project in 1976 and continues to oversee it. The authors are grateful to the members of these bodies who have contributed to the effort, as well as to individuals in federal agencies and on congressional staffs, especially the staff in the Energy and Science Division of the Office of Management and Budget.

Kei Koizumi
Albert H. Teich
Stephen D. Nelson
Joanne Padrón Carney

Washington, DC
November 1999

Intersociety Working Group

American Association for the Advancement of Science
American Astronomical Society
American Chemical Society
American Educational Research Association
American Geological Institute
American Geophysical Union
American Institute of Aeronautics and Astronautics
American Institute of Physics
American Meteorological Society
American Physical Society
American Psychological Association
American Society of Mechanical Engineers
Association of American Universities
Computing Research Association
Council of Professional Associations on Federal Statistics
Ecological Society of America
Federation of Behavioral, Psychological and Cognitive Sciences
Industrial Research Institute
Institute of Electrical and Electronics Engineers
Joint Policy Board for Mathematics
National Academy of Sciences / National Academy
of Engineering / Institute of Medicine
National Association of State Universities and Land-Grant Colleges

Part I

Congressional Action

1

Highlights

Federal support for R&D continues to flourish in the new era of federal budget surpluses, at least for the most favored priorities. Although it was expected that tight statutory caps on discretionary spending would result in a painful FY 2000 budget process of allocating cuts, Congress and President Clinton, while technically sticking to the caps, obliterated them in practice and competed to award large increases for discretionary programs. Most areas of federal support of R&D receive moderate increases in FY 2000, even after a last-minute across-the-board cut in all discretionary spending, while selected high-priority areas in defense and health R&D receive substantial increases.

- Total federal support for R&D in FY 2000 increases substantially to \$83.3 billion, \$4.0 billion or 5.0 percent more than FY 1999, primarily because of large increases for the Department of Defense (DOD) and the National Institutes of Health (NIH). There are increases in R&D funding for most agencies, but some receive increases less than the rate of inflation or even cuts in their R&D programs (see Table 1).
- The FY 2000 R&D total is \$5.4 billion above the President's request. Final FY 2000 appropriations for DOD's R&D exceed the request by more than \$4.0 billion because of strong congressional support for increased defense spending after more than a decade of cuts. Congress awarded NIH \$1.8 billion more for R&D than it had requested. Most other agencies received less for their R&D programs than requested (see Table 1).
- Nondefense R&D totals \$40.9 billion, an increase of 7.1 percent or \$2.7 billion over FY 1999, the first time the federal civilian investment exceeds \$40 billion. Nearly all of the substantial increase is due to a \$2.2 billion or 14.4 percent boost for NIH R&D. Excluding NIH, however, nondefense R&D rises only 2.4 percent to \$23.7 billion, barely ahead of the expected inflation rate of 2.0 percent. Funding for nondefense R&D in FY 2000 is 12.1 percent higher than the FY 1994 level in inflation-adjusted

4 *Highlights*

terms, but this is due to increases for NIH. If NIH is excluded, nondefense R&D is 4.4 percent below the FY 1994 level in inflation-adjusted terms (see Table A).

- After a decade of cuts or only modest increases, total defense R&D increases 3.1 percent to \$42.5 billion. The “Science and Technology” portion of DOD’s budget (encompassing basic and applied research plus exploratory technology development) increases by 11.0 percent to \$8.7 billion.
- Basic research is a high priority in FY 2000 appropriations. Federal support for basic research is expected to total \$19.1 billion in FY 2000, an increase of \$1.8 billion or 10.6 percent (see Table 2). The increases, however, go mostly to life sciences and medical research funded by NIH. Although the total for basic research is \$1.0 billion higher than the request, the President’s request would have spread increases more evenly among the agencies.
- The total NIH budget in FY 2000 is \$17.8 billion (up \$2.2 billion or 14.3 percent), but \$3.0 billion is withheld until September 29, 2000. In FY 2000, NIH provides, for the first time, more than half of total federal support for basic research.
- Health-related R&D (\$18.7 billion, up 14.1 percent) and energy R&D (\$1.3 billion, up 9.3 percent) are clear priorities in the FY 2000 budget by mission (Table 3). Defense R&D increases by \$1.3 billion or 3.1 percent to \$42.5 billion. Once again, it is a majority of the federal R&D portfolio, even though the Clinton Administration request would have made nondefense R&D more than half of the portfolio for the first time since FY 1980.
- Information technology (IT) research was a high priority for the Clinton Administration in the FY 2000 request. The Administration proposed \$366 million for a new six-agency Information Technology for the 21st Century (IT²) initiative to support long-term fundamental research in IT. Though not labeled as IT², new fundamental research activities in IT receive \$235 million in FY 2000, including \$126 million for the National Science Foundation (NSF) and \$60 million for DOD.

Overview of R&D Trends

The FY 2000 Congressional Budget Process

The federal government recorded a budget surplus in fiscal year (FY) 1999 for the second year in a row, ushering in a new era of federal budget surpluses after decades of deficit reduction struggles. The FY 1999 surplus of \$123 billion was the largest in history. The off-budget (Social Security) surplus in FY 1999 was \$124 billion, meaning that the non-Social Security or on-budget deficit was only \$1 billion, narrowly missing the first non-Social Security surplus since FY 1960. As a result of two years in a row of budget surpluses, the federal government has been paying off the national debt to the public and as a share of the economy the national debt is shrinking dramatically. In this flush fiscal environment, federal support of R&D eventually flourished in the final FY 2000 appropriations. The road there, however, was chaotic, prolonged, and partisan, and both the President and Congress reached deep into their bags of tricks to ensure politically palatable results.

In 1997, Congress and President Clinton agreed on a balanced budget law that set a course toward balancing the federal budget by FY 2002. Included were caps (spending limits) each year through FY 2002 on discretionary spending, the portion of the federal budget out of which nearly all federal research and development (R&D) is funded. Although the economic assumptions underlying the law are now seriously out of date and the federal budget actually went into surplus in FY 1998, the caps remain in place because neither the President nor the Congress wants to be the first to propose officially raising or eliminating them.

In FY 1999, Congress and the President cooperated to circumvent the caps by designating \$21 billion in spending as emergency and thus exempt from the FY 1999 caps. As a result, discretionary spending in general and federal R&D in particular received generous funding increases. But the FY 2000 cap of \$538 billion remained law, \$18 billion less than final FY 1999 appropriations.

The FY 2000 budget process began in a poisoned political environment that did not portend well for bipartisan cooperation. The 106th Congress convened in January, and the Senate immediately plunged into the impeachment trial for President Clinton, continuing the intense partisan rancor that characterized much of 1998. President Clinton was eventually acquitted, which pleased Democrats but left Republicans bitter and in no mood to cooperate with the President.

The President pressed ahead with his FY 2000 budget, released in February, which proposed increases for most nondefense R&D agencies. (For details of the request, please see *AAAS Report XXIV: R&D FY 2000*.) In order to stay within the FY 2000 cap and provide increases for selected programs, the President proposed an \$18 billion package of offsetting revenues counted against additional spending. Included were proposals that had failed in FY 1999, such as a tobacco tax.

The budget proposal arrived in a Congress determined to impose fiscal discipline. Many Republicans were angry at the conclusion to the FY 1999 appropriations process, when the \$21 billion in cap-busting spending was enacted in a 2,000-page omnibus bill that few had read and which was three weeks late. The bill gave the President nearly all the additional spending he had requested, and also added billions of dollars for congressional priorities. Republican anger over the omnibus bill was one of the reasons for Rep. Newt Gingrich's (R-GA) removal as Speaker of the House and subsequent resignation in November 1998.

Rep. Dennis Hastert (R-IL), Gingrich's successor, vowed to do things differently, and promised to restrain spending in FY 2000, avoid budgetary tricks and "emergency" designations, and complete the appropriations process on time and in an orderly manner. At first, he was successful. Unlike the year before, when Republican infighting prevented Congress from approving a budget resolution for the first time since the current congressional budget process was created in 1974, Congress approved a final budget resolution before the rarely-met official deadline of April 15. The budget resolution stuck to the theme of fiscal discipline by limiting FY 2000 discretionary to the capped level.

The same month, however, Congress enacted a FY 1999 supplemental appropriations bill (Public Law 106-31) mostly to pay for military

operations in Kosovo, but the bill was loaded with spending that would normally be considered routine. The entire \$15 billion total was designated as emergency to exempt it from the caps.

As Congress began to write the 13 appropriations bills, it ran into trouble as the realities of cutting discretionary spending by \$18 billion while increasing defense spending (which makes up half of all discretionary spending) became clear. In order to make the process go smoothly, Congress deliberately increased the total allocations for the first few bills written, including the defense-related bills, aware that this would shortchange the later ones. The next few bills were given flat or slightly declining allocations, again by shortchanging later ones, which made the bills more difficult to draft but still possible to approve. But by July and August, there was no more money left to move around. The last three appropriations bills had been shortchanged so much that it was politically impossible to draft them without padding them with budgetary tricks. Though the House proposed deep cuts to discretionary programs, including R&D, it was still forced to dip into its bag of budgetary tricks to draft its last few bills.

By the time Congress left Washington in August for a month-long recess, it was clear that Congress could not keep discretionary spending within the \$538 billion FY 2000 cap without budgetary tricks. It then retreated to holding the line at preserving the projected non-Social Security surplus in FY 2000, which would have allowed an additional \$14 billion in spending through tricks. This option, which would allow the entire Social Security surplus to pay down the national debt, became a rallying cry for the Republicans and a line in the sand against President Clinton's demands which, because they totaled \$558 billion, allowed Republicans to claim that the Democrats would "raid" Social Security.

After the recess, Congress stayed mostly on course to send President Clinton 13 appropriations bills separately and on time. Although they missed the October 1 start of FY 2000 by a few weeks, 11 of the 13 appropriations bills won final approval from Congress as separate pieces of legislation, while the remaining two were combined into one bill.

President Clinton, however, refused to be boxed in by Republican demands. In September, he vetoed a 10-year, \$892 billion tax cut bill, thus defeating one of the Republican party's key priorities. He vetoed four of the 13 appropriations bills in the fall, and forced the withdrawal of a fifth.

He criticized the Republican spending bills for not providing enough money for his priorities. He signed 8 of the 13 appropriations bills into law between August and October, but then a stalemate developed as it became clear that high-level closed-door negotiations between congressional leaders and the President would be necessary to resolve the remaining bills, a repeat of last year's situation.

Seven temporary spending bills (continuing resolutions) were necessary to keep the federal government operating while Congress and the President negotiated. As November dragged on, President Clinton gained the upper hand in negotiations as Congress became increasingly impatient to adjourn and the congressional leadership was unable to negotiate separate agreements on the five unsigned appropriations bills while holding the line against the President's demands for more money. Fiscal discipline evaporated as Congress competed to provide more money than the President for key Administration priorities such as education, even though a few years earlier the Republican Party had seriously considered eliminating the Department of Education.

In the end, the five appropriations bills were rolled into yet another 2000+ page omnibus bill combining not only the five remaining bills but also legislation on Medicare/Medicaid, a Department of State authorization, dairy price programs, satellites, scrap metal, miscellaneous supplemental or emergency appropriations, and offsets—just what the Republican leadership had vowed to avoid. The agreement was completed on November 17 after the President finally agreed to Republican demands for a 0.38 percent across-the-board cut in all FY 2000 discretionary appropriations, lower than the 0.97 percent cut they had proposed earlier. The House approved the omnibus bill on November 18 and adjourned for the year, even though only a handful of people had seen it; the Senate approved the bill and adjourned for the year on November 19 after deflecting an attempt by Midwestern Senators to sink it over the dairy provisions.

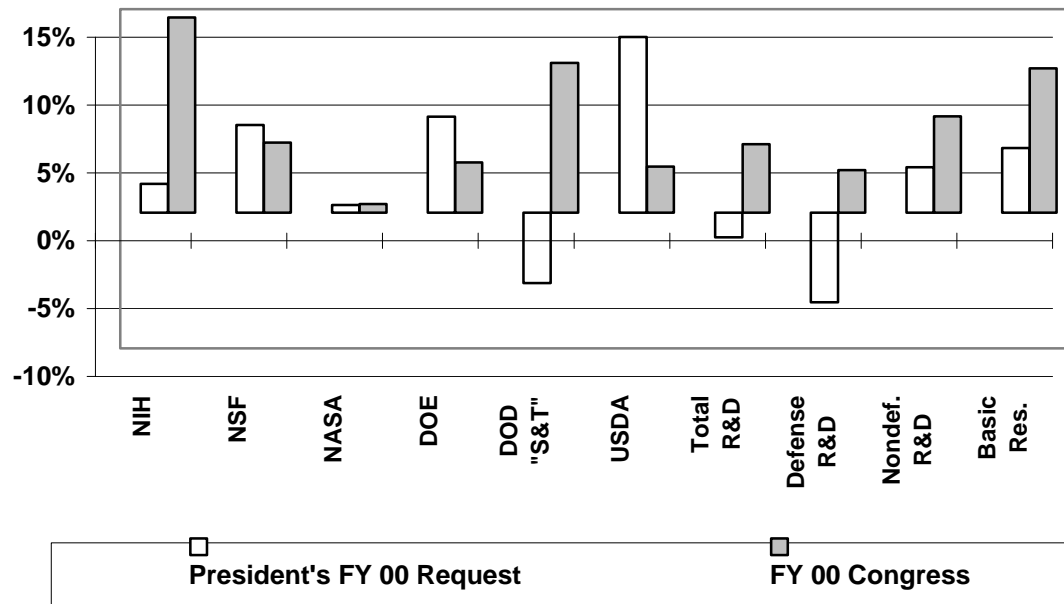
The final FY 2000 budget contains numerous budgetary tricks and accounting devices that allow discretionary spending to exceed the cap and even tap the non-Social Security surplus, while still technically remaining within the cap and preserving the surplus. The agreement contains \$16 billion in emergency spending for normally routine items such as the decennial census, nearly \$10 billion in emergency spending

for natural disasters and agricultural assistance, nearly \$20 billion pushed forward to FY 2001 in advance appropriations, \$2 billion pushed *back* retroactively to FY 1999, miscellaneous rescissions, \$8 billion in miscellaneous offsets, and \$2 billion in savings from the across-the-board cut. This byzantine arrangement allows discretionary budget authority to exceed \$590 billion in FY 2000 after adjusting for these maneuvers, compared to approximately \$556 billion in FY 1999; this amount is far above the technical cap of \$538 billion, and also well above the Administration's request of \$558 billion. Federal R&D shares in the increase, as the following sections in the report show.

Even after these maneuvers, however, Congress and the President still faced the prospect that actual spending in FY 2000 would dip into the Social Security surplus. In order to push as much spending as possible to FY 2001, they resorted to measures such as withholding billions of dollars in spending until September 29, 2000, a day before the end of FY 2000, so that the National Institutes of Health (NIH) and other agencies would not be able to spend the money until FY 2001. They also agreed to push a military and civilian pay day from the end of September to October 1, 2000. However, when even these measures proved insufficient, Congress made the problem go away by simply instructing the Congressional Budget Office (CBO) to lower its estimates of FY 2000 spending by \$17 billion, allowing everyone to claim that according to CBO projections, there would still be a small non-Social Security surplus in FY 2000 for the first time in forty years.

