



# WikiLeaks Document Release

<http://wikileaks.org/wiki/CRS-RL32799>

February 2, 2009

Congressional Research Service

Report RL32799

*Federal Research and Development Funding: FY2006*

Michael E. Davey, Resources, Science, and Industry Division

February 1, 2006

**Abstract.** The Bush Administration requested \$132.4 billion in federal research and development (R&D) funding for FY2006. This sum represents a \$400 million increase over the FY2005 estimated funding level of \$132 billion. CRS estimates that Congress has approved a record \$135.7 billion for federal R&D in FY2006, a 2.8% increase over the FY2005 estimated funding level. However, nearly all of that increase can be attributed to increases in defense weapons systems and the National Aeronautics and Space Administration's \$877 million increase for human space exploration technology. (See Table 13)

WikiLeaks

# CRS Report for Congress

Received through the CRS Web

## Federal Research and Development Funding: FY2006

**Updated February 1, 2006**

Michael E. Davey, Coordinator,  
Christine M. Matthews, John D. Moteff, Marcia S. Smith,  
Michael M. Simpson, Wendy H. Schacht, Daniel Morgan  
Specialists and Analysts in Science and Technology  
Resources, Science, and Industry Division

Pamela W. Smith  
Analyst in Life Sciences  
Domestic Social Policy Division

Wayne A. Morrissey  
Information Research Specialist  
Knowledge Services Group

<http://wikileaks.org/wiki/CRS-RL32799>

# Federal Research and Development Funding: FY2006

## Summary

The Bush Administration requested \$132.4 billion in federal research and development (R&D) funding for FY2006. This sum represents a \$400 million increase over the FY2005 estimated funding level of \$132 billion. CRS estimates that Congress has approved a record \$135.7 billion for federal R&D in FY2006, a 2.8% increase over the FY2005 estimated funding level. However, nearly all of that increase can be attributed to increases in defense weapons systems and the National Aeronautics and Space Administration's \$877 million increase for human space exploration technology.<sup>1</sup> (See Table 13)

Basic research funding would decline by 0.5% below the FY2005 estimated level, declining to an estimated \$26.7 billion in FY2006. Five agencies account for 90% of all federal basic research expenditures. Total federal research funding (the sum of basic and applied research) is projected to increase \$1 billion to \$57 billion. However, the majority of that increase would go to NASA, while most of the remaining federal agencies would receive below inflation increases for research funding.

While the President essentially requested flat funding for the Department of Defense (DOD) R&D programs, Congress approved an estimated \$72.1 billion DOD R&D, a 4.2% increase over FY2005 funding levels. Most of that increase is a result of Congress increasing DOD's proposed science and technology budget by \$2.5 billion more than was requested by the Administration.

Funding for the National Institutes of Health (NIH) would decline, in nominal dollars for the first time in 36 years. Since the completion of doubling NIH's budget (between 1998-2003), funding has declined to the FY2003 funding level, after adjusting for inflation.

Most R&D funding agencies now face budgets that are shrinking to levels of years past, in real dollars. While it has been 24 years since NIH's budget declined in real dollars, other agencies such as the National Science Foundation, DOE's Office of Science, NASA (excluding human space exploration), and Agriculture, have lived with stagnate budgets for several years. Consequently, in real dollars, all of these agencies will have less R&D funding in FY2006 than they did in FY2003.

---

<sup>1</sup> The FY2006 R&D funding totals, in this section do not reflect the 1% across-the-board funding recision approved by Congress. see P. L. 109-148

## Contents

Recent Developments .....	1
Department of Agriculture (USDA) .....	1
Department of Energy (DOE) .....	4
Department of Defense (DOD) .....	6
National Aeronautics and Space Administration (NASA) .....	9
National Institutes of Health (NIH) .....	11
National Science Foundation (NSF) .....	15
Department of Homeland Security (DHS) R&D .....	19
Department of Commerce (DOC) .....	21
National Oceanic and Atmospheric Administration (NOAA) .....	21
National Institute of Standards and Technology (NIST) .....	22
Department of Transportation (DOT) .....	24
Department of the Interior (DOI) .....	25
Environmental Protection Agency (EPA) .....	27

## List of Tables

Table 1. U.S. Department of Agriculture R&D .....	3
Table 2. Department of Energy R&D .....	5
Table 3. Department of Defense RDT&E .....	8
Table 4. NASA R&D Funding .....	10
Table 5. National Institutes of Health (NIH) .....	14
Table 6. National Science Foundation .....	17
Table 7. Department of Homeland Security R&D .....	20
Table 8. NOAA R&D .....	22
Table 9. NIST .....	24
Table 10. Department of Transportation R&D .....	25
Table 11. Department of Interior R&D .....	26
Table 12. EPA .....	27
Table 13. FY2006 Federal R&D Appropriation in the 109 <sup>th</sup> Congress .....	28

# Federal Research and Development Funding: FY2006

## Recent Developments

The Bush Administration requested \$132.4 billion in federal research and development (R&D) funding for FY2006. This sum represents a \$400 million increase over the FY2005 estimated funding level of \$132 billion. CRS estimates that Congress has approved a record \$135.7 billion for federal R&D in FY2006, a 2.8% increase over the FY2005 estimated funding level. However, nearly all of that increase can be attributed to increases in defense weapons systems and the National Aeronautics and Space Administration's \$877 million increase for human space exploration technology.<sup>2</sup> (See **Table 13**)

## Department of Agriculture (USDA)

On November 10, 2005, the President signed into law the FY2006 Agriculture, Rural Development, Food and Drug Administration, and Related Agencies Appropriations Act (P.L. 109-97, H.R. 2744). The FY2006 appropriation for research and education in the U.S. Department of Agriculture (USDA) is \$2,677.4 million, a decrease of \$14.6 million from the FY2005 level. (See **Table 1**). 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 in this area, including the world's largest multi-disciplinary agricultural research center located at Beltsville, Maryland. There are approximately 100 research facilities throughout the U.S. and abroad. 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 FY2006 appropriation provides \$1,266.2 million for ARS, a 3.1% decrease (\$40.1 million) from the FY2005 level. The Administration had proposed reductions of \$175 million in all projects earmarked by Congress in order to finance the Department's high priority program increases. However, conference report language continues funding at the FY2005 level for all of these projects, including hyperspectral imaging in New Orleans, LA. The ARS reports that the majority of its facilities, constructed prior to 1960, have become functionally obsolete. Many of the facilities are not in total compliance with current health and safety standards. Included in the FY2006 appropriation for ARS is \$131.2 million

---

<sup>2</sup> The FY2006 R&D funding totals, in this section do not reflect the 1% across-the-board funding recision approved by Congress. see P. L. 109-148

for buildings and facilities, \$66.4 million above the request, and \$55.1 million below the FY2005 level.

The FY2006 appropriation provides support for several research priority areas and strategic goals. Priority has been given to the mapping and sequencing projects funded by USDA, such as sequencing genomes of agriculturally imported species. The sequencing projects will be coordinated with ongoing genomics initiatives supported by other federal agencies and facilitated by interagency working groups. Increases are provided animal genomes and plant genomes research. Also, the FY2006 appropriation provides an increase in support of research on emerging and exotic diseases as part of the infrastructure to enhance homeland security. USDA states that this research is significant to protecting the Nation from deliberate or unintentional introduction of an agricultural health threat. The USDA has biocontainment complexes where research and diagnostic work is done on organisms that pose serious threats to the crop, poultry, and livestock industries. Other research areas receiving increased support by conferees include bovine spongiform encephalopathy, air and water quality, food safety, obesity/nutrition, biobased products/bioenergy research, and agricultural information. Conferees have instructed ARS not to redirect support for programs from one state to another without prior notification and approval of the Committee on Appropriations.

The Cooperative State Research, Education, and Extension Service (CSREES) distributes funds to State Agricultural Experiment Stations, State Cooperative Extension Systems, land-grant universities, and other institutions and organizations that conduct agricultural research. Included in these partnerships is funding for research at the 1862 institutions, 1890 historically black colleges and universities, and 1994 tribal land-grant colleges. Funding is distributed to the states through competitive awards, statutory formula funding, and special grants. The FY2006 appropriation for CSREES is \$1,194.6 million, an increase of \$153.4 million above the request and \$10.6 million over the FY2005 enacted. Funding for formula distribution in FY2006 to the state Agricultural Experiment Stations (and other eligible institutions) is \$275.7 million, almost level with FY2005. The FY2006 appropriation provides \$37.6 million for the 1890 formula programs, an increase of \$25.3 million over FY2005. The FY2006 appropriation funds the National Research Initiative (NRI) Competitive Grants Program at \$183 million, \$67 million below the Administration's request and \$3.4 million above the FY2005 level. The increase will support initiatives in agricultural genomics, human nutrition and obesity, nanotechnology, food safety, water quality, and pest related programs. Conferees provided \$1.6 million for the Food and Agriculture Policy Research Institute. Also, report language includes \$9.5 million for the Tropical and Subtropical Research program, \$600,000 for aquaculture research, \$736,000 for grain sorghum research, and \$300,000 for air quality research. Special research grants, which were proposed at \$18.3 million in the request, were provided \$128.2 million by the conferees. Report language detailed the need to address the many issues of American Indian tribal nations. Conferees directed the Department to work with the tribal nations and to develop staffing needs for additional Indian reservation extension agents.

The Economic Research Service (ERS) is the principal intramural economic and social science research agency in USDA. The FY2006 appropriation for ERS is \$75.9 a \$1.8 million increase over FY2005. The increase will continue the

development of a consumer data and information system. In addition, the increase will support a cooperative study with the National Academy of Sciences on the U.S. sheep industry. The National Agricultural Statistics Service (NASS) conducts the Census of Agriculture and provides current data on agricultural production and economic indicators of the well-being of the farm sector. The FY2006 appropriation for the NASS is \$140.7 million, \$4.5 million below the request and \$12.3 million above the FY2005 level. Funding would support both Presidential and Department eGovernment initiatives, such as eTraining and eTravel. NASS will continue the development of the USDA Enterprise Architecture and the USDA Enablers initiatives.

(CRS Contact: Christine Matthews.)

