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Research and Development Funding: Fiscal Year 2001

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SUMMARY

The 106th Congress concluded by approving an estimated $91 billion for federal R&D, in FY2001. This includes, an estimated $7.6 billion increase, the largest dollar increase, for R&D, in history. **(see Table 8,)** CRS estimates that civilian R&D will increase 14%, toping the $46 billion mark, while defense R&D is estimated to exceed $45 billion. These large increases are primarily due to Congress approving a $3 billion increase for DOD R&D and a $2.5 billion increase (14%) for NIH funding, which has now passed the $20 billion level. Over the past two years, NIH's budget has increased $4.7 billion.

President Clinton proposed $20.328 billion for basic research, a 7% increase over FY2000. The budget reflects the Administration's goal of obtaining a "Balanced R&D Portfolio" by requesting significant increases in new or existing multi-agency, multi-discipline initiatives. Congress actually approved an estimated $21.335 billion (12% above FY2000) for basic research, that includes significant funding increases across a number of agencies. CRS also estimates that funding for applied research will reach $20 billion, 13% above FY2000 levels.

The Clinton Administration requested a $675 million, a 17% increase for NSF. NSF is also the lead agency for the Nanotechnology and IT initiatives. The House Appropriations Committee approved a $165 million increase, (4.3%) over FY2000. However, after the Committee's action, Senator Lott sent a letter to the Senate Appropriations Committee recommending the Committee support Senator Bond's and Senator Mikulski's goal of doubling NSF's budget over the next 5 years. Approval of such an initiative would require increasing NSF's budget approximately $560 million over FY2000 funding levels. Congress approved an estimated $529 million increase for NSF.

Although NASA requested a small increase for R&D, Congress approved 14% increase for Space Science program ($2.5 billion) $109 million above the request. Congress approved a $847 million increase for DOE's R&D programs, with Energy's civilian R&D activities increasing 16%, while defense R&D programs will increase 11%. Included in DOD's $3 billion increase is a 7% increase for its science and technology programs.

Some of the smaller R&D agencies received large increases with DOT leading the way with a 20% increase while NOAA's and EPA's budgets increased over 7%. Congress approved a 1% increase for Interior's R&D programs. Unlike other agencies, NIST's R&D budget will decline almost 6% below FY2000 levels. The National Nanotechnology Initiative received a 55% increase, growing from $271 million to $422 million, while the IT for the 21st Century Fund increased from $1.545 billion to $1.964 billion, a 27% increase for FY2001. Recent articles in the Washington Post and the Wall Street Journal suggest that the Bush Administrations's FY2002 R&D budget could fall short of the record FY2001 budget. The articles indicated that while the Bush Administration is likely to propose a real dollar increase for NIH in FY2002, other agencies' proposed FY2002 R&D budgets are likely to be below FY2001 levels. For example, the Journal article indicated that the Administration will request a 1% increase for NSF, while the research budget of the U.S. Geological survey is proposed to decline 22% in FY2002.

MOST RECENT DEVELOPMENTS

The 106th Congress concluded by approving an estimated $91 billion for federal R&D, in FY2001. This includes, an estimated $7.6 billion increase, the largest dollar increase, for R&D, in history. CRS estimates that civilian R&D will increase 14%, toping the $46 billion mark, while defense R&D is estimated to exceed $45 billion ***(see Table 8)****. The figures in this report do not reflect a 0.22% across the board budget reduction, contained in P.L. 106-554, for those agencies not included in the Labor/HHS appropriations account.*

BACKGROUND AND ANALYSIS

Department of Agriculture (USDA)

The FY2001 budget request for research and education in the U.S. Department of Agriculture (USDA) is $2,085.3 million, a $64.3 million increase (3.2%) over the FY2000 estimate of $2,021.0 million (see **Table 1**). Several highlights are outlined in the FY2001 request. The budget includes support for the Initiative for Future Agriculture and Food Systems. The Agricultural Research, Extension, and Education Reform Act of 1998 authorized the establishment of a program for competitively awarded research and education grants. The grants are to focus on emerging issues related to food production, environmental quality and natural resources, and farm income including enhanced economic viability of small-scale farmers. Increased support has been provided for research and extension needed by agricultural producers to address the immediate and long-term needs resulting from global climate change. Also, added support is proposed for research on developing a greater understanding of the impacts of nutrition on human health, with a focus on the role of nutrition in preventing cancer, bone loss, and heart disease. Funding is proposed for the construction of selective human nutrition laboratories. Increased support for competitive grants, including support for the Future Agriculture and Food Systems Initiative, will be offset by decreases in formula funds and non-competitive projects. Other priority areas in the FY2001 request include research on the prevention and control of exotic diseases and pests, sustainable ecosystems, emerging plant and animal diseases, food systems to fight hunger, production practices that protect the environment, and the development, production, and commercialization of biobased products.

The USDA conducts in-house basic and applied research. The Agricultural Research Service (ARS) is the lead federal agency for nutrition research, operating five major laboratories focused primarily on this type of research. Other ARS laboratories focus on efficient food and fiber production, preservation of genetic resources, development of new products and uses for agricultural commodities, development of effective biocontrols for pest management, and support of USDA regulatory and technical assistance programs. The ARS has 105research laboratories throughout the United States and abroad. The FY2001 request provides $894 million for ARS, $64 million above the FY2000 level. The proposed budget provides increases of $97.8 million in support of major initiatives and high priority research, including emerging and toxic diseases, plant and animal genetics research, and technologies for production and conversion of crops into biobased products and bioenergy. There are plans

to redirect support from several existing programs to fund higher priority research. ARS reports that the majority of its facilities constructed prior to 1960, have become functionally obsolete. The FY2001 request proposes an additional $39.3 million for high priority modernization and construction at six ARS laboratories. Some of the facilities are not in total compliance with current health and safety standards.