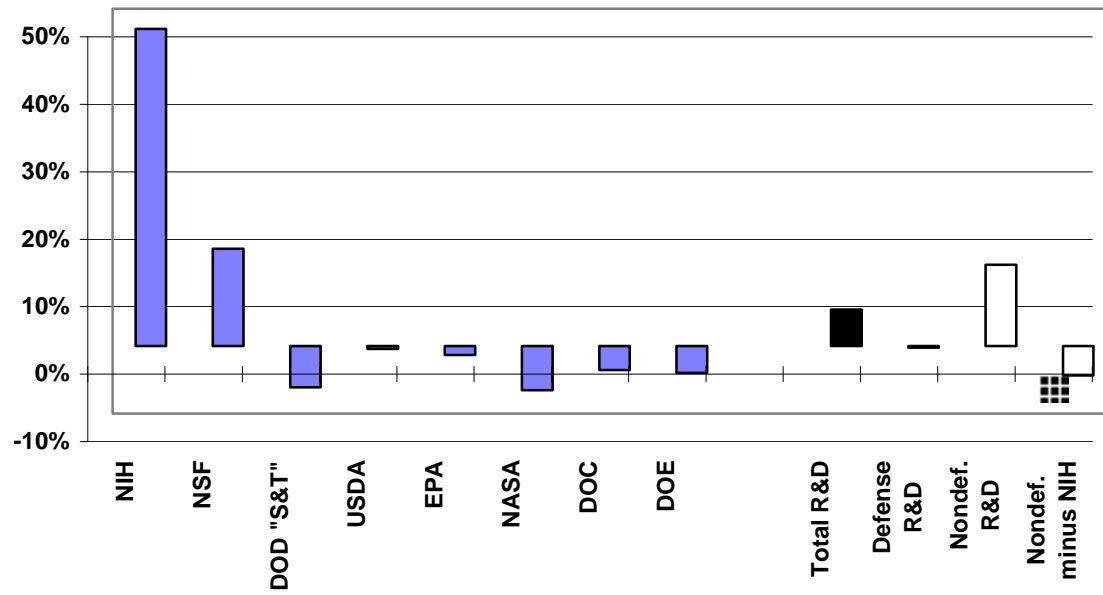
Despite all the creative ways to circumvent them, the discretionary caps remain law. The FY 2001 discretionary budget authority cap is only \$541 billion, \$50 billion less than final FY 2000 discretionary spending. Although no one expects either Congress or the President to abide by the cap in an election year, few expect Congress or the President to repeal the caps either. Ever-increasing and ever-more-creative contortions will be necessary for the President to propose and Congress to appropriate an FY 2001 budget that simultaneously preserves the cap in principle but provides increases for discretionary programs in fact. It remains to be seen whether there are any practical limits to budgetary tricks that could eventually force Congress and the President to either cut discretionary spending or repeal the caps. But as long as they are able to stretch the rules they seem poised to continue to invest in high priority areas of R&D such as defense and health, and the federal investment in R&D looks poised to expand in the first years of the new millennium.

**Figure 1. FY 2000 R&D Appropriations
Percent Change from FY 1999**



AAAS estimates of R&D based on OMB R&D budget data.
DOD S&T = DOD R&D in "6.1" through "6.3" categories.

Figure 2. Trends in R&D, FY 1994-2000
 Percent Change in Constant Dollars



Source: AAAS *Report XX* and AAAS estimates for R&D in FY 2000 appropriations. Adjusted for inflation according to OMB's Gross Domestic Product deflators. DOD "S&T" is DOD R&D in "6.1" through "6.3" categories.

Table A. Trends in R&D, FY 1994-2000Percentage Changes in **Constant Dollars**

	FY 1994	FY 1999	FY 2000	% Chg. Constant \$	
	Actual	Estimate	Approved	FY 94-99	FY 94-00
<i>(budget authority in millions of current dollars):</i>					
Dept. of Defense	35,510	37,975	39,109	-1.9%	-1.0%
(DOD "S&T" (6.1-6.3)) ¹	8,283	7,791	8,652	-13.7%	-6.1%
NASA	9,406	9,715	9,778	-5.3%	-6.5%
Dept. of Energy	6,771	6,974	7,232	-5.6%	-4.0%
Nat'l Institutes of Health	10,474	14,971	17,125	31.1%	47.0%
NSF	2,243	2,714	2,854	11.0%	14.4%
Agriculture	1,528	1,638	1,693	-1.7%	-0.4%
Interior	708	567	562	-26.5%	-28.6%
Transportation	641	603	643	-13.8%	-9.8%
EPA	588	669	645	4.2%	-1.3%
Commerce	1,022	1,075	1,096	-3.5%	-3.6%
All Other	2,185	2,450	2,609	2.8%	7.4%
Total R&D	71,074	79,350	83,346	2.4%	5.4%
Defense R&D	38,299	41,208	42,497	-1.3%	-0.2%
Nondefense R&D	32,775	38,142	40,850	6.7%	12.1%
-Nondef. R&D minus NIH	22,301	23,171	23,725	-4.7%	-4.4%
Basic Research	13,693	17,276	19,112	15.7%	25.5%
"FS&T" ¹	43,002	48,326	49,404	3.1%	3.3%

Source: AAAS Report XX, OMB R&D data, and agency budget justifications.

FY 2000 figures are AAAS estimates of R&D in FY 2000 appropriations bills.

Constant-dollar changes calculated from OMB's GDP deflators.

¹ FY 2000 Approved includes medical R&D appropriated in a separate account.

These programs were previously appropriated in "6.3" accounts.

² An alternative measure of the federal investment in science and technology proposed by the National Academy of Sciences. Please see Appendix 1 for details.

Trends in Total R&D

Table 1 summarizes congressional action on R&D funding by agency. Six-year trends between FY 1994 and FY 2000 are discussed to illuminate the impacts of the 104th, 105th, and 106th Congresses on R&D (see Table A and Figure 2). FY 1994 was chosen as the starting point because it is the last fiscal year before the new Republican-controlled Congress and the President began cutting discretionary spending in earnest to balance the budget. Most civilian R&D funding agencies saw their R&D budgets peak in that year, although increases in the past three years have allowed them to inch back toward peak funding levels.

- Total federal support for R&D in FY 2000 increases substantially to \$83.3 billion, \$4.0 billion or 5.0 percent more than FY 1999**, primarily because of large increases for the Department of Defense (DOD) and the National Institutes of Health (NIH). There are increases in R&D funding for most agencies, but some receive increases less than the rate of inflation or even cuts in their R&D programs (see Figure 1 and Table 1). The National Institutes of Health (NIH) receives its largest dollar increase in history, a nearly \$2.2 billion or 14.4 percent increase in its R&D budget to \$17.1 billion, but \$3 billion is withheld until the end of September 2000. Department of Defense (DOD) R&D totals \$39.1 billion, an increase of \$1.1 billion or 3.0 percent, including an 11.0 percent increase to \$8.7 billion for DOD's "S&T" programs ("6.1" through "6.3").
- The FY 2000 R&D total is \$5.4 billion above the President's request.** Final FY 2000 appropriations for DOD's R&D exceed the request by more than \$4.0 billion because of strong congressional support for increased defense spending after more than a decade of cuts. Congress awarded NIH \$1.8 billion more for R&D than it had requested. Most other agencies received less for their R&D programs than requested.
- Nondefense R&D totals \$40.9 billion, an increase of 7.1 percent or \$2.7 billion over FY 1999**, the first time the federal civilian investment exceeds \$40 billion. Nearly all of the substantial increase is due to a \$2.2 billion or 14.4 percent boost for NIH R&D. **Excluding NIH, however, nondefense R&D**

rises only 2.4 percent or \$555 million to \$23.7 billion, barely ahead of the expected inflation rate of 2.0 percent. Funding for nondefense R&D in FY 2000 is 12.1 percent higher than the FY 1994 level in inflation-adjusted terms, but this is due to increases for NIH. Figure 2 shows that if NIH is excluded, nondefense R&D is 4.4 percent below the FY 1994 level because most non-NIH civilian R&D funding agencies—except for the National Science Foundation (NSF)—have less in FY 2000 in inflation-adjusted terms than they did in FY 1994.

- After a decade of cuts or only modest increases, **total defense R&D increases \$1.3 billion or 3.1 percent to \$42.5 billion**. The **“Science and Technology” portion of DOD’s budget** (encompassing basic and applied research plus exploratory technology development) **increases by 11.0 percent** to \$8.7 billion, including \$274 million for congressionally designated medical research. The FY 2000 increase begins to reverse years of decline in DOD S&T, which provides significant portions of total federal support for engineering and physical sciences research.
- **Basic research** is a high priority in FY 2000 appropriations. Table 2 shows that federal support for basic research is expected to total \$19.1 billion in FY 2000, an increase of \$1.8 billion or 10.6 percent. The increases, however, go mostly to life sciences and medical research funded by NIH. Although the total for basic research is \$1.0 billion higher than the request, the President’s plan would have spread increases more evenly among the agencies. Nevertheless, NSF, the second-largest supporter of basic research and the largest supporter of most non-life sciences disciplines, sees its basic research increase by 6.0 percent to \$2.5 billion. The National Aeronautics and Space Administration’s (NASA) basic research increases by 18.0 percent to \$2.5 billion, but mostly because of a reclassification of existing work from applied to basic research. DOD, the primary supporter of basic research in engineering, mathematics, and computer sciences, sees its basic research (“6.1”) rise by 5.4 percent to \$1.2 billion.

- In FY 2000, **NIH provides, for the first time, a majority of federal support for basic research.** NIH also provides two-thirds of all federal support for R&D at colleges and universities, a proportion that will almost certainly increase in FY 2000.
- FY 2000 appropriations show a clear priority for **health-related R&D** when the total federal R&D portfolio is considered by **national mission** (see Table 3). Health R&D surges by 14.1 percent to \$18.7 billion because of large increases not only for NIH but for other R&D funding agencies in the Department of Health and Human Services (HHS). Defense-related R&D increases by \$1.3 billion or 3.1 percent to \$42.5 billion; once again, it accounts for a majority of the federal R&D portfolio, although the Clinton Administration's FY 2000 request would have made nondefense R&D more than half of the portfolio for the first time since FY 1980. Energy-related R&D increases significantly by 9.3 percent to \$1.3 billion because of last-minute boosts to DOE support of fossil energy and energy conservation R&D. Other mission areas receive modest increases or cuts; natural resources and environment R&D declines 0.9 percent to \$2.1 billion because of cuts in R&D funding in the Environmental Protection Agency (EPA) and the Department of the Interior.
- The Clinton Administration presented a **"21st Century Research Fund"** in the FY 2000 request, as it did in FY 1999, to highlight programs that it considers important to the nation's science and technology enterprise. The Fund highlights both R&D and non-R&D items while excluding large parts of the nation's R&D portfolio (primarily in development). Table 1 summarizes appropriations for the Fund, which total \$39.9 billion in FY 2000, 7.9 percent or \$2.9 billion more than FY 1999. "FS&T," another alternative measure of the federal investment in science and technology developed by the National Academy of Sciences, totals \$52.1 billion (up 7.7 percent; see Table 1).
- Information technology (IT) research was a high priority for the Clinton Administration in the FY 2000 request. The Administration proposed \$366 million for a new six-agency Information Technology for the 21st Century (IT²) initiative to support long-term fundamental research in IT. Though not

labeled as **IT²**, **new fundamental IT research activities receive \$235 million**, including \$126 million for NSF and \$60 million for DOD. DOE, however, did not receive any funds for IT² or similar activities, although it requested \$70 million.

Agency Highlights

- Department of Defense (DOD)** R&D totals \$39.1 billion, \$4.0 billion more than the request and \$1.1 billion or 3.0 percent more than FY 1999 (see Tables 4 and 5). DOD funding of basic and applied research is well above both the request and the FY 1999 funding level. DOD's basic research ("6.1") totals \$1.2 billion, 5.4 percent above FY 1999, while applied research ("6.2") totals \$3.4 billion, 7.5 percent above FY 1999. Including DOD's medical research programs, **DOD S&T** ("6.1" through "6.3" programs, representing DOD's investments in basic and applied research and technology development) **increases by 11.0 percent to \$8.7 billion**, though even this increase leaves DOD S&T 6.1 percent below the FY 1994 level after adjusting for inflation (see Figure 2). The final Defense bill contains substantial increases for the overall DOD budget as well as for R&D programs, after a decade-long post-Cold War decline. The Defense Advanced Research Projects Agency (DARPA) budget declines by \$82 million or 4.2 percent to \$1.8 billion. DOD receives \$60 million of a requested \$100 million for the multi-agency IT² initiative.
- The National Institutes of Health (NIH)** is once again the beneficiary of strong support for biomedical research from both branches of government. The NIH budget of \$17.8 billion represents a \$2.2 billion or 14.3 percent increase over FY 1999 (see Table 8), keeping NIH on the second year of a course toward doubling its budget in five years.¹ However, **\$3.0 billion of the budget is withheld until September 29, 2000**, a day before the end of FY 2000, in order to shift spending to FY 2001. Unless this provision is changed, NIH will have to operate for nearly all of FY 2000 on less than its FY 1999 budget. Every

¹ NIH's R&D as shown in the tables is slightly less than the total NIH budget after subtracting overhead and research training costs.

institute receives an increase greater than 12 percent, and five receive increases greater than 20 percent. Because of steady increases every year, the NIH R&D budget is now 47 percent larger in inflation-adjusted terms than it was in FY 1994.

- The **National Aeronautics and Space Administration's (NASA)** total budget is \$13.6 billion in FY 2000, 0.5 percent less than FY 1999 (see Table 6). Total NASA R&D, which excludes the Space Shuttle and its mission support costs, increases slightly by 0.6 percent to \$9.8 billion. The Science, Aeronautics, and Technology (SAT) account receives \$5.6 billion, a reduction of 1.2 percent from FY 1999 but \$161 million more than the request. Space Science has 2.7 percent more than FY 1999 for a total of \$2.2 billion; there is reduced funding for future Discovery and Explorer missions, which could result in fewer spacecraft launches over the next few years than NASA had planned; funding is also reduced for the Mars missions in response to the recent loss of a Mars spacecraft. Life and Microgravity Sciences and Applications (LMSA) receives \$275 million, an increase of 4.3 percent; much of the increase is for a dedicated shuttle science mission by 2001. NASA receives \$2.3 billion for continued development and construction of the International Space Station, \$70 million or 3.1 percent more than FY 1999 but \$161 million less than the request.
- In the wake of congressional anger over allegations of security breaches and mismanagement at **Department of Energy (DOE)** weapons laboratories, Congress recently moved DOE's weapons-related activities to a new semi-autonomous agency within DOE called the **National Nuclear Security Administration (NNSA)**. Meanwhile, DOE has an R&D budget of \$7.2 billion for FY 2000, \$258 million or 3.7 percent more than FY 1999 (see Table 7). The Science account totals \$2.6 billion for R&D, a slight decline of 0.3 percent. Fusion Energy Sciences receives a boost of 11.2 percent to \$246 million, while Nuclear Physics increases 3.9 percent to \$347 million. The final budget denies funding for the proposed Scientific Simulation Initiative, part of the proposed IT² initiative. Congress reduces funding for the Spallation Neutron Source to \$117 million, down from a requested \$214 million. In DOE's investments in energy

R&D, nuclear energy R&D (\$91 million, up 19.3 percent), fossil energy R&D (\$330 million, up 11.9 percent), and energy conservation R&D (\$440 million, up 10.0 percent) all receive substantial increases. In defense R&D, the Stockpile Stewardship program is funded at \$2.2 billion, \$126 million or 5.9 percent more than last year despite the controversies over the weapons labs.