**Table 1. U.S. Department of Agriculture R&D**  
(\$ in millions)

	FY2004 Act.	FY2005 Act.	FY2006 Req. <sup>a</sup>	FY2006 Approp.
<b>Agric. Research Service (ARS)</b>				
Product Quality/Value Added	\$110.0	\$104.6	97.7	
Livestock Production	95.4	84.1	63.4	
Crop Production	178.7	196.8	159.6	
Food Safety	98.9	102.7	107.6	
Livestock Protection	78.3	78.5	87.6	
Crop Protection	183.6	193.0	180.1	
Human Nutrition	81.5	83.7	81.7	
Environmental Stewardship	212.8	219.4	178.2	
National Agricultural Library	22.8	21.5	22.5	
Funds for Homeland Security	[20.8]	[30.2]	[69.2]	
Repair & Maintenance	17.9	17.8	17.8	
<b>Subtotal</b>	<b>1,088.1</b>	<b>1,102.0</b>	<b>996.1</b>	<b>1,135.0<sup>d</sup></b>
Buildings & Facilities	64.0	186.3	64.8	131.2
Trust Funds	14.0	18.0	18.0	0.0
<b>Total, ARS</b>	<b>1,166.1</b>	<b>1,306.3</b>	<b>1,078.9</b>	<b>1,266.2</b>
<b>Coop. St. Res. Ed. &amp; Ext. (CSREES) Research and Education</b>				
Hatch Act Formula	179.1	178.7	89.4	178.8
Cooperative Forestry Research	21.8	22.2	11.1	22.2
1890 Colleges and Tuskegee Univ.	11.4	12.3	12.5	37.6
Special Research Grants	124.2	135.5	18.3	128.2
NRI Competitive Grants	164.0	179.6	250.0	183.0
Animal Health & Disease Res.	4.5	5.1	0.0	5.1
Federal Administration	37.5	42.5	8.8	50.5
Higher Education <sup>b</sup>	42.3	50.7	55.9	55.0
<b>Total, Coop. Res. &amp; Educ.<sup>c</sup></b>	<b>626.7</b>	<b>655.5</b>	<b>545.5</b>	<b>676.8</b>
<b>Extension Activities</b>				
Smith-Lever Sections 3b&c	277.7	275.5	275.9	275.7
Smith-Lever Sections 3d	80.6	86.7	91.4	88.9
Renewable Resources Extension	4.0	4.1	4.1	4.1
Integrated Activities	50.0	54.7	35.0	55.8
1890 Research & Extension	14.9	16.8	14.9	16.8
Other Extension Prog. & Admin.	7.8	7.8	10.4	14.7
<b>Total, Extension Activities<sup>c</sup></b>	<b>439.1</b>	<b>445.6</b>	<b>431.7</b>	<b>456.0</b>
<b>Total, CSREES<sup>c</sup></b>	<b>1,132.8</b>	<b>1,184.0</b>	<b>1,041.2</b>	<b>1,194.6</b>
Economic Research Service	71.0	74.2	80.7	75.9
National Agricultural Statistics Service	128.0	128.4	145.2	140.7
<b>Total, Research, Education &amp; Economics</b>	<b>\$2,497.9</b>	<b>\$2,692.0</b>	<b>\$2,346.3</b>	<b>\$2,677.4</b>

- a. Funding levels are contained in U.S Department of Agriculture FY2006 Budget Summary and other documents internal to the agency.
- b. Higher education includes payments to 1994 institutions and 1890 Capacity Building Grants program, the Native American Institutions Endowment Fund, and the Alaska Native and Native Hawaiian-Serving Institutions Education Grants.
- c. Program totals may reflect set-asides (non-add) or contingencies. The CSREES total includes support for Integrated Activities, Community Food Projects, and the Organic Agriculture Research and Education Initiative.
- d. Funding levels for specific programs are not yet available.

## Department of Energy (DOE)

The Department of Energy requested \$8.4 billion for R&D in FY2006, including activities in each of the department's four business lines: Science, National Security, Energy Supply, and Environmental Quality. This request was 4.6% below the FY2005 level of \$8.8 billion. The House provided \$8.5 billion, the Senate \$9.1 billion, and the final bill \$8.9 billion. For details, see **Table 2**.

The requested funding for Science was \$3.5 billion, a 3.8% decrease from FY2005. The House and Senate each provided \$3.7 billion; the final bill provided \$3.6 billion. In the Basic Energy Sciences program, DOE expects to complete construction of the Spallation Neutron Source in the third quarter of FY2006, so funds will start to shift from construction to operations. In Fusion Energy Sciences, the congressional debate has centered on U.S. participation in the International Thermonuclear Experimental Reactor (ITER). In June 2005, after an 18-month delay, the participating countries agreed to build ITER in France. Both House and Senate shifted funds from ITER to the domestic fusion program pending the decision on a site; the final bill provided the requested amount. In the Biological and Environmental Research program, the request was a decrease of \$126 million, of which \$80 million corresponded to one-time projects funded at congressional direction in FY2005. The House and Senate restored about half of this requested reduction and allocated \$35 million and \$51 million respectively for directed projects; the final bill restored the entire reduction, with \$130 million for congressionally directed projects. To improve utilization of Office of Science research facilities in several programs, the House and Senate provided \$66 million and \$100 million respectively to fund increased facility operating time; the conference report was silent on this issue.

The requested funding for R&D in National Security was \$3.3 billion, a 3.8% decrease. The House decreased R&D in Weapons Activities by \$224 million below the request, while the Senate increased it by \$73 million; the final bill provided \$3.4 billion, an increase of \$147 million above the request. Within these totals, the House increased Inertial Confinement Fusion and reduced most other programs, the Senate did the opposite (completely eliminating funding for continued construction of the National Ignition Facility), and the final bill approximately accepted the House increase for Inertial Confinement Fusion but omitted most of the decreases. The request would have increased funding for R&D on nuclear proliferation detection by \$46 million or 43%; the House, the Senate, and the final bill all increased funding for this activity even more than requested.



The requested funding for R&D in Energy Supply was \$1.6 billion, down 6.4% from FY2005. Within this total, Fossil Energy R&D was down \$80 million, with the natural gas and oil technology programs proposed for termination. The Senate provided \$305 million more than the request, including increases of \$150 million for Fossil Energy R&D (\$91 million of it coal-related) and \$60 million for Nuclear Energy R&D. The final bill provided \$1.8 billion, with its increases allocated similarly to the Senate bill.

The requested funding for R&D in Environmental Quality was \$21 million. This was less than half the FY2005 level and followed several years of substantial reductions that resulted from a reorientation of the program after an internal review of the Office of Environment in 2002. The House provided the requested amount; the Senate provided \$56 million; the final figure was \$30 million. **(CRS Contact: Daniel Morgan.)**

**Table 2. Department of Energy R&D**  
(\$ in millions)

	<b>FY2005 Estimate</b>	<b>FY2006 Request</b>	<b>FY2006 House</b>	<b>FY2006 Senate</b>	<b>FY2006 Enacted <sup>c</sup></b>
<b>Science</b>	<b>3599.5</b>	<b>3462.7</b>	<b>3666.0</b>	<b>3702.7</b>	<b>3632.7</b>
Basic Energy Sciences	1104.6	1146.0	1173.1	1241.0	1146.0
High Energy Physics	736.4	713.9	735.9	716.9	723.9
Biological and Environmental Research	581.9	455.7	525.7	503.7	585.7
Nuclear Physics	404.8	370.7	408.3	419.7	370.7
Fusion Energy Sciences	273.9	290.6	296.2	290.6	290.6
Advanced Scientific Computing	232.5	207.1	246.1	207.1	237.1
Other	265.4	278.7	280.7	323.7	278.7
<b>National Security</b>	<b>3392.8</b>	<b>3274.7</b>	<b>3126.9</b>	<b>3398.8</b>	<b>3421.3</b>
Weapons Activities <sup>a</sup>	2367.4	2216.5	1992.2	2289.1	2309.8
Naval Reactors	801.4	786.0	799.5	799.5	789.5
Nonproliferation and Verification R&D	224.0	272.2	335.2	310.2	322.0
<b>Energy Supply</b>	<b>1756.8</b>	<b>1644.6</b>	<b>1681.7</b>	<b>1949.8</b>	<b>1831.9</b>
Fossil Energy R&D	571.9	491.5	502.5	641.6	598.0
Energy Efficiency and Renewable Energy <sup>b</sup>	922.8	890.3	915.7	928.8	870.2
Nuclear Energy R&D	170.6	191.0	186.5	251.0	226.0
Electric Transmission and Distribution R&D	91.5	71.8	77.0	128.4	137.7
<b>Environmental Quality</b>	<b>59.7</b>	<b>21.4</b>	<b>21.4</b>	<b>56.4</b>	<b>30.1</b>
Technology Development and Deployment	59.7	21.4	21.4	56.4	30.1
<b>Total</b>	<b>8808.8</b>	<b>8403.4</b>	<b>8496.0</b>	<b>9107.7</b>	<b>8916.0</b>

a. Includes Stockpile Services (R&D Support, R&D Certification and Safety, Advanced Concepts, Robust Nuclear Earth Penetrator, and Reliable Replacement Warhead only), Science Campaigns, Engineering Campaigns (except Enhanced Surety and Enhanced Surveillance),

Inertial Confinement Fusion, Advanced Simulation and Computing, and a prorated share of Readiness in Technical Base and Facilities. Additional R&D activities may take place in the subprograms of Directed Stockpile Work that are devoted to specific weapon systems, but these funds are not included in the table because detailed funding schedules for those subprograms are classified.

- b. Excluding Weatherization and Intergovernmental Activities.
- c. FY2006 enacted figures do not reflect the government-wide 1% rescission enacted in the FY2006 defense appropriations act (PL 109-148, Section 3801).

## Department of Defense (DOD)

Nearly all of what the Department of Defense spends on Research, Development, Test and Evaluation (RDT&E) is appropriated in Title IV of the defense appropriation bill (see **Table 3**). For FY2006, the Bush Administration is requesting \$69.4 billion for Title IV RDT&E. This is essentially unchanged from the \$69.2 billion available for Title IV in FY2005. RDT&E funds are also requested as part of the Defense Health Program (\$169 million) and the Chemical Agents and Munitions Destruction Program (\$48 million). The six-year budget plan estimates spending \$404.6 billion for RDT&E through FY2011. When compared to last year's budget estimate, funding for RDT&E would be reduced by nearly \$9 billion between FY2006 and FY2009, reflecting an overall reduction in the DOD's proposed budgets to help reduce the federal budget deficit.

While the FY2006 RDT&E request represents a modest increase in RDT&E funding over last year, Science and Technology (S&T) funding would drop significantly. S&T consists of basic and applied research and advanced development (6.1, 6.2 and 6.3 activities in the RDT&E account). The FY2006 S&T request represents nearly a 20% reduction from FY2005 S&T funding, not counting inflation (all dollar figures and comparisons made in this discussion do not consider inflation). Congress increased the FY2005 appropriation for S&T above what the Administration had requested. The FY2006 S&T budget request is \$31 million (less than 1%) below the amount requested by the Administration for FY2005. The FY2006 request for basic research is \$1.3 billion, an overall reduction of 12.8% from FY2005. A noticeable exception is basic research within the Chemical and Biological Defense Program which would be increased by 34%. Over half of DOD's basic research budget is spent at universities and represents the major contribution of funds in some areas of science and technology. The FY2006 S&T request is 2.5% of the overall Department of Defense budget request of \$419.3 billion. This is below the 3% target that both the Bush Administration and Congress have set. The FY2006 budget request for Missile Defense RDT&E is \$7.8 billion (a decrease of \$1 billion from the amount available for Missile Defense in FY2005).