The Cooperative State Research, Education, and Extension Service (CSREES) distributes funds to universities and organizations that conduct agricultural research. Funding is distributed to the states through competitive awards, formula funding, and other means. The FY2001 request for CSREES is $973 million, an increase of $22 million (2.3%) above the FY2000 estimate. Support in FY2001 for formula distribution to the state agricultural experiment stations (and other eligible institutions) through the Smith-Lever Act is maintained at $277 million. Funding for the 1890 institutions (historically black colleges and universities) through the Evans-Allen formula also is maintained at its current level of $29.7. Several special grants and construction projects, which target local concerns, are proposed for reductions. The request proposes $150 million for the National Research Initiative (NRI) Competitive Grants Program, a 26% increase over the FY2000 estimate. The proposed increase for the NRI will provide additional investments in biotechnology and animal and plant genetics, animal waste management, human nutrition research, and value added agricultural commodities. The FY2001 request for extension programs is $428 million, a slight increase over FY2000. The additional support is for several high priority initiatives.

The National Agricultural Statistics Service (NASS) has been proposed at $101 million in the FY2001 request, $2 million above the FY2000 estimate. Programs and activities that are proposed for increased funding include the NASS computer security architecture, hogs and pigs inventory report, pesticide use surveys for expansion of the environmental statistics program, and the Census of the Agriculture. The Economic Research Service (ERS) is the principal intramural social science research agency in USDA. The ERS is proposed at $55 million in FY2001. The request reflects a decrease of $12.2 million resulting from a transfer of the food program studies to the Food and Nutrition Service. The ERS provides funding for research on structural changes and market concentrations occurring in the agricultural sector. Increase support has been proposed for global climate change, and global research, statistics, and outreach.

On October 5, 2000, the Committee of Conference filed H.R. 4461, the Agriculture, Rural Development, Food and Drug Administration Bill, FY2001 (Conference Report H.Rept. 106-948). The conference agreement provides a total of $2,080.4 million for research and education in FY2001, $59.4 million above the FY2000 estimate and $4.9 million below the Administration's request. The conferees funded the ARS at $898.8 million, with an additional $74.2 million in support of buildings and facilities. The CSREES and the Extension were funded at $506.2 million and $434.4 million, respectively.

Table 1. U.S. Department of Agriculture FY1998-FY2001

($ millions)

	FY1999 Act.	FY2000 Est.	FY2001 Req.	FY2001 Conf.
Agric. Research Service (ARS)				
Soil & Water Conservation	85.6	89.0	110.0	
Plant Science	301.5	297.0	301.0	
Animal Science	127.0	133.0	141.0	
Commodity Conversion & Delivery	162.2	172.0	184.0	
Human Nutrition	68.4	71.0	89.0	
Information and Library Services	30.1	31.0	30.0	
Integration of Ag. Systems	19.0	19.0	21.0	
Repair and Maintenance	18.3	18.0	18.0	
Contingencies & Trust Funds	20.9	23.0	23.0	
Subtotal	**785.5**	**830.0**	**894.0**	**898.8**
Buildings & Facilities	56.4	53.0	39.3	74.2
Total, ARS	**861.9[a]**	**906.0**	**956.3**	**973.0**
Coop. St. Res. Ed. & Ext. (CSREES)				
Research and Education				
Hatch Act Formula	180.5	180.5	180.5	180.5
Cooperative Forestry Research	21.9	21.9	21.9	21.9
1890 Colleges and Tuskegee Univ.	29.7	30.7	30.7	32.7
Special Research Grants	63.1	63.2	0.0	85.7
NRI Competitive Grants	119.3	119.3	150.0	106.0
Animal Health & Disease Res.	5.1	5.1	5.1	5.1
Federal Administration	10.7	14.8	14.8	18.1
Higher Education[b]	23.4	27.0	37.0	36.0
Total, Coop. Res. & Educ.[c]	**481.2**	**481.0**	**461.0**	**506.2**
Extension Activities				
Smith-Lever Sections 3b&c	276.5	276.5	276.5	276.5
Smith-Lever Sections 3d	106.6	88.5	88.5	78.2
Renewable Resources Extension	3.2	3.2	3.2	3.2
1890 Research & Extension	56.1	56.0	58.0	43.0
Federal Admin. & Special Grants	11.7	10.0	10.0	18.1
Total, Extension Activities[c]	**438.0**	**424.9**	**428.0**	**433.4**
Total, CSREES[c]	**919.2**	**951.0**	**973.0**	**939.6**
Economic Research Service	65.8	65.0	55.0	67.0
National Agric. Statistics Serv.	104.0	99.0	101.0	100.8
TOTAL, Research, Education & Economics	**$1,971.9**	**$2,021.0**	**$2,085.3**	**$2,080.4**

a. The total for ARS excludes trust funds and support for Counter Drug Research and Development and for Anti-Drug Research and Related Matters.

b. Higher education includes payments to 1994 institutions and 1890 Capacity Building Grants program.

c. Program totals may reflect set-asides (non-add) or contingencies.

d. Excludes support for the Initiative for Future Agriculture and Food ($120 million) and the Community Food Projects ($3 million) .

Department of Energy (DOE)

For FY2001, the Department of Energy (DOE) requested $7.987 billion for civilian and defense R&D programs, 6.8% over the FY2000 appropriation. For civilian programs, the request was $4.710 billion, 13.2% above the FY2000 appropriation, while for defense programs, the request is $3.288 billion, 1.3% below the FY2000 appropriation. The appropriations approved by Congress for FY2001 (H.R. 4578 and H.R. 4733) provide DOE with $4.763 billion for civilian R&D programs, 1.1% above the request and $3.562 billion for defense R&D programs, 8.3% above the request. Details are in Table 2.

