

# CRS Report for Congress

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## **Federal Research and Development Funding: FY2006**

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# Federal Research and Development Funding: FY2006

## Summary

The Bush Administration has requested \$132.2 billion in federal research and development (R&D) funding for FY2006. This sum represents a \$505 million increase over the FY2005 estimated funding level of \$131.7 billion. In real dollars, total federal R&D would decline for the first time since FY1996. The proposed FY2006 R&D budget reflects the Administration's objective of constraining the growth of federal discretionary spending.

For the first time since FY1995, funding for defense R&D (the sum of the Department of Defense's (DOD) and the Department of Energy's (DOE) defense R&D programs) would be flat with a requested \$74.9 billion. This is due primarily to a proposed 21% reduction in DOD's science and technology programs. Funding for federal civilian R&D is proposed to increase \$188 million to \$57 billion, a 0.3% increase over the FY2005 estimated funding level. Most of this increase can be attributed to increases in the National Aeronautics and Space Administration (NASA) budget and the Department of Transportation. Based on current funding proposals, most of the other civilian R&D agencies' budgets are proposed to decline, in real dollars, in FY2006.

Funding for federal research (the sum of basic and applied research) would decline from \$55.2 billion to \$54.8, a 0.6% reduction. Total funding for basic research is proposed to decline from \$26.9 billion in FY2005 to \$26.6 billion in FY2006. Most of the decline in basic research support can be attributed to proposed reductions in DOD's and NASA's basic research programs.

The Administration proposes to reduce funding for all three of its multi-agency initiatives. Funding for the National Nanotechnology Initiative would decline 2.5% to \$1.1 billion, following four years of funding increases. The Networking and Information and Technology R&D initiative would decline 6.8% to \$2.4 billion, while the Climate Change Science Program is proposed to decline 1.4% to \$1.9 billion, primarily due to cuts in NASA's contributions to space-based observations of the environment.

The 109<sup>th</sup> Congress is facing difficult decisions for funding federal R&D. For the first time in a decade, total federal R&D funding is proposed to decline in real dollars. Since President Bush took office, defense R&D funding has increased 45%, in real dollars, while concomitantly civilian R&D has increased 23%. However, if the doubling of National Institutes of Health budget, between FY1999 and FY2003, is subtracted from the total, civilian R&D has declined in real dollars. Given the important role that federal civilian R&D plays in the education of future scientists and engineers, as well as the development of technological innovation, a variety of special interest groups are likely to call on Congress to restore funding for civilian R&D. If the President insists on holding the line on civilian discretionary spending, any increase for civilian R&D funding would have to be obtained at the expense of other federal programs.

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# Federal Research and Development Funding: FY2006

## Recent Developments

The House and Senate passed a continuing resolution (H.J.Res. 68, P. L. 109-77) that provides funding through November 18, 2005 for agencies or programs lacking FY2006 signed appropriations bills. The resolution directs agencies to fund their programs at the **lowest** of FY2005, or House approved or Senate approved FY2006 funding level.

Congress has passed two appropriations bills, with only one, Interior, funding R&D.<sup>1</sup> The House has passed all 11 of its FY2006 appropriations bills, while the Senate has passed 11 of its 12 appropriations bills. Based on current House actions, CRS estimates that the House has approved an estimated \$134.2 billion for R&D in FY2006, \$2 billion above the President's request for FY2006. All of that increase can be attributed to the House approving an additional \$2.5 billion for DOD's science and technology programs (H.R. 2863). Most of the remaining House R&D funding actions tend to mirror the President's request with the exception of NOAA in the Department of Commerce. While the President proposed reducing NOAA's R&D budget 14.6% below FY2005 level, the House passed bill would reduce NOAA's R&D budget 20% below FY2005 (H.R. 2862, H.Rept. 109-118). However, the Senate passed bill (S.Rept. 109-88) approved a 10.7% increase over FY2005 funding level for NOAA. The House passed NIH bill appropriations bill (H.Rept. 109-143) matches the President's proposed \$194 million increase (0.7%) for FY2006. However, the Senate Appropriations Committee (S.Rept. 109-103) has approved \$908 million more than the President has requested for NIH.

The Bush Administration has requested \$132.2 billion in federal research and development (R&D) funding for FY2006. This sum represents a \$505 million increase over the FY2005 estimated funding level of \$131.7 billion. In real dollars, total federal R&D would decline for the first time since FY1996. The proposed FY2006 R&D budget reflects the Administration's objective of constraining the growth of federal discretionary spending.

For the first time since FY1995, funding for defense R&D (the sum of the Department of Defense's (DOD) and the Department of Energy's (DOE) defense R&D programs) would be flat with a requested \$74.9 billion. This is due primarily to a proposed 21% reduction in DOD's science and technology programs. Funding for federal civilian R&D is proposed to increase \$188 million to \$57 billion, a 0.3%

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<sup>1</sup> The two appropriations bills are the Department of Interior, P.L. 109-54, and the Legislative Branch, P.L. 109-55.

increase over the FY2005 estimated funding level. Most of this increase can be attributed to increases in the National Aeronautics and Space Administration (NASA) budget and the Department of Transportation. Based on current funding proposals, most of the other civilian R&D agencies' budgets are proposed to decline, in real dollars, in FY2006.