The House approved its Defense Appropriations bill (H.R. 2863) on June 20, 2005. The House voted to appropriate \$71.7 billion for Title IV RDT&E, or \$2.3 billion above the Administration's request. In this appropriation the House also provided an additional \$45 billion to cover expenses for the first six months of FY2006, for troops in the field and other support associated with the war on terrorism. This includes an additional \$88.1 million for Title IV RDT&E (\$13.1 million for the Navy account and \$75 million for the Defense Agencies account.

The House appropriated net increases for all of the major accounts, except for Missile Defense. Nearly half (\$480 million) of the Army's \$1.2 billion increase went to the Army's medical technologies programs. Major reductions were made to the Army's Future Combat System, the Navy's DD(X) Next Generation destroyer project, and the Air Force's Transformational Satellite and Spaced Based Radar programs. Missile Defense programs were reduced a net \$143 million from what the Administration requested. The House appropriated \$13 billion for S&T, over 3.6% of the total amount they recommend in the defense appropriations bill. The House appropriated more for basic research (\$1.4 billion) than what was requested, but less than the estimated FY2005 amount.

In 2005, the House reorganized its Appropriations Committee, combining Veteran's Affairs and Military Construction appropriations into a new Military Quality of Life and Veteran's Affairs and Related Agencies appropriation. This new appropriations also includes some accounts formerly falling within the Defense appropriations. In particular, the Defense Health Program was transferred to this new appropriation, including the program's RDT&E funding. The House passed the Military Quality of Life appropriations (H.R. 2528) on June 8, 2005. The House appropriated \$444 million for the RDT&E portion of the Defense Health Program. This included \$115 million for the Peer Reviewed Breast Cancer Research program and \$80 million for the Peer Reviewed Prostrate Cancer Research program. The House provided \$48 million, as requested, for the RDT&E portion of the Chemical Agents and Munitions Destruction Program, which remains in the Defense appropriations bill (H.R. 2863).

The Senate passed its defense appropriations bills on October 7, 2005. The Senate provided \$70.4 billion for Title IV RDT&E. In addition, it appropriated \$516 million for RDT&E within the Defense Health Program (including \$150 million for peer reviewed breast cancer research and \$85 million for peer reviewed prostrate cancer research) and \$73 million for RDT&E within the Chemical Agents and Munitions Destruction Program. As did the House, the Senate provided additional funds for contingency operations during the first six months of FY2006. The Senate, however, provided \$50 billion, with \$92 million going toward RDT&E. These are funds above and beyond Title IV funding.

The Senate funded S&T at \$12.2 billion, or roughly 3.1% of its total DOD appropriation, not counting the contingency funds. Basic research received \$1.4 billion. However, an approved floor amendment (No. 1991) would allow additional funds from each RDT&E account to be spent on basic research. The amendment states a sense of congress that basic research should be 15% of the S&T budget. As appropriated, i.e. without using the authority granted by the amendment to allocate up to a certain amount in additional funds, basic research received approximately 11% of the S&T funding.

The conference committee filed its report (H.Rept. 109-359 in support of H.R. 2863) on December 18, 2005. The House approved the bill on December 19, the Senate on December 21. The final bill provided \$72.1 billion for Title IV RDT&E. It also provided \$67.8 million for the RDT&E within the Chemical Agents and Munitions Destruction Program and \$542 million for RDT&E in the Defense Health Program. In addition, the bill provided an additional \$50.6 million in RDT&E as part

of the additional advanced supplemental funding (Title IX). Finally, the bill included Katrina-related emergency supplemental funding which included another \$41.3 million in RDT&E to DOD. The final bill provided \$13.4 billion in S&T funding, which included \$1.5 billion for basic research. S&T funding remained 3% of the total DOD appropriation of \$442.8 billion.

(CRS Contact: John Moteff.)

**Table 3. Department of Defense RDT&E**

(\$ in millions)

	FY2005 Estimate	FY2006 Request	House Approp. <sup>f</sup> (H.R. 2863)	Senate Approp. <sup>h</sup>	Conf. Approp. <sup>i</sup>
<b>Accounts</b>					
Army	10,558	9,734	10,827	10,521	11,172
Navy	16,907	18,038	18,482	18,558	18,993
Air Force	20,812 <sup>e</sup>	22,612	22,665	21,859	22,000
Defense Agencies	20,612	18,803	19,515	19,301	19,799
(DARPA)	(2,977)	(3,084)	(3,104)	(2,666)	(3,024)
(MDA <sup>a</sup> )	(8,783)	(7,775)	(7,632)	(7,921)	(7,797) <sup>j</sup>
Dir. Test and Eval.	310	168	168	168	168
<b>Total Ob. Auth.</b>	<b>69,199</b>	<b>69,355</b>	<b>71,657</b>	<b>70,407</b>	<b>72,132</b>
<b>Budget Activity</b>					
Basic Research	1,513	1,318	1,453	1,446	1,491
Applied Research	4,850	4,139	5,057	4,842	5,244 <sup>k</sup>
Advanced Dev.	6,708	5,064	6,462	5,880	6,480
Advanced Component Dev. and Prototypes	14,711	14,143	13,909	14,095	14,310
Systems Dev. and Demo.	17,222	19,754	19,179	19,363	19,588
Mgmt. Support <sup>b</sup>	3,721	3,777	3,941	3,990	4,071
Op. Systems Dev. <sup>c</sup>	20,475	21,160	21,655	20,790	20,948
Total Ob. Auth. <sup>d</sup>	69,200	69,355	71,656	70,406	72,132
<b>Other Defense Programs</b>					
Defense Health Program	507	169	444 <sup>g</sup>	516	542
Chemical Agents and Munitions Destruction	205	48	48	72	68

**Source:** Figures based on Department of Defense Budget, Fiscal Year 2006 RDT&E Programs (R-1), February 2004. Figures for Defense Health Program and Chemical Agents and Munitions Destruction Program come from OMB's FY2006 Budget Appendix.

**Note:** 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. Includes classified programs.
- d. Numbers may not agree with Account Total Obligational Authority due to rounding.
- e. Includes \$100 million for Air Force Tanker Transfer Fund.
- f. H.Rept. 109-119. This does not include the separate \$88.1 million in "bridge" funding allocated to the Navy and Defense Agencies RDT&E accounts.
- g. This program is now funded through the Military Quality of Life and Veterans Affairs, and Related Agencies Appropriations Bill (H.R. 2528).
- h. S.Rept. 109-141.
- i. H.Rept. 109-359.
- j. This includes a \$200 million unspecified general reduction in ballistic missile defense programs.

- k. Most of the ballistic missile defense programs are funded in the Advanced Development account. This figure includes the \$200 million unspecified general reduction. However, some of the reduction could be taken from other accounts.

## National Aeronautics and Space Administration (NASA)

NASA's total congressionally-approved FY2006 funding is a combination of \$16.456 billion provided in the FY2006 Science, State, Justice, Commerce (SSJC) appropriations Act (P.L. 109-108), minus a 0.28% across-the-board rescission in that act, minus a 1% across-the-board rescission in the FY2006 Department of Defense appropriations and hurricane recovery act (P.L. 109-148), plus \$350 million added for NASA for hurricane recovery in P.L. 109-148. The figures in **Table 4** do not reflect the hurricane recovery addition, or the across-the-board rescissions. Congress also passed a NASA authorization act in 2005 (P.L. 109-155), but it authorizes funding for FY2007-2008, not FY2006, so it is not discussed further in this report.

For the purposes of this report, NASA's "R&D budget" is NASA's total budget minus the space shuttle program, space flight support, and Inspector General. Using that definition, NASA received an estimated \$10.7 billion for R&D in FY2005, the FY2006 R&D request was \$11.5 billion, and Congress appropriated approximately \$11.5 billion for R&D. Those numbers should be used cautiously, however. NASA has repeatedly changed its budget structure, and shifted programs from one account to the other, making comparisons across fiscal years, and between requested and appropriated levels, difficult. In addition, funding requirements for the space shuttle program during the "return to flight" effort following the 2003 *Columbia* tragedy remain unsettled, meaning that funds might be shifted into the shuttle program from R&D programs. More definitive figures may become available when the FY2007 budget request is submitted.

In January 2004, President Bush directed NASA to focus its efforts on returning humans to the Moon by 2020, and someday sending them to Mars and "worlds beyond." Most of the funding for this "Vision for Space Exploration" would come from redirecting money from other NASA activities. For example, the space shuttle program would be terminated in 2010, when space station construction is expected to be completed; U.S. space station research activities would be descoped from the broadly-based program that was planned, to only research needed to support extended stays by humans on the Moon and eventual trips to Mars; and NASA would end its involvement in the space station program by 2016. By terminating the shuttle and space station earlier than expected, and reducing funding for space station research, those funds can be redirected to accomplishing other aspects of the Vision. NASA is building a new Crew Exploration Vehicle (CEV), and a launch vehicle for it (the Crew Launch Vehicle or CLV), whose primary purpose is transporting astronauts to and from the Moon. It also could be used to take astronauts to and from the space station. The President directed that the CEV be available by 2014, but NASA Administrator Michael Griffin wants to accelerate that to 2012 in order to minimize the gap between the end of the space shuttle and the availability of the CEV. During that gap, U.S. astronauts would have to rely on Russia to take them to and from space. NASA's support for activities in the fields of aeronautics, and Earth and

space science, also could be affected by the need to fund the Vision. In the FY2006 SSJC appropriations act, and the 2005 NASA authorization act, Congress expressed its support for the Vision, but stressed that NASA needs to maintain a balanced program that includes aeronautics and science. Other issues include whether the shuttle should be terminated in 2010, or retained until the CEV is available, and whether U.S. use of the space station should end in 2016 and its research agenda narrowed, or if NASA should continue using it as originally planned. See CRS Issue Brief IB93062, *Space Launch Vehicles: Government Activities, Commercial Competition, and Satellite Exports*; and CRS Issue Brief IB93017, *Space Stations*, both by Marcia S. Smith, for more information.