For the Energy Resources sector, DOE requested $1.509 billion for FY2001, 10.0% above FY2000. Once again, that growth was due to a large increase in the request for the Renewable Energy and Conservation R&D programs, 17.6% above FY2000. For FY2001, Congress approved funding for these two programs at a level 5.5% below the request. For Conservation R&D, the amount approved exceeds the levels approved by the House and Senate separately. In particular, conference action restored funds for the Partnership for a New Generation of Vehicles (PNGV-$126 million) that were removed in an amendment adopted by the full House. For Renewable Energy R&D, the amount approved approximately splits the difference between the separate House and Senate appropriations. In general, Congress increased funding for those areas it deemed long-range research and reduced funding for those areas considered more near-term, technology development.

For the DOE Science programs, the FY2001 request was 12.1% above FY2000. The bulk of the increase resulted from a large jump ($162 million) in construction funding requirements for the Spallation Neutron Source (SNS) project and a $49 million addition for information technology research. The latter focuses on development and application of high performance computing for scientific applications. An infusion of additional funds to the appropriations committees while the bill was in conference permitted the conferees to add significantly to the levels approved by the House and Senate separately for DOE's science programs. As a result, Congress approved an increase of 1.8% above the request and 16.9% above the FY2000 level for these programs. All of the funding requested for the SNS project and nearly all that requested for information technology research was approved. Congress also approved, however, a general reduction of $34.0 million and a reduction of $38.2 million for safeguards and security to be applied to the various Office of Science programs. If these are applied uniformly to all the programs, each would find its FY2001 funding level reduced by about 2.2% from the levels given in Table 2.

For FY2001, DOE's request for a slight decrease in funding for its defense R&D programs funding was due to a large decrease ($173 million) in the construction funding request for the National Ignition Facility (NIF). DOE announced that it would not ask for additional funds for FY2001 for NIF to cover the cost overruns announced last fall, but would absorb them from other weapons activities. DOE also asked for a 20% increase for defense modeling and computing funds. The national security budget for FY2001 was prepared for the first time under the rubric of the National Nuclear Security Administration (NNSA), the new organization created by Congress to manage most of DOE's defense activities. Congress approved a substantial increase of 8.3% above the request including an additional $60 million in new appropriations for the NIF to help meet the large cost overrun. Budget authority of $199.1 million for the NIF project was approved which included a transfer of $65 million from other weapons R&D programs. Congress, however, directed DOE to hold $69.1

million of that amount until it has demonstrated that it is meeting the budget and schedule targets of the revised project baseline. Congress reduced the defense modeling and computing request by $10 million, or 1.3%.

Table 2. DOE R&D Budget
($ millions)

	FY2000 Appro.	FY2001 Req.	FY2001 House	FY2001 Senate	FY2001 Conf
Energy Resources	**1372.5**	**1509.9**	**1222.5**	**1479.4**	**1505.0**[b]
Clean Coal Technology[a]	(146.0)	(155.0)	(89.0)	(67.0)	(67.0)
Fossil Energy	403.9	384.6	365.4	401.4	433.6
Nuclear Energy	116.1	119.8	103.6	124.7	122.7
Renewable Energy	310.1	409.5	343.4	397.0	374.9
Conservation	545.4	596.0	410.1	556.3	573.8
Science	**2788.1**	**3200.5**	**2839.6**	**2920.8**	**3258.6**[b]
High Energy Physics	697.8	714.7	714.7	677.0	726.1
Nuclear Physics	347.7	369.9	369.9	350.3	369.9
Basic Energy Sciences	771.6	1015.8	791.0	914.6	1013.4
Adv Scientific Computing	127.9	182.0	137.0	140.0	170.0
Biological & Environmental	432.9	445.3	404.0	444.0	500.3
Fusion Energy Sciences	244.7	247.3	250.0	227.3	255.0
Other	165.7	175.8	173.0	167.6	174.1
Defense Programs	**3100.8**	**3091.7**	**3085.7**	**3244.6**	**3451.1**[b]
Nuclear Weapons	2200.6	2181.1	2186.1	2287.0	2361.6
Nonprolif & Verification	225.0	233.0	222.0	263.0	253.0
Naval Reactors	675.1	677.6	677.6	694.6	690.2
Environmental Quality	**229.4**	**196.6**	**242.6**	**252.9**	**256.9**[b]
Science and Technology	229.4	196.6	242.6	252.9	256.9
TOTAL, DOE	**7478.4**	**7987.2**	**7365.2**	**7897.7**	**8325.3**[b]

[a] Accounts for deferrals of previously appropriated funds. The amounts are not included in the totals.
[b] Totals do not include general reductions and reductions for safeguards and security which have yet to be allocated to the specific programs.

Department of Defense (DOD)

The DOD Research, Development, Test and Evaluation (RDT&E) budget request for FY2001 is $37.9 billion. This is $400 million less than the total obligational authority available in FY2000. It is, however, $3 billion greater than what the Administration had proposed to spend in FY2001 in last year's FY2000 budget. The Science and Technology (S&T) portion of the RDT&E budget may again be an issue. In 1998, Congress recommended that S&T funding increase 2% above inflation, using the FY1999 request as a baseline. The Administration's FY 2001 request for S&T is about $200 million short of that goal. Total proposed S&T spending out to FY2005 would fall over $3 billion short. Last year, in the FY2000 authorization bill Congress restated its intention that DOD meet these goals.

Ballistic missile defense (BMD) will be an issue again as to whether the Administration will go ahead with a decision mid-year on whether to begin deployment of a National Missile Defense. The decision is to be based on three intercept tests and assessments regarding cost, effectiveness, and diplomatic impact. The first of the tests (October 1999) successfully intercepted the target, although not with out some problems in the functioning of major components. The second test, conducted in January, failed to intercept the target, probably due to a failure in the infrared seekers' cooling system. In the event of a positive deployment decision, the Administration has included procurement dollars in the NMD budget. Some of this could be obligated this year, to begin construction of missile sites. The goal remains to have an initial operating capability against a small attack by FY2005. The Administration plans to spend $10.4 billion on NMD between FY2001 and FY2005, $1.9 billion in FY2001. The total BMD RDT&E request for FY2001 is $3.9 billion.