Funding for federal research (the sum of basic and applied research) would decline from \$55.2 billion to \$54.8, a 0.6% reduction. Total funding for basic research is proposed to decline from \$26.9 billion in FY2005 to \$26.6 billion in FY2006. Most of the decline in basic research support can be attributed to proposed reductions in DOD's and NASA's basic research programs.

The Administration proposes to reduce funding for all three of its multi-agency initiatives. Funding for the National Nanotechnology Initiative would decline 2.5% to \$1.1 billion, following four years of funding increases. The Networking and Information and Technology R&D initiative would decline 6.8% to \$2.4 billion, while the Climate Change Science Program is proposed to decline 1.4% to \$1.9 billion, primarily due to cuts in NASA's contributions to space-based observations of the environment.

The 109<sup>th</sup> Congress is facing difficult decisions for funding federal R&D. For the first time in a decade, total federal R&D funding is proposed to decline in real dollars. Since President Bush took office, defense R&D funding has increased 45%, in real dollars, while concomitantly civilian R&D has increased 23%. However, if the doubling of National Institutes of Health budget, between FY1999 and FY2003, is subtracted from the total, civilian R&D has declined in real dollars. Given the important role that federal civilian R&D plays in the education of future scientists and engineers, as well as the development of technological innovation, a variety of special interest groups are likely to call on Members of Congress to restore funding for civilian R&D. If the President insists on holding the line on civilian discretionary spending, any increase for civilian R&D funding would have to be obtained at the expense of other federal discretionary programs.

## Department of Agriculture (USDA)

The FY2006 budget request for research and education in the U.S. Department of Agriculture (USDA) is \$2,346.3 million, a 12.8% decrease (\$345.7 million) from the FY2005 estimate of \$2,692 million (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 request provides \$1,079.1 million for ARS, a 17.4% decrease (\$226.9 million) from the FY2005 estimate. Reductions of \$175 million are proposed in all projects

earmarked by Congress in order to finance the Department's high priority program increases. An additional \$28 million would be made available from project terminations to fund critical research priorities detailed in the budget request. The request includes an increase of \$2.5 million for bioenergy and biobased products research. Funding will be directed at developing a system for more efficient harvesting and processing of biomass crops for energy production. The FY2006 request proposes a \$1.8 million increase in air and water quality research and \$3.2 million for research in support of the President's Climate Change Research Initiative. 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. The FY2006 request for ARS includes \$65 million for buildings and facilities.

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 request for CSREES is \$1,041.2 million, a decrease of 12.1% (\$142.8 million) from the FY2005 estimate. The request proposes a reallocation of research formula funds made to institutions under the Hatch Act and McIntire-Stennis Act. The Animal Health formula grant program has been zeroed out in the FY2006 request. In addition, selected federal formula payments will be phased out over a two-year period and redirected at supporting a newly created regional, State, and local competitive grants program. Funding for formula distribution in FY2006 to the state Agricultural Experiment Stations (and other eligible institutions) would be \$275.9 million, almost level with the FY2005 estimate. The request proposes a slight increase for the 1890 formula programs. The FY2006 request funds the National Research Initiative (NRI) Competitive Grants Program at \$250 million, \$70.4 million above the FY2005 estimate. The increase will support initiatives in agricultural genomics, human nutrition and obesity, nanotechnology, food safety, water quality, and pest related programs. Language is included in the request that would remove USDA limitations on indirect costs which the Department states would help put the NRI on level with other federal competitive grant programs.

The Economic Research Service (ERS) is the principal intramural economic and social science research agency in USDA. The request for ERS in FY2006 is \$81 million, a \$7 million increase over FY2005. The majority of the increase (\$5.8 million) will continue the development of a consumer data and information system. 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 Administration requests \$145 million in FY2006, \$17 million above the FY2005 estimate. 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.

The FY2006 request provides support for several research priority areas and strategic goals. One priority is that of advancing cutting edge agricultural research by shifting funding from noncompetitive and formula programs to competitive programs. A new \$75 million competitive grant program is being created to allow State Agricultural Experiment Stations to support research focused on the needs and concerns at the regional, state, and local level. The Administration maintains that the potential of genetic resources has the capability of addressing the varied needs of agriculture. High 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 totaling \$9.2 million are proposed for animal genomes and plant genomes research. Also, the FY2006 budget request provides an increase of \$12.5 million 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. The FY2006 request provides a \$55 million increase for efforts to respond to agricultural health threats. In addition, USDA is concerned with training and educating the next generation of agricultural scientists and supporting core university-based research. The FY2006 request provides \$5 million for the creation of a Higher Education Agrosecurity Program that would award grants to colleges and universities for interdisciplinary degrees in such areas as food defense professionals.

On June 8, 2005, the House Committee on Appropriations passed H.R. 2744, the Agriculture, Rural Development, Food and Drug Administration, and Related Agencies Appropriations Bill (H.Rept. 109-102). The House provides a total of \$2,442.3 million for research and education in FY2006, \$96 million above the request, and \$249.7 million below the FY2005 estimate. The ARS is supported at \$1,122.8 million, \$43.9 million above the request, and \$183.5 million below FY2005 estimated funding level. Included in the support for ARS is \$87.3 million for buildings and facilities. Of that amount, \$58.8 million is for the National Centers for Animal Health, the amount requested by the Administration. H.R. 2744 funds CSREES at \$1,107.4 million, \$66.2 million above the request, and \$76.6 million below the FY2005 estimate. The House-passed bill provides \$75.9 million for the ERS, \$4.8 million below the request, and a slight \$1.7 million above FY2005. For the NASS, the support given is \$136.2 million, \$9 million below the request, and \$7.8 million above the FY2005 estimate.