Another issue is whether NASA should send a servicing mission to the Hubble Space Telescope so it can continue scientific operations with new instruments. A shuttle servicing mission had been planned prior to the 2003 space shuttle *Columbia* accident, but then-NASA Administrator O’Keefe canceled that mission, primarily because of shuttle safety concerns. Hubble advocates sought a reversal of that decision, arguing that Hubble can continue to deliver important scientific data for many more years if the new instruments and other equipment are installed. NASA’s current Administrator, Dr. Griffin, pledged to revisit the Hubble issue after the space shuttle completes its two “return to flight” missions and its current safety characteristics are better understood. The first return to flight mission, in July-August 2005, experienced problems during launch, but was generally judged to be a success. The second return to flight mission is expected some time in 2006. See CRS Report RS21767, *Hubble Space Telescope: Should NASA Proceed with a Servicing Mission?*, by Daniel Morgan, for more on the Hubble issue. (CRS Contacts: Marcia Smith and Daniel Morgan.)

**Table 4. NASA R&D Funding**  
(\$ in millions of Budget Authority)

Category	FY2005 Est. <sup>a</sup>	FY2006 Req. <sup>b</sup>	SSJC Approps. (P.L. 109-108)
Science, Aeronautics, and Exploration	7,889.	9,661.	9,761.
Exploration Capabilities (R&D only)	2,772.	1,857.	<sup>c</sup> 1,777.
<b>Total R&amp;D</b>	<b>10,661.</b>	<b>11,518.</b>	<sup>c</sup> <b>11,538.</b>
<b>Total NASA</b>	<sup>d</sup> <b>16,196.</b>	<b>16,456.</b>	<sup>e</sup> <b>16,457.</b>

**Sources:** NASA FY2005 and FY2006 budget documents; congressional bills and reports; and CRS (for R&D estimates).

**Note:** Column totals may not add due to rounding.

- Figures in this column are based on NASA’s September 30, 2005 operating plan update for FY2005 and are not final. NASA continues to change its budget structure and shift programs from one account to the other, making comparisons across fiscal years, and between requested and appropriated amounts, difficult. The figures in this table should be used cautiously.
- NASA submitted an amended FY2006 request in July 2005, but the appropriations committees acted on the original request, so the original request is shown here.
- The amounts shown here are estimates, based on appropriations conference committee report language (H.Rept. 109-272) stating that the final bill cuts \$80 million from the International

- Space Station. However, a \$10 million general reduction also was made to this account, which may or may not impact R&D funding.
- d. Includes \$126 million from a FY2005 supplemental for recovery from the 2004 hurricanes; regular appropriations were \$16.07 billion (adjusted for an across-the-board rescission).
  - e. Does not include additional NASA funding for recovery from the 2005 hurricanes in P.L. 109-148 (\$350 million), or cuts to NASA funding from across-the-board rescissions in P.L. 109-108 (0.28%) and P.L. 109-148 (1.0%).

## National Institutes of Health (NIH)

In final action for FY2006, NIH received a program level budget of \$28.47 billion, which is \$81 million (0.3%) lower than the FY2005 level of \$28.55 billion (see **Table 5**). It was the first decrease in NIH's appropriation since 1970. The conference report (H.Rept. 109-337) on the Labor-HHS-Education appropriations act (H.R. 3010, P.L. 109-149) had given NIH enough of an increase that the overall budget would have grown by \$205 million (0.7%), but the 1% across-the-board rescission mandated by P.L. 109-148 reduced NIH's budget by \$286 million, resulting in the net loss of \$81 million.

The President had requested a total FY2006 budget for NIH of \$28.745 billion, an increase of \$195 million (0.7%) over the FY2005 level. The House (H.Rept. 109-143) accepted the President's funding levels, while making some shifts in the accounts that supply the funds. The Senate (S.Rept. 109-103) provided a higher program level of \$29.553 billion, an increase of \$1,003 million (3.5%) over FY2005 and \$808 million over the request and House levels. The conferees on H.R. 3010 set the increase at \$10 million over the request. The bulk of NIH's budget comes through the Labor-HHS-Education appropriation. An additional small amount for environmental work related to Superfund comes from the Interior, Environment, and Related Agencies appropriation (H.R. 2361, P.L. 109-54). (Formerly, the funding came through the VA-HUD appropriations bill.) Those two sources constitute NIH's discretionary budget authority. In addition, NIH receives \$150 million pre-appropriated in separate funding for diabetes research, and has other funds transferred to and from other appropriations (see Table 5).

FY2003 was the final year of the five-year effort to double the NIH budget from its FY1998 base of \$13.6 billion to the FY2003 level of \$27.1 billion. The annual increases for FY1999 through FY2003 were in the 14%-15% range each year. For FY2004 and FY2005, faced with competing priorities and a changed economic climate, Congress and the President gave increases of between 2% and 3%, levels which were below the estimated 3.5% and 3.3% biomedical inflation index for those two years. The research advocacy community had originally urged that the NIH budget grow by about 10% per year in the post-doubling years. For FY2006, advocates modified their recommendation, maintaining that a 6% increase would be needed to keep up the momentum of scientific discovery made possible by the increased resources of the doubling years (the projected biomedical inflation index for FY2006 is 3.2%).

The agency's organization consists of the Office of the NIH Director and 27 institutes and centers. The Office of the Director (OD) sets overall policy for NIH and coordinates the programs and activities of all NIH components. The individual institutes and centers (ICs), each with a focus on particular diseases, areas of human

health and development, or aspects of research support, plan and manage their own research programs in coordination with the Office of the Director. As shown in Table 5, Congress provides a separate appropriation to 24 of the 27 ICs, to OD, and to a buildings and facilities account. (The other three centers, not included in the table, are funded through the NIH Management Fund, financed by taps on other NIH appropriations.) On average, the ICs devote over 80% of their budgets to supporting peer-reviewed extramural research by awarding research project grants (RPGs), research center grants, contracts, training grants, construction grants, and many other types of funding to researchers in universities and other institutions around the country. The other 15%-20% of the IC budgets supports their intramural research programs and research management costs. An alternate way, therefore, to describe the NIH budget is by “funding mechanism,” which reveals the balance between extramural and intramural funding, as well as the relative emphasis on support of individual investigator-initiated research versus funding of larger projects, comprehensive research centers, agency-directed research contracts, research career training, facilities construction, and so forth.

When the final shape of the FY2006 budget became clear, NIH announced the policies it would apply for funding RPGs and other award mechanisms. All non-competing RPG awards will be reduced by 2.35% below committed levels. The average cost of competing RPGs (new and renewal awards) will be maintained at FY2005 levels, with the number of awards at 1% below what the conference level would have supported. All other funding mechanisms will be reduced by 1.1% from the conference level, with the exception of Research Management and Support, which will be level with the conference amount. By undertaking these measures, NIH expects that the “success rate” of applicants receiving funding will be about 19.5% compared to 22.3% in FY2005. They expect to fund a total of about 38,300 competing and non-competing RPGs, representing a decrease of about 570 RPGs, or 1.5%, below FY2005. NIH is quite concerned about the support of new investigators, particularly younger scientists making the transition from training to independent research. In January 2006, NIH announced a new Pathway to Independence Award program to support promising postdoctoral scientists. The five-year awards will have a two-year mentored phase and a three-year independent phase. NIH expects to support 150-200 awards beginning in Fall 2006, and a similar number in each of the following five years, for a total commitment of almost \$400 million.

As shown in Table 5, only two accounts received an increase in the final FY2006 appropriation compared to FY2005. Most of the institutes and centers received decreases in the 0.3% to 0.7% range. The National Center for Research Resources was decreased by 1.4% because of the elimination of the \$30 million program for non-biodefense extramural research facilities construction. The 26.5% decline in NIH’s intramural Buildings and Facilities account reflects completion of several construction and renovation projects. The National Institute of Allergy and Infectious Diseases (NIAID), home to almost all of NIH’s biodefense research, received a 0.3% increase. As in past years, the NIAID budget includes \$100 million to be transferred to the Global Fund to Fight HIV/AIDS, Tuberculosis, and Malaria. The Office of the NIH Director (OD) received the only large increase, growing 33.5% to \$478 million. Of the \$120 million increase, \$97 million is biodefense funding previously included in the Office of the HHS Secretary. It targets research on countermeasures against nuclear and radiological threats (\$47 million, same as



FY2005) and chemical threats (\$50 million, new in FY2006). The remaining increase for OD provides an 8% boost for OD's portion of the initiatives collectively known as the NIH Roadmap for Medical Research. The Roadmap addresses scientific gaps in biomedical research that need to be approached on an NIH-wide basis. A list of initiatives in high-risk basic research, clinical research, and multidisciplinary collaborative research will receive up to \$333 million for FY2006 (\$250 million from the institutes and centers and \$83 million from the Office of the Director), up \$98 million, or 42%, from FY2005.

NIH and other Public Health Service (PHS) agencies are subject to a budget "tap" called the PHS Program Evaluation Transfer (section 241 of the PHS Act), which has the effect of redistributing appropriated funds among PHS agencies. The appropriation keeps the tap at 2.4%, the same as in FY2005.

After a hiatus of a dozen years, there has been some congressional movement toward action on reauthorization legislation for NIH. A number of hearings have been held in the past several years, and evolving drafts of proposed legislation are fostering discussions on such issues as the balance of authority and control between the central NIH Director's Office and the individual institutes and centers; the best methods of facilitating and funding cross-institute research initiatives; and possible changes in how authorization and appropriations levels for the institutes and centers are handled. **(CRS Contact: Pamela Smith.)**