Table 2. Department of Defense RDT&E

($ millions)

	FY2001 request	House Auth. (H.R. 4205)	SASC Auth. (S. 2549)	Apprn. Conf. (H.Rept. 106-754)[e]
Accounts				
Army	5,260	5,500	5,462	6,343
Navy	8,477	8,834	8,666	9,494
Air Force	13,686	13,677	13,928	14,138
Defense Agencies	10,238	11,078	11,052	11,157
(DARPA)	(1,951)	(1,866)	(2,161)	(1,990)
(BMDO[a])	(3,943)	(4,633)	(4,184)	(4,262)
Dir. Test & Eval	--	--	--	--
Dir. Op.Test/Eval	202	220	223	227
Total Ob. Auth.	**$37,862**	**$39,309**	**$39,331**	**$41,359**
Budget Activity				
Basic Research	1,217	1,255	1,243	1,326
Applied Res.	3,144	3,180	3,456	3,718
Advanced Dev.	3,182	3,476	3,464	4,018
Demonstr./Valid.	6,810	7,412	7,721	7,900
Engrg/Mftg. Dev.	8,661	8,849	8,184	8,754
Mgmt. Support[b]	2,434	2,462	2,512	2,645
Op. Systems Dev.	12,415	12,675	12,812	12,999[f]
Total Ob. Auth.	**$37,862**	**$39,309**	**$39,392[c]**	**$41,360**

Source: Department of Defense Budget for Fiscal Years 2000 RDT&E Programs (R-1). February 2000. FY1998 figures comes from the 1999 R-1 and may not reflect latest adjustments. Totals may not add due to rounding.

a. Includes only BMD RDT&E. Does not include procurement and military construction.
b. Includes funds for Developmental and Operational Test and Evaluation.
c. Does not include $63 million reduction due to economic adjustments.
d. Does not include a $26 million reduction for administrative support of the program per Section 8115.
e. Does not include the 0.7% general reduction for all RDT&E programs.
f. Includes $20 million for an Information Technology Center.

Congress is prepared to increase RDT&E funding above the Administration's request. The defense appropriations conference committee (H.Rept. 106-754) is recommending $41.1 billion for RDT&E (that includes a general reduction of 0.7% for all RDT&E programs

across the board). The House has approved the report. The conference committee also recommended $9.0 billion for S&T (again including the 0.7% general reduction), an increase of $1.4 billion above the Administration's request and well above the 2% above inflation goal set by Congress. In fact, to meet the goal set by Congress, S&T funding would not have to get that high until 2005.

The defense appropriations conference committee also increased BMD funding to $4. 3 billion, again including the 0.7% reduction. The House Armed Services Committee's increase for NMD includes the transfer of the low orbit Space-based Infrared Surveillance program and the Airborne Laser program (along with an additional $82.4 million for ABL) from the Air Force to the Ballistic Missile Defense Organization. The Senate Armed Services has left the program in the Air Force and, in accordance with the Senate Appropriations Committee, increased the request by $92 million. The defense appropriations conference committee left both programs with the Air force.

The Joint Strike Fighter became an issue this year. The Senate Armed Services and Appropriations committee have increased funding for the demonstration and validation phase of the Joint Strike Fighter program, but eliminated any FY2001 engineering and manufacturing funding. The House Appropriations would also increase the funding for demonstration and validation, but would only reduce the funding for engineering and manufacturing. The House already voted to authorize the full amount requested by the Administration for both phases. The F-22 program, which was debated extensively in last year's appropriations deliberations, has been fully supported so far this year. The defense appropriations conference committee recommended increasing demonstration and validation while reducing, but not eliminating engineering and manufacturing development funding.

National Aeronautics and Space Administration

For FY2001, NASA requested $9.73 billion for R&D, an increase of 0.8% over the FY2000 appropriation. On October 18, 2000, the conferees approved an appropriation of $10.00 billion for NASA R&D, 2.7% above the request and 3.6% above the FY2000 appropriation. **Details are in Table 4.**

NASA requested $2.114 billion for the International Space Station (ISS) for FY2001, 9.0% below FY2000. The decrease is due to a sharp falloff in future construction fund requirements as the station's components near completion. The conferees agreed to the requested amount. The conferees directed NASA to prepare a plan on managing research and commercialization activities for the ISS. They also prohibited the expenditure of any funds before December 1, 2001 on any agreement between NASA and a non-government organization to manage those activities until the Appropriations Committees can evaluate those plans and approve a final agreement.

The amount approved by the conferees for the Science, Aeronautics, and Technology account is 9.2% or $520.1 million above FY2000. For Space Science, the largest of NASA's science activities, NASA requested an increase of 9.4% above FY2000. NASA proposed an initiative, called Living With a Star, to enhance its solar research program and learn more about the behavior of solar disturbances that affect the earth's satellite, telecommunication, and electric transmission systems. The conferees approved an amount 4.6% above the

request. Included is an additional $75 million for the Mars Lander program, an amount proposed by NASA directly to the conferees. These funds were obtained by transfers from other NASA program accounts. The conferees also noted that adoption of the recommendations of the Mars Program Independent Assessment Team may increase costs for many Space Science programs. NASA is instructed to provide a five-year estimate of those costs. The conferees also funded the Living With a Star initiative and directed NASA to create a plan for a "resilient Sun-Earth Connection program.