On September 22, the Senate passed its version of H.R. 2744 (S.Rept. 109-92). The Senate bill provides a total of \$2,599.9 million for research and education in FY2006, \$253.6 million above the request and \$157.6 million above the House. Within the Senate bill, the ARS proposed to receives \$1,270.6 million, \$191.7 million above the request, and \$147.8 million above the House-passed version. CREES is supported at \$1,105.6 million, \$64.4 million above the request, and a slight \$1.8 million below the House bill. The Hatch Act Formula funding, contained in CREES, is provided \$178.7 million, almost double the amount in the Administration's request of \$89.4 million. The Senate-passed version of H.R. 2744

provides \$78.5 million for the ERS and \$145.2 million for NASS. The Senate included language in its report directing the ERS to conduct a national study determining the economic impact of cooperative models on rural communities and residents. The Committee stressed that research related to the study should be coordinated with cooperative research centers and other stakeholders of the cooperative community. (CRS Contact: Christine Matthews.)

**Table 1. U.S. Department of Agriculture R&D**

(\$ in millions)

	FY2005 Est.	FY2006 Req. <sup>a</sup>	FY2006 House	FY2006 Senate
<b>Agric. Research Service (ARS)</b>				
Product Quality/Value Added	\$104.6	97.7		
Livestock Production	84.1	63.4		
Crop Production	196.8	159.6		
Food Safety	102.7	107.6		
Livestock Protection	78.5	87.6		
Crop Protection	193.0	180.1		
Human Nutrition	83.7	81.7		
Environmental Stewardship	219.4	178.2		
National Agricultural Library	21.5	22.5		
Funds for Homeland Security	[30.2]	[69.2]		
Repair & Maintenance	17.8	17.8		
<b>Subtotal</b>	<b>1,102.0</b>	<b>996.1</b>	<b>1,035.5<sup>d</sup></b>	<b>1,110.0</b>
Buildings & Facilities	186.3	64.8	87.3	160.6
Trust Funds	18.0	18.0	0.0	0.0
<b>Total, ARS</b>	<b>1,306.3</b>	<b>1,078.9</b>	<b>1,122.8</b>	<b>1,270.6</b>
<b>Coop. St. Res. Ed. &amp; Ext. (CSREES) Research and Education</b>				
Hatch Act Formula	178.7	89.4	178.8	178.7
Cooperative Forestry Research	22.2	11.1	22.3	22.2
1890 Colleges and Tuskegee Univ.	12.3	12.5	37.7	37.5
Special Research Grants	135.5	18.3	92.1	110.3
NRI Competitive Grants	179.6	250.0	214.6	190.0
Animal Health & Disease Res.	5.1	0.0	5.1	5.1
Federal Administration	42.5	8.8	39.7	38.2
Higher Education <sup>b</sup>	50.7	55.9	51.3	54.1
<b>Total, Coop. Res. &amp; Educ.<sup>c</sup></b>	<b>655.5</b>	<b>545.5</b>	<b>662.5</b>	<b>652.2</b>
<b>Extension Activities</b>				
Smith-Lever Sections 3b&c	275.5	275.9	275.9	275.5
Smith-Lever Sections 3d	86.7	91.4	92.5	93.1
Renewable Resources Extension	4.1	4.1	4.1	4.1
1890 Research & Extension	16.8	14.9	16.8	12.3
Other Extension Prog. & Admin.	62.5	45.4	55.6	68.4
<b>Total, Extension Activities<sup>c</sup></b>	<b>445.6</b>	<b>431.7</b>	<b>444.9</b>	<b>453.4</b>
<b>Total, CSREES<sup>c</sup></b>	<b>1,184.0</b>	<b>1,041.2</b>	<b>1,107.4</b>	<b>1,105.6</b>
Economic Research Service	74.2	80.7	75.9	78.5
National Agricultural Statistics Service	128.4	145.2	136.2	145.2
<b>Total, Research, Education &amp; Economics</b>	<b>\$2,692.0</b>	<b>\$2,346.3</b>	<b>\$2,442.3</b>	<b>\$2,599.9</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 has 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 is 4.6% below the FY2005 level. The House provided \$8.5 billion, the Senate \$9.1 billion. For details, see **Table 2**.

The requested funding for Science is \$3.5 billion, a 3.8% decrease from FY2005. The House (H.R. 2419) and Senate each provided \$3.7 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. In the Biological and Environmental Research program, the request is a decrease of \$126 million, of which \$80 million corresponds 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. 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 requested funding for R&D in National Security is \$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. Within these totals, the House increased Inertial Confinement Fusion and reduced most other programs, while the Senate did the opposite. About 31% of the request for Inertial Confinement Fusion is for continued construction of the National Ignition Facility: the Senate eliminated this item completely. The request would increase funding for R&D on nuclear proliferation detection by \$46 million or 43%; both House and Senate increased funding for this activity even more than requested.

