

CRS Report for Congress

Federal Research and Development Funding: FY2008

June 6, 2007

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Summary

The Bush Administration has requested \$142.7 billion in federal research and development (R&D) funding for FY2008. As in the recent past, the FY2008 proposed increase over the FY2007 funding level is due to significant funding increases in the Department of Defense (DOD); the National Aeronautics and Space Administration's (NASA's) space vehicles development program; and the continuation of the American Competitiveness Initiative (ACI). The President initiated the ACI in FY2007 and continues to promote it in his FY2008 R&D budget.

While the ACI is likely to be well received by lawmakers, other administration proposals for agency R&D funding are likely to encounter strong opposition in Congress. For example, the administration's proposed budget for the National Institutes of Health (NIH) is \$28.5 billion, a decrease of \$529 million (1.8%) below the estimated 2007 funding level. This proposed level represents the fifth year in a row the administration has proposed cutting NIH's budget.

While NASA's R&D budget would increase in FY2008, the entire increase is designated for two major initiatives: finishing the international space station and developing the crew launch vehicle/crew exploration vehicle combination. However, as a result of these priorities, funding for NASA's basic and applied research programs has declined 18% since FY2006.

Funding for the Department of Defense is proposed to increase by \$765 million to \$79 billion in FY2008. DOD's weapons development program would increase to an all time high of \$68.1 billion. However, DOD's science and technology research programs, which include medical research and technology development, would decline 21.1% to \$10.9 billion dollars, which would negate seven years of past funding increases.

R&D funding for the U.S. Geological Survey, the lead science agency for the Department of the Interior is proposed to decline 4% in FY2008. The Environmental Protection Agency's R&D budget is proposed to be cut 3.2% from its estimated FY2007 funding level. As a result, according to the American Association for the Advancement of Science, funding for EPA's R&D budget would fall to its lowest level in two decades, in constant FY2007 dollars.

Contents

Overview	1
Department of Energy (DOE)	3
Department of Defense (DOD)	4
National Aeronautics and Space Administration (NASA)	9
National Institutes of Health (NIH)	11
National Science Foundation (NSF)	15
Department of Agriculture (USDA)	18
Department of Homeland Security (DHS) R&D	22
Department of Commerce (DOC)	25
National Oceanic and Atmospheric Administration (NOAA)	25
National Institute of Standards and Technology (NIST)	26
Department of Transportation (DOT)	27
Department of the Interior (DOI)	28
Environmental Protection Agency (EPA)	29

List of Tables

Table 1. Department of Energy R&D	3
Table 2. Department of Defense RDT&E	7
Table 3. Department of Defense RDT&E, FY2007 Emergency Supplemental ..	8
Table 4. NASA R&D	10
Table 5. National Institutes of Health	14
Table 6. National Science Foundation	18
Table 7. U.S. Department of Agriculture R&D	21
Table 8. Department of Homeland Security R&D	24
Table 9. NOAA R&D	25
Table 10. NIST	27
Table 11. Department of Transportation R&D	28
Table 12. Department of The Interior R&D	29
Table 13. Environmental Protection Agency S&T	32

Federal Research and Development Funding: FY2008

Overview

Congress continues to have a strong interest in supporting federal research and development (R&D) activities. The federal government has a history of playing an important role in supporting efforts that have led to emerging technologies. These include such things as cancer and AIDS research, the development of nuclear power, and nanotechnology. Most of the research funded by the federal government is in support of specific activities of the federal government as reflected by the different missions of the funding agencies. The federal government has become the largest supporter of long term fundamental basic research, primarily because the private sector asserts it cannot recapture the full cost of long-term fundamental research. Some of the major agencies funding basic research include the Department of Defense (DOD), the National Institutes of Health (NIH), the National Science Foundation (NSF), and the Department of Energy (DOE).

The Bush Administration has requested \$142.7 billion in federal R&D funding for FY2008.¹ As in the recent past, the FY2008 proposed increase over the FY2007 funding level is due to significant funding increases in the DOD and in the National Aeronautics and Space Administration's (NASA's) space vehicles development program, as well as the continuation of the American Competitiveness Initiative (ACI).

The President proposed the ACI in response to growing concerns about America's ability to compete in the technological global market place. Between FY2007 and FY2015, the \$136 billion initiative would commit \$50 billion for research, science education, and the modernization of research infrastructure. The remaining \$86 billion would finance a revised Research and Experimental (R&E)

¹ The present FY2008 R&D request was released before final passage of the Revised Continuing Appropriations Resolution, hereafter CR, (P.L. 110-5, February 15, 2007, H.J.Res. 20), which contains estimated agencies' funding levels for FY2007. Actual FY2007 appropriations levels were not specified by the CR. Only two agencies, DOD and the Department of Homeland Security have received enacted FY2007 appropriations bills. As a result, agencies were directed by Congress to submit their FY2007 estimated funding levels and operating plans to Congress by March 15, 2007. Estimated funding levels for different agencies have become available as the agencies report their FY2007 operating plans. Tables in this report reflect the agencies' FY2007 estimates derived from the CR. Actual agencies' FY2007 R&D funding levels may not be available until the President's FY2009 budget is released. Unless otherwise indicated, all funding data are in current dollars. The FY2006 R&D numbers reflect congressionally mandatory funding rescissions.

tax incentive over the next 10 years. The current R&E tax credit expires at the end of 2007.²

As part of the \$50 billion for research, the President, in February 2006, called for doubling federal R&D funding over 10 years. That increase included the physical sciences and engineering research in three agencies: the National Science Foundation (NSF), the Department of Energy (DOE) Office of Science, and the National Institute of Standards and Technology (NIST). According to the Administration, in FY2008, ACI funding for NSF would increase \$409 million, DOE Office of Science funding would increase \$296 million, and NIST's core intramural research would increase \$59 million.³

Despite continued support for the ACI, total federal support for research (basic and applied), would decrease 2% in FY2008. A decline in research funding at NIH, the Department of Agriculture, NASA, DOD, and other agencies would offset increases proposed for the ACI. According to the American Association for the Advancement of Science (AAAS), the federal research portfolio would decline for the fourth year in a row, a decrease of 7.5% since 2004.

Support for three federal multiagency research initiatives would vary. The National Nanotechnology Initiative is proposed to increase 4% to \$1.447 billion (see CRS Report RS20589, *Manipulating Molecules: Federal Support for Nanotechnology Research*, by Michael E. Davey). Funding for the Networking and Information Technology R&D Initiative would essentially remain at the same level with funding at \$3.057 billion (see CRS Report RL33586, *The Federal Networking and Information Technology Research and Development Program: Funding Issues and Activities*, by Patricia Moloney Figliola). The administration is proposing \$1.544 billion for the Climate Change and Science Program, a decrease of 7%, primarily due to a decrease in NASA's funding (see CRS Report RL33817, *Climate Change: Federal Expenditures*, by Jane A. Leggett).

² See *Rising Above The Gathering Storm and Energizing and Employing America for a Brighter Economic Future*, The National Academy of Sciences, the National Academy of Engineering, and the Institute of Medicine, The National Academies, 500 Fifth Street, NW Washington, DC 20001, 2005.

³ Based on P. L. 110-5, both the House and Senate FY2007 appropriations actions would partially fund the President's ACI request. Based on House and Senate actions, in FY2007 DOE's Office of Science would receive \$200 million of ACI funding, NSF an estimated \$217 million, and NIST an estimated \$37 million of ACI funding.

Department of Energy (DOE)

The Department of Energy has requested \$9.781 billion for R&D in FY2008, including activities in three major categories: Science, National Security, and Energy. (For details, see **Table 1.**) This request is 6.1% above the FY2007 level of \$9.220 billion.

Table 1. Department of Energy R&D
(\$ in millions)

	FY2006 Actual	FY2007 Op. Plan	FY2008 Request
Science	\$3,632.0	\$3,797.3	\$4,397.9
Basic Energy Sciences	1,110.1	1,250.2	1,498.5
High Energy Physics	698.2	751.8	782.2
Biological and Environmental Research	564.1	483.5	531.9
Nuclear Physics	357.8	422.8	471.3
Fusion Energy Sciences	280.7	319.0	427.8
Advanced Scientific Computing Research	228.4	283.4	340.2
Other	392.7	286.6	346.0
National Security	3,429.7	3,235.5	3,131.6
Weapons Activities ^a	2,306.4	2,161.9	2,036.7
Naval Reactors	781.6	781.8	808.2
Nonproliferation and Verification R&D	312.7	270.4	265.3
Defense Environmental Cleanup TD&D	29.0	21.4	21.4
Energy	1,783.6	2,186.9	2,251.8
Energy Efficiency and Renewable Energy ^b	849.2	1,192.6	1,031.3
Fossil Energy R&D	580.7	592.6	566.8
Nuclear Energy R&D	221.1	302.6	567.7
Electricity Delivery and Energy Reliability R&D	132.6	99.1	86.0
Total	8,845.3	9,219.7	9,781.3

Source: CRS analysis of the DOE's FY2007 Operating Plan by Appropriations, [<http://www.doe.gov/media/FY2007OperatingPlanForDOE.pdf>].

- a. Includes Stockpile Services R&D Support, Stockpile Services R&D Certification and Safety, Reliable Replacement Warhead, 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.