Table 4. National Aeronautics and Space Administration
($ millions)

	FY2000 Appro	FY2001 Request	FY2001 House	FY2001 Senate	FY2001 Conf
Human Space Flight (R&D only)	**2,408.3**	**2,216.0**	**2,216.0**	**2,216.0**	**2,216.0**
Space Station	2,323.1	2,114.5	2,114.5	2,114.5	2.114.5
Eng and Tech Base	85.2	101.5	101.5	101.5	101.5
Science, Aeronautics, and Technology	**5,670.6**	**5,929.4**	**5,606.7**	**6,190.7**	**6,190.7[a]**
Space Science	2,192.8	2,398.8	2,378.8		2,508.3
Life, Microgravity Sciences & Application	274.7	302.4	329.0		316.9
Earth Science	1,443.4	1,405.8	1,405.8		1,498.0
Aero-Space Technology.	1,124.9	1,193.0	1.193.0		1,253.2
Space Operations	496.0	529.4	529.4		529.4
Academic Programs	138.8	100.0	105.4		134.0
R&P Management	**1,573.9**	**1,588.6**	**1,588.6**	**1,588.6**	**1,588.6**
Total NASA R&D	**9,652.8**	**9,734.0**	**9,411.3**	**9,995.3**	**9,995.3**

[a] The total includes a general reduction of $49 million not yet allocated to the individual SAT programs.

For Aero-Space Technology (AST), NASA requested an increase of 6% above FY2000. The major new initiative in this activity is the 2nd generation reusable launch vehicle (RLV) program, designed to replace the current version of the Shuttle. NASA intends to spend about $4.4 billion over the next five years with the objective that the private sector will provide the remaining funds to develop a finished RLV by about 2010-12 when NASA believes the Shuttle must be replaced. The program is rather complicated and there is no assurance that upon its completion, the private sector would be willing to continue development without significant additional support. The conferees approved the full amount for this initiative and directed NASA to ensure that any vehicles developed in this program will be privately owned and that competition from existing launch services will be a major driver to ensure the development of new and innovative concepts.

National Institutes of Health (NIH)

The final conference version of the FY2001 appropriations act for the Departments of Labor, Health and Human Services, and Education (H.R. 5656) was enacted by reference in P.L. 106-554, the Consolidated Appropriations Act, 2001 (H.R. 4577, H.Rept. 106-1033). Funding for NIH was included at a level of $20.313 billion, an increase of $2.5 billion or 14.0% over the FY2000 figure of $17.813 billion (see **Table 5**). The Administration had requested a 5.6% increase for NIH, $1 billion above the FY2000 appropriation, for a total

budget of $18.813 billion (see H.Rept.106-645 on H.R. 4577 and S.Rept. 106-293 on S. 2553). The FY2000 appropriation was an increase of $2.2 billion (14.2%) over FY1999; it had been preceded by increases of 14.5% for FY1999 and 7.1% for FY1998.

The increases of at least 14% starting with the FY1999 appropriation reflect a campaign by medical research advocates who have urged Congress to double the NIH budget over the 5-year period from FY1998 ($13.6 billion) to FY2003 (about $27 billion). The goal of a 100% increase in 5 years requires annual increases of nearly 15%. Although the Clinton Administration favored a slower growth path, proposing projected increases of about 40% to 50% over 5 years, Congress has responded thus far with 3 installments that are on pace to meet the 5-year doubling goal.

In their reports accompanying the FY2001 appropriation, the appropriations committees discussed their high regard for NIH and its accomplishments, and their intent to distribute the appropriations largely according to NIH's recommendations. To this end, specific amounts were not provided for particular diseases or funding mechanisms, although report language relating to some areas of research in some institutes is quite detailed. NIH's own budget documents had highlighted a number of activities slated to receive additional resources. They include exploitation of genomic discoveries, reinvigoration of clinical research, interdisciplinary research with other scientific disciplines, and elimination of health disparities. Two new initiatives are a trans-agency Biomedical Information Science and Technology Initiative to develop new ways to manage biological data, and development of a Trans-NIH Strategic Plan for Research on Health Disparities. Programs receiving particular emphasis by Congress include grants to institutions in states with historically low levels of NIH support, research on complementary and alternative medicine, and research on Parkinson's disease and autism.

Authorizing legislation passed at the end of the 106th Congress added a new center and a new institute to NIH. The National Center on Minority Health and Health Disparities was established by P.L.106-525 to expand the functions currently funded through the Office of Research on Minority Health in the Office of the Director of NIH. The National Institute of Biomedical Imaging and Bioengineering, created by P.L.106-580 after the FY2001 appropriations were enacted, will focus research on some of the areas currently coordinated by the Office of Bioengineering, Bioimaging, and Bioinformatics. Two additional new public health laws have provisions affecting NIH: P.L.106-310, the Children's Health Act of 2000, authorizes a number of disease-specific programs affecting the pediatric population, and P.L.106-505, the Public Health Improvement Act, extends the authority for NIH programs in clinical research generally, in construction of research facilities, and in specific research and training on lupus, prostate cancer, Alzheimer's disease, and sexually transmitted diseases. For further information on NIH, see CRS Report 95-96, *The National Institutes of Health: An Overview.*

Table 5. National Institutes of Health (NIH)

($ millions)