- The **National Science Foundation (NSF)** receives \$3.9 billion for its total budget in FY 2000, an increase of 5.0 percent (see Table 10). NSF's R&D funding, which excludes NSF's education and training activities and overhead costs, totals \$2.9 billion (up 5.2 percent). **NSF receives \$126 million out of a requested \$146 million for new fundamental information technology (IT) research activities in FY 2000**, most of which comes from the Directorate of Computer and Information Science and Engineering (up 30.6 percent to \$390 million). NSF also receives \$36 million in Major Research Equipment for Terascale Computing Systems, an IT project. Although growth in the NSF budget stagnated somewhat in the mid-1990s, in the last few years it has received significant funding increases. NSF's R&D is 14.4 percent higher in inflation-adjusted terms compared to FY 1994 (see Figure 2), one of only two major R&D funding agencies to receive increased funding over this time period.
- Funding for the **Department of Commerce's** R&D programs increases slightly in FY 2000. The National Institute of Standards and Technology (NIST) sees its R&D budget rise modestly by 1.0 percent or \$5 million to \$473 million (see Table 11). Within NIST, the Advanced Technology Program (ATP) receives \$130 million for R&D activities, a cut of 27.0 percent, but this is offset by a near-doubling to \$108 million for the mostly intramural Construction of Research Facilities program. The National Oceanic and Atmospheric Administration's (NOAA) programs for natural resources and environment R&D increase by \$17 million or 2.8 percent to \$617 million.
- The **U.S. Department of Agriculture (USDA)** has an R&D budget of \$1.7 billion in FY 1999, an increase of \$56 million (up

3.4 percent; see Table 12). This amount, though an increase, is still far below the request of \$1.85 billion because the final bill blocks two non-appropriated competitive agricultural research grants programs from spending a planned \$135 million in FY 2000. The existing competitive grants program, the National Research Initiative, receives \$119 million, the same as last year but far less than the request of \$200 million. The Special Research Grants program receives \$63 million, \$58 million more than the request, for 142 separate grants, all but six of them to congressionally designated performers.

- The **Department of the Interior's (DOI)** R&D budget declines by 0.9 percent in FY 2000 to \$562 million (see Table 14). The U.S. Geological Survey receives \$496 million for its R&D, 0.2 percent less than FY 1999, partially because of a major restructuring of USGS activities. Due to severe cutbacks in recent years, Interior's R&D is now nearly 30 percent less than the FY 1994 funding level in inflation-adjusted terms.
- The **Environmental Protection Agency (EPA)** has an FY 2000 R&D budget of \$645 million, \$23 million or 3.5 percent less than FY 1999 but the same funding level as the request (see Table 15). In order to make room for congressionally designated projects, Congress trimmed the request for R&D projects in the Climate Change Technology Initiative and other R&D programs.
- The **Department of Transportation's (DOT)** R&D budget of \$643 million (up 6.7 percent or \$40 million) is a small part of the total DOT budget (see Table 13). Because of a multi-year reauthorization of transportation programs in May 1998 that significantly boosted funding for highways and other surface transportation programs, the total DOT budget climbs \$2.1 billion to \$50.1 billion; DOT R&D shares in these gains.

Total U.S. R&D in 1999

As the federal investment in R&D and the federal budget surplus expands, and the national debt shrinks, there is also good news from U.S. industry. Once again, the **total U.S. R&D** enterprise continues to grow. Recently, the National Science Foundation (NSF) released its preliminary

projections for total U.S. R&D in calendar years 1998 and 1999, including industry-funded R&D. NSF estimates that the total U.S. R&D effort in 1999 is \$247 billion (see Figure 3 and Table B). This represents an 8.8 percent or \$20 billion increase over the \$227 billion total in 1998, which itself was a 7.3 percent increase over 1997.

As shown in Figure 3, since 1994 total U.S. R&D has expanded dramatically due almost entirely to substantial increases in R&D funding from industrial firms. In 1999, U.S. industry is expected to spend \$169 billion on R&D with its own funds, an increase of 12 percent, far outstripping the more modest growth in federal R&D. As Figure 3 shows, industry has consistently expanded its share of total U.S. R&D over the past four decades, and now funds two-thirds of total U.S. R&D. Other funding sources for R&D, though far smaller in dollar terms, are also expected to increase their R&D spending.

These increases in U.S. R&D spending cover all character-of-work categories. Despite worries in the mid 1990s that industry would cut back on its support of basic research, according to the NSF analysis industrial firms are expected to fund \$12.7 billion of basic research in 1999, an increase of 11.6 percent. This increase is far higher than the increase in federal support of basic research (up 4.1 percent), although the federal government continues to be the majority sponsor of basic research. Applied research and development are also expected to grow.

Because growth in total R&D is expected to exceed growth in the U.S. economy as a whole as measured by Gross Domestic Product (GDP), NSF estimates that total U.S. R&D will reach 2.79 percent of GDP in 1999, up from 2.67 percent in 1998 and the highest share since 1967.

If R&D continues to grow faster than the economy as a whole, as it has since 1994, in 2000 the U.S. R&D/GDP ratio could exceed the all-time high ratio of 2.87 percent in 1964. A survey by the Industrial Research Institute (IRI), an organization whose members include the largest R&D performing companies, indicates that industry plans to increase its R&D spending in 2000, though at a slower rate than in the past three years. Before adjourning, Congress approved a five-year extension of the Research and Experimentation Tax Credit, which had expired in July. Congress hopes that this credit will provide additional incentives for industrial firms to invest in R&D.

Table B. Total U.S. R&D, 1997-1999
(expenditures in millions of dollars)

(calendar years)	1997	1998	1999	% Change
	Actual	Preliminary	Preliminary	1998-99
U.S. R&D by funding source:				
Federal Government	65,016	64,853	65,853	1.5%
Industry	136,394	151,105	169,312	12.0%
Universities and Colleges	4,842	5,366	5,838	8.8%
Nonprofits	3,436	3,686	3,913	6.2%
Nonfederal Government	1,898	1,974	2,085	5.6%
Total U.S. R&D	211,586	226,984	247,000	8.8%
U.S. R&D by performer:				
Federal Government	16,814	17,189	17,362	1.0%
Industry	155,409	168,291	185,892	10.5%
Universities and Colleges	25,136	26,684	28,256	5.9%
FFRDCs *	8,562	8,715	9,171	5.2%
Nonprofits	5,665	6,105	6,319	3.5%
Total U.S. R&D	211,586	226,984	247,000	8.8%
U.S. R&D by character of work:				
Basic Research	35,495	37,695	40,224	6.7%
(from federal sources)	19,328	20,186	21,020	4.1%
(from industry sources)	10,315	11,373	12,689	11.6%
Applied Research	47,453	51,722	56,462	9.2%
Development	128,638	137,566	150,315	9.3%
Total U.S. R&D	211,586	226,984	247,000	8.8%
U.S. GDP** (billions of dollars)	8,111	8,509	8,849	4.0%
U.S. R&D / GDP	2.61%	2.67%	2.79%	

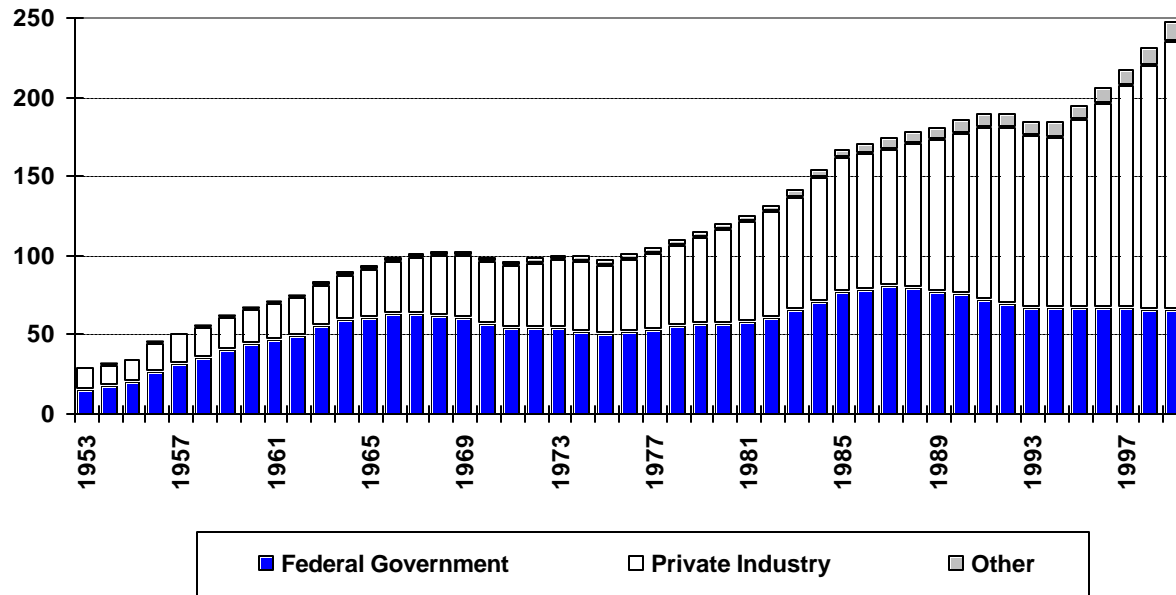
Source: National Science Foundation, *National Patterns of R&D Resources 1999 Data Update*. The complete data are available at <http://www.nsf.gov/sbe/srs/stats.htm>.

* Federally Funded Research and Development Centers.

** Gross Domestic Product.

These data are based on performer surveys of expenditures for calendar years, and thus differ from data presented elsewhere in this report (agency budget authority data by fiscal year). These data also exclude R&D facilities.

Figure 3. U.S. R&D Funding by Source, 1953-1999
Expenditures in Billions of Constant 1999 Dollars



Source: National Science Foundation, *National Patterns of R&D Resources: 1999 Data Update* (Data for 1998 and 1999 are preliminary.)

Agency R&D Budgets

Department of Defense (DOD)

DOD's R&D budget increases in FY 2000 as a result of a strong congressional commitment to increasing total U.S. defense spending. In this year's appropriations, President Clinton requested cuts in DOD's R&D budget for the fifth year in a row, and for the fifth year in a row the Republican-controlled Congress granted an increase. DOD R&D receives a 3.0 percent or \$1.1 billion boost to \$39.1 billion for FY 2000 (see Tables 4 and 5). The appropriation is \$4.0 billion more than the request, spread over all categories of DOD spending.

DOD funding of basic and applied research is above both the President's request and the FY 1999 funding level. DOD's basic research ("6.1") totals \$1.2 billion, 5.4 percent above FY 1999. In recent years, the House has proposed cuts to basic research, the Senate has proposed increases, and the final appropriations have split the difference, but this year there was broad agreement that the basic research accounts of all the services needed increases. The applied research ("6.2") total is \$3.4 billion, an increase of \$237 million or 7.5 percent. This total is \$429 million more than the request. As a result, total DOD support of research (basic plus applied) is \$4.6 billion, 7.0 percent more than FY 1999.

The "6.1" and "6.2" research accounts provide a significant share of federal support for several key science and engineering disciplines. DOD provides nearly a third of all federal support for engineering research, and a majority of federal support for some key engineering subfields. DOD also provides more than 40 percent of total federal support for computer sciences research, and plays a strong funding role in other disciplines such as mathematics, oceanography, medical sciences, chemistry, physics, and environmental sciences. In recent years, cuts in "6.1" and "6.2" have resulted in shrinking DOD support for many of these disciplines, especially engineering research. The FY 2000 increases for DOD research should help to reverse the downward trends, but will still

leave support for these disciplines well below mid-1990s levels. Even with a 5.4 percent increase in FY 2000, for example, DOD's "6.1" funding remains more than 20 percent below the FY 1993 level in inflation-adjusted terms.

This year, the DOD budget contains a separate \$274 million appropriation, outside the regular R&D accounts, for medical R&D (see Table 4). In past years, Congress has appropriated these unrequested funds for medical research in the Army's "6.3" accounts. This appropriation for peer-reviewed, competitively awarded research grants continues the recent expansion of DOD's effort in medical research. The \$274 million total is divided into \$175 million for breast cancer research (up from \$135 million in the Army in FY 1999) and \$75 million for prostate cancer research (up from \$58 million), with an additional \$24 million for peer reviewed research on other topics.

The "6.1," "6.2," and "6.3" categories are often grouped together as "Science and Technology" (S&T). This category encompasses basic research, applied research, and generic technology development, which contribute to a broad knowledge base with potential applications to a wide variety of military as well as civilian uses. DOD S&T has declined steeply in recent years. In FY 2000, however, DOD S&T, including the medical research appropriations formerly appropriated within the "6.3" category, totals \$8.7 billion, 11.0 percent more than FY 1999 and the largest increase by far in more than a decade.

Among the Defense Agencies, the budget of the Defense Advanced Research Projects Agency (DARPA) declines by \$82 million or 4.2 percent to \$1.8 billion (see Table 5). DARPA receives \$30 million for the first year of Extensible Information Systems (down from a first-time request of \$70 million). The program is a key part of DOD's contribution to the multi-agency Information Technology for the 21st Century (IT²) initiative. DOD receives \$60 million of a requested \$100 million for IT².

The Ballistic Missile Defense Organization's (BMDO) budget falls 10.8 percent to \$3.4 billion, but this is primarily because the FY 1999 total contains \$770 million in last-minute emergency appropriations. The BMDO appropriation funds continued development and testing of national and theater missile defense systems, including nearly \$1 billion (\$953 million) for development of a national missile defense system.

In congressional debates this summer over the DOD budget, the most controversial item was the House's proposed deletion of procurement funds for the F-22 fighter, for a savings of \$1.8 billion. The House would have provided \$1.2 billion for continued R&D on prototypes for the F-22, while the Senate bill would have funded both procurement and R&D. The final Defense bill keeps the F-22 program alive, but delays procurement and provides extra funds for continued development and prototype testing in a special transfer account. The bill provides nearly \$2 billion in development funds for the F-22, which contributes to the Air Force's 4.1 percent increase for its R&D activities to \$14.3 billion.

Total DOD R&D is on a slight upswing after a decade of post-Cold War cuts. The DOD budget for R&D is 25 percent below the FY 1987 peak funding level in real terms but the trend in recent years has been slightly upward. While the 11.0 percent increase for S&T in FY 2000 is substantial, because of steep cuts in earlier years DOD S&T is still 6.1 percent below its FY 1994 level in inflation-adjusted terms.

National Institutes of Health (NIH)

NIH is once again the beneficiary of strong support for biomedical research from both branches of government. In a repeat of last year, NIH won the largest dollar increase in its history in FY 2000. The NIH budget of \$17.8 billion represents a \$2.2 billion or 14.3 percent increase over FY 1999 coming after a \$2 billion increase last year, keeping the NIH budget on track in the second year of a plan to double the NIH budget in five years, as key congressional supporters of NIH have proposed (see Table 8). This amount is \$1.9 billion more than the request of \$15.9 billion.

In the FY 2000 budget process, both the House and the Senate proposed substantial increases for NIH and competed to fund NIH as well as possible. The House proposed \$16.9 billion, 8.5 percent above FY 1999. The Senate would have been even more generous with an appropriation of \$17.6 billion, exactly \$2 billion above the FY 1999 level for an increase of 12.8 percent. The final FY 2000 omnibus bill, however, follows the higher Senate appropriation but adds even more money, for a total of \$17.8 billion for NIH's budget (after factoring in the across-the-board cut), \$2.2 billion or 14.3 percent more than FY 1999 (see Table 8).

Excluding research training and overhead costs, NIH's R&D totals \$17.1 billion, 14.4 percent more than FY 1999.

The generous appropriation, however, comes with a bizarre catch. The final bill delays the release of \$3.0 billion of NIH's FY 2000 budget until September 29, 2000, one day before the end of FY 2000. The bill does not specify how this total should be distributed among the institutes, but it amounts to 17 percent of the total appropriation. This is an improvement, however, over the original proposal of \$7.5 billion in delayed obligations included in the original Labor-HHS bill vetoed by the President. This budgeting trick allows Congress to appropriate a generous increase to NIH, but ensures that some of it will not actually be spent in FY 2000, helping to hold down federal spending in FY 2000 and thus keep the government from dipping into the Social Security surplus. The money will become available on September 29, but NIH will not be allowed to obligate it until that date; that is, NIH will not be able to award any grants or make commitments on how to spend the money until the end of the year. Because it will take NIH weeks to months to then disperse these funds, this money will not be spent until FY 2001.

Unless the provision is repealed, the Labor-HHS bill requires NIH to operate for nearly all of FY 2000 on less than its FY 1999 budget. The \$2.2 billion increase is essentially canceled out by the withheld \$3.0 billion in funds, leaving \$14.8 billion for the first 364 days of FY 2000 compared to \$15.6 billion for all of FY 1999.