**Table 5. National Institutes of Health (NIH)**  
(\$ in millions)

Institutes and Centers (ICs)	FY2005 approp. <sup>a</sup>	FY2006 request	FY2006 enacted <sup>b</sup>	% change FY06/05
Cancer (NCI)	\$4,825.3	\$4,841.8	\$4,793.4	-0.7%
Heart/Lung/Blood (NHLBI)	2,941.2	2,951.3	2,921.8	-0.7%
Dental/Craniofacial Research (NIDCR)	391.8	393.3	389.3	-0.6%
Diabetes/Digestive/Kidney (NIDDK)	1,713.6	1,722.1	1,704.9	-0.5%
Neurological Disorders/Stroke (NINDS)	1,539.4	1,550.3	1,534.8	-0.3%
Allergy/Infectious Diseases (NIAID) <sup>c</sup>	4,402.8	4,459.4	4,414.8	0.3%
General Medical Sciences (NIGMS)	1,944.1	1,955.2	1,935.6	-0.4%
Child Health/Human Development (NICHD)	1,270.3	1,277.5	1,264.8	-0.4%
Eye (NEI)	669.1	673.5	666.8	-0.3%
Environmental Health Sciences (NIEHS)	644.5	647.6	641.1	-0.5%
Aging (NIA)	1,052.0	1,057.2	1,046.6	-0.5%
Arthritis/Musculoskeletal/Skin (NIAMS)	511.2	513.1	507.9	-0.6%
Deafness/Communication Disorders (NIDCD)	394.3	397.4	393.5	-0.2%
Nursing Research (NINR)	138.1	138.7	137.3	-0.5%
Alcohol Abuse/Alcoholism (NIAAA)	438.3	440.3	435.9	-0.5%
Drug Abuse (NIDA)	1,006.4	1,010.1	1,000.0	-0.6%
Mental Health (NIMH)	1,411.9	1,417.7	1,403.5	-0.6%
Human Genome Research (NHGRI)	488.6	491.0	486.0	-0.5%
Biomedical Imaging/Bioengineering (NIBIB)	298.2	299.8	296.8	-0.5%
Research Resources (NCRR)	1,115.1	1,100.2	1,099.1	-1.4%
Complementary/Alternative Med (NCCAM)	122.1	122.7	121.5	-0.5%
Minority Health/Health Disparities (NCMHD)	196.2	197.4	195.4	-0.4%
Fogarty International Center (FIC)	66.6	67.0	66.4	-0.4%
Library of Medicine (NLM)	315.1	318.1	314.9	-0.1%
Office of Director (OD) <sup>d</sup>	358.0	385.2	478.1	33.5%
Buildings & Facilities (B&F)	110.3	81.9	81.1	-26.5%
<i>Subtotal, Labor/HHS Appropriation</i>	<i>\$28,364.5</i>	<i>\$28,509.8</i>	<i>\$28,331.3</i>	<i>-0.1%</i>
Superfund (Interior approp to NIEHS) <sup>e</sup>	79.8	80.3	79.1	-0.9%
<b>Total, NIH discretionary budget authority</b>	<b>\$28,444.4</b>	<b>\$28,590.1</b>	<b>\$28,410.4</b>	<b>-0.1%</b>
Pre-appropriated Type 1 diabetes funds <sup>f</sup>	150.0	150.0	150.0	0.0%
NLM program evaluation <sup>g</sup>	8.2	8.2	8.2	0.0%
Public Health/Soc Serv Emergency Fund <sup>g</sup>	47.0	97.0	0.0	-100.0%
Global Fund transfer (AIDS/TB/Malaria) <sup>c</sup>	-99.2	-100.0	-99.0	-0.2%
<b>Total, NIH program level</b>	<b>\$28,550.4</b>	<b>\$28,745.3</b>	<b>\$28,469.6</b>	<b>-0.3%</b>

Source: H.Rept. 109-337 on H.R. 3010, FY2006 Labor-HHS-Education appropriations.

- FY2005 reflects across-the-board reduction (0.8%) totaling \$229.390m, and Labor/HHS/Ed reduction of \$6.787m for salaries and expenses.
- FY2006 reflects across-the-board rescission (1%) totaling \$285.974m. Does not reflect \$18m pandemic flu supplemental funding (P.L. 109-148). Before rescission, NIH total program level was \$28,745m from the House, \$29,559m from the Senate, and \$28,756m from the conferees.
- NIAID totals include funds for transfer to the Global Fund to Fight HIV/AIDS, TB, and Malaria.
- OD has Roadmap funds for distribution to ICs (FY2005, \$59.5m; FY2006, \$83.0m). In the FY2006 appropriation, OD includes \$96.0m for terrorism countermeasures (see note g).
- Separate account in the Interior/Related Agencies appropriation for NIEHS activities mandated in Superfund legislation (formerly in VA/HUD appropriation).
- Funds available to NIDDK for diabetes research in accordance with P.L. 107-360.
- Additional funds available: From the program evaluation set-aside (sec. 241 of the Public Health Service Act), \$8.2m for NLM each year; from the Public Health and Social Services Emergency Fund appropriation, \$47m in both the FY2005 appropriation and the FY2006 request for NIH research on nuclear and radiological countermeasures, and \$50m in the FY2006 request for chemical countermeasures. The FY2006 bill placed the \$97m (reduced to \$96m) in OD instead.

## National Science Foundation (NSF)

The FY2006 request for the National Science Foundation (NSF) is \$5,605 million, a 2.4% (\$132.2 million) increase over the FY2005 level of \$5,472.8 million (See **Table 6**). In the FY2006 request, the NSF will increase the funding rate to 21%, while maintaining current gains in award size and duration. In FY2006, grant size will approximate \$136,800, and the length will be three years. NSF asserts that international research partnerships are critical to the Nation in maintaining a competitive edge, addressing global issues, and capitalizing on global economic opportunities. To address these particular needs, the FY2006 request proposes \$35 million for the Office of International Science and Engineering. Also, in FY2006, NSF will provide leadership in planning U.S. participation in observance of the International Polar Year scheduled during 2007. Additional FY2006 highlights include funding for the National Nanotechnology Initiative (\$343.8 million), investments in Climate Change Science Program (\$196.9 million), continued support for homeland security (\$344 million), and funding for Networking and Information Technology Research and Development (\$803.2 million).

Included in the FY2006 request is \$4,333.5 million for Research and Related Activities (R&RA), a 2.7% increase (\$112.9 million) over the FY2005 level of \$4,220.6 million. R&RA funds research projects, research facilities, and education and training activities. Partly in response to concerns in the scientific community about the imbalance between support for the life sciences and the physical sciences, the FY2006 request provides increased funding for the physical sciences—\$230.1 million, a 2.3% increase (\$5.2 million) over the FY2005 estimate. Research in the physical sciences often leads to advances in other disciplines. R&RA includes Integrative Activities (IA), and is a source of funding for the acquisition and development of research instrumentation at U.S. colleges and universities. It funds also Partnerships for Innovation, disaster research teams, and the Science and Technology Policy Institute. The FY2006 request for IA is \$134.9 million, a 3.8% increase (\$5 million) over the FY2005 estimate. The Office of Polar Programs is funded in the R&RA. The FY2006 request would transfer responsibility to NSF from the U.S. Coast Guard for funding the maintenance and operation of polar ice breaking activities.

Research project support in the FY2006 request totals \$2,757.1 million. Support is provided to individuals and small groups conducting disciplinary and cross-disciplinary research. Included in the total for research projects is support for centers, proposed at \$358.5 million. NSF supports a variety of individual centers and center programs. The FY2006 request provides \$51 million for Science and Technology Centers, \$58 million for Materials Centers, \$61.8 million for Engineering Research Centers, \$19.5 million for Physics Frontiers Centers, \$36 million for the Plant Genome Virtual Centers, and \$17.2 million for the Mathematical Science Research Institutes.

The Major Research Equipment and Facilities Construction (MREFC) account is funded at \$250 million in the FY2006 request, a 44% increase (\$76.4 million) over the FY2005 level. The MREFC supports the acquisition and construction of major research facilities and equipment that extend the boundaries of science, engineering,

and technology. Of all federal agencies, NSF is the primary supporter of “forefront instrumentation and facilities for the academic research and education communities.” First priority for funding is directed to ongoing projects. Second priority is given to projects that have been approved by the National Science Board (NSB) for new starts. NSF requires that in order for a project to receive support, it must have “the potential to shift the paradigm in scientific understanding and/or infrastructure technology.” NSF contends that the projects receiving support in the FY2006 request meet that qualification. There are no new starts proposed in the FY2006 request. However, two new starts are requested in FY2007, and one start is requested in FY2008. In the order of priority, they are the Ocean Observatories in FY2007; the Alaska Region Research Vessel in FY2007; and the Advanced Laser Interferometer Gravitational Wave Observatory (LIGO) in FY2008. Those projects receiving support in the FY2006 request are Atacama Large Millimeter Array Construction (\$49.2 million), EarthScope (\$50.6 million), IceCube Neutrino Observatory (\$50.5 million), Rare Symmetry Violating Processes (\$41.8 million), and Scientific Ocean Drilling Vessel (\$57.9 million).

The FY2006 request provides support for several interdependent priority areas: biocomplexity in the environment (\$84 million), human and social dynamics (\$39 million), and mathematical sciences (\$89 million). Additional priority areas include those of strengthening core disciplinary research, providing broadly accessible cyberinfrastructure and world-class research facilities, broadening participation in the science and engineering workforce, and sustaining organizational excellence in NSF management practices. The NSF states that researchers need not only access to cutting-edge tools to pursue the increasing complexity of research, but funding to develop and design the tools critical to 21<sup>st</sup> century research and education. An investment of \$509 million in cyberinfrastructure will allow for funding of modeling, simulation, visualization and data storage, and other communications breakthroughs. NSF anticipates that this level of funding will make cyberinfrastructure more powerful, stable, and accessible to researchers and educators through widely shared research facilities. Increasing grant size and duration has been a long-term priority for NSF. The funding rate for research grants applications has declined from approximately 30% in the late 1990s to an estimated 20% in FY2005.

The NSF was directed to improve its oversight of large projects by developing an implementation plan that included comprehensive guidelines and project oversight review. One continuing question focused on the selection process for including major projects in the upcoming budget cycle. In February 2004, the National Academies released the congressionally mandated study of the process for prioritization and oversight of projects in the MREFC account. The report recommended a more open process for project selection, broadened participation from various disciplines, and well-defined criteria for the selection process. In May 2005, the National Science Board (NSB) approved a report detailing the new guidelines for the development, review, and approval of major projects—*Setting Priorities for Large Research Facility Projects Supported by the National Science Foundation*.<sup>3</sup> Also at the May 2005 meeting, the NSB approved a facility plan,

---

<sup>3</sup> National Science Board, *Setting Priorities for Large Research Facility Projects Supported* (continued...)

describing facilities under construction and those being considered for future funding. The facility plan is to be made available when final edits identified by the NSB are completed.

**Table 6. National Science Foundation**  
(\$ in millions)

	<b>FY2004 Act.</b>	<b>FY2005 Est.</b>	<b>FY2006 Req.</b>	<b>FY2006 Conf.</b>
Res. & Related Act.				
Biological Sciences	\$587.1	\$576.6	\$581.8	
Computer & Inform. Sci. & Eng.	605.4	613.7	620.6	
Engineering	565.6	561.3	580.7	
Geosciences	713.4	694.2	709.1	
Math & Physical Sci.	1,091.6	1,069.9	1,086.2	
Social, Behav. & Econ. Sci.	184.3	197.0	198.8	
Office of International Sci. & Eng.	40.8	33.7	34.5	
U.S. Polar Programs	341.7	344.4	386.9	
Integrative Activities	163.5	129.9	134.9	
<b>Subtotal Res. &amp; Rel. Act</b>	<b>\$4,293.3</b>	<b>\$4,220.6</b>	<b>\$4,333.5</b>	<b>\$4,387.5</b>
Ed. & Hum. Resr.	944.1	841.4	737.0	807.0
Major Res. Equip. & Facil. Constr.	184.0	173.7	250.0	208.2
Salaries & Expenses	218.9	223.2	269.0	250.0
National Science Board	2.2	4.0	4.0	4.0
Office of Inspector General	9.5	10.0	11.5	11.5
<b>Total NSF<sup>a</sup></b>	<b>\$5,652.0</b>	<b>\$5,472.8</b>	<b>\$5,605.0</b>	<b>\$5,653.4</b>

- The totals do not include carry overs or retirement accruals. Totals may not add due to rounding.
- Additional funding resulting from H-1B Nonimmigrant Petitioner Receipts is \$57.3 million in FY2004, \$100 million in FY2005, and a projected \$100 million in FY2006.
- Specific funding allocations for each directorate or for individual program or activity will be determined at a later time.