Institute or Center	FY1999 comp [a,b]	FY2000 comp [a,c]	FY2001 request [a]	FY2001 conf [a,d]
Cancer (NCI)	$2,891.6	$3,311.7	$3,505.1	$3,757.2
Heart/Lung/Blood (NHLBI)	1,774.8	2,026.4	2,136.8	2,299.9
Dental/Craniofacial Research (NIDCR)	238.0	269.2	284.2	306.4
Diabetes/Digestive/Kidney Dis (NIDDK)	994.0	1,141.4	1,209.2	1,303.4
Neurological Disorders/Stroke (NINDS)	896.9	1,029.7	1,084.8	1,176.5
Allergy/Infectious Diseases (NIAID)	1,570.5	1,796.6	1,906.2	2,043.2
General Medical Sciences (NIGMS)	1,202.8	1,353.9	1,428.2	1,535.8
Child Health/Human Develop't (NICHD)	752.2	859.3	904.7	976.5
Eye (NEI)	395.6	450.1	474.0	510.6
Environmental Health Sciences (NIEHS)	387.6	442.7	468.6	502.5
Aging (NIA)	599.7	687.9	725.9	786.0
Arthritis/Musculoskeletal/Skin (NIAMS)	306 0	349.5	368.7	396.7
Deafness/Communication Dis. (NIDCD)	230.8	263.7	278.0	300.6
Nursing Research (NINR)	69.9	89.5	92.5	104.4
Alcohol Abuse/Alcoholism (NIAAA)	259.3	293.2	308.7	340.7
Drug Abuse (NIDA)	607.7	687.4	725.5	781.3
Mental Health (NIMH)	854.2	974.7	1,031.4	1,107.0
Human Genome Research (NHGRI)	283.6	335.9	357.7	382.4
Research Resources (NCRR)	560.7	675.1	714.2	817.5
Complementary/Alt. Medicine (NCCAM)	50.5	69.0	72.4	89.2
Minority Health/Disparities (NCMHD)	—	—	—	130.2
Fogarty International Center (FIC)	35.2	43.3	48.0	50.5
National Library of Medicine (NLM)	181.8	215.2	230.1	246.8
Office of Director (OD)	255.6	282.0	309.0	213.6
Buildings & Facilities (B&F)	197.5	165.4	148.9	153.8
[AIDS/Off. of AIDS Research (non-add)] [e]	[1,792.7]	[2,006.2]	[2,111.2]	[2,267.0]
Total, NIH	**$15,596.5**	**$17,812.7**	**$18,812.7**	**$20,312.7**

Sources: Conference Report (H.Rept. 106-1033) on H.R. 4577 and NIH Budget Office.

a. All years do not include these transfers: $27 million to NIDDK for diabetes research (funding from the Balanced Budget Act of 1997 for FY1998-FY2002), and $9.5 million to NIDA from Office of National Drug Control Policy ($9.670 million in FY1999).

b. FY1999 reflects transfer of $4.967 million to DHHS under the Secretary's 1% transfer authority; rescission of $10.230 million in administrative and travel funds under P.L. 106-51, and comparable transfers for Clinical Center and Central Services formula adjustments among institutes/centers.

c. FY2000 reflects rescission of $100 million, transfer of $20 million from NIAID to Centers for Disease Control for study of vaccines for biological agents, and transfer to NIAID of $19.883 million for NIH Challenge Grants appropriated to the Public Health and Social Services Emergency Fund in the Office of the Secretary. Does not reflect transfer of $3.516 million to DHHS under Secretary's 1% transfer authority. Comparable for Central Services formula adjustments. Includes $40 million advance appropriation for Buildings and Facilities from FY1999 appropriation.

d. FY2001 does not reflect $5.8 million transfer to DHHS for Office for Human Research Protections (sec. 222 of Labor-HHS-Education conference report) or across-the-board reduction for administrative and related expenses (sec. 520). Reflects establishment of NCMHD, previously funded under Office of Director.

e. All AIDS funding is shown distributed to the individual institutes and centers, although the FY2001 request placed the money in a consolidated OAR account. Total AIDS spending, as reported by NIH, is shown in brackets. The FY1999 - FY2001 appropriations acts did not specify an amount for AIDS.

The National Science Foundation (NSF)

The FY2001 request for the National Science Foundation (NSF) is $4,572.4 million, a 17.3% ($675.2 million) increase over the FY2000 estimate of $3,897.2 million (see **Table 6**). The FY2001 request is part of the Administration's commitment to basic research, as outlined in the Administration's "21st Century Research Fund" proposal. The request provides support for several initiatives, including nanoscale science and engineering ($217 million), biocomplexity in the environment ($136 million), and education and workforce development ($157 million). At the suggestion of the President's Information Technology Advisory Committee, the NSF has been designated as the lead agency for an initiative on information technology involving seven federal agencies. NSF's FY2001 request provides $327 million for the information technology research (ITR) initiative. The investment in ITR will support research in areas such as computer system architecture, information storage and retrieval, scalable networks, connectivity, and research on the impact of information technology on society. The ITR initiative builds on NSF's current investments, and increases the total support for ITR by approximately 160% over the FY2000 estimate. The NSF continues its involvement in the National Science and Technology Council interagency programs in FY2001, providing $187 million for the U.S. Global Change Research Program, $47 million for a New Generation of Vehicles, and $125 million for Integrated Science for Ecosystems Challenges.

Included in the FY2001 request is $3,540.7 million for Research and Related Activities (R&RA), a 19.7% ($582.2 million) increase over the FY2000 estimate of $2,958.5 million. R&RA funds research projects, research facilities, and education and training activities. In the FY2001 request, the NSF has placed an emphasis on funding rates for new investigators and on increasing grant size and duration. The R&RA includes Integrative Activities (IA), created in FY1999. IA funds cross-disciplinary research, major research instrumentation, intellectual infrastructure, and the Science and Technology Policy Institute. The FY2001 request for IA is $119.2 million.

Research project support in the FY2001 request totals $2,781 million, an increase of 20% over FY2000. Support is provided individuals and small groups conducting disciplinary and cross-disciplinary research. Included in the total for research projects is support for centers, proposed at $334 million. NSF supports a variety of individual centers and center programs. A total of $44 million is proposed for the second phase of 23 Science and Technology Centers. These centers explore interdisciplinary research activities and are being phased down as planned. Continued support is provided for an additional five new centers initiated in FY1999. The support for Information Technology Centers, initiated in FY2000, will increase by $33 million. Research facility support in FY2001 is $830 million.

The Major Research Equipment (MRE) account is funded at $138.5 million in FY2001, a 48.2% increase ($45 million) over the FY2000 level. The MRE, established in FY1995, supports the construction of major research facilities that are at the "cutting edge of science and engineering." Seven projects are supported in this account, two are new for FY2001. The projects include terascale computing systems ($45 million), construction funds for the Large Hadron Collider ($16.4 million), completion of the design and development phase of the Millimeter Array ($6 million), investments in the Network for Earthquake Engineering Simulation ($28.2 million), the modernization of the South Pole Station ($13.5 million),

construction of the Earthscope: USArray and San Andreas Fault Observatory at Depth ($17.4 million), and startup funds for the National Ecological Observatory Network ($12 million).