The requested funding for R&D in Energy Supply is \$1.6 billion, down 6.4% from FY2005. Within this total, Fossil Energy R&D is 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 requested funding for R&D in Environmental Quality is \$21 million. This is less than half the FY2005 level and follows several years of substantial reductions

that resulted from a reorientation of the program that followed an internal review of the Office of Environment in 2002. The House provided the requested amount; the Senate provided \$56 million. (CRS Contact: Daniel Morgan.)

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

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

## 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. **(CRS Contact: John Moteff.)**

**Table 3. Department of Defense RDT&E**  
(\$ in millions)

	FY2004	FY2005 Estimate	FY2006 Request	House Approp. <sup>f</sup> (H.R. 2863)	Senate Approp. <sup>h</sup>
<b>Accounts</b>					
Army	10,202	10,558	9,734	10,827	10,521
Navy	14,773	16,907	18,038	18,482	18,558
Air Force	20,233	20,812 <sup>c</sup>	22,612	22,665	21,859
Defense Agencies	18,856	20,612	18,803	19,515	19,301
(DARPA)	(2815)	(2,977)	(3,084)	(3,104)	(2,666)
(MDA <sup>a</sup> )	(7,567)	(8,783)	(7,775)	(7,632)	(7,921)
Dir. Test and Eval.	302	310	168	168	168
<b>Total Ob. Auth.</b>	<b>64,366</b>	<b>69,199</b>	<b>69,355</b>	<b>71,657</b>	<b>70,407</b>
<b>Budget Activity</b>					
Basic Research	1,358	1,513	1,318	1,453	1,446
Applied Research	4,347	4,850	4,139	5,057	4,842
Advanced Dev.	6,185	6,708	5,064	6,462	5,880
Advanced Component Dev. and Prototypes	12,947	14,711	14,143	13,909	14,095
Systems Dev. and Demo.	15,339	17,222	19,754	19,179	19,363
Mgmt. Support <sup>b</sup>	4,443	3,721	3,777	3,941	3,990
Op. Systems Dev. <sup>c</sup>	19,747	20,475	21,160	21,655	20,790
Total Ob. Auth. <sup>d</sup>	64,366	69,200	69,355	71,656	70,406
<b>Other Defense Programs</b>					
Defense Health Program	486	507	169	444 <sup>g</sup>	516
Chemical Agents and Munitions Destruction	252	205	48	48	72

**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.

## National Aeronautics and Space Administration (NASA)

NASA's FY2006 total budget request is \$16.456 billion, a 2.4% increase over the amount it received in the FY2005 Consolidated Appropriations Act—\$16.07 billion (adjusted for the across the board rescission). Separately, NASA received

\$126 million in a FY2005 emergency supplemental for hurricane relief, making its total FY2005 budget \$16.196 billion (see **Table 4**).

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, the FY2006 R&D request is \$11.5 billion, compared to an estimate of \$10.7 billion in FY2005. Estimating the FY2005 figure is complicated because NASA has changed its budget structure in each of the past several years, making comparisons between fiscal years difficult. Also, Congress gave NASA "unrestrained transfer authority" for FY2005 to shift money between its two major accounts. NASA is informing Congress of how it plans to spend its FY2005 funds through periodic updates to its FY2005 operating plan. Using the most recent update (May 10, 2005), the R&D total is \$10.7 billion, less than the \$11 billion estimated from the December 23, 2004 operating plan, reflecting NASA's need to shift funds from R&D programs into returning the shuttle to flight status.

In deliberations on the FY2006 budget, the House approved \$16.471 billion (\$15 million more than the request) for NASA as a whole in the FY2006 Science, State, Justice, Commerce, and Related Agencies (SSJC) appropriations bill (H.R. 2862, H.Rept. 109-118). The Senate version, as reported from committee (S.Rept. 109-88), cuts the request by \$60 million. The NASA authorization bill approves a \$15 million increase in the House version (H.R. 3070, as marked up by a House Science subcommittee), and a \$100 million increase in the Senate version (S. 1281, as ordered reported from the Senate Commerce Committee). The bills and associated reports do not break down recommended NASA funding in a manner that permits R&D funding to be determined by CRS. **Table 4** provides the available data.