The requested funding for Science is \$4.398 billion, a 16% increase from FY2007. This increase reflects the American Competitiveness Initiative (ACI), which

the President announced in February 2006 in his State of the Union address. Over the next 10 years, the ACI would double R&D funding for the DOE Office of Science and two other agencies. The requested increase relative to FY2007 is enlarged because the FY2007 appropriation (under the year-long continuing resolution, P.L. 110-5) was \$304 million less than the FY2007 request, even though the House and Senate regular appropriations bills for FY2007 would both have provided more than the FY2007 request. In the Basic Energy Sciences program, most of the requested \$248 million increase in FY2008 would support increased facility operating time as requested in FY2007 and supported by both the House and the Senate in the regular FY2007 appropriations bills. In Fusion Energy Sciences, almost all of the requested \$109 million increase in FY2008 is for the International Thermonuclear Experimental Reactor (ITER), whose estimated U.S. total cost remains at \$1.122 billion through FY2014, with operating costs thereafter now estimated at \$57 million per year.

The requested funding for R&D in National Security is \$3.132 billion, a 3.2% decrease. Most of the reduction results from the scheduled completion of construction projects, most notably the National Ignition Facility (NIF) at Lawrence Livermore National Laboratory. The request for the Reliable Replacement Warhead program is \$89 million, an increase of \$53 million.

The requested funding for R&D in Energy is \$2.252 billion, up 3.0% from FY2007. Within this total, R&D on nuclear, hydrogen, biomass, and solar energy would increase, while geothermal and natural gas and oil technology programs would be terminated. The requested \$267 million increase for Nuclear Energy R&D would mostly go to the Advanced Fuel Cycle Initiative, which is the main U.S. component of the Global Nuclear Energy Partnership, an effort to develop nuclear energy technologies that minimize nuclear waste and the threat of nuclear proliferation. FY2007 funding for the geothermal and natural gas and oil technology programs is already substantially below FY2006 levels. **(CRS Contact: Daniel Morgan.)**

Department of Defense (DOD)

Congress supports research and development in the Department of Defense (DOD) through its Research, Development, Test and Evaluation (RDT&E) appropriation. The appropriation primarily supports the development of the nation's future military hardware and software and the technology base upon which those products rely.

Nearly all of what the DOD spends on RDT&E is appropriated in Title IV of the defense appropriation bill (see **Table 2**). However, RDT&E funds are also requested as part of the Defense Health Program and the Chemical Agents and Munitions Destruction Program. The Defense Health Program supports the delivery of health care to DOD personnel and family. Program funds are requested through the Operations and Maintenance appropriation. The program's RDT&E funds support Congressionally directed research in such areas as breast, prostate, and ovarian cancer and other medical conditions. The Chemical Agents and Munitions Destruction Program supports activities to destroy the U.S. inventory of lethal chemical agents and munitions to avoid future risks and costs associated with storage. Funds for this

program are requested through the Army Procurement appropriation. Typically, Congress has funded both of these programs in Title VI (Other Department of Defense Programs) in the defense appropriations bill. More recently, RDT&E funds have also been requested and appropriated as part of DOD's separate funding to support the Global War on Terror (GWOT). These appropriations have been located in Title IX of the defense appropriations bill. The Joint Improvised Explosive Device Defeat Fund, part of the GWOT funding, contains additional RDT&E monies. The Joint Improvised Explosive Device Defeat Office, which now administers the Fund, tracks, but does not report, the amount of funding allocated to RDT&E.

For FY2008, the Bush Administration requested \$75.1 billion for DOD's baseline Title IV RDT&E, roughly \$800 million less than the total obligational authority available for Title IV in FY2007. The FY2008 requests for RDT&E in the Defense Health Program and the Chemical Agents and Munitions Destruction program were \$134 million and \$221 million, respectively. This year's request for the Global War on Terror included both a FY2008 Title IX request and a FY2007 Title IX Supplemental request, with \$2.9 billion and \$1.4 billion being requested for RDT&E, respectively.

Since FY2001, funding for RDT&E in Title IV has increased from \$42 billion to \$76 billion in FY2007. In constant FY2008 dollars, the increase is roughly 58%. Historically, RDT&E funding has reached its highest levels in constant dollars, dating back to 1948.⁴ Congress has appropriated more for RDT&E than has been requested, every year, since FY1996.

RDT&E funding can be broken out in a couple of ways. Each of the military services request and receive their own RDT&E funding. So, too, do various DOD agencies (e.g., the Missile Defense Agency and the Defense Advanced Research Projects Agency), collectively aggregated within the Defensewide account. RDT&E funding also can be characterized by budget activity (i.e. the type of RDT&E supported). Those budget activities designated as 6.1, 6.2 and 6.3 (basic research, applied research, and advanced development) constitute what is called DOD's Science and Technology Program (S&T) and represents the more research-oriented part of the RDT&E program. Budget activities 6.4 and 6.5 focus on the development of specific weapon systems or components (e.g. the Joint Strike Fighter or missile defense systems), for which an operational need has been determined and an acquisition program established. Budget activity 6.7 supports system improvements in existing operational systems. Budget activity 6.6 provides management support, including support for test and evaluation facilities.

S&T funding is of particular interest to Congress since these funds support the development of new technologies and the underlying science. Assuring adequate support for S&T activities is seen by some in the defense community as imperative to maintaining U.S. military superiority. This was of particular concern at a time when defense budgets and RDT&E funding were falling at the end of the Cold War.

⁴ This historical data can be found in DOD's *National Defense Budget Estimates for the FY2008 Budget* (also known as the "Green Book"). Office of the Under Secretary for Defense (Comptroller). March 2007. pp 62-67. See [http://www.defenselink.mil/comptroller/defbudget/fy2008/fy2008_greenbook.pdf]. Last viewed May 10, 2007.

As part of its 2001 Quadrennial Review, DOD established a goal of stabilizing its base S&T funding (i.e Title IV) at 3% of DOD's overall funding. Congress has embraced this goal. The FY2008 S&T funding request in Title IV is \$10.8 billion, about \$2.5 billion less than what was available for S&T in Title IV in FY2007. Furthermore, the S&T request for Title IV is approximately 2.2% of the overall baseline DOD budget request (not counting funds for the Global War on Terror), short of the 3% goal. The ability for the Administration to meet its 3% goal has been strained in recent years as the overall Defense budget continues to rise. In last year's defense authorization bill (P.L. 109-364, Sec. 217), Congress reiterated its support for the 3% goal, extended it to FY2012, and stipulated that, if the S&T budget request does not meet this goal, DOD submit a prioritized list of S&T projects that were not funded solely due to insufficient resources.

Within the S&T program, basic research (6.1) receives special attention, particularly by the nation's universities. DOD is not a large supporter of basic research, when compared to the National Institute of Health or the National Science Foundation. However, 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 (such as electrical engineering and material science). The FY2008 request for basic research (\$1.4 billion) is roughly \$140 million less than what was available for Title IV basic research in FY2007.

In Congressional action to date, Congress approved, and the President signed, the *U.S. Troop Readiness, Veterans' Care, Katrina Recovery, and Iraq Accountability Appropriations Act, 2007* (P.L. 110-28). The bill contains emergency supplemental funds, including additional FY2007 RDT&E funds in support of the Global War on Terror. The act also provides additional FY2007 RDT&E funds for the Defense Health Program to support additional trauma-related research. See **Table 3** below. **(CRS Contact: John Moteff.)**

Table 2. Department of Defense RDT&E
(\$ in millions)

	FY2006 Actual	FY2007 Estimate^d	FY2008 Request
Title IV			
By Account			
Army	\$11,682	\$10,963	\$10,590
Navy	18,970	18,880	17,076
Air Force	22,191	24,421	26,712
Defense Agencies	19,682	21,507	20,560
Dir. Test & Eval	166	184	180
Total Ob. Auth.^a	72,691	75,955	75,118
By Budget Activity			
6.1 Basic Research	1,457	1,564	1,428
6.2 Applied Res.	4,948	5,329	4,357
6.3 Advanced Dev.	6,866	6,432	4,987
6.4 Advanced Component Dev. and Prototypes	13,789	15,789	15,662
6.5 Systems Dev. and Demo	18,955	19,258	18,098
6.6 Management Support ^b	5,263	4,216	4,129
6.7 Op. Systems Dev	21,412	23,367	26,455
Total Ob. Auth.^a	72,691	75,955	75,117
Additional Appropriations - Global War On Terror (GWOT)	see note ^c	see note ^c	2,857
Other Defense Programs			
Defense Health Program	566	348	134
Chemical Agents and Munitions Destruction	67	231	221
Grand Total	73,324	76,534	78,329

Source: Except as mentioned below, figures are based on Department of Defense Budget, Fiscal Year 2008 RDT&E Programs (R-1), February 2007. FY2006 and FY2008 figures for Defense Health Program based on Department of Defense Budget, Fiscal Year 2008, Operations and Maintenance Programs (O-1), February 2007. The FY2007 figure is based on P.L. 110-5 (H.J.Res. 20). Figures for Chemical Agents and Munitions Destruction Program based on Department of Defense Budget, Fiscal Year 2008, Procurement Programs (P-1), February 2007. Figures for enacted FY2007 Supplemental based on P.L. 110-28, *U.S. Troop Readiness, Veteran's Care, Katrina Recovery, and Iraq Accountability Appropriations Act, 2007*. Figures on Additional Appropriations for Global War on Terror (GWOT) based on President's Budget, Appendix, Additional 2007 and 2008 Proposals, February 2007.

- a. Numbers may not agree with Account Total Obligational Authority due to rounding.
- b. Includes funds for Developmental and Operational Test and Evaluation.
- c. DOD includes the RDT&E-related GWOT funding for these years in the Title IV figures.
- d. Does not include the FY2007 Emergency Supplemental for the Global War on Terror. See table below.