Table 6. National Science Foundation

($ millions)

	FY1999 Act.	FY2000 Est.	FY2001 Req.	FY2001 Conf
Res. & Related Act. Biological Sciences	$392.1	$414.4	$511.1	
Computer & Inform. Sci. & Eng.	298.6	388.4	529.1	
Engineering	370.1	381.3	456.5	
Geosciences	478.0	487.8	583.0	
Math & Physical Sci.	733.7	757.6	881.2	
Social, Behav. & Econ. Sci.	142.0	146.1	175.1	
U.S. Polar Res. Prg.	183.0	190.4	222.8	
U.S. Antarctic Log. Act.	62.6	62.6	62.6	
Integrative Activities	161.6	129.2	119.2	
Subtotal Res. & Rel. Act	**2,821.6**	**2,958.5**	**3,540.7**	**3,245.7**
Ed. & Hum. Resr.	662.7	724.0	760.0	787.4
Major Res. Equip.	56.7	93.5	138.5	121.6
Salaries & Expenses	144.1	148.9	157.9	160.9
Office of Inspec. Gen.	5.4	5.5	6.3	6.3
Total NSF	**$3,690.5**	**$3,897.2**	**$4,572.4**	**$4,426.12**

The FY2001 request for the Education and Human Resources Directorate (EHR) is $729 million, a 5.5% increase ($38.1 million) above the FY2000 estimate. Support at the various educational levels in the FY2001 request is as follows: precollege, $267.5 million; undergraduate, $143.6 million; and graduate, $97 million. Support at the precollege level includes investments in a new activity, Centers for Learning and Teaching (CLT). The focus of the CLTs will be on developing the next generation of professionals to manage and direct the development of instructional materials, large scale assessments, and education research and evaluation. Support will continue for the Systemic Reform Initiatives, Instructional Materials Development, and Collaboratives for Excellence in Teacher Preparation. Major programs at the undergraduate level are Advanced Technological Education, Louis Stokes Alliances for Minority Participation, Scholarships for Services, Minority-Servicing Institutions, and Distinguished Teaching Scholars. Support at the graduate level has increased slightly in the FY2001 request, with the additional funding directed at the Graduate Teaching Fellows program. Continued support will be given to the Graduate Research Fellowship, Integrative Graduate Education and Research Training, Minority Graduate Education, and Postdoctoral Fellowships in Science, Mathematics, Engineering, and Technology Education. Funding for the Experimental Program to Stimulate Competitive Research is $48.4 million. H-1B nonimmigrant petitioner fees are proposed at $31 million in FY2001.

On October 12, 2000, the House and Senate passed H.R. 4635, VA, HUD, and Independent Appropriations Bill, FY2001. The agreement provides a total of $4,426.1 million for the NSF, a 13.6% increase ($528.9 million) over the FY2000 estimate. This is the largest dollar increase, in real or constant dollars, that the agency has ever received. The

conferees provided $3,245.7 million for the R&RA, $787.4 million for EHR, and $121.6 million for the MRE. (The total funding figure for NSF excludes support for the H-1B Petitioner Account, estimated at $102 million in FY2001).

Department of Commerce (DOC)

National Oceanic and Atmospheric Administration (NOAA)

For FY2001, the President requested a total of $2.76 billion in budget authority for NOAA, $557 million (22%) of which would be for Research and Development (R&D) and $37 million for R&D equipment and facilities construction, for a total of $594 million (see **Table 7**). The request is an increase of about 7% above FY2000 appropriations for R&D at NOAA ($554 million). The FY2001 NOAA R&D budget would contribute to a number of presidential environmental research initiatives managed by the White House Committee on Environment and Natural Resources (CENR), and the U.S. Global Change Research Program and High Performance Computing Research initiatives. The Office of Oceanic and Atmospheric Research (OAR), and 13 environmental research labs, supports weather, climate, and oceanic operational activities at NOAA and receive the largest percentage of R&D funding. OAR's Ocean and Coastal Programs fund the National Sea Grant, Great Lakes, and National Underwater Research Programs.

On June 26, 2000, the House passed the Commerce Appropriations bill (H.R. 4690), which includes $2.23 billion for NOAA for FY2001. This is about 5% less than FY2000 appropriations and 19% below the President's request. Reported on June 14, 2000 (H.Rpt. 106-680), the Appropriation's Committee language for NOAA noted the committee's reluctance to fund President's research initiatives at NOAA which have not been authorized or whose authorizing legislation has expired. Consequently, CRS estimates that Congress approved $522 million for R&D, 6% below FY2000. Critics contend this could effectively slow an expansion of environmental R&D incentives across the federal government proposed by the Clinton Administration. Most notably, the committee did not approve a long-term climate observation initiative, increased funding for Pacific Coastal Salmon Recovery (PCSR), or a coastal environmental impacts and protection assessment fund. On July 18th, the Senate Commerce Appropriations Subcommittee reported H.R. 4690, as an amendment in the nature of a substitute, and approved a total of $2.69 billion for NOAA; of which an estimated $606 million is for R&D, thus restoring funding for some of the key research activities discussed above.

National Institute of Standards and Technology

The Administration's FY2001 budget requests $713 million for The National Institute of Standards and Technology (NIST). This amount is 12% above the current fiscal year (see **Table 7**). Included is $337.5 million for the Scientific and Technical Research and Services (STRS) account (with $5 million for the Quality Program). Support for Industrial Technology Services (ITS) would total $349.6 million of which $175.5 million is for the Advanced Technology Program (ATP) and $114.1 is for Manufacturing Extension Partnership (MEP). At these figures, funding for ATP would increase 23% and expand 9.5% for MEP. In addition, a new program under ITS, the Institute for Information Infrastructure Protection (IIIP), is funded at $50 million. This effort will support R&D designed to protect

information and telecommunications infrastructures from attack or other failures. The construction budget would be $35.9 million.