Every institute (except the Office of the Director) receives an increase greater than 12 percent in the final bill (including the withheld funds), and five receive increases greater than 20 percent. The bill provides \$90 million for the National Institute of Nursing Research (NINR), an increase of 28.4 percent; the Fogarty International Center (FIC), the unit of NIH with the smallest budget, receives \$44 million, up 23.0 percent; the National Center for Research Resources (NCRR) receives \$678 million, an increase of 22.1 percent, including \$75 million for extramural facilities construction; and a 26.9 percent increase to the National Human Genome Research Institute (NHGRI) for a total of \$336 million. NHGRI is on schedule to publish a "working draft" sequence of the human genome in spring 2000 and the complete sequence by 2003. The largest percentage increase goes to the newest institute, the National Center for Complementary and Alternative Medicine (NCCAM), which receives

\$68 million for its second year of existence, a substantial increase of \$18 million or 37.0 percent.

The National Cancer Institute (NCI) once again has the largest budget with \$3.3 billion, an increase of 13.4 percent or \$392 million. The National Heart, Lung, and Blood Institute (NHLBI) exceeds \$2 billion for the first time with an appropriation of \$2.0 billion, 13.3 percent more than FY 1999.

In addition to the regular NIH appropriation, there are additional funds from an account in the Office of the HHS (Health and Human Services) Secretary (see Table 9). The bill approves a transfer of \$20 million from the Public Health and Social Services Fund to NIH. The \$20 million funds a new program providing matching funds for cooperative R&D between NIH and the biotechnology, pharmaceutical, and medical device industries. The funds are planned to go toward R&D activities in biomedical research and biotechnology with commercial potential or promising therapies, and would become available if industry matched the federal funds.

Both the House and the Senate appropriated NIH HIV/AIDS research funds within individual institute budgets, instead of in a consolidated account as the Administration proposed, and the final bill retains this structure. Total NIH AIDS research is expected to be well over \$2 billion.

Although the Senate bill originally contained a provision that would have allowed federal financing of research using stem cells, the provision was removed before the bill reached the Senate floor, and was left out of the final bill also. The provision would have reflected recent recommendations from the National Bioethics Advisory Commission, which recommended that NIH should finance research on stem cells derived from embryos created during fertility treatments that would otherwise have been destroyed. A separate bill will be introduced in the next session of Congress that will address this subject. The final omnibus bill retains a ban on NIH using its funds to create human embryos for research purposes or to perform any research in which human embryos are destroyed.

There are also increases for R&D programs in other agencies within the Department of Health and Human Services (HHS; see Table 9). R&D in the Centers for Disease Control and Prevention increases by 10.5 percent to \$484 million, with an additional \$49 million provided by transfer from the Office of the Secretary for bioterrorism-related R&D activities. Congress boosts R&D in the Health Care Financing Administration (HCFA) by \$13 million to \$63 million. HCFA finances R&D on health-care outcomes and alternative health-care delivery systems in Medicare and Medicaid. R&D in the Health Resources and Services Administration (HRSA) increases dramatically to \$54 million because of a large increase in funding for rural health research. Total HHS R&D rises 14.9 percent to \$18.1 billion.

Although other R&D funding agencies have struggled to maintain their budgets in the past several years, NIH has enjoyed extraordinary success on Capitol Hill and its budget growth is accelerating even as discretionary budgets get tighter. NIH has enjoyed steady growth in its R&D budget over the past two decades, and in many years Congress has awarded more than the request. NIH's budget growth has accelerated in the last few years, and in the most recent two years NIH has won increases of \$2 billion, far more than the Clinton Administration had requested. These increases are intended as the first and second installments of a plan to double the budget in five years.

NIH's growth has been good for the life sciences, for which NIH is by far the largest federal supporter. Federal support for life sciences has expanded dramatically over the past few decades, while support for other disciplines, which rely on agencies other than NIH, has stayed constant or declined. NIH now accounts for nearly two-thirds of all federal support for R&D in colleges and universities, and in FY 2000 NIH, for the first time, will fund more than half of all federal support for basic research.

National Aeronautics and Space Administration (NASA)

NASA has had a rough year in 1999, with continuing problems in keeping the International Space Station on schedule, problems with the Hubble Space Telescope, and the embarrassing loss of a Mars spacecraft. This summer, the House proposed cutting NASA's budget by \$1.4 billion, leading NASA to warn of possible closings of several NASA facilities. By the fall, however, the cuts were restored and the final NASA budget for FY 2000 is \$13.6 billion, \$64 million or 0.5 percent less than FY 1999,

but slightly higher than the agency request. Total NASA R&D, which excludes the Space Shuttle program and its mission support costs, increases slightly by 0.6 percent to \$9.8 billion (see Table 6).

The Science, Aeronautics, and Technology (SAT) account, which funds nearly all of NASA's R&D not related to the Space Station, receives \$5.6 billion, a reduction of 1.2 percent from FY 1999 but \$161 million or 3.0 percent more than the request. The final appropriation is close to the Senate proposal, in contrast to a proposed 12 percent cut in the House bill. The final bill provides \$2.2 billion for Space Science, 2.7 percent more than FY 1999. Congress reduces funding for future Discovery and Explorer missions, which could result in fewer spacecraft launches over the next few years than NASA had planned, and also reduces funding for Mars missions in response to the recent loss of a Mars spacecraft. The bill instructs NASA to prepare a detailed report on the causes of the Mars mission's failure. There are increases for several congressionally designated projects and a \$23 million increase for costs associated with the next servicing mission of the Hubble Space Telescope.

The Life and Microgravity Sciences and Applications (LMSA) account within SAT receives a \$275 million appropriation, an increase of 4.3 percent. The increase is due to congressionally designated projects. The House-proposed bill sharply criticized NASA for scheduling only one life and microgravity sciences shuttle mission in the next few years. The final bill retains the House language instructing NASA to add another dedicated science mission by 2001, and provides science funds in LMSA and shuttle funds in Human Space Flight for that purpose. Earth Science receives \$1.4 billion, slightly less than the request but 2.0 percent or \$28 million more than FY 1999. There are more than a dozen congressionally designated projects, requiring offsetting cuts in mission reserves and other regular Earth Science accounts. Although the House proposed to terminate the Triana program, the final bill keeps it alive but directs NASA to suspend all work until the National Academy of Sciences completes an evaluation of the mission.

In the sharpest departure from NASA's priorities, Congress adds \$142 million to the request for Aero-Space Technology, leaving the program with \$1.1 billion, which is still 14.2 percent less than FY 1999. Although much of the increase over the request is for congressionally designated projects, the final bill also contains add-ons for R&D in ultra-efficient

engine technologies, aircraft noise reduction, flight control, and space launch technologies. Congress also adds \$40 million to the request for Academic Programs, resulting in a budget of \$140 million, slightly more than last year. The supplement to the request is entirely for 16 congressionally designated projects.

The final NASA budget contains \$2.3 billion for continued development and construction of the International Space Station, \$70 million or 3.1 percent more than FY 1999 but \$161 million less than NASA's request, partly because of a \$100 million reduction from the request for development of a crew return vehicle. Although the Senate appropriated Space Station funds in a separate account to prevent NASA from siphoning funds from other Human Space Flight programs to cover cost overruns, the final bill preserves the existing Human Space Flight account structure. The non-R&D Space Shuttle program, the other major program within Human Space Flight, receives \$3.0 billion, staying level with its current funding. The appropriation includes \$40 million for an additional Space Shuttle science mission by 2001.

NASA R&D increased dramatically from FY 1986 to FY 1994 because of development of a replacement for the Space Shuttle Challenger, development of the International Space Station, and an expansion of NASA's earth science activities. Growth in the NASA budget stopped in the mid-1990s, and has declined in inflation-adjusted terms as a result of budget cuts and the agency's efforts to streamline its operations and produce cheaper space missions. The R&D appropriation for FY 2000 represents a 0.6 percent increase, significantly less than the 2 percent expected inflation rate, so once again NASA's R&D declines in real terms. NASA's R&D in FY 2000 is 6.5 percent below the FY 1994 funding level in inflation-adjusted terms (see Table A).

Although much of NASA's R&D funds development projects such as the Space Station, NASA is also an important source of federal support for basic and applied research. Engineering research makes up the largest part of the portfolio. NASA funds approximately a third of total federal support for engineering research, and is the second largest agency sponsor after the Department of Defense. NASA is the leading federal sponsor of the environmental sciences (oceanography, atmospheric sciences, geological sciences). The environmental sciences are about a quarter of NASA's portfolio, but NASA funds nearly 40 percent of total federal support for environmental sciences research. NASA also invests

heavily in the physical sciences (astronomy, chemistry, and physics). Approximately two-thirds of NASA's physical sciences funding goes to astronomy, and most of the remaining third goes to physics. NASA is the second largest federal sponsor of physical sciences behind the Department of Energy, and is the leading sponsor of astronomy research.

Department of Energy (DOE)

For much of 1999, DOE has been the target of intense criticism over allegations of lax security and thefts of classified nuclear information at its three weapons laboratories. The labs (Los Alamos and Sandia in New Mexico, and Lawrence Livermore in California) are operated by contractors but are owned by DOE and report to DOE management. For most of the year, DOE Secretary Bill Richardson and other top agency officials were busy appearing repeatedly before Congress to respond to a growing chorus of demands to radically reorganize the labs' management and to correct persistent problems in keeping nuclear information secret. A report issued in the spring by an advisory board appointed by the President called for the creation of either a semi-autonomous agency within DOE to oversee the labs and other nuclear programs, or a separate agency to run DOE's nuclear weapons programs.

In response, after much discussion of possible options, Congress attached legislation to the FY 2000 defense authorization bill in August creating a new agency within DOE, the National Nuclear Security Administration (NNSA). NNSA is now responsible for ensuring the security and reliability of the nation's nuclear weapons stockpile and promoting nuclear safety in a manner consistent with environmental protection and national security. Although DOE Secretary Bill Richardson had previously opposed the creation of NNSA because a new agency could undermine his authority, in October he reluctantly gave his consent to the provisions in the defense bill, removing the last possible obstacle to President Clinton signing the bill into law on October 5.

The legislation creating NNSA declares that it is responsible for "nuclear weapons development, naval nuclear propulsion, defense nuclear nonproliferation, and fissile material disposition." The agency is headed by a presidentially-appointed and Senate-confirmed Under Secretary for Nuclear Security who also serves as Administrator for Nuclear Security in NNSA. All NNSA employees and NNSA contractors report only to

this new Administrator and no one in the non-NNSA parts of DOE except the Secretary of Energy who retains ultimate control of NNSA and the rest of DOE. The DOE budget will be reorganized so that NNSA will have its own budget accounts within DOE. In practical terms, this means that all of DOE's defense R&D (in Atomic Energy Defense Activities in Table 7) with the possible exception of Environmental Management will become part of NNSA in the next budget.

Despite the creation of the NNSA, President Clinton and Secretary Richardson appear determined to forge their own path in interpreting the law, leading to a great deal of uncertainty over what the agency will look like in 2000. The President angered Congress in October by immediately appointing Secretary Richardson as the Under Secretary head of NNSA and giving high-level DOE officials dual appointments to similar jobs in NNSA, thwarting Congress's intention of creating two separate structures staffed by different people. Richardson later acquiesced to Congress and announced that he will appoint a separate Under Secretary.

Amid the confusion over the fate of DOE's weapons programs, Congress appropriated an increase for DOE's R&D activities, roughly half of which will be part of NNSA. Total DOE R&D in FY 2000 rises \$258 million or 3.7 percent to \$7.2 billion (see Table 7).

In the Science account, Congress provides \$2.6 billion for R&D, a slight decline of 0.3 percent after adjusting for general reductions and the across-the-board cut. All but two accounts receive more than the original request. Physics and fusion research are high priorities within Science. Fusion Energy Sciences receives \$246 million, an increase of 11.2 percent after several years of flat or declining budgets. This amount is well above the request of \$223 million. Both High Energy Physics (up 0.5 percent to \$692 million) and Nuclear Physics (up 3.9 percent to \$347 million) receive increases. Computational and Technology Research (CTR), however, declines by 16.6 percent to \$130 million, primarily because Congress denies funding for the proposed Scientific Simulation Initiative, DOE's proposed contribution to the Information Technology for the Twenty-First Century (IT²) initiative. Within the Basic Energy Sciences program, Congress reduces funding for the Spallation Neutron Source (SNS) to \$117 million, down from a requested \$214 million because of several critical internal and external reviews of the project's management. Most of the SNS funds are for construction of the facility in Tennessee.

DOE's investments in energy R&D are a mixed bag of large increases and steep cuts. In the Energy Supply account, spending on Solar and Renewable Energy R&D falls 7.3 percent to \$275 million, \$78 million less than the request. Nuclear Energy R&D, however, is favored with a 19.3 percent increase to \$91 million because of congressional concern that nuclear energy has been neglected as a potential non-atmospheric-polluting energy source. DOE's R&D on Fossil Energy receives \$330 million, an increase of 11.9 percent or \$35 million over the FY 1999 funding level. This program funds R&D on more efficient coal, gas, and oil technologies. Energy Conservation R&D was set to decline in the original final Interior bill, but in the omnibus FY 2000 bill Congress added nearly \$60 million to result in an R&D total of \$440 million, an increase of 10 percent over FY 1999. This program aims to develop new technologies for conserving energy in buildings, transportation, and industry, and new ways of energy management.

DOE's defense R&D programs receive large increases, consistent with increases for total defense spending in Republican budget plans, despite the controversy over the weapons labs. Total DOE defense R&D is \$3.4 billion, an increase of 4.8 percent over FY 1999.

The Stockpile Stewardship program, the cornerstone of DOE's effort to use science-based methods to ensure the safety and reliability of the nation's nuclear stockpile, receives \$2.2 billion, \$126 million or 5.9 percent more than FY 1999. The additional dollars fund an expansion of the Accelerated Strategic Computing Initiative (ASCI; \$315 million, up 4.6 percent), a program to develop the next generation of teraflop computers (capable of several trillions of operations a second) in order to simulate nuclear explosions without nuclear testing. There is also an increase for Inertial Confinement Fusion (\$227 million, up 3.4 percent), a different approach to fusion than the magnetic fusion research funded in the Science account. Construction funding for that program's major facility, the National Ignition Facility, declines from its peak funding of \$284 million to \$247 million, unaffected by recent news that the project is now behind schedule and over budget. The bill directs DOE to prepare a revised construction schedule and project budget by next June. The Stockpile Stewardship program funds most of the R&D at the three weapons labs at the heart of the DOE security controversy. The contract managers of the labs (the University of California for Los Alamos and

Livermore, Lockheed Martin for Sandia) and all laboratory employees will report to NNSA.

The weapons labs, although they rely on the Stockpile Stewardship account to fund most of their R&D, also perform R&D funded through other nondefense accounts, and there is concern that this nondefense work could be negatively affected in NNSA because non-NNSA program managers in DOE who manage DOE nondefense R&D programs now have no direct authority over R&D activities or personnel in the labs. Because most of the reorganization provisions do not take full effect until March 2000, it is unclear at this time how nondefense R&D performed at the three labs will fit into the new organizational structure, and it is equally unclear whether NNSA will implement new restrictions on the flow of scientific personnel and information between the labs and other institutions.

National Science Foundation (NSF)

Congress provided NSF with just \$24 million less than its request, for a total NSF budget in FY 2000 of \$3.9 billion, an increase of \$187 million or 5.0 percent over FY 1999. NSF's R&D funding, which excludes NSF's education and training activities and overhead costs, totals \$2.9 billion in FY 2000, an increase of \$140 million or 5.2 percent (see Table 10).

The Research and Related Activities (R&RA) account, which funds most of NSF's R&D, receives \$3.0 billion, 5.2 percent or \$146 million above the FY 1999 funding level but \$49 million below the request. Although the R&RA appropriation is not distributed by directorate, this amount is enough to give each directorate an increase of at least 3 percent.