Table 3. Department of Defense RDT&E, FY2007 Emergency Supplemental
(\$ in millions)

	FY2007 Supplemental Request	FY2007 Supplemental House	FY2007 Supplemental Senate	FY2007 Supplemental Enacted
Additional Appropriations — Global War On Terror (GWOT)				
By Account				
Army	\$116	\$61	\$126	\$100
Navy	460	296	308	299
Air Force	221	133	234	187
Defense Agencies	651	546	523	513
Dir. Test & Eval				
Total Ob. Auth.^a	1,448	1,035	1,190	1,098
By Budget Activity				
6.1 Basic Research				
6.2 Applied Res.				
6.3 Advanced Dev.	4	0	4	0
6.4 Advanced Component Dev. and Prototypes	73	9	42	17
6.5 Systems Dev. and Demo	86	93	98	107
6.6 Management Support ^b	16	0	10	2
6.7 Op. Systems Dev	1,269	934	1,037	973
Total Ob. Auth.^a	1,448	1,036	1,191	1,099
Other Defense Programs				
Defense Health Program		500	72	332
Grand Total	1,448	1,1536	1,263	1,431

Source: Figures for the FY2007 Supplemental Request are based on the Office of the Secretary of Defense, Fiscal Year 2007 Emergency Supplemental Request, Exhibits for FY2007, pp. 13-14. House, Senate and Enacted figures are taken from H.Rept. 110-107. Making Emergency Supplemental Appropriations for the Fiscal Year Ending September 20, 2007, and Other Purpose. Conference Report, to accompany H.R. 1591. H.R. 1591 was vetoed by the President. The House failed to overturn the President's veto. Both houses then passed and the President signed H.R. 2206 (*U.S. Troop Readiness, Veterans' Care, Katrina Recovery, and Iraq Accountability Appropriations Act, 2007 (P.L. 110-28)*). There is, as yet, no report accompanying H.R. 2206. However, the figures approved for each account (i.e. the Services and Defense Agencies) in H.R. 2206 agree with those approved in H.R. 1591. The table assumes the breakdown of those accounts by budget activity reported in H.Rept. 110-107 are valid for H.R. 2206.

a. Numbers may not agree with Account Total Obligational Authority due to rounding.

b. Includes funds for Developmental and Operational Test and Evaluation.

National Aeronautics and Space Administration (NASA)

NASA has requested \$12.722 billion for R&D in FY2008. (For details, see **Table 4.**) This request is a 7.3% increase over FY2007, in a total NASA budget that would increase by 6.4%.

Budget priorities throughout NASA are being driven by the Vision for Space Exploration. Announced by President Bush in January 2004 and endorsed by Congress in the NASA Authorization Act of 2005 (P.L. 109-155), the Vision includes returning the space shuttle to flight status (which has been accomplished) then retiring it by 2010; completing the space station, but discontinuing its use by the United States by 2017; returning humans to the moon by 2020; and then sending humans to Mars and “worlds beyond.” The request for Constellation Systems, the program responsible for developing the Orion spacecraft and Ares I launch vehicle to return humans to the moon, is an increase of \$518 million or 20.3% relative to FY2007. The request for the International Space Station is an increase of \$466 million or 26.3%. Meanwhile, among programs not focused on space exploration, Science would increase by \$145 million or 2.7%, and Aeronautics Research would decrease by \$163 million or 22.7%.

The FY2008 request was released before final passage of the full-year continuing resolution that funded NASA for FY2007 (P.L. 110-5), and the continuing resolution made several major changes to the FY2007 request. As a result, some of the major shifts of funding in the FY2008 request, viewed relative to FY2007, reflect the continuing resolution’s changes to the FY2007 baseline more than any change in NASA’s own plans. Most notably, FY2007 funding for Constellation Systems is \$682 million less than was requested, so that the FY2008 request for Constellation Systems (a 20.3% increase) is actually less than the FY2007 request was. NASA’s top priority is maintaining the development schedule for Orion and Ares I, and an initial operating capability (i.e., a first crewed flight) is now planned in early 2015. Conversely, FY2007 funding for Aeronautics Research is \$187 million more than was requested, so that the FY2008 request (a 22.7% decrease) is actually more than the FY2007 request was, and planned future funding for aeronautics has increased by about \$50 million per year through FY2011. On the other hand, the continuing resolution provided only \$10 million more than requested for the International Space Station; the requested FY2008 increase for that program mostly reflects the previously planned construction schedule.

Further complicating comparisons between FY2008 and previous years is a change in how NASA accounts for overhead expenses. The new system, implemented in September 2006 and known as “full cost simplification,” increases the stated cost of some programs and decreases the stated cost of others, without affecting actual program content. The increases and decreases exactly balance, so that NASA’s total budget is unchanged, but for any particular program, amounts expressed in the new accounting system are not directly comparable with amounts expressed in the previous system.

Table 4. NASA R&D
(\$ in millions)

	FY2007 Operating Plan	FY2008 Request
Science	\$5,371.4	\$5,516.1
<i>Astrophysics</i>	<i>1,610.8</i>	<i>1,565.8</i>
<i>Earth Science</i>	<i>1,409.0</i>	<i>1,497.3</i>
<i>Heliophysics</i>	<i>1,011.9</i>	<i>1,057.2</i>
<i>Planetary Science</i>	<i>1,339.6</i>	<i>1,395.8</i>
Exploration Systems	3,457.1	3,923.8
<i>Constellation Systems</i>	<i>2,550.5</i>	<i>3,068.0</i>
<i>Advanced Capabilities</i>	<i>906.7</i>	<i>855.8</i>
Aeronautics Research	716.7	554.0
Cross-Agency Support Programs	540.5	489.2
International Space Station	1,773.0	2,238.6
Subtotal R&D	11,858.7	12,721.7
Space Shuttle	3,977.4	4,007.5
Space and Flight Support	395.9	545.7
Inspector General	32.2	34.6
Total NASA	16,264.3	17,309.4

Source: FY2008 amounts are from the FY2008 NASA budget request [<http://www.nasa.gov/about/budget/>]. FY2007 amounts are from NASA briefing charts based on the March 2007 initial operating plan. The italicized rows are shown in the categories NASA uses for FY2008, which are different from those it uses for FY2007. In those rows, some FY2007 amounts have been calculated by CRS to make them comparable with the FY2008 request; the FY2007 amounts for Earth Science and Heliophysics are estimates. All amounts reflect “full cost simplification.”

The effect of the Vision on science funding has been of particular congressional interest. In late 2006, responding to concern in Congress and the scientific community about NASA support for earth science, the Science Mission Directorate (SMD) created a separate Earth Science Division. Although the FY2008 request includes increased funding for Earth Science and projects further increases in FY2009 and FY2010 relative to previous plans, most of the increases would go to cover cost growth and schedule delays in existing missions. In SMD’s Astrophysics Division, the FY2008 request defers the Space Interferometer mission beyond the budget horizon but reinstates funding for the SOFIA airborne infrared telescope. The House and Senate appropriations reports for FY2007 were supportive of SOFIA, for which no funding was requested in that year, and the program is funded in the FY2007 operating plan. (CRS Contact: Daniel Morgan.)

National Institutes of Health (NIH)

The President has requested a budget of \$28.558 billion at the program level for NIH for FY2008 (see **Table 5**). The FY2007 level, derived from the Revised Continuing Appropriations Resolution (P.L. 110-5,) totaled \$29.087 billion. (Actual FY2007 appropriations levels were not specified by the CR; the amounts have become available as agencies have reported their FY2007 operating plans. The final amount for NIH for FY2007 could also be affected by the FY2007 supplemental appropriations legislation currently under consideration.) The FY2008 request represents a decrease of \$529 million (1.8%) below the CR program level. The FY2007 appropriation was some \$662 million (2.3%) more than the FY2006 program level of \$28.425 billion.

The bulk of NIH's budget comes through the Labor-HHS-Education appropriation. An additional small amount for environmental work related to Superfund comes from the Interior, Environment, and Related Agencies appropriation. Those two sources constitute NIH's discretionary budget authority. In addition, NIH receives \$150 million pre-appropriated in separate funding for diabetes research, and \$8.2 million from a transfer within the Public Health Service (PHS). For the past several years, about \$100 million of the annual NIH appropriation has been transferred to the Global Fund to Fight HIV/AIDS, Tuberculosis, and Malaria. The FY2008 budget request proposes to increase the amount to \$300 million, representing the entire U.S. contribution to the Global Fund. The "NIH program level" cited in the Administration's budget documents, however, does not reflect that transfer.

FY2003 was the final year of the five-year effort to double the NIH budget from its FY1998 base of \$13.7 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 gave NIH increases of between 2% and 3%, levels which were below the estimated 3.5% and 3.3% biomedical inflation index for those two years. (The index has since been updated to show inflation of 3.7% for FY2004 and 3.9% for FY2005.) The research advocacy community had originally urged that the NIH budget grow by about 10% per year in the post-doubling years. They modified their recommendation to 6% for FY2006 and to 5% for FY2007, maintaining that such increases would be needed to keep up the momentum of scientific discovery made possible by the increased resources of the doubling years. For FY2008, the community is urging a 6.7% increase in the appropriation.

The biomedical inflation index was an estimated 4.5% for FY2006, while the appropriation for that year declined 0.3%. The index is projected to be 3.7% for FY2007 and FY2008. Taking inflation into account, the NIH budget has been losing ground each year since the end of the doubling in FY2003. In constant 2003 dollars, the NIH budget has declined from its peak level of \$27.1 billion in FY2003, to \$26.9 billion in FY2004, to \$26.5 billion in FY2005, to \$25.3 billion in FY2006, to \$24.9 billion in FY2007, and the FY2008 request level represents \$23.6 billion in constant dollars. In inflation-adjusted terms, the FY2007 appropriation was 7.9% below the FY2003 level, and the FY2008 request is 12.9% below the FY2003 level.