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." Under this "Vision for Space Exploration," the space shuttle program would be terminated in 2010, when space station construction is expected to be completed; U.S. space station research would focus only on that which is needed to support extended stays by humans on the Moon and eventual trips to Mars instead of the broadly-based program that was planned; and NASA would end its involvement in the space station program by FY2017. By terminating the shuttle and space station earlier than expected, that funding could be redirected to accomplishing the Vision. NASA would build a Crew Exploration Vehicle (CEV) whose primary purpose is sending astronauts to the Moon, but could also be used to take them to the space station by 2014. U.S. astronauts would have to rely on Russia to take them to and from the space station between 2010 and 2014. Most of the funding for the Vision would come from redirecting money from other NASA activities. Part of the debate over the Vision is the future of those "other" activities, including aeronautics, Earth science, and certain space science disciplines. Other issues include whether the shuttle should be terminated in 2010, if it should be retained until the CEV is available, or if a specific number of required shuttle missions should be determined and the system operated until those mission are completed. Another issue is whether U.S. use of the space station should end in FY2017 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 *Columbia* accident, but then-NASA Administrator O’Keefe canceled that mission, primarily because of shuttle safety concerns. Hubble advocates have been seeking 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. Michael Griffin, has pledged to revisit the Hubble issue after the space shuttle return to flight status and its current safety characteristics are better understood. (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.	House App.	Senate App.	Senate Auth.	House Auth.
Science, Aeronautics, and Exploration	7,619.	9,661.	9,726.	9,761.	9,661.	
Exploration Capabilities	3,107.	1,857.	<sup>b</sup> 6,713.	<sup>b</sup> 6,603.	<sup>b</sup> 6,863.	
<b>Total R&amp;D</b>	<b>10,726.</b>	<b>11,518.</b>	— <sup>b</sup>	— <sup>b</sup>	— <sup>b</sup>	— <sup>b</sup>
<b>Total NASA</b>	<sup>c</sup> 16,196.	16,456.	16,471.	16,396	16,556.	16,471.

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

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

- Figures in this column (other than R&D) are from NASA’s May 10, 2005 Operating Plan update and are not final. See text for explanatory comments.
- The appropriations committees, and the Senate Commerce Committee, do not identify funding amounts below the account level, and the House Science Committee identified funding only at the agency level. Thus, it is not possible to determine the amounts recommended only for R&D. For convenience, the total for Exploration Capabilities is shown where available, but it includes non-R&D funding.
- Includes \$126 million FY2005 supplemental. Regular appropriations were \$16.07 billion.

## National Institutes of Health (NIH)

The President has requested a total FY2006 budget for NIH of \$28.745 billion, an increase of \$195 million (0.7%) over the FY2005 total program level of \$28.550 billion (see **Table 5**). The House has accepted the President’s funding levels, but has made some shifts in the accounts that supply the funds. The Senate Appropriations Committee has recommended a total program level of \$29.553 billion, an increase of \$1,003 million (3.5%) over the FY2005 level and \$808 million over the request and House levels. The bulk of NIH’s budget comes through the appropriation for the Departments of Labor, Health and Human Services, and Education and Related Agencies (H.R. 3010, H.Rept. 109-143 and S.Rept. 109-103). An additional small amount for environmental work related to Superfund comes from the Interior,

Environment, and Related Agencies appropriation, H.R. 2361, which has passed both the House and the Senate. (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.

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 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 have modified their stance, maintaining that a 6% increase is 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.

For FY2006, the President's request once again places major emphasis on support of research project grants, and offsets the increases with cuts in research facilities construction funds. RPGs account for 54% of the total NIH budget (\$15.5 billion). The proposed total of 38,746 RPGs is 402 lower than in FY2005, including 658 fewer noncompeting grants but a higher (and more costly) number of new and competing renewal grants (9,463 compared to 9,216). Funding for the competing awards has to cover a large cohort of expensive AIDS clinical trials and HIV vaccine grants. In the request, no inflationary adjustments are provided for noncompeting grants, and no average cost increase is included for new and competing grants. The Senate committee recommendation provides sufficient funding to pay the



continuation grants at their committed levels and to increase the average cost of competing RPGs by 3.2%, the level of the biomedical research price index. The request proposes increases for research center grants (up 2.3% overall), especially biotechnology centers (up 15%); R&D contracts (up 4.9%), with increases focused in biodefense and AIDS; the NIH intramural research program (up 0.8%); and research training grants (up 0.3%), where the number of training slots would be reduced in order to pay for increases in stipends and health insurance coverage for post-doctoral trainees.

The two funding mechanisms proposed for decreases in the request are extramural research facilities construction grants (down 83% from \$179 million in FY2005 to \$30 million) and the intramural buildings and facilities account (down 24% from \$118 million to \$90 million). In the extramural program, the \$30 million would be used for biodefense laboratories (down from \$149 million in one-time costs for such labs in FY2005), while non-biodefense facilities would have no new funding (down from \$30 million that Congress provided in FY2005 after a presidential request for zero). The intramural facilities funding would support maintenance needs on the NIH campus but no new construction. The House agreed to those proposed decreases, but the Senate committee recommended \$30 million for non-biodefense extramural facilities and added \$32 million for intramural facilities. Aside from facilities, the House and Senate bills and reports do not specify funding levels for particular research mechanisms.

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 request maintains the 2.4% level that Congress set in FY2005 for the tap (up from 2.2% in FY2004). The House bill funds fewer activities through the evaluation transfer, and sets the tap at no more than 1.3%. The Senate committee uses the evaluation monies in ways similar to the request, and caps the transfers at 2.5%.