With the passage of H.R. 4577 Congress approved $598.5 million for NIST in FY2001, a 6% reduction from FY2000 estimated levels. Most of this decrease is due to a significant reduction in construction funds for NIST's laboratories. Included in this FY2001 funding figure is $312.6 million for STRS activities (an 10% increase over FY2000), $105.1 million for MEP (a 4% increase), $145.7 million for ATP (1.5% above the previous year), and $35.9 million for construction. The decrease in support for construction reflects activities to complete building the new advanced measurement laboratory.

Department of the Interior (DOI)

The Department of the Interior's budget proposal for FY2001 includes $590 million for R&D. This represents a 1% increase above the $584 million estimated for FY2000 (see **Table 7**). The U.S. Geological Survey is the primary science and research arm of the DOI. The USGS is the nation's primary provider of earth and life science information related to natural hazards; the environment; and energy, mineral, water, and biological resources.

The House approved Interior's FY2001 budget (H.R. 4578, H.Rept. 106-646) that would reduce R&D funding close to FY2000 levels. The Senate adopted and passed H.R. 4578 (S.Rept. 106-312) recommending R&D levels that are closer to FY2000 levels. Congress approved a total of $591 million for R&D a $7 million increase over FY2000. USGS's three major areas of R&D, Geological Hazards, Resources and Processes or earth sciences ($225 million request, Conf. $217 million), Water Resources Investigation ($135 million request, Conf. $133 million), and Biological Research ($159 million request, Conf. $157 million). DOI has proposed $71 million for Integrated Science to be spent on scientific support for the National Park Service, U.S. Fish and Wildlife Service, and the Bureau of Land Management. Appropriations conferees approved the higher R&D numbers for DOI's R&D programs, an estimated $591 million in FY2001.

Department of Transportation (DOT)

The Department of Transportation has requested a total of $733 million for R&D during FY2001 (see **Table 7**). The total R&D proposal represents a 25% increase over the estimated total $585 million for FY2000.CRS estimates that Congress has approved $702 million for DOT R&D, $29 million below the President's request, but $117 million, or almost 16% , above FY2000 estimated funding levels. The Federal Highway Administration's R&D programs are estimated to receive $273 million, of which $100 million is for the Intelligent Transportation System. The Federal Aviation Administration will receive $293 million, almost a 30% increase over FY2000. The National Highway Transportation Safety Administration's R&d activities will increase $7 million to $58 million for FY2001.

Environmental Protection Agency (EPA)

The Administration requested $674 million for Science and Technology for FY2001 and the House approved $650 million in H.R. 4635 on June 21, 2000. On September 13, 2000, in Senate Report 106-410, the Senate Appropriations Committee recommended $670 million for science and technology, and the transfer of $38 million from Superfund, for a total of $708 million for S&T. The S&T account incorporated elements of the former Research and Development account (R&D, also called extramural research) as well as EPA's in-house R&D and technology efforts. Two continuing issues are the quality of science upon which EPA bases its regulations, criteria, and programs, and the view (as stated by the House Appropriations Committee) that EPA measure and report its progress in terms of environmental outcomes, such as healthier people and better habitat. On October 20, 1999 President Clinton signed Public Law No. 106-74 which provided $645.0 million for EPA's Science and Technology account for Fiscal Year 2000. This was $2.5 million more than the request of $642.5 million, which represented a 3% decrease when compared to FY1999 funding of $660.0 million. The appropriations conference report (H.Rpt. 106-988) recommended $696 million for EPA.

Table 7. R&D Budgets of Preceding Agencies

($ millions)

	FY1998	FY1999 Act.	FY2000 Est.	FY2001 Approp. Est.
Nat. Oceanic & Atmos. Admin.	545	577	581	620
Nat. Instit. of Stand. & Tech.	678	641	636	598
Dept. of the Interior	539	532	584	591
Dept. of Transportation	545	500	585	702
Envir. Protection Agency	631	660	645	696

Table 8. Current Appropriations Actions for Federal R&D Spending

$ millions

Agency	FY2000 Estimate	FY2001 Request	House	Senate	Conference Estimate
USDA	2,021	2,085	1,835	1,893	1,912
Energy (Civilian R&D)	4,108	4,578	4,066	4,322	4,764
NASA	9,653	9,734	9,411	9,542	9,995
NIH	17,813	18,813	20,513	20,513	20,313
NSF	3,897	4,572	4,064	4,297	4,426
Res. Related Act.	2,959	3,541	3,135	3,246	3,246
Transportation	585	733	694	686	702
Interior	584	590	549	584	591
EPA	645	674	650	708	696
NOAA	581	594	522	606	620
NIST	636	713	423	597	598
ATP	143	175	0	154	145
Other agencies	1,552	1,561	1,544	1,599	1,575
Total Civilian R&D	**$ 41,075**	**$43,273**	**$44,271**	**$45,347**	**$46,035b**
DOD	38,289	37,862	40,170	39,597	41,360
Energy Def. R&D	3,330	3,296	3,349	3,497	3,708
Total Defense R&D	**$42,349 a**	**$42,060 a**	**$43,519**	**$43,094**	**$44,969b**
Total Federal R&D	**$83,424**	**$85,333**	**$87,790**	**$88,428**	**$91,004b**

a. Includes facilities and research equipment funding.

b. Estimated FY2001 totals for civilian and defense R&D reflect a 0.22% across-the-board budget reduction, mandated in P. L. 106-554, for those agencies not included in the Labor/HHS appropriations account. Individual agency numbers do not contain the 0.22% reduction.