The FY 2000 NSF budget dramatically increases NSF's investments in information technology (IT) research. The President's Information Technology Advisory Committee (PITAC), which issued its final report in February 1999, recommended that the federal investment in information technologies R&D be increased by \$1.37 billion over the next five years and that a strategic initiative be created to support fundamental computing research that will lead to breakthroughs and new capabilities to serve the growing demands on information technologies.

In response the Clinton Administration, in its budget request, had proposed a multi-agency Information Technology for the 21st Century (IT²) initiative in fundamental computing and IT research with a \$366 million budget for FY 2000, of which \$146 million would have come from NSF. Of that amount, NSF requested \$110 million for IT² research in the Computer and Information Science and Engineering (CISE) Directorate, funded within R&RA. In Congress the House Science Committee introduced a bill (HR 2086; the Networking and Information Technology Research and Development Act) to authorize a multi-year IT research initiative at higher levels following the PITAC recommendations. In the final budget, there is \$90 million in new money for CISE, designated for “individual and team research projects related to information technologies, specifically in the areas recommended in the PITAC report and in H.R. 2086.” Combined with IT funds in the Major Equipment account (see below), NSF has \$126 million out of its requested \$146 million for new IT research activities in FY 2000. The CISE budget of \$390 million is a 30.6 percent increase over FY 1999.

The remaining \$36 million of NSF’s proposed contribution to IT² comes from the Major Research Equipment account to fund Terascale Computing Systems, a facilities project to build a five-teraflop (trillions of computing operations a second) computing site. Congress granted the request and oriented these activities toward the goals of HR 2086 and the PITAC report. The Major Research Equipment account receives \$95 million, up \$10 million from the request and \$5 million from FY 1999.

The Biological Sciences (BIO) Directorate within R&RA receives \$415 million, \$24 million or 6.1 percent more than FY 1999. The bill boosts funding for the third year of the Plant Genome Research Program from a requested \$55 million to \$60 million. NSF’s new Integrative Activities account, which supports emerging cross-disciplinary research and major research instrumentation, receives \$130 million, far less than the request and FY 1999 level of \$161 million. Although the final bill provides the requested \$50 million for the new Biocomplexity initiative and \$50 million (the same as FY 1999 and the FY 2000 request) for Major Research Instrumentation, the bill does not provide any funding for the Opportunity Fund, a fund designed to support innovative, cross-disciplinary research taking advantage of emerging scientific opportunities. In FY 1999, the Fund received \$24 million.

Education and Human Resources receives \$694 million, \$38 million more than FY 1999, including \$55 million for the Experimental Program to Stimulate Competitive Research (EPSCoR; up from \$48 million), a program to improve the research competitiveness of 18 states (and Puerto Rico) traditionally underrepresented as recipients of federal research funding. The final VA-HUD bill transfers the EPSCoR program and its funds to a new Office of Innovation Partnerships, and charges the new office with administering EPSCoR and also assisting non-EPSCoR institutions that receive relatively little federal research funding expand their research capacity and competitiveness. The new office receives \$10 million in addition to the \$55 million in EPSCoR funds.

NSF is the only federal agency with responsibility for research in all major science and engineering fields. Although growth in the NSF budget stagnated somewhat in the mid-1990s, in the last few years NSF has received significant funding increases and in FY 2000 has an R&D budget 14.4 percent above the FY 1994 budget in inflation-adjusted terms (see Table A, page 12). Most science and engineering disciplines have shared in this growth. For the past few years, NSF has increased support for its major supported disciplines at similar rates. The large increase for CISE in FY 2000, however, is likely to skew the FY 2000 results and show a far higher increase for mathematics and computer sciences research compared to other disciplines.

Other Agencies

The **U.S. Department of Agriculture** (USDA) funds agricultural research in universities and in its own laboratories, and forestry research through the Forest Service. In FY 2000, USDA's R&D totals \$1.7 billion, an increase of \$56 million or 3.4 percent from FY 1999 (see Table 12).

The primary reason the final USDA appropriation falls short of the requested 11.4 percent increase to \$1.85 billion for USDA's R&D is that the bill blocks two mandatory (non-appropriated) grants programs from spending any money in FY 2000. The Initiative for Future Agriculture and Food Systems was created in June 1998 as a mandatory program to spend \$120 million a year for five years on competitively awarded grants for agricultural research, to be administered by USDA's Cooperative State Research, Education and Extension Service (CSREES). Congress and the President, however, blocked USDA from spending the first

installment of these funds in FY 1999. In the FY 2000 request, the President proposed to release the second year of these funds in FY 2000, but Congress once again blocks these grants. Similarly, the Fund for Rural America in the Office of the Secretary was reauthorized last June for five years, but FY 1999 spending was blocked by Congress and the President. The President proposed to release the FY 2000 funds, of which \$15 million would go toward research topics, but Congress blocked them.

Competitively awarded grants hold their own in the appropriated programs of CSREES. The National Research Initiative (NRI) of competitive research grants receives \$119 million, nearly the same amount as FY 1999 but far short of USDA's proposal to expand NRI to \$200 million. Special Research Grants, mostly congressionally designated research projects to specific academic institutions, total \$63 million, \$8 million more than FY 1999 and \$58 million more than the request. The bill specifies 142 separate grants, all but six of them to designated performers, in amounts as small as \$42,000. Most formula funding programs for academic R&D such as the Hatch Act (\$181 million, same as FY 1999) receive level funding. Total CSREES R&D is \$479 million, an increase of \$17 million or 3.7 percent over FY 1999.

Agricultural Research Service (ARS) R&D totals \$903 million in FY 2000, an increase of \$36 million or 4.2 percent. ARS funds intramural research through a nationwide network of intramural laboratories and agricultural experiment stations.

Other R&D funding agencies within USDA include the Economic Research Service (ERS), a leading supporter of research in economics, particularly agricultural economics. ERS receives \$65 million in FY 2000, an increase of \$2 million. The Forest Service supports ecosystems and forestry research, and receives \$214 million for its R&D in FY 2000, an increase of 1.3 percent.

The **Department of Commerce** receives \$1.1 billion for its R&D in FY 2000, \$21 million or 2.0 percent more than FY 1999 (see Table 11).

Congress and President Clinton are still engaged in a battle over how the 2000 Census will be conducted by the Bureau of the Census in Commerce, but the two sides fought themselves to a draw in 1999. The

Administration favors the use of statistical sampling to augment the traditional counting method in enumerating the U.S. population, but congressional Republicans oppose this technique. Although the two sides were expected to engage in a major showdown in 1999, they postponed the real battles until after the 2000 Census is conducted. At the beginning of 1999, the Census Bureau had assumed that statistical sampling could be used to fill in some missing data gaps from unreturned census questionnaires and to produce a more accurate population count, but the Supreme Court ruled in January that statistical sampling could not be used to produce population figures for congressional apportionment. The Census Bureau pressed ahead with its plans to use statistical sampling, and asked for and received a total of \$4.8 billion in FY 2000. The appropriation, significantly above the \$3.1 billion requested in February when the Bureau assumed it could use statistical sampling for all purposes, should allow the Bureau to perform a more comprehensive (and costly) actual enumeration for congressional apportionment purposes, while still leaving itself the option of using statistical sampling to produce population figures for non-apportionment purposes. If the Bureau produces two sets of figures in 2000, however, legal battles are almost certain to erupt.

The final Commerce budget provides modest increases for Commerce's R&D programs. The National Institute of Standards and Technology (NIST) receives \$473 million for its R&D activities in FY 2000, a modest \$5 million or 1.0 percent above FY 1999. While the NIST intramural laboratory research programs grow modestly by 0.7 percent to \$235 million, the Advanced Technology Program (ATP) receives \$130 million for R&D activities, a cut of \$48 million or 27.0 percent. ATP is NIST's extramural research grants program to provide precompetitive cost-shared R&D support for promising market technologies. The House would have eliminated the program, while the Senate would have cut it slightly from the FY 1999 funding level. The large cut to ATP is balanced by a large increase for NIST's Construction of Research Facilities account. Its \$108 million appropriation is nearly double the FY 1999 level. Most of this appropriation will fund the start of construction of a new Advanced Measurement Laboratory (AML) at NIST headquarters in Maryland, although \$12 million of this normally intramural account is congressionally designated for three extramural projects.

The National Oceanic and Atmospheric Administration (NOAA) has an R&D budget of \$617 million in FY 2000, an increase of \$17 million or 2.8

percent over both FY 1999 and the FY 2000 request. The final bill cuts many NOAA R&D programs, but awards an increase to the Oceanic and Atmospheric Research (OAR) account, from \$287 million in FY 1999 to \$299 million in FY 2000. The bill boosts climate and air quality research from \$122 million to \$129 million.

The FY 2000 increase, even with the expected inflation rate, keeps Commerce R&D at a stable funding level. Mostly because of strong Clinton Administration support for NIST programs, and secondarily because of bipartisan support for NOAA's R&D programs in the early 1990s, Commerce R&D in FY 2000 is more than double the funding level of a decade ago (in inflation-adjusted terms). Commerce is now one of seven agencies to fund more than \$1 billion in R&D annually.

The **Department of the Interior** has an R&D budget of \$562 million in FY 2000, a cut of \$5 million or 0.9 percent from FY 1999 (see Table 14).

The U.S. Geological Survey (USGS) is the primary sponsor of R&D in Interior. Its total FY 2000 appropriation is \$821 million, \$18 million less than the request but \$23 million or 2.9 percent above FY 1999. Nearly two-thirds of the USGS budget is for R&D activities, for a total of \$496 million (down 0.2 percent). Although Interior proposed a major budget restructuring in the FY 2000 request, including the creation of an Integrated Science account for multi-disciplinary projects and integrated ecosystem studies, the final Interior bill funds USGS under the old account structure and allows these studies and projects to be funded through the old accounts. The Interior bill permits two other proposed accounts, Science Support and Facilities, to be created. Because of the transitions between the old account structure, the proposed new account structure, and the new approved account structure, the 0.2 percent estimated cut in USGS R&D may actually turn out to be a slight increase, depending on how USGS allocates its costs based on the appropriation.

USGS is one of the leading federal sponsors of earth sciences research, along with the Department of Energy, the National Science Foundation, and the National Aeronautics and Space Administration. Within the earth sciences, USGS is particularly important in geological hazards research, including research on earthquakes and volcanoes. The earth sciences program in USGS receives a 6.4 percent increase over the comparable amount in FY 1999. USGS is also a leading sponsor of water resources

research, which receives a 2.7 percent increase, and biological research, which increases to \$137 million. Most of this research is conducted within Interior labs to address the science needs of Interior's other agencies, such as the Fish and Wildlife Service and the Bureau of Land Management.

Congress approved \$645 million in FY 1999 for the R&D activities of the **Environmental Protection Agency (EPA)**, \$23 million or 3.5 percent less than last year, the same amount as the request (see Table 15). Congress approved a total EPA budget of \$7.6 billion, slightly less than FY 1999.

Among EPA's R&D programs, most of which are in the Science and Technology account, most are funded at the requested levels. To make room for \$54 million for 38 congressionally designated projects in the S&T account, however, Congress trimmed \$23 million from the request for R&D in the Climate Change Technology Initiative (CCTI) and \$28 million from other projects and from a general reduction. CCTI is a multi-agency initiative to address global warming through partnerships with locally based organizations, research on energy efficient technologies, and tax incentives for energy efficiency. Global change research receives \$17 million, the same level as FY 1999.

In the overall EPA budget, the final bill adds \$615 million to the requested amount for State and Tribal Assistance Grants, bringing the total to \$3.5 billion, 1.4 percent more than the FY 1999 level. Most of this money goes to state and local governments. For Environmental Programs and Management, which funds most of EPA's operating expenses, the bill provides \$1.9 billion, 2.4 percent more than FY 1999 but \$154 million less than EPA had requested. Within the account, the bill reduces the request for CCTI programs by \$90 million. Between this account and the S&T account, CCTI funding totals \$103 million, less than half the request of \$216 million and down from the FY 1999 level of \$110 million. The Superfund program is cut \$103 million below the FY 1999 funding level, for a total of \$1.4 billion. Superfund also supports R&D on hazardous substances managed by EPA's Office of Research and Development through a \$38 million transfer to the Science and Technology account. Within the Superfund account, EPA will transfer approximately \$37 million to the National Institute of Environmental Health Sciences (NIEHS) for its research activities related to hazardous substances.

The final EPA budget bill contains a legislative provision, carried over from last year's EPA funding bill, that prohibits EPA from implementing actions called for under the U.N. Kyoto Protocol, which has not been submitted to nor ratified by the Senate.

Nearly half of EPA's R&D is performed in the agency's own laboratories, while about a third is performed in the nation's colleges and universities, a share that has been growing in recent years. The remainder is performed by industrial firms and nonprofit institutions.

The **Department of Transportation** (DOT) has an R&D budget of \$643 million in FY 2000, an increase of \$40 million or 6.7 percent (see Table 13). This substantial increase for transportation-related R&D exceeds growth in DOT's total budget (including spending from the various transportation trust funds), which increases by \$2.1 billion to \$50.1 billion in FY 1999, an increase of 4.4 percent.

Although Congress faced the politically unpleasant task of making deep cuts to total discretionary spending in order to stay under budget caps this year, much of DOT's budget is exempt from the caps because of two new categories of discretionary spending created in last year's Transportation Equity Act for the 21st Century (TEA-21). TEA-21, a six-year reauthorization bill for most highway and transit programs, dedicates all highway and transit trust fund receipts for transportation and creates two new categories of discretionary spending (highways and transit programs) for that purpose. Spending in these two categories is determined by receipts from transportation taxes and not by legislative limits.

Because transportation revenues have been rising and all these revenues are required to be spent on transportation, R&D funding increases in the primary beneficiary of TEA-21 spending, the Federal Highway Administration (FHWA). FHWA's R&D programs receive \$287 million, a gain of \$29 million or 11.3 percent over FY 1999, mostly because of the guaranteed funding in TEA-21. The Administration's request was for \$459 million, nearly double the FY 1999 level. In the budget request, DOT had proposed to reallocate a portion of unexpected additional revenues from the highway trust fund toward uses not specified in TEA-21, including a significant diversion of funds to R&D. Congress rejected this proposal, and distributed all the additional revenue to the states according

to the TEA-21 distribution formula. The FHWA total includes \$47 million for R&D in the Intelligent Transportation Systems (ITS) program, down from the \$97 million request but up from last year.

The Federal Aviation Administration (FAA) receives \$245 million for R&D activities, an increase of 8.5 percent. The increase for R&D is due to a new \$16 million appropriation for the Safety Flight 2000 project, a project to develop new traffic-control and aircraft navigation technologies to improve the efficiency of commercial aviation. There are also increases for many other FAA R&D projects, including research on aircraft safety technologies and aging aircraft.

The majority of DOT's R&D is performed by intramural laboratories and industrial performers. Universities and colleges perform about a tenth of DOT's R&D, and a similar proportion is performed by state and local governments.

Although DOT wins an increase in FY 2000, its support of R&D is still well below the levels of the early 1990s in inflation-adjusted terms. DOT's R&D peaked in FY 1995 and then suffered a steep decline, particularly in the FAA, as a result of efforts to reduce federal spending. The FY 2000 funding level is 9.8 percent below the FY 1994 funding level in inflation-adjusted terms.