Specific priorities highlighted in the budget request include biodefense, HIV/AIDS, neurosciences research, and the initiatives collectively known as the NIH Roadmap for Medical Research. The *Roadmap*, launched in September 2003, has identified critical scientific gaps that may be constraining rapid progress in biomedical research, and has set out a list of NIH-wide priorities and initiatives to address them. Roadmap initiatives would be funded at \$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. Three core themes focus on new paths to biological discoveries (\$169 million), building multidisciplinary research teams (\$44 million), and improving the clinical research infrastructure (\$120 million). *Biodefense* activities would receive a total of \$1.8 billion, a net increase of \$56 million (3.2%) over FY2005. After accounting for the non-recurring costs for laboratories, research activities would increase by \$175 million (11%) over FY2005. Of those totals, \$1.7 billion is requested for the regular NIH appropriation (up \$6 million or 0.35%, with research increasing by \$125 million or 8%), and \$97 million is requested through the Public Health and Social Services Emergency Fund account in the Office of the HHS Secretary. That money is targeted for research on countermeasures against nuclear and radiological threats (\$47 million, same as FY2005) and chemical threats (\$50 million, new in FY2006). The House and Senate committees

both placed the \$97 million in the Office of the NIH Director, for distribution to relevant institutes and centers, and did not give NIH any additional funding from the Emergency Fund. Neither committee identified a specific funding level for biodefense research. *HIV/AIDS* funding, at \$2.9 billion or over 10% of the NIH budget, is proposed for a \$12 million overall increase, which includes a \$100 million increase in research on HIV vaccines. The budget therefore gives decreased priority to other HIV/AIDS activities such as research on prevention, therapeutics, or international or minority AIDS. In the request and in the Senate committee recommendation, NIH would continue to support the U.S. contribution to the Global Fund to Fight HIV/AIDS, Tuberculosis, and Malaria through a transfer of \$100 million from the NIH appropriation to the Global Fund. The House bill drops the language authorizing the transfer, and provides \$100 million less funding. (The Global Fund is slated to receive increased funding through the Foreign Operations appropriations bill.) The *NIH Blueprint for Neuroscience Research*, at \$26 million requested, is a new framework of initiatives and working groups among 15 institutes and centers involved in the neurosciences. In both intramural and extramural research, it would encourage pooling resources, enhancing training, and developing research tools and infrastructure to serve the whole neuroscience community.

After a hiatus of a dozen years, Congress is moving toward action on reauthorization legislation for NIH. A number of hearings have been held in the past two Congresses, 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 House	FY2006 Sen. Cmte.
Cancer (NCI)	\$4,825.3	\$4,841.8	\$4,841.8	\$4,960.8
Heart/Lung/Blood (NHLBI)	2,941.2	2,951.3	2,951.3	3,023.4
Dental/Craniofacial Research (NIDCR)	391.8	393.3	393.3	405.3
Diabetes/Digestive/Kidney (NIDDK)	1,713.6	1,722.1	1,722.1	1,767.9
Neurological Disorders/Stroke (NINDS)	1,539.4	1,550.3	1,550.3	1,591.9
Allergy/Infectious Diseases (NIAID) <sup>b</sup>	4,402.8	4,459.4	4,359.4	4,547.1
General Medical Sciences (NIGMS)	1,944.1	1,955.2	1,955.2	2,002.6
Child Health/Human Development (NICHD)	1,270.3	1,277.5	1,277.5	1,311.0
Eye (NEI)	669.1	673.5	673.5	693.6
Environmental Health Sciences (NIEHS)	644.5	647.6	647.6	667.4
Aging (NIA)	1,052.0	1,057.2	1,057.2	1,090.6
Arthritis/Musculoskeletal/Skin (NIAMS)	511.2	513.1	513.1	525.8
Deafness/Communication Disorders (NIDCD)	394.3	397.4	397.4	409.4
Nursing Research (NINR)	138.1	138.7	138.7	142.5
Alcohol Abuse/Alcoholism (NIAAA)	438.3	440.3	440.3	452.3
Drug Abuse (NIDA)	1,006.4	1,010.1	1,010.1	1,035.2
Mental Health (NIMH)	1,411.9	1,417.7	1,417.7	1,460.4
Human Genome Research (NHGRI)	488.6	491.0	491.0	502.8
Biomedical Imaging/Bioengineering (NIBIB)	298.2	299.8	299.8	309.1
Research Resources (NCRR)	1,115.1	1,100.2	1,100.2	1,188.1
Complementary/Alternative Med (NCCAM)	122.1	122.7	122.7	127.0
Minority Health/Health Disparities (NCMHD)	196.2	197.4	197.4	203.4
Fogarty International Center (FIC)	66.6	67.0	67.0	68.7
Library of Medicine (NLM)	315.1	318.1	318.1	327.2
Office of Director (OD) <sup>c</sup>	358.0	385.2	482.2	487.4
Buildings & Facilities (B&F)	110.3	81.9	81.9	113.6
<i>Subtotal, Labor/HHS Appropriation</i>	<i>\$28,364.5</i>	<i>\$28,509.8</i>	<i>\$28,506.8</i>	<i>\$29,414.5</i>
Superfund (Interior approp to NIEHS) <sup>d</sup>	79.8	80.3	80.3	80.3
<b>Total, NIH discretionary budget authority</b>	<b>\$28,444.4</b>	<b>\$28,590.1</b>	<b>\$28,587.1</b>	<b>\$29,494.8</b>
Pre-appropriated Type 1 diabetes funds <sup>e</sup>	150.0	150.0	150.0	150.0
NLM program evaluation <sup>f</sup>	8.2	8.2	8.2	8.2
Public Health/Soc Serv Emergency Fund <sup>f</sup>	47.0	97.0	0.0	0.0
Global Fund transfer (AIDS/TB/Malaria) <sup>b</sup>	-99.2	-100.0	0.0	-100.0
<b>Total, NIH program level</b>	<b>\$28,550.4</b>	<b>\$28,745.3</b>	<b>\$28,745.3</b>	<b>\$29,553.0</b>

Source: H.Rept. 109-143 and S.Rept. 109-103 on H.R. 3010.