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, particularly in areas of research that involve multiple institutes. The individual institutes and centers (ICs), each having 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 4**, 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.)

Within the FY2008 request, most of the institutes and centers would be approximately level-funded from their FY2007 amounts. Several that were given increases by Congress in the FY2007 CR are dropped back to levels closer to their FY2006 funding. For example, the National Center for Research Resources (NCRR) was given \$34 million extra in FY2007 for one-year Shared Instrumentation Grants; the FY2008 request decreases the NCRR budget by \$31 million. The biggest institute, the National Cancer Institute, would be cut by some \$13 million (0.3%). The second largest, the National Institute of Allergy and Infectious Diseases (NIAID), would be increased by \$226 million (5.2%) over FY2007, but only \$25 million of that amount is for NIAID programs. The other \$201 million of the increase is for transfer to the Global Fund to Fight HIV/AIDS, Tuberculosis, and Malaria, mentioned earlier.

The two biggest changes in the request are a 68% increase in the Buildings and Facilities account, and a 53% drop in funding for the Office of the Director. Many of the laboratories, animal facilities, and office buildings on the NIH campus are aging, and are in need of upgrading to stay compliant with health and safety guidelines and to provide the proper infrastructure for the Intramural Research program. The budget requests \$136 million for Buildings and Facilities, an increase of \$55 million.

The \$580 million drop in the OD account, from \$1,097 million in FY2007 to \$517 million in the request, is largely because of the way Congress funded the NIH Roadmap initiatives in FY2007. The NIH Roadmap for Medical Research is a set of trans-NIH research activities designed to support high-risk/high-impact research in emerging areas of science or public health priorities. The initiatives are funded through a Common Fund that has been supported partially in the OD appropriation and partially by contributions from each IC at a fixed percentage. The original FY2007 Roadmap total of \$443 million required \$332 million from the institutes and centers (a 1.2% tap on their budgets) and \$111 million from the Director's Discretionary Fund. The FY2007 CR, however, appropriated \$483 million and placed the entire sum in OD, boosting that appropriation and allowing the ICs to use all of their funding for their own programs without the Roadmap tap for trans-NIH research. For FY2008, planned funding for the Roadmap/Common Fund totals \$486 million, consisting of \$365 million from the IC budgets (a 1.3% tap) plus \$121 million from OD.

Also in the OD account for the first time in FY2007 was \$69 million for the National Children's Study. This long-term (25+ year) environmental health study was proposed for cancellation in the FY2007 request. The multi-agency study, mandated by the Children's Health Act of 2000 (P.L. 106-310), plans to examine the effects of environmental influences on the health and development of more than 100,000 children across the United States, following them from before birth until age 21. The overall projected cost for the whole study is about \$2.7 billion. For FY2007, both appropriations committees directed NIH to continue with the study, and the CR provided the \$69 million. Nonetheless, the FY2008 request again contains no funding for it.

The NIH's two major concerns in the face of tight budgets are maintaining support of investigator-initiated research through research project grants (RPGs), and continuing to nourish the pipeline of new investigators. The FY2008 request concentrates resources on supporting research grants, planning to fund 10,188 competing RPGs, one of the highest numbers ever. However, the expected "success rate" of applications receiving funding will remain at about 20%. Scientists with non-competing (continuation) grants will not receive inflationary increases for their costs. Several efforts are focused on supporting new investigators, to encourage young scientists to undertake careers in research despite the discouraging financial climate, and to help them speed their transition from training to independent research. The year-old Pathway to Independence Award is proposed for a funding increase to \$31 million. Regular training mechanisms such as the National Research Service Awards are proposed for slight decreases, with level stipends. Clinical research training and the new Clinical and Translational Science Awards are proposed for increases, to a total funding level of \$131 million. The biodefense research portfolio is slated to increase slightly by cycling one-time extramural construction costs into other research areas.

NIH and other Public Health Service agencies within HHS 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 FY2007 appropriation kept the tap at 2.4%, the same as in FY2006. NIH, with the largest budget among the PHS agencies, becomes the largest "donor" of program evaluation funds, and is a relatively minor recipient.

At the end of the 109th Congress, the House and Senate agreed on the first NIH reauthorization statute enacted since 1993, the NIH Reform Act of 2006 (P.L. 109-482). The law made managerial and organizational changes in NIH, focusing on enhancing the authority and tools for the NIH Director to do strategic planning, especially to facilitate and fund cross-institute research initiatives. It required detailed tracking of the research portfolio and periodic review of NIH's organizational structure. The measure authorized, for the first time, overall funding levels for NIH, although not for the individual ICs, and established a "common fund" for trans-NIH research. For further information on NIH, see CRS Report RL33695, *The National Institutes of Health: Organization, Funding, and Congressional Issues*, by Pamela W. Smith. **(CRS Contact: Pamela Smith.)**

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

Institutes and Centers (ICs)	FY2006 actual ^{a,b}	FY2007 CR ^{a,c}	FY2008 request	% change FY08/07
Cancer (NCI)	\$4,795.1	\$4,795.5	\$4,782.1	-0.3%
Heart/Lung/Blood (NHLBI)	2,915.9	2,920.0	2,925.4	0.2%
Dental/Craniofacial Research (NIDCR)	388.7	389.4	389.7	0.1%
Diabetes/Digestive/Kidney (NIDDK)	1,703.1	1,705.2	1,708.0	0.2%
Neurological Disorders/Stroke (NINDS)	1,533.0	1,534.9	1,537.0	0.1%
Allergy/Infectious Diseases (NIAID) ^c	4,379.2	4,366.4	4,592.5	5.2%
General Medical Sciences (NIGMS)	1,934.0	1,935.6	1,941.5	0.3%
Child Health/Human Development (NICHD)	1,263.5	1,254.1	1,264.9	0.9%
Eye (NEI)	665.8	666.7	667.8	0.2%
Environmental Health Sciences (NIEHS)	636.0	641.8	637.4	-0.7%
Aging (NIA)	1,045.2	1,046.5	1,047.1	0.1%
Arthritis/Musculoskeletal/Skin (NIAMS)	507.4	508.1	508.1	0.0%
Deafness/Communication Disorders (NIDCD)	393.1	393.5	393.7	0.0%
Nursing Research (NINR)	137.2	137.3	137.8	0.4%
Alcohol Abuse/Alcoholism (NIAAA)	435.5	436.1	436.5	0.1%
Drug Abuse (NIDA)	998.9	1,000.0	1,000.4	0.0%
Mental Health (NIMH)	1,401.8	1,403.6	1,405.4	0.1%
Human Genome Research (NHGRI)	485.7	486.4	484.4	-0.4%
Biomedical Imaging/Bioengineering (NIBIB)	298.1	298.4	300.5	0.7%
Research Resources (NCRR)	1,108.9	1,143.8	1,112.5	-2.7%
Complementary/Alternative Med (NCCAM)	121.1	121.4	121.7	0.3%
Minority Health/Health Disparities (NCMHD)	195.3	199.4	194.5	-2.5%
Fogarty International Center (FIC)	66.3	66.4	66.6	0.3%
Library of Medicine (NLM)	314.1	320.2	312.6	-2.4%
Office of Director (OD) ^d	478.3	1,097.0	517.1	-52.9%
Buildings & Facilities (B&F)	85.5	81.1	136.0	67.7%
<i>Subtotal, Labor/HHS Appropriation</i>	<i>28,286.70</i>	<i>28,948.80</i>	<i>28,621.20</i>	<i>-1.1%</i>
Superfund (Interior approp to NIEHS) ^e	79.1	79.1	78.4	-0.9%
Total, NIH discretionary budget authority	28,365.80	29,028.00	28,699.70	-1.1%
Pre-appropriated Type 1 diabetes funds ^f	150.0	150.0	150.0	0.0%
NLM program evaluation ^g	8.2	8.2	8.2	0.0%
Total, NIH program level	28,524.00	29,186.20	28,857.90	-1.1%
Global Fund transfer (AIDS/TB/Malaria) ^c	-99.0	-99.0	-300.0	203.0%
Total, NIH program level after transfer	28,425.00	29,087.20	28,557.90	-1.8%

Source: Table from NIH Budget Office reflecting the final FY2007 funding levels provided by the CR (H.J.Res. 20, P.L. 110-5, Revised Continuing Appropriations Resolution, 2007, February 15, 2007).

- a. The FY2007 program level is an increase of \$662.152m (2.3%) over FY2006. FY2006 and FY2007 reflect comparative transfers to HHS (\$0.542m) and internal transfers among NIH ICs.
- b. FY2006 reflects across-the-board rescission (1%), Interior reduction, and HHS transfer of \$19.462m to Centers for Medicare and Medicaid Services. Also reflects Director's 1% transfer of \$4.480m from NIEHS to B&F and other adjustments to obligations totaling \$6.897m (including \$4.467m NCI breast cancer stamp funds).
- c. NIAID totals include funds for transfer to the Global Fund to Fight HIV/AIDS, TB, and Malaria. FY2006 includes \$18.0m supplemental funding (P.L. 109-148) from Public Health and Social Services Emergency Fund for pandemic flu (not included in FY2007 CR). FY2006 and FY2007 include a comparable transfer of \$49.5m to HHS Assistant Secretary for Preparedness and Response for the Advanced Development of Medical Countermeasures program.
- d. OD has Roadmap funds for distribution to ICs (FY2006, \$82.170m; FY2007, \$483.000m; FY2008, \$121.540m). In FY2007, all Roadmap/Common Fund money is in OD.
- e. Separate account in the Interior/Related Agencies appropriation for NIEHS research activities mandated in Superfund legislation (formerly in VA/HUD appropriation).
- f. Funds available to NIDDK for diabetes research (P.L. 106-554 and P.L. 107-360).
- g. Additional funds from program evaluation set-aside (§ 241 of Public Health Service Act), \$8.2m for NLM each year.