Part II

Tables



Table 1. Total R&D by Agency
Congressional Action on R&D in the FY 2000 Budget (budget authority in millions of dollars)

	FY 1999 Estimate	FY 2000 Request	Action by Congress				
			FY 2000 Approved	Chg. from Request		Chg. from FY 1999	
				Amount	Percent	Amount	Percent
Department of Defense (military)	37,975	35,065	39,109	4,044	11.5%	1,134	3.0%
("S&T" 6.1,6.2,6.3 + Medical)	7,791	7,386	8,652	1,265	17.1%	861	11.0%
(All Other DOD R&D)	30,184	27,679	30,457	2,778	10.0%	274	0.9%
National Aeronautics and Space Admin.	9,715	9,770	9,778	8	0.1%	63	0.6%
Department of Energy	6,974	7,467	7,232	-235	-3.1%	258	3.7%
Health and Human Services	15,750	16,047	18,094	2,047	12.8%	2,344	14.9%
(National Institutes of Health)	14,971	15,289	17,125	1,835	12.0%	2,153	14.4%
National Science Foundation	2,714	2,890	2,854	-36	-1.2%	140	5.2%
Department of Agriculture	1,638	1,850	1,693	-156	-8.5%	56	3.4%
Department of the Interior	567	584	562	-22	-3.8%	-5	-0.9%
Department of Transportation	603	836	643	-193	-23.1%	40	6.7%
Environmental Protection Agency	669	645	645	1	0.1%	-23	-3.5%
Department of Commerce	1,075	1,172	1,096	-76	-6.5%	21	2.0%
(NOAA)	600	600	617	17	2.8%	17	2.8%
(NIST)	468	565	473	-92	-16.3%	5	1.0%
Department of Education	224	276	246	-30	-10.7%	22	10.0%
Agency for International Development	143	94	143	49	51.9%	0	-0.1%
Department of Veterans Affairs	674	663	665	2	0.4%	-9	-1.3%
Nuclear Regulatory Commission	49	47	47	0	-0.5%	-2	-4.5%
Smithsonian Institution	138	146	143	-3	-2.2%	5	3.5%
Tennessee Valley Authority	35	35	35	0	0.0%	0	0.0%
Corps of Engineers	40	32	31	-1	-4.4%	-9	-23.5%

(continued)

Table 1. (continued)

	FY 1999 Estimate	FY 2000 Request	Action by Congress				
			FY 2000 Approved	Chg. from Request		Chg. from FY 1999	
				Amount	Percent	Amount	Percent
Labor	70	43	87	44	102.7%	17	24.5%
Housing and Urban Development	48	50	45	-5	-10.3%	-3	-6.6%
Justice	71	48	52	4	7.5%	-19	-27.3%
U.S. Postal Service ¹	77	78	78	0	0.0%	1	1.3%
Social Security Administration	37	24	25	1	4.1%	-12	-32.5%
Treasury	13	13	13	0	0.0%	0	0.0%
All Other	52	30	30	0	0.0%	-22	-42.3%
TOTAL R&D	79,350	77,904	83,346	5,442	7.0%	3,996	5.0%
Defense R&D	41,208	38,483	42,497	4,014	10.4%	1,288	3.1%
Nondefense R&D	38,142	39,422	40,850	1,428	3.6%	2,708	7.1%
"21st Century Research Fund" ²	36,943	38,111	39,854	1,743	4.6%	2,910	7.9%
"FS&T" ³	48,326	49,404	52,058	2,654	5.4%	3,732	7.7%

AAAS estimates of R&D in FY 2000 appropriations bills. Includes across-the-board reduction. Includes conduct of R&D and R&D facilities.

Includes rescissions, supplementals, and emergency appropriations.

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

¹ Financed out of postal revenues.

² An alternative measure of the federal investment in science and technology proposed by the Clinton Administration.

Includes both R&D and non-R&D programs.

³ An alternative measure of the federal investment in science and technology proposed by the National Academy of Sciences.

Please see Appendix 1 for details.

Table 2. Estimated Basic Research by Agency
Congressional Action on R&D in the FY 2000 Budget (budget authority in millions of dollars)

	FY 1999 Estimate	FY 2000 Request	Action by Congress				
			FY 2000 Approved	Chg. from Request Amount	Chg. from Request Percent	Chg. from FY 1999 Amount	Chg. from FY 1999 Percent
Health and Human Services	8,429	8,590	9,623	1,033	12.0%	1,194	14.2%
<i>(National Institutes of Health)</i>	<i>8,427</i>	<i>8,588</i>	<i>9,619</i>	<i>1,031</i>	<i>12.0%</i>	<i>1,192</i>	<i>14.1%</i>
National Science Foundation	2,333	2,514	2,473	-40	-1.6%	141	6.0%
Department of Defense ("6.1")	1,108	1,113	1,167	54	4.9%	59	5.4%
Department of Energy	2,225	2,281	2,253	-28	-1.2%	28	1.2%
National Aeronautics & Space Admin.	2,140	2,466	2,526	60	2.5%	386	18.0%
Department of Agriculture	677	776	710	-66	-8.5%	33	4.8%
Department of the Interior	51	53	53	0	0.7%	2	4.3%
Smithsonian Institution	128	136	133	-3	-2.4%	5	3.7%
Environmental Protection Agency	83	79	79	0	0.1%	-4	-4.7%
Department of Commerce	36	38	38	-1	-2.1%	2	4.2%
All Other	65	55	56	1	1.0%	-9	-13.9%
TOTAL Est. Basic Research	17,276	18,101	19,112	1,011	5.6%	1,836	10.6%

AAAS estimates of basic research based on FY 2000 appropriations bills and historical trends for agencies and programs.
Includes across-the-board reduction. All figures are rounded to the nearest million. Changes calculated from unrounded figures.

**Table 3. Major Functional Categories of R&D
Congressional Action on R&D in the FY 2000 Budget (budget authority in millions)**

	FY 1999 Estimate	FY 2000 Request	Action by Congress				
			FY 2000 Approved	Chg. from Request Amount	Chg. from Request Percent	Chg. from FY 1999 Amount	Chg. from FY 1999 Percent
Defense ¹	41,208	38,483	42,497	4,014	10.4%	1,288	3.1%
Nondefense ²	38,142	39,422	40,850	1,428	3.6%	2,708	7.1%
Space	8,518	8,704	8,606	-98	-1.1%	88	1.0%
Health	16,379	16,664	18,689	2,025	12.2%	2,310	14.1%
Energy	1,173	1,353	1,282	-71	-5.2%	109	9.3%
General Science	5,365	5,668	5,498	-170	-3.0%	133	2.5%
Natural Resources & Environment	2,088	2,104	2,070	-34	-1.6%	-18	-0.9%
Agriculture	1,427	1,608	1,479	-128	-8.0%	53	3.7%
Transportation	1,799	1,902	1,815	-87	-4.6%	15	0.8%
Commerce	474	571	479	-92	-16.2%	5	1.0%
International	194	123	172	49	39.7%	-22	-11.4%
All Other	724	725	760	35	4.8%	36	5.0%
TOTAL R&D	79,350	77,904	83,346	5,442	7.0%	3,996	5.0%

AAAS estimates of R&D in FY 2000 appropriations bills based on historical trends for agencies and programs.

Includes across-the-board reduction. All figures are rounded to the nearest million. Changes calculated from unrounded figures.

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

¹ Includes DOD R&D and atomic energy defense R&D in DOE.

² Includes all R&D not in defense (domestic and international discretionary programs).

**Table 4. Department of Defense by Program
Congressional Action on R&D in the FY 2000 Budget (budget authority in millions of dollars)**

	FY 1999 Estimate	FY 2000 Request	Action by Congress				
			FY 2000 Approved	Chg. from Request		Chg. from FY 1999	
				Amount	Percent	Amount	Percent
Research, Development, Test, and Evaluation:							
Basic Research ("6.1")	1,108	1,113	1,167	54	4.9%	59	5.4%
Applied Research ("6.2")	3,151	2,959	3,388	429	14.5%	237	7.5%
Advanced Tech. Development ("6.3")	3,532	3,314	3,822	508	15.3%	290	8.2%
TOTAL Science and Technology	7,791	7,386	8,378	991	13.4%	587	7.5%
Demonstration/Validation ("6.4")	7,237	5,580	6,536	955	17.1%	-701	-9.7%
Engineering and Manuf. Dev. ("6.5")	7,931	7,538	8,623	1,085	14.4%	692	8.7%
RDT&E Management Support ("6.6")	2,930	2,406	2,550	144	6.0%	-380	-13.0%
Operational Systems Dev. ("6.7")	11,554	11,465	12,101	636	5.5%	547	4.7%
BA Adjustment	-38	0	0	--	--	--	--
TOTAL RDT&E	37,405	34,375	38,187	3,812	11.1%	783	2.1%
Other Appropriations ¹	570	690	648	-42	-6.2%	78	13.6%
Medical research ²	0	0	274	274	--	274	--
TOTAL DOD R&D	37,975	35,065	39,109	4,044	11.5%	1,134	3.0%

AAAS estimates. Includes conduct of R&D and R&D facilities. Includes rescissions, supplementals, and emergency appropriations. Includes across-the-board cut. All figures are rounded to the nearest million. Changes calculated from unrounded figures.

¹ R&D support in military personnel, military construction, and other DOD appropriations.

² The FY 2000 Defense bill appropriates some medical R&D in a separate account. In FY 1999, these programs were in the Army ("6.3").

**Table 5. Department of Defense by Agency
Congressional Action on R&D in the FY 2000 Budget (budget authority in millions of dollars)**

	FY 1999 Estimate	FY 2000 Request	Action by Congress				
			FY 2000 Approved	Chg. from Request		Chg. from FY 1999	
				Amount	Percent	Amount	Percent
Research, Development, Test, and Evaluation:							
Army	5,032	4,426	5,227	801	18.1%	195	3.9%
Navy	8,640	7,984	9,020	1,036	13.0%	380	4.4%
Air Force	13,683	13,078	14,250	1,172	9.0%	567	4.1%
Defense Agencies	9,757	8,609	9,394	784	9.1%	-363	-3.7%
<i>(Defense Adv. Research Projects Agcy.)</i>	<i>1,930</i>	<i>2,003</i>	<i>1,849</i>	<i>-154</i>	<i>-7.7%</i>	<i>-82</i>	<i>-4.2%</i>
<i>(Ballistic Missile Defense Organization)</i>	<i>3,845</i>	<i>2,944</i>	<i>3,429</i>	<i>484</i>	<i>16.5%</i>	<i>-416</i>	<i>-10.8%</i>
<i>(Other)</i>	<i>3,982</i>	<i>3,662</i>	<i>4,116</i>	<i>454</i>	<i>12.4%</i>	<i>134</i>	<i>3.4%</i>
Director of Test and Evaluation	259	253	265	11	4.5%	6	2.5%
Dir. of Operational Test & Evaluation	34	24	31	7	28.2%	-3	-8.6%
TOTAL RDT&E	37,405	34,375	38,187	3,812	11.1%	783	2.1%
Other Appropriations ¹	570	690	648	-42	-6.2%	78	13.6%
Medical research ²	0	0	274	274	--	274	--
TOTAL DOD R&D	37,975	35,065	39,109	4,044	11.5%	1,134	3.0%

AAAS estimates. Includes conduct of R&D and R&D facilities. Includes rescissions, supplementals, and emergency appropriations. Includes across-the-board cut. All figures are rounded to the nearest million. Changes calculated from unrounded figures.

¹ R&D support in military personnel, military construction, and other DOD appropriations.

² The FY 2000 Defense bill appropriates some medical R&D in a separate account. In FY 1999, these programs were in the Army ("6.3").

**Table 6. National Aeronautics and Space Administration
Congressional Action on R&D in the FY 2000 Budget (budget authority in millions of dollars)**

	FY 1999 Estimate	FY 2000 Request	Action by Congress				
			FY 2000 Approved	Chg. from Request Amount	Chg. from Request Percent	Chg. from FY 1999 Amount	Chg. from FY 1999 Percent
Summary of R&D by Appropriation:							
1. Human Space Flight (HSF)							
Space Station	2,252	2,483	2,322	-161	-6.5%	70	3.1%
Other	20	6	6	0	-0.4%	-14	-69.8%
Total R&D HSF	2,272	2,489	2,328	-161	-6.5%	56	2.5%
2. Science, Aeronautics, and Technology (SAT)							
Space Science	2,119	2,197	2,177	-19	-0.9%	58	2.7%
Life & Microgravity Sciences	264	256	275	19	7.2%	11	4.3%
Earth Science	1,414	1,459	1,442	-17	-1.2%	28	2.0%
Aeronautics and Space Transp.	1,339	1,007	1,149	142	14.1%	-190	-14.2%
Mission Communications Serv.	380	406	403	-4	-0.9%	23	5.9%
Academic Programs	139	100	140	40	40.2%	2	1.2%
Total R&D SAT	5,654	5,425	5,585	161	3.0%	-69	-1.2%
3. Mission Support R&D							
TOTAL NASA R&D	9,715	9,770	9,778	8	0.1%	63	0.6%

(continued)

Table 6. (continued)

	FY 1999 Estimate	FY 2000 Request	Action by Congress				
			FY 2000 Approved	Chg. from Request		Chg. from FY 1999	
				Amount	Percent	Amount	Percent
NASA Non-R&D Activities:							
Space Shuttle (in HSF)	2,998	2,986	3,000	14	0.5%	1	0.0%
Russian Cooperation (HSF)	53	0	0	0	--	-53	-100.0%
Other Non-R&D in HSF	157	163	162	-1	-0.4%	5	3.4%
Mission Support Non-R&D	721	638	641	2	0.4%	-81	-11.2%
Inspector General	20	21	20	-1	-4.2%	0	-0.4%
Total NASA Non-R&D Activities	3,950	3,809	3,823	14	0.4%	-127	-3.2%
TOTAL NASA Budget	13,665	13,578	13,601	22	0.2%	-64	-0.5%

AAAS estimates of R&D in FY 2000 appropriations bills. Includes across-the-board reduction. Includes conduct of R&D and R&D facilities. All figures are rounded to the nearest million. Changes calculated from unrounded figures.

**Table 7. Department of Energy
Congressional Action on R&D in the FY 2000 Budget (budget authority in millions of dollars)**

	FY 1999 Estimate	FY 2000 Request	Action by Congress				
			FY 2000 Approved	Chg. from Request Amount	Chg. from Request Percent	Chg. from FY 1999 Amount	Chg. from FY 1999 Percent
DOE Appropriations Containing R&D:							
1. Energy Supply R&D ¹	373	440	366	-74	-16.8%	-7	-1.9%
2. Fossil Energy R&D	295	289	330	41	14.1%	35	11.9%
3. Energy Conservation	400	477	440	-37	-7.8%	40	10.0%
4. Science ¹	2,651	2,778	2,644	-135	-4.8%	-7	-0.3%
5. Atomic Energy Defense Activities	3,234	3,417	3,388	-30	-0.9%	154	4.8%
6. Clean Coal Technology ²	-40	10	10	0	-0.4%	50	-124.9%
7. Radioactive Waste Management	61	55	55	0	-0.4%	-7	-10.8%
TOTAL DOE R&D	<u>6,974</u>	<u>7,467</u>	<u>7,232</u>	<u>-235</u>	<u>-3.1%</u>	<u>258</u>	<u>3.7%</u>
Detail of selected appropriations:							
1. Energy Supply R&D ¹							
Solar and Renewables	297	353	275	-78	-22.0%	-22	-7.3%
Nuclear Energy	76	87	91	4	4.2%	15	19.3%
TOTAL Energy Supply	<u>373</u>	<u>440</u>	<u>366</u>	<u>-74</u>	<u>-16.8%</u>	<u>-7</u>	<u>-1.9%</u>
4. Science ¹							
High Energy Physics	689	692	692	0	0.0%	3	0.5%
(Large Hadron Collider)	65	70	70	0	-0.4%	5	7.3%
Nuclear Physics	334	343	347	4	1.1%	13	3.9%

(continued)

Table 7. (continued)

	FY 1999 Estimate	FY 2000 Request	Action by Congress				
			FY 2000 Approved	Chg. from Request Amount	Chg. from Request Percent	Chg. from FY 1999 Amount	Chg. from FY 1999 Percent
Fusion Energy Sciences	222	223	246	24	10.6%	25	11.2%
Computational and Tech. Res.	156	199	130	-69	-34.6%	-26	-16.6%
Bio. and Environmental Research	433	411	435	24	5.8%	2	0.5%
Basic Energy Sciences	796	888	771	-117	-13.1%	-24	-3.0%
<i>(Spallation Neutron Source)</i>	130	214	117	-97	-45.1%	-13	-9.7%
Energy Research Analyses	1	1	1	0	-1.5%	0	8.5%
Multiprogram Lab Support	21	21	21	0	-1.5%	0	-1.4%
TOTAL Science	2,651	2,778	2,644	-135	-4.8%	-7	-0.3%
5. Atomic Energy Defense Activities							
Naval Reactors	650	644	655	10	1.6%	4	0.7%
Weapons Activities	2,180	2,390	2,341	-49	-2.0%	161	7.4%
<i>(Stockpile Stewardship)</i>	2,116	2,286	2,242	-44	-1.9%	126	5.9%
- ASCI ³	301	341	315	-26	-7.7%	14	4.6%
- <i>Inertial Confinement Fusion</i>	219	218	227	9	4.2%	8	3.4%
- <i>National Ignition Facility</i>	284	248	247	-1	-0.4%	-37	-13.0%
- <i>All Other</i>	1,312	1,480	1,453	-26	-1.8%	141	10.8%
Nuclear Safeguards & Security	24	27	37	10	35.9%	14	58.0%
Intelligence	4	4	4	0	0.0%	0	0.0%
Nonproliferation & Verification R&D	187	191	190	-1	-0.4%	3	1.5%
Fissile Materials Disposition	54	53	53	0	-0.4%	-1	-2.2%
Environmental Management	135	108	107	0	-0.4%	-27	-20.3%
TOTAL Atomic Defense	3,234	3,417	3,388	-30	-0.9%	154	4.8%

(continued)

Table 7. (continued)

	FY 1999 Estimate	FY 2000 Request	Action by Congress				
			FY 2000 Approved	Chg. from Request Amount	Percent	Chg. from FY 1999 Amount	Percent
DOE R&D by Budget Function:							
Defense	3,234	3,417	3,388	-30	-0.9%	154	4.8%
General Science ¹	2,651	2,778	2,644	-135	-4.8%	-7	-0.3%
Energy ¹	1,089	1,271	1,201	-71	-5.6%	111	10.2%
DOE "FS&T" ⁴	6,133	6,645	6,401	-244	-3.7%	267	4.4%

AAAS estimates of R&D in FY 2000 appropriations bills. Includes across-the-board reduction. Includes conduct of R&D and R&D facilities. All figures are rounded to the nearest million. Changes calculated from unrounded figures.