- a. FY2005 reflects across-the-board reduction (0.8%) totaling \$229.390m, and Labor/HHS/Ed reduction of \$6.787m for salaries and expenses.
- b. Except in the FY2006 House bill, NIAID totals include funds for transfer to the Global Fund to Fight HIV/AIDS, TB, and Malaria.
- c. OD has Roadmap funds for distribution to ICs (FY2005, \$59.5m; FY2006, \$83.0m). In the FY2006 House and Senate bills, OD has \$97.0m for terrorism countermeasures (see note f).
- d. Separate account in the Interior/Related Agencies appropriation for NIEHS activities mandated in Superfund legislation (formerly in VA/HUD appropriation).
- e. Funds available to NIDDK for diabetes research in accordance with P.L. 107-360.
- f. Additional funds available: From the program evaluation set-aside (sec. 241 of the Public Health Service Act), \$8.2m for NLM each year; and from the Public Health and Social Services Emergency Fund appropriation, \$47.0m in the FY2005 appropriation and the FY2006 request for NIH research on nuclear and radiological countermeasures, and \$50.0m in the FY2006 request for chemical countermeasures. The House and Senate FY2006 bills place the \$97.0m 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>2</sup> Also at the May 2005 meeting, the NSB approved a facility plan,

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<sup>2</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>FY2005 Est.</b>	<b>FY2006 Req.</b>	<b>FY2006 House</b>	<b>FY2006 Senate</b>
Res. & Related Act. Biological Sciences	\$576.6	\$581.8		
Computer & Inform. Sci. & Eng.	613.7	620.6		
—Engineering	561.3	580.7		
—Geosciences	694.2	709.1		
—Math & Physical Sci.	1,069.9	1,086.2		
—Social, Behav. & Econ. Sci.	197.0	198.8		
—Office of International Sci. & Eng.	33.7	34.5		
—U.S. Polar Programs	344.4	386.9		
Integrative Activities	129.9	134.9		
<b>Subtotal Res. &amp; Rel. Act</b>	<b>\$4,220.6</b>	<b>\$4,333.5</b>	<b>\$4,377.5<sup>c</sup></b>	<b>\$4,345.2</b>
Ed. & Hum. Resr.	841.4	737.0	807.0	747.0
Major Res. Equip. & Facil. Constr.	173.7	250.0	193.4	193.4
Salaries & Expenses	223.2	269.0	250.0	229.9
National Science Board	4.0	4.0	4.0	4.0
Office of Inspector General	10.0	11.5	11.5	11.5
<b>Total NSF<sup>a</sup></b>	<b>\$5,472.8</b>	<b>\$5,605.0</b>	<b>\$5,643.4</b>	<b>\$5,531.0</b>

- a. The totals do not include carry overs or retirement accruals. Totals may not add due to rounding.  
b. 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.  
c. 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 at 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 Integrative Graduate Education and Research Traineeship, Graduate Research

<sup>2</sup> (...continued)

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

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.

On June 16, 2005, the House Committee on Appropriations passed H.R. 2862, Science, State, Justice, Commerce, and Related Agencies Appropriations Bill, FY2006 (H.Rept. 109-118). The bill provides a total of \$5,643.4 million for NSF in FY2006, \$38.4 million above the Administration's request and \$170.6 million above the FY2005 estimate. Included in the total is \$4,377.5 million for R&RA, \$44 million above the request and \$156.9 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 level. The MREFC account is funded at \$193.4 million, \$56.6 million below the request and \$19.7 million above the FY2005 estimate. The House does not include support 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. All other projects included in the budget are funded at the requested level. On June 23, 2005, the Senate reported the Commerce, Justice, Science Appropriations Bill, FY2006 (S.Rept. 109-88). The Senate bill provides a total of \$5,531 million for the NSF, \$74 million below the request and \$112.4 million below the House allowance. R&RA is funded at \$4,345.2 million in FY2006, \$11.7 million above the request, and \$35.2 million above the House-passed version. Included in the bill is \$48 million for icebreaking activities. 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. Support for the MREFC is \$193.4 million, \$56.6 million below the Administration's request, and the same as provided by the House. The committee recommends \$747 million in FY2006 for EHR, \$10 million above the request and \$60 million below the House-passed version. **(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>3</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, 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

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<sup>3</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).



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)

	<b>FY2005 Enacted</b>	<b>FY2006 Request</b>	<b>FY2006 House</b>	<b>FY2006 Senate</b>	<b>FY2006 Enacted</b>
<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 full budget request of \$3.58 billion.<sup>4</sup> The R&D request is \$92 million, or 14.6% less than the estimated \$626 million appropriated for FY2005. (see **Table 8**). The \$315 million request for the Oceanic and Atmospheric Research (OAR), which conducts most of NOAA's R&D program and manages R&D facilities, would be cut by \$23 million, or 6.8% below FY2005 estimated level. Compared with FY2005 appropriations, the President would cut tsunami hazard research funding, but increase funding for detection hardware and to add personnel at the two National Weather Service tsunami warning centers for 24/7 coverage. (For additional information, see CRS Report RL32739, *Tsunamis: Monitoring, Detection and Early Warning Systems*, by Wayne A. Morrissey.)