The FY2006 request for the Education and Human Resources Directorate (EHR) is \$737 million, a 12.4% decrease (\$104.2 million) from the FY2005 estimate. The EHR portfolio is focused on, among other things, increasing the technological literacy of all citizens, preparing the next generation of science, engineering, and mathematics professionals, and closing the achievement gap in all scientific fields. Support at the various educational levels in the FY2006 request is as follows: precollege, \$140.8 million; undergraduate, \$135 million; and graduate, \$155 million. The focus at the precollege level in FY2006 is for teacher development activities (\$58.8 million) and informal science education (\$63.1 million). At the undergraduate level, approximately 72% of the funding is in support of new awards and activities. Priorities at the undergraduate level include the Robert Noyce Scholarship Program, Course, Curriculum and Laboratory Improvement, STEM Talent Expansion Program, the National STEM Education Digital Library, the Federal Cyber Service, and Advanced Technological Education. At the graduate level, priorities are those of

<sup>3</sup> (...continued)

by the National Science Foundation, NSB05-77 (Pre-publication Draft), Arlington, VA, May 26, 2005, 10 pp.

Integrative Graduate Education and Research Traineeship, Graduate Research Fellowship, and the Graduate Teaching Fellows in K-12 Education. The request provides \$60 million for the President's Math and Science Partnerships program (MSP), a 24.4% decrease from the FY2005 estimate. (The MSP is a five-year investment to improve the performance of U.S. students in science and mathematics at the precollege level). Funding in the FY2006 request will provide support for ongoing awards, in addition to data collection, evaluation, knowledge management, and dissemination. The MSP has made 80 awards in a three year period, with an overall funding rate of approximately 9%. No new partnership awards are proposed in the FY2006 request. Several programs are directed at increasing the number of underrepresented minorities in science and engineering. Among these targeted programs in the FY2006 request are the Historically Black Colleges and Universities Programs (\$25 million), Tribal Colleges and Universities Program (\$10 million), Louis Stokes Alliances for Minority Participation (\$35 million), and Centers of Research Excellence in Science and Technology (\$18.5 million). Funding for the Experimental Program to Stimulate Competitive Research (EPSCoR) is \$94 million in the FY2006 request, almost level with the FY2005 estimate. Approximately 35% of the request would be available for new awards and activities, with the balance supporting awards made in previous years.

Both the House and Senate have passed the conference agreement on FY2006 appropriations for the NSF, contained in the Science, State, Justice, Commerce, and Related Agencies Appropriations Bill, FY2006, (H.R. 2862, H.Rept. 109-272). The House passed the conference agreement on November 9, 2005 and the Senate passed the agreement on November 16, 2005. The bill provides a total of \$5,653.4 million for NSF in FY2006, \$48.4 million above the Administration's request and \$180.6 million above the FY2005 estimate. Included in the total is \$4,387.5 million for R&RA, \$54 million above the request and \$166.9 million above the FY2005 level. The EHR receives \$807 million in H.R. 2862, \$70 million above the request and \$34.4 million below the FY2005 estimate. The EHR will fund the Louis Stokes Alliance for Minority Participation program at \$25.8 million and the Historically Black Colleges and Universities Undergraduate Program at \$35.8 million. Funds have been provided for continued support of the Tribal Colleges and Universities Program, the Robert Noyce Scholarship program and the Advanced Technological Education program. Conferees agreed with the Senate in providing \$64 million for the MSP. Also, the Committee rejected the Administration's request to have the MSP operate only in the Department of Education.

H.R. 2862 funds the MREFC at \$208.2 million in FY2006, \$41.8 million below the request and \$34.5 million above the FY2005 estimate. The projects receiving support are the Atacama Large Millimeter Array (\$49.2 million), EarthScope (\$50.6 million), IceCube Neutrino Observatory (\$50.5 million), and Scientific Ocean Drilling Vessel (\$57.9 million). Support is not provided for the Rare Symmetry Violating Processes (RSVP). The Committee is concerned with the "unacceptable increases" in the project cost and suggests that the RSVP proposal be altered or descoped. If the necessary changes can be made, the restructured RSVP can be considered for inclusion for project support within the R&RA. EPSCoR is funded at \$100 million in FY2006, \$6 million above the request and \$6.7 million above the FY2005 estimate. The Senate Committee directs the NSF to assume polar icebreaking activities from the Coast Guard. If the Coast Guard is unable to provide

icebreaking services, the NSF is directed to obtain services from other sources. (CRS Contact: Christine Matthews.)

## Department of Homeland Security (DHS) R&D

The Department of Homeland Security requested \$1.37 billion for the Directorate of Science and Technology in FY2006. (For details see **Table 7**.) For the first time, all R&D funding for the department was included in this request. Compared with the enacted FY2005 funding for the S&T Directorate alone (\$1.12 billion) the FY2006 request was a 23% increase. However, if one includes the enacted FY2005 funding for R&D programs formerly funded elsewhere in the department, the requested increase in DHS-wide R&D funding was 4%. The House (H.R. 2360) provided \$1.29 billion, a reduction of \$78 million from the request.<sup>4</sup> The Senate provided \$1.45 billion, or \$85 million more than the request, plus a separate \$18.5 million for Coast Guard R&D. The final bill provided \$1.50 billion for the S&T Directorate plus \$17.8 million for Coast Guard R&D.

R&D programs formerly in the Transportation Security Administration (TSA) and Coast Guard, together with some other smaller programs, would all have been consolidated into the S&T Directorate under the proposed FY2006 budget. This move reflected direction originally given in the FY2004 appropriations conference report (H.Rept.108-280). Consolidating the Coast Guard R&D program was proposed in the FY2005 budget request as well, but the change was controversial, and Congress did not approve it. For FY2006, the House accepted the Coast Guard move, but the Senate again rejected it, and the conference agreement again followed the Senate. The House, Senate, and conference agreement all accepted the other proposed FY2006 consolidations as requested. The FY2006 budget was the first to propose consolidation for the TSA R&D program because the Homeland Security Act, which established DHS, required that TSA be maintained as a single distinct entity until November 2004 (P.L.107-296, §424).

The request for the newly created Domestic Nuclear Detection Office (DNDO) was \$227 million. Although funded under S&T, DNDO has been made a freestanding office that reports directly to the Secretary. Noting this fact, the House report provided \$100 million less than was requested and stated that “DHS still needs to clarify its role in regard to other federal agencies ... that have similar and more mature programs.” The Senate committee, stating that it was “troubled by the manner in which this initiative has been handled,” also recommended \$100 million less than requested for DNDO, and recommended restricting the obligation of all but \$15 million until further details are provided to the appropriations committees. Some DNDO activities were formerly funded by the S&T Directorate’s radiological and nuclear countermeasures program, whose FY2006 request was \$19 million, down from \$123 million. The House provided the requested amount for radiological and nuclear countermeasures, while the Senate provided an increase to \$226 million, including \$125 million requested under Customs and Border Prevention for testing,

---

<sup>4</sup> The House committee recommended \$1.34 billion, but a floor amendment by Rep. Obey reduced this by \$50 million to fund state conformance with drivers' license standards under the REAL ID Act of 2005 (P.L. 109-13).

development, and deployment of radiation portal monitors at ports of entry. The conference agreement provided \$318 for DNDO, including \$135 million for radiation portal monitors and with restrictions on the obligation of another \$145 million pending approval of an expenditure plan by the appropriations committees. The conference agreement provided \$19 million for radiological and nuclear countermeasures and concurred with the plan to transfer most funding for this activity into DNDO. (CRS Contact: Daniel Morgan.)

**Table 7. Department of Homeland Security R&D**  
(\$ in millions)

	FY2005 Enacted	FY2006 Request	FY2006 House	FY2006 Senate	FY2006 Enacted
<b>Science and Technology Directorate</b>	<b>1115.4</b>	<b>1368.4</b>	<b>1290.0</b>	<b>1453.5</b>	<b>1502.1</b>
Salaries and Expenses	68.6	81.4	81.4	81.1	81.1
R&D, Acquisition, and Operations	1046.8	1287.0	1208.6	1372.4	1421.0
Biological Countermeasures	362.6	362.3	360.0	384.3	380.0
NBACC Construction	35.0	—	—	—	—
Chemical Countermeasures	53.0	102.0	90.0	100.0	95.0
Explosives Countermeasures	19.7	14.7	54.7	33.9	44.0
Radiological/Nuclear Countermeasures	122.6	19.1	19.1	226.0	19.1
Domestic Nuclear Detection Office	—	227.3	127.3	127.3	318.0
Threat and Vulnerability Testing and Assessment	65.8	47.0	47.0	40.0	43.0
Critical Infrastructure Protection	27.0	20.8	35.8	13.8	40.8
Cyber Security	18.0	16.7	16.7	16.7	16.7
Standards	39.7	35.5	35.5	35.5	35.0
Support of DHS Components	54.6	93.6	80.0	74.7	80.0
University and Fellowship Programs	70.0	63.6	63.6	63.6	63.0
Emerging Threats	10.8	10.5	10.5	5.3	8.0
Rapid Prototyping	76.0	20.9	30.0	20.9	35.0
Counter MANPADS	61.0	110.0	110.0	110.0	110.0
SAFETY Act	10.0	5.6	10.0	5.6	7.0
Office of Interoperability and Compatibility	21.0	20.5	41.5	15.0	26.5
R&D Consolidation	—	116.9	116.9	99.9	99.9
Technology Development and Transfer	—	—	10.0	—	—
General Reduction	—	—	-50.0	—	—
<b>Transportation Security Administration R&amp;D</b>	<b>178.0</b>	—	—	—	—
<b>U.S. Coast Guard RDT&amp;E</b>	<b>18.5</b>	—	—	<b>18.5</b>	<b>17.8</b>
<b>Customs R&amp;D</b>	<b>1.4</b>	—	—	—	—
<b>Total DHS R&amp;D</b>	<b>1313.3</b>	<b>1368.4</b>	<b>1290.0</b>	<b>1472.0</b>	<b>1519.9</b>



## Department of Commerce (DOC)

### National Oceanic and Atmospheric Administration (NOAA)

For FY2006, the President requested \$534 million for NOAA R&D programs and facilities, which is 15% of NOAA's entire budget request of \$3.58 billion.<sup>5</sup> The R&D request was \$92 million, or 14.6% less than the estimated \$626 million appropriated for FY2005. (See **Table 8**.) The Office of Oceanic and Atmospheric Research (OAR) conducts most of NOAA's R&D program and manages R&D facilities and is NOAA's primary line office for research. The requested for OAR of \$316 million is a \$23 million funding cut, or 6.8% less than the FY2005 estimate.