¹ DOE has changed its appropriation account structure. Programs in the General Science and Research account and selected programs in Energy Supply have been shifted to the "Science" account. The table shows DOE programs under the new account structure.

² Negative for some years because of deferrals of previously appropriated funds. Table does not reflect FY 2000 deferral of \$156 million.

³ Accelerated Strategic Computing Initiative.

⁴ An alternative measure of the federal investment in science and technology proposed by the National Academy of Sciences. Please see Appendix 1 for details.

Table 7a. Department of Energy Budget (budget authority in millions of dollars)

	FY 1999 Estimate	FY 2000 Request	FY 2000 Approved	Action by Congress			
				Chg. from Request		Chg. from FY 1999	
				Amount	Percent	Amount	Percent
Weapons Activities	4,400	4,531	4,427	-104	-2.3%	27	0.6%
Defense Environmental Restoration	4,321	4,506	4,467	-38	-0.9%	147	3.4%
Nuclear Waste and Other Defense	3,660	3,147	3,076	-71	-2.3%	-584	-16.0%
Total DOE defense	12,381	12,184	11,971	-214	-1.8%	-410	-3.3%
Science ¹	2,698	2,835	2,789	-46	-1.6%	91	3.4%
Energy Supply ¹	770	841	637	-204	-24.3%	-133	-17.3%
Fossil Energy	384	364	417	53	14.7%	33	8.7%
Energy Conservation	628	838	742	-95	-11.4%	115	18.3%
Other Energy Programs	187	352	311	-41	-11.6%	124	66.3%
Nondefense Environmental Mngmt.	431	331	332	1	0.4%	-99	-22.9%
Power Marketing Administrations	238	200	261	61	30.7%	24	10.0%
Departmental Administration	141	153	128	-25	-16.3%	-12	-8.6%
Total DOE Budget	17,856	18,098	17,589	-509	-2.8%	-267	-1.5%

Source: Department of Energy budget justification and FY 2000 appropriations bills.

DOE appropriations only (does not include offsets and other mandatory). Includes across-the-board reduction.

Includes rescissions and emergency appropriations. Includes R&D and non-R&D programs.

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

¹ DOE has changed its appropriation account structure. Programs in the General Science and Research account and selected programs in Energy Supply have been shifted to the "Science" account. The table shows DOE programs under the new account structure.

**Table 8. National Institutes of Health
Congressional Action on R&D in the FY 2000 Budget (budget authority in millions of dollars)**

	FY 1999 Estimate	FY 2000 Request	Action by Congress				
			FY 2000 Approved	Chg. from Request Amount	Chg. from Request Percent	Chg. from FY 1999 Amount	Chg. from FY 1999 Percent
Cancer	2,927	2,973	3,320	347	11.7%	392	13.4%
Heart, Lung and Blood	1,794	1,826	2,033	207	11.3%	239	13.3%
Dental and Cranofacial Research	234	244	269	25	10.3%	35	14.9%
Diabetes, Digestive and Kidney	994	1,021	1,143	122	12.0%	149	15.0%
Neurological Disorders and Stroke	903	921	1,031	110	11.9%	128	14.1%
Allergy and Infectious Diseases	1,570	1,614	1,796	182	11.3%	226	14.4%
General Medical Sciences	1,198	1,227	1,356	130	10.6%	159	13.2%
Child Health & Human Development	751	772	860	88	11.4%	109	14.5%
Eye	396	407	451	44	10.9%	55	13.9%
Environmental Health Sciences	376	398	443	45	11.4%	67	17.9%
Aging	597	615	688	73	11.8%	91	15.3%
Arthritis & Musculoskeletal & Skin	308	315	351	36	11.4%	42	13.7%
Deafness and Comm. Disorders	230	237	264	27	11.4%	34	14.9%
Mental Health	861	876	975	99	11.3%	113	13.2%
Drug Abuse	603	623	687	64	10.3%	84	13.9%
Alcoholism and Alcohol Abuse	260	265	293	27	10.3%	33	12.7%
Nursing Research	70	72	90	18	25.0%	20	28.4%
Research Resources	555	568	678	109	19.3%	123	22.1%
Human Genome Research	265	276	336	60	21.9%	71	26.9%
Fogarty International Center	35	36	44	7	20.1%	8	23.0%
National Library of Medicine	181	186	214	29	15.5%	33	18.2%

(continued)

Table 8. (continued)

	FY 1999 Estimate	FY 2000 Request	Action by Congress				
			FY 2000 Approved	Chg. from Request Amount	Chg. from Request Percent	Chg. from FY 1999 Amount	Chg. from FY 1999 Percent
Office of the Director	257	263	282	20	7.5%	26	10.1%
Office of AIDS Research ¹	0	[1,834]	0	--	--	--	--
Buildings and Facilities ²	198	148	175	26	17.7%	-23	-11.5%
Complementary and Alternative Medicine ³	50	51	68	17	33.8%	18	37.0%
TOTAL NIH Budget	15,612	15,933	17,845	1,913	12.0%	2,233	14.3%
<i>Subtract:</i>							
<i>Estimated Research Training</i>	<i>511</i>	<i>512</i>	<i>573</i>	<i>61</i>	<i>12.0%</i>	<i>62</i>	<i>12.2%</i>
<i>Other Non-R&D</i>	<i>130</i>	<i>132</i>	<i>147</i>	<i>16</i>	<i>12.0%</i>	<i>17</i>	<i>13.2%</i>
TOTAL NIH R&D	14,971	15,289	17,125	1,835	12.0%	2,153	14.4%

AAAS estimates of R&D in FY 2000 appropriations bills. Includes conduct of R&D and R&D facilities. Includes across-the-board reduction. All figures are rounded to the nearest million. Changes calculated from unrounded figures.

¹ The Office of AIDS Research (OAR) provides pass-through funding to the other Institutes for AIDS research.

Congress in FY 1999 allocated OAR funds directly to the Institutes. The FY 2000 request consolidated all AIDS research funded by the Institutes under the OAR line. Congress allocated FY 2000 AIDS funds directly to the Institutes.

The FY 2000 request figures distribute the OAR request among the Institutes for comparability.

² FY 2000 figures include \$40 million in advance appropriations.

³ New center created in FY 1999.

Totals do not include amounts transferred from Departmental Administration for matching funds (see Table 9).

Note: The FY 2000 omnibus bill delays the release of \$3 billion in FY 2000 NIH funds until September 29, 2000, one day before the end of FY 2000. The bill does not specify the distribution of the total among institutes.

**Table 9. Department of Health and Human Services
Congressional Action on R&D in the FY 2000 Budget (budget authority in millions of dollars)**

	FY 1999 Estimate	FY 2000 Request	Action by Congress				
			FY 2000 Approved	Chg. from Request Amount	Chg. from Request Percent	Chg. from FY 1999 Amount	Chg. from FY 1999 Percent
National Institutes of Health ¹	14,971	15,289	17,125	1,835	12.0%	2,153	14.4%
Centers for Disease Control ¹	438	478	484	6	1.2%	46	10.5%
Food and Drug Administration	104	111	105	-6	-5.8%	1	0.5%
Health Care Financing Admin.	50	55	63	8	13.9%	13	25.3%
Health Resources & Services Admin.	25	25	54	29	115.2%	29	115.2%
Health Care Policy and Research	100	27	109	82	301.9%	9	8.5%
Admin. for Children & Families	27	28	38	10	35.2%	11	40.2%
Office of Aging	18	18	32	14	80.2%	14	80.2%
Departmental Administration ¹	17	16	86	70	435.5%	69	404.0%
TOTAL HHS R&D	15,750	16,047	18,094	2,047	12.8%	2,344	14.9%

AAAS estimates of R&D in FY 2000 appropriations bills. Includes conduct of R&D and R&D facilities. Includes across-the-board reduction.

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

Includes emergency and supplemental appropriations.

¹ The Labor-HHS bill provides \$20 million in the Office of the Secretary's Public Health and Social Services Fund for transfer to NIH for partnerships with pharmaceutical and biotechnology companies to accelerate new antibiotics development.

There is also \$49 million for CDC for bioterrorism-related R&D. These funds are listed under Departmental Administration.

Note: The FY 2000 omnibus bill delays the release of \$3 billion in FY 2000 NIH funds until September 29, 2000, one day before the end of FY 2000. The bill does not specify the distribution of the total among institutes.

The bill also delays \$500 million in CDC funds and \$450 million in HRSA funds until September 29, 2000.

**Table 10. National Science Foundation
Congressional Action on R&D in the FY 2000 Budget (budget authority in millions of dollars)**

	FY 1999 Estimate	FY 2000 Request	Action by Congress				
			FY 2000 Approved	Chg. from Request Amount	Chg. from Request Percent	Chg. from FY 1999 Amount	Chg. from FY 1999 Percent
Research and Related Activities ^{1,2} :							
Mathematical and Physical Sciences	734	754	756	2	0.3%	22	3.0%
Engineering	369	379	380	1	0.3%	11	3.0%
Biological Sciences	391	409	415	6	1.5%	24	6.1%
Geosciences	473	485	487	1	0.3%	14	2.9%
Computer and Info. Science and Eng.	299	423	390	-32	-7.7%	91	30.6%
Social, Behavioral and Econ. Scis.	137	143	143	0	0.3%	6	4.5%
US Polar Programs	245	251	254	3	1.2%	9	3.5%
Integrative Activities ¹	161	161	130	-31	-19.5%	-32	-19.6%
Total Research and Related Activities ^{1,2}	2,809	3,004	2,955	-49	-1.6%	146	5.2%
Major Research Equipment	90	85	95	10	11.3%	5	5.2%
Education and Human Res. R&D	108	108	108	0	0.0%	0	0.0%
<i>Subtract Non-R&D in R&RA</i> ²	-293	-307	-303	4	-1.3%	-10	3.5%
TOTAL NSF R&D	2,714	2,890	2,854	-36	-1.2%	140	5.2%

(continued)

Table 10. (continued)

	FY 1999 Estimate	FY 2000 Request	Action by Congress				
			FY 2000 Approved	Chg. from Request Amount	Chg. from Request Percent	Chg. from FY 1999 Amount	Chg. from FY 1999 Percent
Non-R&D Programs and Activities:							
Non-R&D in R&RA ²	293	307	303	-4	-1.3%	10	3.5%
Other Education and Human Res.	554	570	586	16	2.8%	32	5.8%
Salaries and Expenses	144	149	148	-1	-0.4%	4	3.1%
Inspector General	5	5	5	0	-0.4%	0	4.4%
Total NSF Non-R&D Activities	996	1,032	1,043	11	1.1%	47	4.7%
TOTAL NSF Budget	3,710	3,921	3,897	-24	-0.6%	187	5.0%

AAAS estimates of R&D in FY 2000 appropriations bills. Includes across-the-board reduction. Includes conduct of R&D and R&D facilities.

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

¹ R&RA figures include funding derived from the Intellectual Infrastructure fund in FY 1999.

² R&RA funds are not appropriated by directorate. The FY 2000 Approved directorate figures are AAAS estimates based on language in the FY 2000 appropriations bill.

**Table 11. Department of Commerce
Congressional Action on R&D in the FY 2000 Budget (budget authority in millions of dollars)**

	FY 1999 Estimate	FY 2000 Request	Action by Congress				
			FY 2000 Approved	Chg. from Request Amount	Chg. from Request Percent	Chg. from FY 1999 Amount	Chg. from FY 1999 Percent
National Oceanic and Atmospheric Administration:							
TOTAL NOAA R&D	600	600	617	17	2.8%	17	2.8%
National Institute of Standards and Technology:							
Scientific & Technical Research	233	240	235	-5	-2.1%	2	0.7%
Advanced Technology Program R&D	178	219	130	-88	-40.5%	-48	-27.0%
Construction	57	107	108	1	1.1%	51	90.4%
TOTAL NIST R&D	468	565	473	-92	-16.3%	5	1.0%
<i>(STRS, ATP Non-R&D Activities)</i>	72	70	59	-11	-15.2%	-13	-18.1%
<i>(Manufacturing Extension Partnership)</i>	107	100	104	5	4.6%	-2	-2.2%
<i>(Total NIST Budget)</i>	647	735	637	-98	-13.4%	-11	-1.6%
Bureau of the Census	2	2	2	0	0.0%	0	0.0%
National Telecomm. and Info. Admin.	4	4	4	0	0.0%	0	0.0%
Economic Development Administration	1	1	1	0	0.0%	0	0.0%
TOTAL Commerce R&D	1,075	1,172	1,096	-76	-6.5%	21	2.0%

AAAS estimates of R&D in FY 2000 appropriations bills. Includes across-the-board reduction. Includes conduct of R&D and R&D facilities. All figures are rounded to the nearest million. Changes calculated from unrounded figures.