The House passed bill (H.R. 2862 H.Rept. 109-118) provides \$501 million for NOAA's R&D programs, a decrease of \$150 million, 20% below FY2005 estimated funding. The House bill would cut funding for OAR's R&D programs 15% below FY2005 levels, to \$286 million. All other NOAA R&D programs, except for the National Weather Service, would see their budgets decline below FY2005 funding. The House bill would reduce NOAA's National Ocean Service program by almost 40%. This proposed reduction is at odds with U.S. Oceans Policy Commission (OPC's) recommendations for doubling ocean and coastal research budgets over the next five years. (For information on the OPC recommendations and the President's response, see CRS Issue Brief IB10132, *Ocean Commissions: Ocean Policy Review and Outlook*, by John Justus, et. al.)

In contrast to the House, the Senate passed version of the Commerce-Justice-Science Appropriations bill (H.R. 2862, S.Rept. 109-88) proposes to increase NOAA's R&D budget to \$693 million, an increase of 10.7% over FY2005 estimated funding. The Senate also recommended increasing OAR's R&D budget from \$338 million in FY2005, to \$380 million in FY2006, a 12.4% increase. The Senate bill also proposes to increase funding for the National Ocean Service program by almost 20% to \$121 million. Finally, the Senate bill proposes to reduce a category entitled "All Other NOAA R&D" activities from \$94 million in FY2005, to \$76 million in FY2006, a 19% decline. For information on NOAA's full budget request for FY2006, see CRS Report RL38225, *Science, State, Justice, Commerce and Related Agencies (House)/Commerce, Justice, Science and Related Agencies (Senate): FY2006 Appropriations*, by Ian F. Fergusson, Coordinator. (**CRS Contact: Wayne A. Morrissey.**)

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<sup>4</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	FY2006 Request	FY2006 House	FY2006 Senate
R&D Total	626	534	501	693
Office of Oceanic and Atmospheric Research	338	315	286	380

**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 is from the American Association for the Advancement of Science Budget and Policy Program (AAAS).

## 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 requests \$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 is \$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 is 12.5% above the current fiscal year and includes \$5.7 million for the Baldrige National Quality Program. MEP would be funded at \$46.8 million, 56% below FY2005 support. The construction budget would be \$58.9 million. (See **Table 9**.)

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

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

by the Administration and more than four times that included in the House version of the bill.

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 brings support for the program up to pre-FY2004 levels. The Advanced Technology Program is financed at \$136.5 million (20% below FY2004) and the construction budget received \$72.5 million. The legislation also rescinds \$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 FY2005 appropriations legislation, it is 20% 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 restores financing for MEP in FY2005 to the level that existed prior to the 63% reduction taken in FY2004. 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)

<b>NIST Program</b>	<b>FY2005*</b>	<b>FY2006 Request</b>	<b>H.R. 2862</b>	<b>Senate Version H.R. 2862</b>
<b>NIST Total</b>	695.3	532	548.7	844.5
<b>STRS**</b>	378.8	426.3	397.7	399.9
<b>ATP</b>	136.5	0	0	140
<b>MEP</b>	107.5	46.8	106	106
<b>Construction</b>	72.5	58.9	45	198.6

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

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

## 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. (CRS Contact: Mike Davey.)

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

Department of Transportation	FY2005 Estimate	FY2006 Request	FY2006 <sup>b</sup> Senate	FY2006 House
<b>Federal Highway Administration</b>	337	444	319	345
<b>Federal Aviation Administration</b>	263	233	285	246
<b>Others<sup>a</sup></b>	144	131	165	136
<b>Total</b>	744	808	742	727

- a. "Other" includes: Office of the Secretary, Federal Motor Safety Administration, Federal Railroad Administration, Pipeline Hazardous Materials Administration, and the Research & Innovation Administration.
- b. FY2006 R&D data for the House, and Senate is from the American Association for the Advancement of Science.

## 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	69,912	69,550	72,148	70,407	
Homeland Security	1,313	1,368	1,290	1,454	
Nat. Institutes of Health	28,550	28,745	28,745	29,553	
NASA	10,726 <sup>a</sup>	11,497	11,542	11,464	
Nat. Science Foundation	5,473	5,605	5,643	5,531	
EPA	780	791	796	761	772
NIST	695	532	549	845	
NOAA	626	534	501	693	
Dept. of Energy	8,809	8,403	8,496	9,108	
Dept. of Transportation	744	808	727	742	
Dept. of Interior	611	581	619	616	620
Dept. of Agriculture	3,146	2,666	2,893	3,028	
Other	1,808	1,537	1,463	1,804	
<b>Total</b>	135,198	132,537	135,412	136,006	

a. The appropriations committees, and the Senate Commerce Committee, do not identify funding amounts below the account level, and the House Science Committee identified funding only at the agency level. Thus, it is not possible to determine the amounts recommended only for R&D. NASA R&D estimates for the House and Senate are from AAAS.