National Science Foundation (NSF)

The FY2008 request for the National Science Foundation (NSF) is \$6.429 billion, an 8.6% increase (\$511.8 million) over the FY2007 estimate of \$5.917 billion. (See **Table 6**). President Bush's ACI has proposed to double the NSF budget over the next 10 years. The FY2008 request will be another installment toward that doubling effort. The FY2008 request for NSF is designed to support several interdependent priority areas: discovery research for innovation, preparing the workforce of the 21st century, transformational facilities and infrastructure, international polar year leadership, and stewardship. These particular areas of investments, similar to the goals contained in the President's proposed ACI, are designed to promote research that will drive innovation and support the design and development of world-class facilities, instrumentation, and infrastructure at the frontiers of discovery. The priorities will support also a portfolio of programs directed at strengthening and expanding the participation of underrepresented groups and diverse institutions in the scientific and engineering enterprise.

The 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 Administration requested \$45.0 million for the Office of International Science and Engineering. Also, in FY2008, NSF continues in its leadership role in planning U.S. participation in observance of the International Polar Year, which spans 2007 and 2008. The FY2008 request for addressing the challenges in polar research is \$464.9 million. A major focus of planned polar research will be in climate change and environmental observations. Other proposed FY2008 highlights include funding for the National Nanotechnology Initiative (\$389.9 million), investments in Climate Change Science Program (\$208.3 million), continued support for homeland security (\$375.4 million), and funding for Networking and Information Technology Research and Development (\$993.7 million).

Included in the FY2008 request is \$5.131 billion for Research and Related Activities (R&RA), a 10% increase (\$465.7 million) above the FY2007 level of

\$4.666 billion. 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 FY2008 request provides increased funding for the physical sciences. Research is multidisciplinary and transformational in nature, and very often, discoveries in the physical sciences often lead 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. IA also funds Partnerships for Innovation, disaster research teams, and the Science and Technology Policy Institute. The FY2008 request transfers support for the Experimental Program to Stimulate Competitive Research (EPSCoR) from the Education and Human Resources Directorate (EHR) to IA. It was determined that placement in IA would allow the research focus and cross-directorate activities of EPSCoR to be more fully integrated in the agency and give it more leverage for improving and planning its research agendas. The FY2008 request provides \$263 million for IA. Included in that amount is \$107 million for EPSCoR. The EPSCoR request will support a portfolio of four investment strategies. Approximately 62.6% of the funding for EPSCoR will be for a combination of new and continuing awards.

The Office of Polar Programs (OPP) is funded in the R&RA. In FY2006, responsibility for funding the costs of icebreakers that support scientific research in polar regions was transferred from the U.S. Coast Guard to the NSF. While the NSF does not own the ships, it is responsible for the operation, maintenance, and staffing of the vessels. The OPP is funded at \$464.9 million in the FY2008 request. Increases in OPP for FY2008 are directed at research programs for arctic and antarctic sciences — glacial and sea ice, terrestrial and marine ecosystems, the ocean, and the atmosphere, and biology of life in the cold and dark. The NSF also serves in a leadership capacity for several international research partnerships in polar regions.

The NSF supports a variety of individual centers and center programs. The FY2008 request provides \$66.2 million for Science and Technology Centers, \$59.2 million for Materials Research Science and Engineering Centers, \$52.9 million for Engineering Research Centers, \$42.4 million for Nanoscale Science and Engineering Centers, \$27.0 million for Science of Learning Centers, and \$11.5 million for Centers for Analysis and Synthesis.

Additional priority areas in the FY2008 request include those of strengthening core disciplinary research, and sustaining organizational excellence in NSF management practices. NSF maintains 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 21st century research and education. An investment of \$200.0 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 grant applications was 21% in FY2006 and 20% in FY2007. NSF plans to return to the 21% funding rate in FY2008. In addition, the average duration will lengthen and the average award size will increase.

The Major Research Equipment and Facilities Construction (MREFC) account is funded at \$244.7 million in the FY2008 request, a 28.1% increase (\$53.8 million) over the FY2007 estimate. 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 directed at projects that have been approved by the National Science Board 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 stated that the projects scheduled for support in the FY2008 request met that qualification. Six ongoing projects and one new start are proposed for funding in the FY2008 request: Atacama Large Millimeter Array Construction (\$102.1 million), Ice Cube Neutrino Observatory (\$22.4 million), National Ecological Observatory Network (\$8.0 million), South Pole Station Modernization project (\$6.6 million), Alaskan Region Research Vessel (\$42.0 million), Ocean Observatories Initiative (\$31.0 million), and Advanced Laser Interferometer Gravitational Wave Observatory (\$32.8 million).

The FY2008 request for the EHR Directorate is \$750.6 million, \$46.1 million (5.8%) below the FY2007 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 FY2008 request is as follows: research on learning in formal and informal settings (includes precollege), \$222.5 million; undergraduate, \$210.2 million; and graduate, \$169.5 million. Priorities at the precollege level include research and evaluation on education in science and engineering (\$42.0 million), informal science education (\$66.0 million), and Discovery Research K-12 (\$107.0 million). Discovery Research is structured to combine the strengths of three existing programs and encourage innovative thinking in K-12 science, technology, engineering, and mathematics education.

Programs at the undergraduate level are designed to “create leverage for institutional change.” Priorities at the undergraduate level include the Robert Noyce Scholarship Program (\$10.0 million), Course, Curriculum and Laboratory Improvement (\$37.5 million), STEM Talent Expansion Program (\$29.7 million), Advanced Technological Education (\$51.6 million), and Scholarship for Service (\$12.1 million). The Math and Science Partnership Program (MSP), a crosscutting program, is proposed at \$46 million in the FY2008 request. The MSP in NSF coordinates activities with the Department of Education and its state-funded MSP sites. The MSP in NSF has made approximately 80 awards, with an overall funding rate of about 9%. At the graduate level, priorities are those of Integrative Graduate Education and Research Traineeship (\$25.0 million), Graduate Research Fellowships (\$97.5 million), and the Graduate Teaching Fellows in K-12 Education (\$47.0 million). Added support is given to several programs directed at increasing the number of underrepresented groups in science, mathematics, and engineering. Among these targeted programs in the FY2008 request are the Historically Black Colleges and Universities Undergraduate Program (\$30.0 million), Tribal Colleges and Universities Program (\$12.9 million), Louis Stokes Alliances for Minority

Participation (\$40.0 million), and Centers of Research Excellence in Science and Technology (\$29.5 million). (CRS Contact: Christine Matthews.)

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

	FY2005	FY2006	FY2007 P. L. 110-5	FY2008 Req.
Research & Related Activities				
Biological Sciences	\$576.8	\$580.9		\$633.0
Computer & Inform. Sci. & Eng.	490.2	496.4		574.0
Engineering	557.1	585.5		683.3
Geosciences	697.2	704.0		792.0
Math & Physical Sci.	1,069.4	1,086.6		1,253.0
Social, Behav. & Econ. Sci.	196.8	201.2		222.0
Office of Cyberinfrastructure	123.4	127.1		200.0
Office of International Sci. & Eng.	43.4	42.6		45.0
U.S. Polar Programs	349.7	390.5		464.9
Integrative Activities ^a	224.3	233.3		263.0
U.S. Arctic Research Commission	1.2	1.2		1.5
Subtotal Res. & Rel. Act	4,234.8	4,351.0	4,666.0^c	5,131.7
Ed. & Hum. Resr.	843.5	796.7	796.7	750.6
Major Res. Equip. & Facil. Constr.	165.1	233.8	190.9	244.7
Salaries & Expenses	223.5	247.1	248.3	285.6
National Science Board	3.7	3.9	4.0	4.0
Office of Inspector General	10.2	11.5	11.4	12.4
Total NSF^b	5,480.8	5,645.8	5,917.2	6,429.0

a. Beginning in the FY2008 request, EPSCoR was transferred from the EHR Directorate to Integrative Activities.

b. The totals do not include carry overs or retirement accruals. Totals may not add due to rounding.

c. Specific funding allocations for each directorate or for individual programs and activities have not been determined.

Department of Agriculture (USDA)

The FY2008 request for research and education in the U.S. Department of Agriculture (USDA) is \$2.350 billion, a 10.3% decrease (\$268.9 million) from the FY2007 estimate. (The funding estimates presented for FY2007 are based on the estimated full year amounts available under the Continuing Appropriations Resolution, 2007, P.L. 110-5, as amended). (See **Table 7.**) The Agricultural Research Service (ARS) is USDA's in-house basic and applied research agency, and operates approximately 100 laboratories nationwide, including the world's largest multidisciplinary agricultural research center, located in Beltsville, Maryland. The

ARS laboratories focus on efficient food and fiber production, 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. Included in the total support for USDA in FY2008 is \$1.055 billion for ARS, a 13.2% decrease (\$160.0 million) from the FY2007 estimate. The Administration has proposed reductions of \$141.0 million in funding add-ons designated by Congress for research at specific locations. These amounts are to be redirected to high-priority Administration initiatives that include livestock production, food safety, crop protection, and human nutrition. Included in the request for ARS is \$16.0 million for buildings and facilities. The requested funding is for the planning and design of the Biocontainment Laboratory and Consolidated Poultry Research Facility in Athens, Georgia.