**Table 12. Department of Agriculture
Congressional Action on R&D in the FY 2000 Budget (budget authority in millions of dollars)**

	FY 1999 Estimate*	FY 2000 Request	Action by Congress				
			FY 2000 Approved	Chg. from Request Amount	Chg. from Request Percent	Chg. from FY 1999 Amount	Chg. from FY 1999 Percent
Agricultural Research Service (ARS)							
Programs ¹	811	857	851	-6	-0.7%	41	5.0%
Buildings and Facilities	56	45	52	8	17.5%	-4	-7.3%
Total ARS R&D	867	901	903	2	0.2%	36	4.2%
Cooperative State Research, Education and Extension Service (CSREES):							
Total CSREES R&D	462	595	479	-116	-19.6%	17	3.7%
<i>(National Research Initiative)</i>	119	200	119	-81	-40.6%	0	-0.4%
<i>(Special Research Grants)</i>	55	5	63	58	1136.7%	8	15.3%
<i>(Initiative for Future Agri. ²)</i>	0	120	0	-120	-100.0%	0	- -
Total CSREES R&D	462	595	479	-116	-19.6%	17	3.7%
<i>(CSREES Non-R&D Programs)</i>	463	473	472	0	-0.1%	10	2.1%
<i>(Total CSREES Budget)</i>	924	1,068	951	-117	-10.9%	27	2.9%
Forest Service	211	242	214	-28	-11.7%	3	1.3%
Economic Research Service	63	56	65	9	16.4%	2	3.4%
Alternative Agri. Res. and Commerc.	3	10	0	-10	-100.0%	-3	-100.0%
Agricultural Marketing Service	5	5	5	0	0.0%	0	0.0%

(continued)

Table 12. (continued)

	FY 1999 Estimate*	FY 2000 Request	Action by Congress				
			FY 2000 Approved	Chg. from Request		Chg. from FY 1999	
				Amount	Percent	Amount	Percent
Foreign Agricultural Service	1	1	1	0	0.0%	0	0.0%
Nat'l Agricultural Statistics Service	3	3	3	0	-1.5%	0	-1.5%
Grain Inspection	3	3	3	0	-0.4%	0	-0.4%
Animal & Plant Inspection Service	20	18	20	2	11.1%	0	0.0%
Office of the Secretary ³	0	15	0	-15	-100.0%	0	--
Total USDA R&D	1,638	1,850	1,693	-156	-8.5%	56	3.4%

AAAS estimates of R&D in FY 2000 appropriations bills. Includes across-the-board reduction. Includes conduct of R&D and R&D facilities.

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

* Adjusted to reflect rescissions enacted in Public Law 106-31.

¹ Includes spending from trust funds.

² Mandatory (non-appropriated) program of competitive grants for agricultural research.

The FY 2000 Agriculture bill prohibits the expenditure of FY 2000 funds.

³ Fund for Rural America, a mandatory program. The FY 2000 Agriculture bill prohibits the expenditure of FY 2000 funds.

**Table 13. Department of Transportation
Congressional Action on R&D in the FY 2000 Budget (budget authority in millions of dollars)**

	FY 1999 Estimate	FY 2000 Request	Action by Congress				
			FY 2000 Approved	Chg. from Request Amount	Chg. from Request Percent	Chg. from FY 1999 Amount	Chg. from FY 1999 Percent
Federal Aviation Administration	226	246	245	-2	-0.7%	19	8.5%
Federal Highway Administration	258	459	287	-173	-37.6%	29	11.3%
Federal Transit Administration	17	19	13	-6	-30.8%	-3	-20.3%
Nat'l Highway Traffic Safety Admin.	50	59	50	-9	-14.6%	0	-0.4%
Federal Railroad Administration	22	24	25	1	2.4%	3	11.7%
Coast Guard	15	15	13	-2	-12.8%	-1	-7.0%
Research and Special Programs	7	8	7	0	-4.3%	0	5.8%
Office of the Secretary	9	4	2	-2	-47.6%	-6	-73.3%
Total DOT R&D	603	836	643	-193	-23.1%	40	6.7%
DOT Budget (includes R&D components):							
Federal Aviation Administration	9,814	10,131	10,013	-118	-1.2%	199	2.0%
Federal Highway Administration	27,367	28,599	28,828	229	0.8%	1,461	5.3%
Federal Transit Administration	5,390	6,088	5,775	-313	-5.1%	385	7.1%
Coast Guard	4,284	4,135	4,008	-127	-3.1%	-275	-6.4%
Federal Railroad Administration	778	658	732	74	11.3%	-46	-5.9%
All Other ¹	351	781	745	-36	-4.6%	394	112.4%
Total DOT Budget	47,983	50,393	50,103	-290	-0.6%	2,119	4.4%

AAAS estimates of R&D in FY 2000 appropriations bills. Includes across-the-board reduction. Includes conduct of R&D and R&D facilities. Figures rounded to the nearest million. Changes calculated from unrounded figures.

DOT figures include budget authority (regular and emergency), limitations on obligations, and other budgetary resources.

¹ Includes Office of Secretary, NHTSA, RSPA, Maritime Administration, Bureau of Transportation Statistics, and others.

**Table 14. Department of the Interior
Congressional Action on R&D in the FY 2000 Budget (budget authority in millions of dollars)**

	FY 1999 Estimate	FY 2000 Request	Action by Congress				
			FY 2000 Approved	Chg. from Request		Chg. from FY 1999	
				Amount	Percent	Amount	Percent
U.S. Geological Survey: ¹							
Surveys, Investigations, and Research (SIR):							
National Mapping	23	24	25	1	3.5%	2	8.1%
Geologic Resources	199	199	212	13	6.5%	13	6.4%
Water Resources	119	119	122	4	3.1%	3	2.7%
Biological Research	126	125	137	12	9.7%	12	9.2%
Integrated Science	30	48	0	-48	-100.0%	-30	-100.0%
Total USGS R&D	497	514	496	-18	-3.5%	-1	-0.2%
<i>(USGS Non-R&D SIR Activities)</i>	<i>301</i>	<i>324</i>	<i>324</i>	<i>0</i>	<i>0.1%</i>	<i>24</i>	<i>7.9%</i>
<i>(Total USGS SIR Budget)</i>	<i>798</i>	<i>838</i>	<i>821</i>	<i>-18</i>	<i>-2.1%</i>	<i>23</i>	<i>2.9%</i>
Bureau of Reclamation	10	10	9	-1	-12.8%	-1	-12.8%
National Park Service	34	34	30	-4	-11.8%	-4	-11.8%
Bureau of Land Management	1	1	1	0	0.0%	0	0.0%
Minerals Management Service	25	25	26	1	5.6%	1	5.6%
TOTAL Interior R&D	567	584	562	-22	-3.8%	-5	-0.9%

AAAS estimates of R&D in FY 2000 appropriations bills. Includes across-the-board reduction. Includes conduct of R&D and R&D facilities.

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

¹ USGS restructuring in FY 2000. FY 1999 figures adjusted for comparability.

**Table 15. Environmental Protection Agency
Congressional Action on R&D in the FY 2000 Budget (budget authority in millions of dollars)**

	FY 1999 Estimate	FY 2000 Request	FY 2000 Approved	Action by Congress			
				Chg. from Request Amount	Percent	Chg. from FY 1999 Amount	Percent
EPA R&D:							
Science and Technology ¹	667	643	644	1	0.1%	-23	-3.4%
Other Accounts	1	0	0	0	--	-1	-100.0%
R&D from Trust Funds:							
Leaking Underground Storage Tanks	1	1	1	0	-0.4%	0	-0.4%
Oil Spill Response	1	1	1	0	-0.4%	0	10.7%
TOTAL EPA R&D	<u>669</u>	<u>645</u>	<u>645</u>	<u>1</u>	<u>0.1%</u>	<u>-23</u>	<u>-3.5%</u>
EPA Budget:							
Science and Technology (incl. non-R&D) ²	700	679	680	1	0.2%	-20	-2.8%
Environ. Progs. and Management	1,848	2,047	1,893	-154	-7.5%	45	2.4%
Superfund ²	1,460	1,463	1,357	-106	-7.3%	-103	-7.1%
State and Tribal Assistance Grants	3,407	2,838	3,453	615	21.7%	46	1.4%
Buildings and Facilities	57	63	62	-1	-1.0%	5	9.4%
Leaking Underground Storage Tanks	73	72	70	-2	-3.1%	-3	-4.5%
Oil Spill Response	15	16	15	-1	-6.6%	0	-0.4%
Inspector General	31	29	32	3	11.3%	1	4.1%
TOTAL EPA Budget	<u>7,591</u>	<u>7,207</u>	<u>7,563</u>	<u>356</u>	<u>4.9%</u>	<u>-28</u>	<u>-0.4%</u>

AAAS estimates of R&D in FY 2000 appropriations bills. Includes across-the-board reduction. Includes conduct of R&D and R&D facilities.

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

¹ Includes budget authority for R&D transferred from Superfund account.

² Transfers from Superfund to S&T account recorded under S&T.

Part III

Appendices

Appendix 1: Methodology and Data Sources

Within the federal budget there is no separately identified R&D budget as such; nor are most appropriations for R&D so labeled except for certain program areas, such as defense. Consequently, most funds for R&D are not line items in an agency's budget but are included within general program funding. The Office of Management and Budget (OMB) requires agencies whose annual R&D funding is greater than \$10 million to submit data on their R&D programs as part of their annual budget submissions. Specifically, the agencies provide data (reported on MAX Schedule C as part of the budget process) on funding levels for basic research, applied research, development, R&D facilities, and R&D support to universities and colleges (see Appendix 2: Definitions). However, agencies differ in their reporting. For example, some agencies classify program direction or management support as R&D; others do not.

In the data tables, the columns "FY 1999 Estimate" and "FY 2000 Request" represent the agencies' best estimates of actual and proposed federal funding for R&D collected during the winter and spring by OMB and AAAS. These figures incorporate information provided to OMB by 26 agencies accounting for more than 99 percent of all federal R&D and information collected by AAAS from individual agencies after the budget is prepared. Some adjustments to these figures have been made during 1999 to reflect agency revisions, supplemental appropriations, and rescissions. "FY 2000 Approved" figures are AAAS estimates of R&D contained in FY 2000 appropriations bills and their accompanying committee reports as approved by Congress and signed by the President in the fall of 1999, and reflect rescissions and emergency supplementals (including contingent emergency appropriations) enacted at that time. The figures also reflect across-the-board cuts in discretionary appropriations, which are allocated proportionately.

Due to rounding in the tables, the detail may not add to the totals, and the percentage changes may not correspond to the difference shown. Most figures are rounded to the nearest million; totals and changes are calculated from unrounded figures. In the tables, subtotals are occasionally provided for additional detail. These subtotals are shown in italics to indicate that they do not add into the totals.

Special Note on Tables A, 1, and 7. “FS&T” refers to an alternative measure of the federal investment in science and technology developed by the National Academy of Sciences in its 1995 report *Allocating Federal Funds for Science and Technology* (National Academy Press, Washington DC, 1995). “FS&T” is defined in the report as a subset of total federal R&D. (Since the release of the report, the Academy has revised its original definition of “FS&T”. The tables reflect these revisions.) “FS&T” excludes advanced development, testing and evaluation work in DOD and DOE. In DOD, “FS&T” excludes R&D funding in the “6.4” through “6.7” categories, and R&D in non-RDT&E accounts. In DOE, “FS&T” excludes the Naval Reactors program and the “Testing and Readiness” component of Stockpile Stewardship.

Special Note on Table 2. Basic Research by Agency. Most R&D programs contain a mix of basic research, applied research, and development. Agencies determine what proportion of a program’s R&D is basic research. “FY 2000 Approved” figures for basic research are AAAS estimates of basic research contained in FY 2000 appropriations bills as approved by Congress and signed by the President in the fall of 1999, based on historical trends in basic research and agency budget documents.

Special Note on Table 3. Major Functional Categories of R&D. All activities in the federal budget are classified into 20 broad functional categories. (AAAS separates the general science, space, and technology function into its subfunctions of General Science and Space). Each function often includes programs from several agencies. Each R&D program is assigned to only one function, even though the R&D activity may address several functional concerns. For example, NASA’s Earth Science program is classified under the Space function, even though its R&D is also closely related to Natural Resources and Environment, as well as General Science.

Appendix 2: Definitions

In this report, R&D refers to actual research and development activities as well as R&D facilities. These definitions are used by the Office of Management and Budget, the National Science Foundation, and AAAS.

Research is systematic study directed toward more complete scientific knowledge or understanding of the subject studied. The federal government classifies research as either basic or applied according to the objective of the sponsoring agency.

- In **basic research** the objective is to gain knowledge or understanding of phenomena without specific applications in mind.
- In **applied research** the objective is to gain knowledge or understanding necessary for meeting a specific need.

Development is the systematic use of the knowledge or understanding gained from research directed toward the production of materials; devices; systems; or methods, including design, development, and improvement of prototypes and new processes. It excludes quality control, routine product testing, and production.

R&D funding normally includes those personnel, program supervision, and administrative support costs directly associated with R&D activities. Laboratory equipment is also included. Defense R&D also includes testing, evaluation, prototype development, and other activities which precede actual production.

Funding for **R&D facilities** includes construction, repair, or alteration of physical plant (*e.g.*, reactors, wind tunnels, particle accelerators, or laboratories) used in the conduct of R&D.

The federal R&D funding data in this report are presented in terms of **budget authority**. Budget authority is the initial budget parameter for congressional action on the President's proposed budget. Other R&D data sources may express R&D funding in terms of obligations or

outlays. There are also R&D data sources which obtain funding data from funding **recipients** (companies, universities) rather than from funding **sources** (agencies).

Budget authority is the legal authorization to expend funds.

Obligations represent orders placed, contracts awarded, services received, and similar transactions during a given period, regardless of when the funds were appropriated and when the future payment of money is required.

Outlays represent checks issued and cash payments made during a given period, regardless of when the funds were appropriated or obligated. Some surveys refer to outlays as expenditures.

As an example, Congress may appropriate \$100 million to NASA in FY 1999 for an R&D laboratory. NASA may then issue contracts to build the lab and sign \$50 million of the contracts in FY 1999 and \$50 million in FY 2000. Upon completion of the lab in FY 2001, NASA may then write checks to the contractors for a total of \$100 million. Budget authority would be \$100 million in FY 1999; obligations would be split \$50 million each in FY 1999 and FY 2000; outlays would be \$100 million in FY 2001. In the federal budget process, there is normally a lag between budget authority and outlays for large capital projects and research contracts; budget authority and outlays usually occur in the same year for recurring expenses such as staff salaries.

(Definitions adapted from National Science Foundation, *Federal R&D Funding by Budget Function: Fiscal Years 1998-2000*, Arlington, VA, 1999.)

Appendix 3: Related Publications

AAAS Report XXIV: Research and Development FY 2000, Intersociety Working Group, 1999. \$18.95; \$15.16 for AAAS members. AAAS Publication Number: 99-07S. (Companion to this volume, a comprehensive analysis of the President's proposed budget for R&D for FY 2000 by agency, issue area, and discipline. The full text is available on line on the AAAS R&D Web site.)

AAAS Science and Technology Policy Yearbook 2000, Albert H. Teich, Stephen D. Nelson, Celia McEnaney, Tina Drake, editors, 2000. (Available January, 2000.) \$24.95; \$19.95 for AAAS members. (A collection of writings on the major science and technology policy issues of 1999 including selections from the proceedings of the 24th Annual AAAS Colloquium on Science and Technology Policy. The full text will be available on line on the AAAS R&D Web site.)

Working with Congress: A Practical Guide for Scientists and Engineers, Second Edition, William G. Wells, Jr., 1996. AAAS Publication Number: 96-2S. \$15.95; \$12.76 for AAAS members.

Competitiveness in Academic Research, Albert H. Teich, editor, 1996. AAAS Publication Number: 96-1S. \$21.95; \$17.56 for AAAS members. (Based on a study commissioned by the National Science Foundation's EPSCoR program).

The above publications may be ordered from the AAAS Distribution Center. Please add \$4.00 for postage and handling per order. Orders must be prepaid by check or accompanied by purchase order payable to AAAS. Address: AAAS Distribution Center, P.O. Box 521, Annapolis Junction, MD 20701. For VISA / Mastercard orders call 1-800-222-7809 (8:30 AM - 5:00 PM ET). Fax orders to 301-206-9789. For shipments to CA and DC, add applicable sales tax. For shipments to Canada, add the GST. Please allow 2-3 weeks for delivery.

AAAS World Wide Web Site

Updated information on federal funding for R&D, including the **complete text of this book, detailed agency analyses, revised historical tables, and supplementary materials**, is available on the AAAS R&D Budget and Policy Program home page at:

<http://www.aaas.org/spp/R&D>

Further information on the activities and publications of the AAAS Directorate for Science and Policy Programs is available on the AAAS Web site at:

<http://www.aaas.org/spp/>