The House passed, Science, State, Justice, and Commerce Appropriations (SSJC) bill, H.R. 2862, would have provided an estimated \$501 million for NOAA's R&D programs, which is a decrease of \$150 million, or 20% below FY2005 estimated funding (H.Rept. 109-118). It would have reduced funding for OAR's R&D programs by 15% less than FY2005 levels, for a total of \$286 million. This reduction was at odds with U.S. Oceans Policy Commission (OPC) recommendations for doubling ocean and coastal research budgets over the next five years. (For information on the OPC recommendations, the President's *Ocean Action Plan*, and congressional action, see CRS Issue Brief IB10132, *Ocean Commissions: Ocean Policy Review and Outlook*.) The Senate-passed version of H.R. 2862 proposed increases for NOAA's R&D and a total of \$693 million most of which would be for implementing OPC recommendations and expanding oceanic research. The total is \$32 million more than FY2005 estimated funding of \$626 million; \$15 million more than the request, and \$192 million more than the House level. The Senate report recommended increasing OAR funding from \$338 million in FY2005 to \$380 million in FY2006, which is a 12.4% increase (S.Rept. 109-88).

The conference committee on SSJC appropriations, FY2006, reported H.R. 2862 (H.Rept. 109-272). An estimated \$661 million would be for NOAA R&D in FY2006. Conferees also agreed to \$373 million for OAR. The greatest change for R&D at NOAA in FY2006 relates to individually funded ocean science educational programs. These have been consolidated under NOAA's Program Support base. Also, funding for ocean research programs under OAR, including the National Sea Grant Program, and NOAA's National Ocean Service ocean sciences programs has been cut. Conferees directed NOAA to compile a plan for implementing OPC recommendations that included estimated costs, before reconsidering funding for associated programs in the FY2007 budget (H.Rept. 109-272). H.R. 2862 became P.L. 109-108 on November 22, 2005. For information on NOAA's full budget request for FY2006, see CRS Report RS22109, *National Oceanic and Atmospheric Administration (NOAA) Budget for FY2006: President's Request, Congressional Appropriations, and Related Issues*. (CRS Contact: **Wayne A. Morrissey**.)

---

<sup>5</sup> OMB's R&D Bureau estimates differ: \$650 million for FY2005; and \$551 million requested for FY2006. However, those amounts include capital costs for equipment and maintenance of R&D facilities, which NOAA does not score as R&D obligations.

**Table 8. NOAA R&D**  
(\$ in millions)

NOAA	FY2005 Conf.	FY2006 Request	FY2006 House	FY2006 Senate	P.L. 109-108
R&D Total	626	534	501	693	661
Office of Oceanic & Atmospheric Research (OAR)	340	316	286	380	374

**Source:** U.S. Department of Commerce, National Oceanic and Atmospheric Administration, Office of Financial Administration, *Research and Development Budgets FY2004-FY2006*, February 23, 2005. FY2006 R&D data for the House and Senate totals is from the American Association for the Advancement of Science Budget and Policy Program (AAAS). OAR funding is from House, Senate and conference committee reports. P.L. 109-108 totals are subject to a 1% across the board rescission pending OMB action.

## National Institute of Standards and Technology (NIST)

The National Institute of Standards and Technology (NIST) is a laboratory of the Department of Commerce. It is mandated to increase the competitiveness of U.S. companies through appropriate support for industrial development of pre-competitive generic technologies and the diffusion of government-developed technological advances to users in all segments of the American economy. NIST research also provides the measurement, calibration, and quality assurance techniques that underpin U.S. commerce, technological progress, improved product reliability, manufacturing processes, and public safety.

The President's FY2006 budget requested \$532 million in funding for NIST, a 23% decrease from FY2005 due primarily to an absence of support for the Advanced Technology Program (ATP) and a significant cut in financing for the Manufacturing Extension Partnership (MEP). Included in the total figure was \$426.3 million for the Scientific and Technology Research and Services (STRS) account which primarily finances the internal R&D activities of the laboratory. This amount was 12.5% above the previous fiscal year and included \$5.7 million for the Baldrige National Quality Program. MEP was to be funded at \$46.8 million, 56% below FY2005 support. The construction budget was \$58.9 million. (See **Table 9**.)

H.R. 2862, as originally passed by the House, would have provided \$548.7 million for NIST, 21% below FY2005 funding. The STRS account was to receive \$397.7 million, 5% more than FY2005 but 6.7% below the President's request. Financing for MEP totaled \$106 million, a decrease of 1.4% from the earlier fiscal year and over twice the Administration's budget request. There was no funding for ATP. Construction activities would have received \$45 million.

The version of H.R. 2862 initially passed by the Senate would have funded NIST at \$844.5 million, almost 21% above the FY2005 budget. Included in this amount was \$399.9 million for the STRS account (incorporating \$7.2 million for the Quality Program), an increase of 5.6% over previous funding. MEP was to receive \$106 million. Support for ATP, absent from both the President's budget request and the original House-passed bill, would total \$140 million, 2.6% more than the financing provided in FY2005. The construction budget was to be funded at \$198.6

million, more than double the earlier figure. This construction funding was over three times that proposed by the Administration and more than four times that included in the original House version of the bill.

Subsequently, the final FY2006 appropriations legislation, P.L. 109-108, provides \$761.8 million for NIST, an increase of almost 9% over funding in FY2005. Support for the STRS account totals \$399.9 million and includes \$7.1 million for the Quality Program. This amount is an increase of 5.6% over the previous fiscal year. The Manufacturing Extension Partnership is to receive \$106 million and the Advanced Technology Program is financed at \$80 million. The funding for MEP is a small decrease from FY2005 while support for ATP declines 41% from the earlier figure. The construction budget more than doubles to \$175.9 million. (Please note that the legislation also includes a 0.28% rescission on all discretionary budget authority.)

For FY2005, the Omnibus Appropriations Act, P.L. 108-447, provided the NIST with \$695.3 million (after a mandated 0.8% across-the-board rescission and a 0.54% rescission from Commerce, Justice, State discretionary accounts). This amount was 14% above FY2004 funding. Internal research and development under the STRS account was \$378.8 million (including funding for the Baldrige National Quality Program), almost 12% over the previous fiscal year. The Manufacturing Extension Partnership was funded at \$107.5 million, an increase of 178% that brought support for the program up to pre-FY2004 levels. The Advanced Technology Program was financed at \$136.5 million (20% below FY2004) and the construction budget received \$72.5 million. The legislation also rescinded \$3.9 million of unobligated balances from prior year funds in the ATP account.

Continued support for the Advanced Technology Program has been a major funding issue. ATP provides “seed financing,” matched by private sector investment, to businesses or consortia (including universities and government laboratories) for development of generic technologies that have broad applications across industries. Opponents of the program cite it as a prime example of “corporate welfare,” whereby the federal government invests in applied research activities that, they argue, should be conducted by the private sector. Others defend ATP, arguing that it assists businesses (and small manufacturers) in developing technologies that, while crucial to industrial competitiveness, would not or could not be developed by the private sector alone. While Congress has maintained support for the Advanced Technology Program, the initial appropriation bills passed by the House since FY2002 provided no funding for ATP. While support again is provided in the FY2006 appropriations legislation, it is 41% below the earlier fiscal year.

The budget for the Manufacturing Extension Partnership, another extramural program administered by NIST, was an issue during the FY2004 appropriations deliberations. While in the recent past, congressional support for MEP remained constant, the Administration’s FY2004 budget request, the initial House-passed bill, and the FY2004 Consolidated Appropriations Act substantially decreased federal funding for this initiative reflecting the President’s recommendation that manufacturing extension centers “... with more than six years experience operate without federal contribution.” However, P.L. 108-447 restored financing for MEP in FY2005 to the level that existed prior to the 63% reduction taken in FY2004. This

level of support has been maintained for FY2006. For additional information see CRS Report 95-30, *The National Institute of Standards and Technology: An Overview*; CRS Report 95-36, *The Advanced Technology Program*; and CRS Report 97-104, *The Manufacturing Extension Partnership Program: An Overview*, all by Wendy Schacht. (CRS Contact: Wendy H. Schacht.)

**Table 9. NIST**  
(\$ in millions)

NIST Program	FY2005*	FY2006 Request	FY2006†
<b>NIST Total</b>	695.3	532	761.8
<b>STRS**</b>	378.8	426.3	399.9
<b>ATP</b>	136.5	0	80
<b>MEP</b>	107.5	46.8	106
<b>Construction</b>	72.5	58.9	175.9

\* After mandated rescissions (but not including those to unobligated balances).

\*\* Includes funding for the Baldrige National Quality Program.

† Does not include a 0.28% rescission on all discretionary budget authority.

## Department of Transportation (DOT)

The Bush Administration requested \$808 million for the Department of Transportation's (DOT) research and development budget in FY2006. This represents an increase of 8% over the FY2005 estimated funding level of \$744 million. (see **Table 10.**) Support for the Federal Highway Administration (FHWA) would increase from an estimated \$336 million to \$444 million in FY2006. Most of this increase is the result of the Administration's proposal to shift some resources away from state highway grants to highway research, an approach Congress rejected in FY2005. R&D funding for the Federal Aviation Administration (FAA) would decline 11%, to \$233 million, primarily due to a 27% cut in FAA development activities, as well as the Administration proposal to eliminate \$17 million in FY2005 Congressional earmarks. FAA research focuses on a number of topics including weather research, air craft safety, human factors research, and the development of "free flight technology to improve aviation system capacity." Finally funding for FAA security R&D has declined significantly with the transfer of aviation security and Coast Guard R&D to DHS.