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, education, and outreach. Included in these partnerships is funding for research at 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 FY2008 request for CSREES is \$1.044 billion, a decrease of \$143.6 million from the FY2007 estimate. Funding for formula distribution in FY2008 to the state Agricultural Experiment Stations is \$273.2 million, almost level with FY2007. Support for the 1890 formula programs is \$38.2 million, again level with FY2007. The FY2008 request proposes, as in previous years, to modify the Hatch formula program. It would expand the multistate research programs from 25% to approximately 60% and distribute a portion of the funds through competitively awarded grants. In previous years, Congress did not accept the Administration's proposed changes to the Hatch formula.

The FY2008 request funds the National Research Initiative (NRI) Competitive Grants Program at \$256.5 million, \$67.5 million above the FY2007 level. The increase will support initiatives in agricultural genomics, emerging issues in food and agricultural security, the ecology and economics of biological invasions, plant biotechnology, and water security. In addition to supporting fundamental and applied science in agriculture, USDA maintains that the NRI makes a significant contribution to developing the next generation of agricultural scientists. The FY2008 request also includes funding for grants to educational institutions and community-based organizations to benefit socially disadvantaged farmers and ranchers. These grants are intended to encourage greater participation of black farmers, tribal groups, and Hispanic and other minority groups in the USDA portfolio of commodity, loan, education, and grant offerings. In addition, NRI funding will support projects directed at developing alternate methods of biological and chemical conversion of biomass, and research determining the impact of a renewable fuels industry on the economic and social dynamics of rural communities.

The FY2008 request for USDA provides \$82.5 million for the Economic Research Service (ERS), \$7.3 million above the FY2007 estimate; and \$167.7 million for the National Agricultural Statistics Service (NASS), approximately \$27.5 million above the FY2007 estimate. The proposed increase for ERS will expand the

market analysis and outlook program and strengthen the coverage of increasingly complex global markets for various agricultural products. The increase for NASS will be in support of the 2007 Census of Agriculture. Funding will be available also to obtain contract services for extensive data collection and processing activities scheduled to occur in 2008. **(CRS Contact: Christine Matthews.)**

Table 7. U.S. Department of Agriculture R&D
(\$ in millions)

	FY2005	FY2006	FY2007 P. L. 110-5 ^a	FY2008 Req. ^b
Agric. Research Service (ARS)				
Product Quality/Value Added	\$104.6	\$105.3		\$104.6
Livestock Production	84.1	85.0		70.7
Crop Production	196.8	201.1		168.9
Food Safety	102.7	104.4		103.2
Livestock Protection	78.5	82.5		108.3
Crop Protection	193.0	196.8		173.7
Human Nutrition	83.7	84.6		84.1
Environmental Stewardship	219.4	222.9		171.0
National Agricultural Library	21.5	23.8		20.4
Repair & Maintenance	17.8	17.6		16.6
Subtotal	1,102.0^c	1,150.0^d	1,057.6	1,021.5
Buildings & Facilities	186.3	159.1	140.0	16.0
Trust Funds	18.0	17.0	18.0	18.0
Total, ARS	1,306.3	1,326.1	1,215.6	1,055.5
Coop. St. Res. Ed. & Ext. (CSREES) Research and Education				
Hatch Act Formula	178.7	177.0	183.3	164.4
Cooperative Forestry Research	22.2	22.0	22.7	20.5
1890 Colleges and Tuskegee Univ.	12.3	37.2	38.3	38.3
Special Research Grants	135.5	126.9	100.5	3.3
NRI Competitive Grants	179.6	181.2	189.0	256.5
Animal Health & Disease Res.	5.1	5.0	5.0	0.0
Federal Administration	42.5	50.0	39.5	10.0
Higher Education ^e	50.7	55.0	37.6	40.5
Other Programs	28.9	31.9	50.7	44.3
Total, Coop. Res. & Educ.^f	655.5^c	670.7	651.5	562.5
Extension Activities				
Smith-Lever Sections 3b&c	275.5	273.0	273.0	273.2
Smith-Lever Sections 3d	86.7	62.0	62.1	62.3
Renewable Resources Extension	4.1	4.0	4.1	4.1
Integrated Activities	54.7	55.8	56.1	20.1
1890 Research & Extension	32.9	33.5	33.5	34.1
Other Extension Prog. & Admin.	67.7	99.1	99.6	80.0
Total, Extension Activities^f	521.6	527.4	536.4	481.8
Total, CSREES^f	1,177.1	1,198.1	1,187.9	1,044.3
Economic Research Service	74.2	75.9	75.2	82.5
National Agricultural Statistics Service	128.4	140.7	140.2	167.7
Total, Research, Education & Economics	2,686.3	2,740.8	2,618.9	2,350.0

- a. Funding levels for specific programs are not yet available.
- b. Funding levels are contained in U.S. Department of Agriculture FY2008 Budget Summary and other documents internal to the agency.
- c. Totals may not add due to rounding. Research activities carried out in support of Homeland Security are include in Food Safety, Livestock Protection, and Crop Protection portfolios.
- d. Includes Hurricane Katrina Emergency Appropriations of \$29.2 million.
- e. 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.
- f. Program totals may or may not include 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.

Department of Homeland Security (DHS) R&D

The Department of Homeland Security (DHS) has requested \$1.379 billion for R&D in FY2008, a decrease of 6.3% from FY2007.⁵ The total includes \$799 million for the Directorate of Science and Technology (S&T), \$562 million for the Domestic Nuclear Detection Office (DNDO), and \$18 million for Research, Development, Test, and Evaluation (RDT&E) in the U.S. Coast Guard. (For details, see **Table 8**.) The request for DNDO is a 17% increase. The request for the S&T Directorate is an 18% decrease, about half of which results from the transfer of some operational programs out of S&T into other DHS organizations.⁶

Starting in late 2006, the S&T Directorate realigned its programs and reorganized its management structure. The directorate's program structure is now as shown in **Table 8**. The directorate's university centers of excellence are expected to be aligned to match the new organization, with new centers being established for some topics. The requested reduction of \$41 million in the Explosives program is due to the completion of efforts (known as Counter-MANPADS) to develop a prototype system for protecting commercial aircraft against ground-to-air missiles. The requested \$51 million reduction in the Infrastructure and Geophysical program largely reflects the elimination of funding for community and regional initiatives previously established or funded at congressional direction. The operational programs being transferred out of S&T are the BioWatch monitoring system, the Biological Warning and Incident Characterization (BWIC) system, and the Rapidly Deployable Chemical Detection System (RDCDS) from the Chemical and Biological program and SAFECOM from the Command, Control, and Interoperability program.

During the FY2007 appropriations cycle, Congress and others were highly critical of the S&T Directorate's performance. The House Appropriations Committee report for FY2007 (H.Rept.109-476) referred to the directorate's "lack of

⁵ The FY2007 appropriations bill rescinded \$125 million in prior-year funds from the S&T Directorate. If the FY2007 enacted total for DHS R&D is reduced by the amount of this prior-year rescission, the FY2008 request is a 2.4% increase.

⁶ If the FY2007 enacted funding for S&T is reduced by the amount of the prior-year rescission, the FY2008 request for S&T is only a 5.8% decrease. See previous footnote. If the FY2007 enacted amount is adjusted for both the rescission and the transfer of programs out of the S&T Directorate, the FY2008 request for S&T is a 5.4% increase.

responsiveness” to its information requests, restricted the obligation of funds until S&T provided budgetary information “with sufficient detail” and the Under Secretary reported on progress in addressing financial management deficiencies, and objected that the FY2007 budget justification contained “no details of how risk assessment was used in its formulation or even which DHS agency was tasked with prioritizing risks and assigning them resources.” The Senate Appropriations Committee report for FY2007 (S.Rept. 109-273) described the S&T Directorate as “a rudderless ship without a clear way to get back on course” and proposed transferring certain S&T activities back to the Transportation Security Administration because “the Committee has repeatedly requested a breakout of funding ... which S&T has failed to provide.” Since the appointment of a new Under Secretary (Admiral Jay Cohen, sworn in on August 10, 2006) criticism of the directorate has been more muted, but congressional attention is likely to remain focused on issues such as the directorate’s mission, its organization, its priorities and how they are set, its financial management, and the transparency of its operations.

In DNDO, the proposed \$47 million increase in Research, Development, and Operations would focus primarily on the Transformational R&D program, whose goal is to identify, develop, and demonstrate technologies that fill major gaps in the nuclear detection architecture. The proposed \$30 million increase in Systems Acquisition would be used to begin implementation of the Securing the Cities initiative in the New York City area. Congressional attention has focused recently on criticism of a cost-benefit analysis that DNDO conducted to support its assessment of next-generation Advanced Spectroscopic Portal technology for radiation portal monitors.⁷

The FY2007 budget request marked the end of a period of consolidation for DHS R&D programs and the beginning of its reversal; the FY2008 request would further reverse the consolidation trend. In the FY2004 appropriations conference report (H.Rept.108-280), Congress directed the department to consolidate its R&D activities into the S&T Directorate. This process began with several small programs in FY2005, but a proposed move of the Coast Guard RDT&E program was rejected by the Senate. In FY2006, the much larger R&D program of the Transportation Security Administration was moved into S&T, but again the Senate rejected moving the Coast Guard program. In FY2007 no further consolidations were proposed. Conversely, R&D on radiological and nuclear countermeasures, previously funded by S&T, was expanded and transferred to the newly created DNDO, an independent organization with its own appropriations accounts. With DNDO funding increasing and S&T funding decreasing in the FY2008 request, the relative roles of the two organizations remain an issue of congressional interest. The S&T Directorate’s requested share of DHS R&D funding would drop to 58%, which may raise questions about the S&T Under Secretary’s statutory responsibility for “establishing and administering the primary research and development activities of the Department”

⁷ See, for example, Government Accountability Office, *Combating Nuclear Smuggling: DHS’s Decision to Procure and Deploy the Next Generation of Radiation Detection Equipment Is Not Supported by Its Cost-Benefit Analysis*, GAO-07-581T, testimony before the House Committee on Homeland Security, March 14, 2007.

and “coordinating and integrating all research, development, demonstration, testing, and evaluation activities of the Department.”⁸ (CRS Contact: Daniel Morgan.)

Table 8. Department of Homeland Security R&D
(\$ in millions)

	FY2007 Enacted	FY2008 Request
Science and Technology Directorate	\$848.1	\$799.1
Management and Administration ^a	135.0	142.6
R&D, Acquisition, and Operations	713.1	656.5
Borders and Maritime Security	33.4	25.9
Chemical and Biological ^a	313.6	228.9
Command, Control, and Interoperability ^b	62.6	63.6
Explosives	105.2	63.7
Human Factors	6.8	12.6
Infrastructure and Geophysical	74.8	24.0
Innovation	38.0	59.9
Laboratory Facilities	105.6	88.8
Test and Evaluation, Standards	25.4	25.5
Transition	24.0	24.7
University Programs	48.6	38.7
Rescission of Unobligated Prior-Year Funds	— 125.0	—
Domestic Nuclear Detection Office	481.0	561.9
Management and Administration	30.5	34.0
Research, Development, and Operations	272.5	319.9
Systems Acquisition	178.0	208.0
U.S. Coast Guard RDT&E	17.0	17.6
Total DHS R&D	1,346.1	1,378.6
Total (Excluding Prior-Year Rescission)	1,471.1	1,378.6

Notes: Programs in the S&T Directorate have been realigned since the enactment of the FY2007 appropriation. For comparability, the FY2007 column is shown here in the new structure. (Enacted amounts for FY2007 are presented both ways, with a crosswalk between the two, in the FY2008 congressional budget justification.)

- a. BioWatch and related programs will be transferred from the S&T Directorate to the Office of Health Affairs in FY2008. The enacted FY2007 funding for these programs in S&T consisted of \$1.0 million in the Management and Administration account plus \$84.1 million in the Chemical and Biological program of the R&D, Acquisition, and Operations account.
- b. SAFECOM will be transferred from the S&T Directorate to the National Protection and Programs Directorate in FY2008. Its enacted FY2007 funding in S&T was \$5.0 million in the Command, Control, and Interoperability program of the R&D, Acquisition, and Operations account.

⁸ Homeland Security Act of 2002 (P.L. 107-296), Sec. 302, items 10 and 11.

Department of Commerce (DOC)

National Oceanic and Atmospheric Administration (NOAA)

According to the *Office of Management and Budget R&D Bureau Report*, for FY2008 the President requested a total of \$506 million for NOAA R&D. (See **Table 9.**) This includes \$62 million for Basic Research, \$402 million for Applied Research, and \$42 million for Development activities at the agency. In addition, \$38 million is requested for R&D Major Equipment, for a grand total of \$544 million proposed for conduct of R&D at NOAA. For 2007 and 2008, no funding was requested for R&D Facility Construction. The agency recognized that such facilities serve multiple purposes and thus construction would be funded out of the NOAA Procurement, Acquisitions and Construction (PAC) account exclusive of the R&D request.

The following information is taken from the Department of Commerce, *NOAA FY2008 Budget Summary*, released February 8, 2007. NOAA R&D funding is 16% of NOAA's total budget request of \$3.82 billion. The R&D budget is comprised of 86% research and 14% development funding. Seventy percent of R&D is intramural, while 30% is extramural. NOAA Research "OAR" manages 60% of all R&D conducted at NOAA. Proposed R&D funding by NOAA line office includes \$294 million, for OAR. Of the remaining R&D funding 13%, or \$63.7 million, is for NOAA's Office of Marine and Aviation Operations (OMAO) for data acquisition and mission support; 9%, or \$44.1 million, is for National Marine and Fisheries; 7%, or \$34.3 million, is for National Ocean Service; 6%, or \$29.4 million, is for NOAA Satellite Services; and 5%, or \$24.5 million, is for the National Weather Service. (CRS Contact: Wayne Morrissey.)

Table 9. NOAA R&D
(\$ in millions)

Type of R&D	FY2006 ^a Approps.	FY2007 ^b (Est.)	FY2008 Request ^c
Basic Research	\$52	\$50	\$62
Applied Research	454	361	402
Development	44	36	42
Subtotal R&D ^d	550	447	506
R&D Major Equipment	36	38	38
R&D Facility Construction (PAC) ^e	38	—	—
Total Conduct of R&D	624	485	544

Source: Office of Management and Budget, R&D Bureau Report, February 1, 2007.

a. P.L. 109-108 (H.Rept. 109-272)

b. P.L. 110-5 (Reported as H.J.Res. 20)

c. OMB

d. Includes (research) Data Acquisition

e. For FY2007-FY2008 not scored as R&D funding

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 precompetitive 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 FY2008 budget requests \$640.7 million for NIST, 5.1% below the current fiscal year. Internal research and development under the Scientific and Technology Research and Services (STRS) account would increase 15.6% to \$500.5 million (including funding for the Baldrige National Quality Program). There would be no funding for the Advanced Technology Program (ATP) and support for the Manufacturing Extension Partnership would be reduced 55.7% to \$46.3 million. Construction expenses increase 59.1% to \$93.9 million. (See **Table 10.**)

The Administration's FY2007 budget included \$581.3 million for NIST, almost 22.7% below the previous fiscal year. Support for the STRS account would have increased 18.3% to \$467 million. There was no funding for the Advanced Technology Program (ATP), and support for the Manufacturing Extension Partnership (MEP) would have declined 55.7% to \$46.3 million. Construction funding would have totaled \$68 million, a 60.8% decrease from FY2006.

No final FY2007 appropriations legislation for NIST was enacted during the 109th Congress. A series of continuing resolutions funded the program at FY2006 levels through February 15, 2007. However, P.L. 110-5, passed in the 110th Congress, provides \$675 million in FY2007 support for NIST. Funding for the STRS account increases 9.6% to \$432.8 million while the construction budget decreases 66% to \$58.6 million. Financing for ATP (\$79 million) remains at the FY2006 level as does support for MEP (\$104.6 million).

As part of the American Competitiveness Initiative, the Administration stated its intention to double over 10 years funding for "innovation-enabling research" done at NIST through its "core" programs (defined as internal research in the STRS account and the construction budget). To this end, the President's FY2007 budget requested an increase of 18.3% for intramural R&D at NIST; FY2007 appropriations for these programs increased 9.6%. For FY2008, the Administration has again recommended an increase in support for the STRS account, up 15.6% from the current fiscal year. It remains to be seen how support for this effort will evolve and how this might affect financing of extramural efforts such as ATP and MEP.

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 helps businesses (and small manufacturers) develop 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. Although support was provided again in the FY2006 appropriations legislation, it was 41% below the earlier fiscal year. In the 109th Congress, both the House-passed FY2007 appropriations bill and the version reported from the Senate Committee on Appropriations contained no funding for the program. It remains to be seen how the 110th Congress will address this issue.

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 H. Schacht. **(CRS Contact: Wendy H. Schacht.)**

Table 10. NIST
(\$ in millions)

NIST Program	FY2006 ^a	FY2007	FY2008 Request
STRS ^b	\$394.8	\$432.8	\$500.5
ATP	79	79	0
MEP	104.6	104.6	46.3
Construction	173.6	59	93.9
NIST Total	\$752	675	640.7

a. Includes mandated rescissions (but not a \$7 million rescission from unobligated balances in the MEP account).

b. Includes funding for the Baldrige National Quality Program.

Department of Transportation (DOT)

The Bush Administration has requested \$812 million for the Department of Transportation's (DOT's) research and development budget in FY2008. (See **Table 11.**)

Funding for Federal Highway Administration (FHWA) R&D is requested at \$430 million in FY2008. Highway research includes the Federal Highway Administration's transportation research and technology contract programs. These research programs include the investigation of ways to improve safety, reduce congestion, improve mobility, reduce lifecycle construction and maintenance costs, improve the durability and longevity of highway pavements and structures, enhance the cost-effectiveness of highway infrastructure investments and minimize negative impacts on the natural and human environment.

The funding request for the Federal Aviation Administration (FAA) is \$140 million, including \$63 million focused on the advancement of the Next Generation Air Transportation System led by the Joint Planning Development Office. As indicated in the table, funding for the FAA is proposed to decline from \$310 million in FY2006 to \$140 million in FY2008.

Finally, the Administration is proposing \$12 million for the Research and Innovation Technology Administration to coordinate and advance the pursuit of transportation research that cuts across all modes of transportation, such as hydrogen fuels, global positioning, and remote sensing. DOT also supports nanotechnology research, the U. S. Climate Change Technology Program, and the President's Hydrogen Fuel Initiative. (CRS Contact: Mike Davey.)

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

Department of Transportation	FY2006	FY2007 Estimate	FY2008 Request
Federal Highway Administration	\$380	\$397	\$430
Federal Aviation Administration	310	235	140
Others ^a	148	135	242
Total	838	767	812

Note: "Others" includes Office of the Secretary, Federal Motor Carrier Safety Administration, Federal Railroad Administration, Pipeline and Hazardous Materials Safety Administration, and the Research and Innovative Technology Administration.