The House passed Transportation-Treasury bill (H.R. 3058, H. Rept. 109-153) recommended a total of \$727 million DOT R&D in FY2006, a 2.2% reduction below FY2005 estimated levels. While the Administration had recommended a 32% increase for FHWA R&D, the House approved a modest 2.4% increase for FY2006. The House also approved a 6.5% reduction for FAA's R&D programs, which is less than the 11.4% reduction proposed by the Administration. The Senate Appropriations Committee bill (H.R. 3085, S.Rept. 109-109) would provide \$742 million for R&D in FY2006, \$2 million below FY2005 estimated funding levels. The FAA would receive \$285 million, an increase of 8.4% because the Committee added \$21 million

for an airport technology R&D program, and restored proposed cuts to other aviation research programs.

According to P. L. 109-115, Congress approved a record \$841million for transportation R&D in FY2006, a 13% increase over FY2005 estimated funding level. Despite recommending a cut in FAA's R&D budget, Congress approved a 5% increase in FAA's R&D spending. (CRS Contact: Mike Davey.)

**Table 10. Department of Transportation R&D**  
(\$ in millions)

Department of Transportation	FY2005 Estimate	FY2006 Request	FY2006 <sup>b</sup> Total
<b>Federal Highway Administration</b>	337	444	
<b>Federal Aviation Administration</b>	263	233	276
<b>Others<sup>a</sup></b>	144	131	
<b>Total</b>	744	808	841

- a. "Other" includes Office of the Secretary, Federal Motor Carrier Safety Administration, Federal Railroad Administration, Pipeline and Hazardous Materials Safety Administration, and the Research and Innovative Technology Administration.
- b. FY2006 R&D data for the House, and Senate is from the American Association for the Advancement of Science. FY2006 funding levels do not include the 1% across-the-board funding.

## Department of the Interior (DOI)

The Administration requested \$581 million for R&D in the Department of the Interior (DOI) (see **Table 11**), a 4.9% decline from the \$611 million the agency estimates it received in FY2005. The U.S. Geological Survey (USGS) is the primary supporter of R&D (over 90 % of the total) within DOI. The USGS areas of research include mapping, research in geological resources, water quality, and biological resources. The proposed FY2006 budget for R&D within the USGS would decline from \$541 million in FY2005 to \$515 million. The USGS is one of the major sponsors of earth science research, along with NSF, DOE, and NASA.

As indicated in the table, Geological Mineral Resources research funding is proposed to decline 13%, while Water Resources is scheduled to decline 5.5%. The Geological hazards programs conducts basic and applied research, collects long-term data, operates a variety of monitoring networks, and helps to warn the public of impending disasters such as earthquakes. Recently, the Administration announced that NOAA and the DOI, will work together to develop an improved tsunami and earthquake warning system in the United States. The Water Resources research focuses on activities aimed at improving the quality of the U.S. ground water. Within the earth sciences, the USGS plays a major role in important geological hazards research, including research on earthquakes and volcanoes.

The USGS Biological Research Activity develops and distributes information needed in the conservation and management of the Nation's biological resources. This program serves as the Department's research arm utilizing the capabilities of 17 research centers, as well as 40 Cooperative Research Units that support research on fish, wildlife, and natural habitats. Major research initiatives are carried out by USGS scientists by collecting scientific information through research, inventory and monitoring investigations. These activities develop new methods and techniques to identify, observe, and manage fish and wildlife, including invasive species and their habitats. Nearly 90% of USGS research is performed within Interior labs to address the science needs of Interior and other agencies such as the Fish and Wildlife Service and the Bureau of Land Management. If Congress approves the President's proposed budget for FY2006, funding for DOI R&D will have declined 18%, in real dollars, since FY2004.

Both the House (H.R. 2361, H.Rept. 109-80) and Senate passed bill (H.R. 2361, S.Rept. 109-80) rejected the Administration's proposal to cut funding for DOI's R&D programs. The House bill would increase funding for USGS R&D programs by \$12 million over FY2005 estimates, while the Senate bill approved a \$9 million increase. The Administration has proposed to cut Geological Resources program by 13%, however both the House and Senate approved a modest increases for that program. Given the funding similarities in both bills, it is likely the DOI R&D funding will essentially remain flat, in real dollars, for FY2006. Congress approved an estimated \$555 million for USGS R&D for FY2006, a 2.5% increase over FY2005. Total Interior R&D spending increased 1.4% to \$620 million in FY2006 (see P.L. 109-54). (CRS Contact: Mike Davey.)

**Table 11. Department of Interior R&D**  
(\$ in millions)

U. S. Geological Survey	FY2006 Request	House	Senate	Approp. 2006
National Mapping	43	41	39	
Geological Resources	179	210	208	
Water Resources	119	126	128	
Biological Research	173	175	174	
Enterprise Information <sup>a</sup>	1	1	1	
<b>USGS total<sup>b</sup></b>	<b>515</b>	<b>553</b>	<b>550</b>	<b>555</b>
Other agencies <sup>c</sup>	66	66	66	65
<b>Total all agencies</b>	<b>581</b>	<b>619</b>	<b>616</b>	<b>620</b>

- Transfers of IT -related programs from other accounts beginning in FY2005.
- USGS R&D estimates are from the USGS budget office, and the USGS FY2006 Budget Justification documents.
- Other includes, the Bureau of Reclamation, Bureau of Land Management, the Minerals Management Service, and the National Park Services.

## Environmental Protection Agency (EPA)

The Environmental Protection Agency's Science and Technology (S&T) account incorporates elements of the former research and development account (also called extramural research) and EPA's in-house research, development, and technology work. For FY2006, P.L. 109-54 provides \$772.3 million for all S&T activities, which includes \$30.6 million transferred from the Superfund account (see **Table 12**). Incorporating the 0.476% across-the-board rescission, the FY2006 S&T total is \$768.6 million, including \$30.5 million transferred from Superfund. The FY2005 data shown here reflect rescissions. The FY2006 S&T total exceeds the amount passed by the Senate, but is less than the amount passed by the House, the amount requested for FY2006, or the amount enacted for FY2005.

Among the noteworthy details are these. The FY2006 amount of \$18.9 million (including the rescission) for climate protection programs is slightly less than the FY2005 level of \$19.0 million. The FY2006 amount of \$33.1 million for "Research/Congressional Priorities" (for research projects such as the Center for Air Toxic Metals at the University of North Dakota, the Environmental Systems Center of Excellence at Syracuse University, the Texas Air Quality Study 2, and the National Alternative Fuels Training Consortium at West Virginia University, each getting about \$2 million) is much less than the FY2005 level of \$65.7 million. The FY2006 amount of \$19.8 million for global change clean air research is slightly greater than the FY2005 level of \$19.6 million. The FY2006 amount of \$50.9 million for water quality—clean water research exceeds the FY2005 level of \$45.0 million. The FY2006 amount of \$11.9 million for human health and ecosystem research fellowships is slightly less than the FY2005 level of \$12.0 million. The FY2006 amount of \$11.3 million for land protection and restoration research exceeds the FY2005 level of \$9.1 million. Beyond the appropriateness of funding levels, a continuing question is the degree to which efforts to insure sound science (such as the Information Quality Act (IQA) and the Office of Management and Budget's Peer Review guidelines) will impact EPA's S&T work, including the magnitude of Agency resources to satisfy IQA requirements and peer-review guidelines. (**CRS Contact: Michael Simpson.**)

**Table 12. EPA**

(\$ in millions)

EPA	FY2005 Enacted	FY2006 Request	H.R. 2361 House-passed	H.R. 2361 Senate-passed	P.L. 109-54 [reflecting rescission]
<b>S&amp;T total</b>	779.9	791.2	795.9	761.4	772.3 [768.6]
<b>Specifically for S&amp;T</b>	744.1	760.6	765.3	730.8	741.7 [738.2]
<b>Transferred from Superfund</b>	35.8	30.6	30.6	30.6	30.6 [30.5]

**Table 13. FY2006 Federal R&D Appropriation in the 109<sup>th</sup> Congress**  
(\$ millions)

Agency	FY2005	FY2006 Request	FY2006 House	FY2006 Senate	FY2006 Appropriation
Department of Defense	69,199	69,355	71,657	70,407	72,132
Homeland Security	1,313	1,368	1,290	1,454	1,520
Nat. Institutes of Health	28,550	28,745	28,745	29,553	28,470
NASA	10,726	11,497	11,542	11,464	11,538
Nat. Science Foundation	5,473	5,605	5,643	5,531	5,653
EPA	780	791	796	761	772
NIST	695	532	549	845	762
NOAA	626	534	501	693	661
Dept. of Energy	8,809	8,403	8,496	9,108	8,916
Dept. of Transportation	744	808	727	742	841
Dept. of Interior	611	581	619	616	620
Dept. of Agriculture	2,692	2,666	2,893	3,028	2,537
Other	1,808	1,537	1,463	1,804	1,497
<b>Total</b>	132,026	132,425	134,921	136,006	135,669

The Bush Administration requested \$132.4 billion in federal research and development (R&D) funding for FY2006. This sum represents a \$400 million increase over the FY2005 estimated funding level of \$132 billion. CRS estimates that Congress has approved a record \$135.7 billion for federal R&D in FY2006, a 2.8% increase over the FY2005 estimated funding level. However, nearly all of that increase can be attributed to increases in defense weapons systems and the National Aeronautics and Space Administration's \$877 million increase for human space exploration technology.<sup>6</sup>

Basic research funding would decline by 0.5% below the FY2005 estimated level, declining to an estimated \$26.7 billion in FY2006. Five agencies account for 90% of all federal basic research expenditures. Total federal research funding (the sum of basic and applied research) is projected to increase \$1 billion to \$57 billion. However, the majority of that increase would go to NASA, while most of the remaining federal agencies would receive below inflation increases for research funding.

<sup>6</sup> The FY2006 R&D funding totals, in this section do not reflect the 1% across-the-board funding recision approved by Congress. see P. L. 109-148



While the President essentially requested flat funding for the Department of Defense (DOD) R&D programs, Congress approved an estimated \$ 72.1 billion DOD R&D, a 4.2 % increase over FY2005 funding levels. Most of that increase is a result of Congress increasing DOD's proposed S&T budget by \$2.5 billion more than was requested by the Administration.

Funding for the National Institutes of Health (NIH) would decline, in nominal dollars for the first time in 36 years. Since the completion of doubling NIH's budget (between 1998-2003), funding has declined to the FY2003 funding level, after adjusting for inflation.

Most R&D funding agencies now face budgets that are shrinking to levels of years past, in real dollars. While it has been 24 years since NIH's budget declined in real dollars, other agencies such as the National Science Foundation, DOE's Office of Science, NASA (excluding human space exploration), and Agriculture, have lived with stagnate budgets for several years. Consequently, in real dollars, all of these agencies will have less R&D funding in FY2006 than they did in FY2003.