Department of the Interior (DOI)

The Administration has requested \$621 million for R&D in the Department of the Interior (DOI) an estimated decline of 3% in FY2008. (See **Table 12.**)

The U.S. Geological Survey is the primary supporter of R&D (almost 90 % of the total) within DOI. The three major USGS areas of research include geological resources, water resources and quality, and biological resources. Funding for the USGS is proposed to decline 4% in FY2008.

Funding for the Geological Resources is proposed to decline 7.3%, to an estimated \$198 million for FY2008. The geological resources program assesses the availability and quality of the nation's energy and mineral resources. The geological resources program researches, monitors, and assesses the landscape to understand geological processes to help distinguish natural change from those resulting from human activity. Within the earth sciences, the USGS plays a major role in important geological hazards research, including research on earthquakes and volcanoes. Enterprise Information conducts information science research to enhance the National Map and National Spatial Data infrastructure.

Funding for water resources research focuses on activities aimed at improving the quality of U.S. groundwater. Water Resources Investigations R&D is proposed to decline 6.2%, but as in the past, Congress may reject these cuts. This program supports the collection of basic hydrologic data, studies of specific water-resources problems, and hydrologic research through USGS partnerships with state governments and other entities.

Funding for USGS Biological Research is basically unchanged at \$181 million in FY2008. This research program develops and distributes information needed in the conservation and management of the nation's biological resources. The program serves as DOI's research arm, utilizing the capabilities of 17 research centers and 40 Cooperative Research Units that support research on fish, wildlife, and natural habitats. Major research initiatives are carried out by USGS scientists who collect 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 DOI and other agencies, such as the Fish and Wildlife Service and the Bureau of Land Management. (CRS Contact: Mike Davey.)

Table 12. Department of The Interior R&D
(\$ in millions)

DOI	FY2006	FY2007 Estimate	FY2008 Request
National Mapping	\$39	\$44	\$42
Geological Resources	214	214	198
Water Resources	127	126	119
Biological Research	180	180	181
Enterprise Information	1	5	7
USGS total^a	561	570	547
Other agencies ^b	78	70	74
Total	639	640	621

a. USGS R&D estimates are from the American Association for the Advancement of Science, USGS budget office, and USGS FY2008 Budget Justification documents.

b. "Other agencies" includes the Bureau of Reclamation, the Bureau of Land Management, the Minerals Management Service, and the National Park Service.

Environmental Protection Agency (EPA)

The Administration has requested \$706.7 million for EPA's Science and Technology programs in FY2008. This sum is 3.2% below the FY2007 S&T funding level. (See **Table 13.**)

The Environmental Protection Agency (EPA), the regulatory agency responsible for carrying out a number of environmental laws, funds a broad portfolio of R&D activities to provide the necessary scientific tools and knowledge to support decisions relating to preventing, regulating, and abating environmental pollution. As is the case for several federal agencies, funding for EPA's R&D activities are not generally separately identified line items in the agency's budget request or appropriations, but rather are typically included within general program funds. Although the Office of Management and Budget (OMB) reports⁹ historical and projected budget authority amounts for R&D at EPA (and other federal agencies), how these amounts explicitly relate to the requested and appropriated funding amounts for the many specific EPA program activities is not clear. R&D at EPA headquarters and laboratories around the country, as well as external R&D, is primarily managed by EPA's Office of Research and Development (ORD). EPA's annual appropriations are requested, considered, and enacted according to eight line-item appropriations accounts, which were established by Congress during the FY1996 appropriations process. Most of EPA's scientific research activities, including the agency's laboratories and research grants, are funded within the agency's Science and Technology (S&T) appropriations account. Many of the programs implemented by EPA have a research component, but the research is not necessarily the primary focus of the program.

The S&T account incorporates elements of the former EPA Research and Development account, as well as a portion of the former Salaries and Expenses and Research and Program Operations accounts, which had been in place until FY1996. The S&T account is funded by a base appropriation and a transfer of appropriated funds from the Superfund account. These transferred funds are dedicated to research on more effective methods to clean up contaminated sites. Of the total \$7.2 billion requested for EPA, the President's FY2008 budget would provide \$780.6 million for the S&T account, including the transfer from Superfund. The request is \$17 million more than the FY2007 appropriation of \$763.6 million. Although the base amount would rise, the transfer from Superfund would fall. Despite the increase in the base amount, total funding within this account for research would decline, as the increase is mostly due to a continued accounting shift in funds primarily from the Environmental Programs and Management (EPM) account to pay for facility operations and administration, such as rent, utilities, and security. Discounting this administrative line item, the President's budget would provide nearly \$25 million less in FY2008 than in FY2007 for the S&T account. The FY2008 request is also less than Congress appropriated for research within this account from FY2003 through FY2006.

⁹ The Office of Management and Budget (OMB) reports R&D budget authority amounts in its Analytical Perspectives accompanying the annual President's budget, but amounts for specific programs are not included. The budget authority amounts reported by OMB are typically significantly less than amounts appropriated/requested for the S&T account, but the differences are not explicitly defined. For example, OMB reported actual budget authority of \$622 million for FY2006, and estimated amounts of \$567 million for FY2007 and \$562 million for FY2008. See OMB, *Fiscal Year 2008 Budget of the United States: Analytical Perspectives — Cross Cutting Programs*, [<http://www.whitehouse.gov/omb/budget/fy2008/>].

Although FY2008 funding requested for most line item research program activities would decrease or remain relatively constant compared to FY2007, there would be increases for certain research activities funded within the S&T account. EPA acknowledges reductions in certain areas but contends that the FY2008 proposed budget addresses the highest priority environmental research needs, given available resources and interest in reducing the federal deficit.¹⁰ For example, although overall funding requested for human health research would decrease compared to FY2007, human health risk assessment research would increase from \$38.3 million in FY2007 to \$42.8 million in FY2008. Other priority areas receiving increased funding noted by EPA include clean air research and research regarding fate, transport and other issues associated with nanomaterials. The FY2008 request also proposes combining line item funding for certain research activities to allow for flexibility and a “more holistic approach” for addressing science challenges. For example, the FY2008 request proposes combining funding for air toxics research and funding for National Ambient Air Quality Standards (NAAQS) research into an integrated air research program.

Some Members of Congress and an array of stakeholders have raised concerns about the adequacy of funding for scientific research at EPA. A number of the scientific organizations, including EPA’s Science Advisory Board (SAB)¹¹ and the American Association for the Advancement of Science (AAAS), have analyzed the FY2008 request, identified potential shortfalls and provided their recommendations for funding increases above those proposed for certain research activities. In particular, the EPA SAB expressed its concerns about the “decreased trend in the funding of ecosystems research, decreased funding of the Science to Achieve Results (STAR) extramural and fellowship programs, and the elimination of the economics and decision sciences research program within ORD.” According to the AAAS estimates, the FY2008 requested EPA R&D funding would be the lowest in more than two decades, in real inflated adjusted dollars. Consistent with budgetary procedures, the House Committee on Science and Technology submitted its views and estimates of the FY2008 budget House Budget Committee.¹² In its April 2007 views and estimates, the Committee noted the EPA SAB’s opinions regarding the inadequacies of EPA’s R&D resources, and agreed that a more robust investment is needed to maintain a healthy environment and economy.

Debate regarding funding for scientific research administered by EPA (and other federal agencies) often has focused on the question of whether the agency’s actions are based on “sound science,” and how scientific research is applied in developing federal policy. Although EPA contends the recent fiscal budget requests are adequate

¹⁰ See March 14, 2007, testimony of George Gray, EPA Assistant Administrator for Research and Development and Science Advisor, before the House Subcommittee on Energy and Environment, Committee on Sciences and Technology [<http://science.house.gov/publications/Testimony.aspx?TID=5177>].

¹¹ Comments on EPA’s Strategic Research Directions and Research Budget for FY2008, An Advisory Report of the U.S. Environmental Protection Agency Science Advisory Board (EPA-SAB-07-004) [<http://www.epa.gov/science1/pdf/sab-07-004.pdf>].

¹² See the House Committee on Science and Technology website at [http://science.house.gov/randd/views_estimates.htm].

to support the agency's priorities, the question of sound science continues to be of concern as evidenced by recent EPA actions. For example, the question of too much or not enough science and how EPA used the science in its decision making, has been an issue surrounding EPA's recent review of air quality standards or NAAQS.¹³ The adequacy of resources necessary to ensure the sufficiency of scientific support for EPA's implementation of the many environmental requirements remains an issue of concern. **(CRS Contact: Robert Esworthy).**

Table 13. Environmental Protection Agency S&T
(\$ in millions)

Environmental Protection Agency	FY2006 Enacted^a	FY2007 Enacted	FY2008 Request
Science and Technology Appropriations Account			
<i>Base Appropriations</i>	\$730.8	\$733.4	\$754.5
<i>Transfer in from Superfund Account</i>	30.2	30.2	26.1
Science and Technology Total	761.0	763.6	780.6
— <i>(Operations and Administration)</i>	(8.5)	(33.0)	(73.9)
Net Science and Technology	752.5	730.6	706.7

Source: Prepared by the Congressional Research Service (CRS) using information provided by the House Appropriations Committee. Numbers may not add due to rounding.

- a. Committee amounts for FY2006 in the above table reflect a 0.476% across-the-board rescission, and a 1% government-wide rescission, applicable to that year.

¹³ See CRS Report RL33807, *Air Quality Standards and Sound Science: What Role for CASAC?* by James E. McCarthy.