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CRS Report for Congress

# Federal R&D Funding Under a Continuing Resolution

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## Summary

On December 9, 2006, President Bush signed a continuing resolution, or CR (P.L. 109-383, H.J.Res. 102) which provides spending at FY2006 levels through February 15, 2007, for those agencies lacking enacted FY2007 appropriations bills. The House passed 10 of its 11 appropriations bills, and the Senate passed 3 of its 12 appropriations bills (the Senate Appropriations Committee passed its remaining 9 appropriations bills). Congress passed two appropriations bills, the Department of Defense (P.L. 109-289, H.Rept. 109-676) and the Department of Homeland Security (P.L. 109-295, H.Rept. 109-699). The centerpiece of the President's proposed FY2007 R&D budget was the American Competitiveness Initiative (ACI). Some Democratic members of Congress have indicated they may attempt to extend a revised CR until the end of the FY2007 fiscal year.

The Bush Administration had requested $137.7 billion in federal research and development (R&D) funding for FY2007. This sum represented a 2.4% increase over the estimated $134.5 billion that was approved in FY2006. As in the recent past, the FY2007 increase over the FY2006 estimated funding levels was due to significant funding increases for the Department of Defense (DOD) and the National Aeronautics and Space Administration's (NASA's) space vehicles development program (see **Table 1**, below).

The centerpiece of the President's proposed FY2007 R&D budget was the National Research Council's (NRC) report entitled *Rising Above the Gathering Storm and Energizing and Employing America for a Brighter Future.* The report expressed growing concerns about America's ability to compete in the technological global market place.[1] In response to the NRC report, the President requested the American Competitiveness Initiative (ACI). As proposed, over the next 10 years, this $136 billion initiative would

[1] *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.

commit $50 billion for research, science education, and the modernization of research infrastructure. The remaining $86 billion would finance a revised permanent research and experimentation (R&E) tax incentive over the next 10 years. The most recent federal research tax credit expired on December 31, 2005 (see P.L. 108-311).

## The Current Status of FY2007 R&D Appropriations

The 109th Congress passed two appropriations bills, the Department of Defense (P.L. 109-289, H.Rept. 109-289) and the Department of Homeland Security (P.L. 109-295, H.Rept. 109-699). As stated above, action remains to be taken on the other FY2007 appropriations bills. Total federal R&D could reach an estimated $140 billion for FY2007. Despite the ACI, most of this increase can be attributed to large funding increases for development spending in defense and for the National Aeronautics and Space Administration. CRS estimates that total federal basic research funding for FY2007 could increase 2%, to $28.2 billion. Five agencies account for 90% of all federal basic research expenditures. Total federal research funding (the sum of basic and applied research) is projected to decline 1%, to an estimated $56 billion.

The current CR funds agency programs at the lowest of House-passed, Senate-passed, or FY2006 funding levels. Based on current congressional actions, most R&D agencies would be funded at FY2006 budgetary levels. (See table.) If Congress approves a year-long CR, agencies lacking enacted FY2007 appropriations bills may see spending at FY2006 funding levels, minus a one-time agency-wide 1% funding rescission.

**American Competitiveness Initiative (ACI).** As part of the $50 billion for research initiatives, the President called for doubling the federal R&D funding over 10 years. This increase would include the physical sciences and engineering research in three agencies: the National Science Foundation (NSF), the Department of Energy's (DOE's) Office of Science, and the National Institute of Standards and Technology (NIST). Both the House and Senate FY2007 appropriations actions would fully fund the President's ACI request. Consequently, funding for NSF would increase 7.9% to $4.6 billion; DOE's Office of Science budget would receive an 18% budget increase to $3.9 billion; and NIST's laboratory funding would increase 21% to an estimated $382 million. However, despite strong congressional support for the ACI, its implementation is on hold because none of the three agencies have enacted FY2007 appropriations bills. Some Democratic members of Congress have indicated that they may attempt to extend a revised CR until the end of the FY2007 fiscal year.

**Homeland Security.** The Department of Homeland Security (DHS) requested $1.552 billion for R&D in FY2007, an increase of 4.5% from FY2006. This total included $1.002 billion for the Directorate of Science and Technology, $536 million for the Domestic Nuclear Detection Office (DNDO), and $14 million for Research, Development, Test, and Evaluation (RDT&E) in the U.S. Coast Guard. The request for DNDO was a 70% increase. The request for the S&T Directorate was a 13% decrease. The House provided $956 million for the Directorate of Science and Technology; $500 million for DNDO; and $14 million for Coast Guard RDT&E. The Senate provided $818 million for the S&T Directorate (less a rescission of $200 million in unobligated prior-year funds); $442 million for DNDO; $18 million for Coast Guard RDT&E; and $92 million for R&D in the Transportation Security Administration (transferred from S&T). The final bill provided $973 million for S&T (less $125 million in rescinded prior-year

funds); $481 million for DNDO, and $17 million for Coast Guard RDT&E. The final total of $1.371 billion (excluding the rescission of unobligated funds) was an overall 9% reduction from FY2006, made up of a 16% decrease for S&T, a 53% increase for DNDO, and a 6% decrease for Coast Guard RDT&E.[2] (See P.L. 109-295, H.Rept. 109-699)

**Labor/HHS/ED.** The primary R&D agency under this appropriations bill is the National Institutes of Health (NIH). For the second fiscal year in a row, NIH is likely to see its budget decline in real dollars. The President requested a program level budget of $28.487 billion for NIH for FY2007, essentially equal to the FY2006 final budget and $66.8 million (0.2%) lower than the FY2005 level of $28.553 billion. The FY2006 amount was the first decrease in NIH's appropriation since 1970. (NIH lost an additional $19.5 million in FY2006 funds in June 2006 when the HHS Secretary exercised his transfer authority to give the Centers for Medicare and Medicaid a total of $40 million from other HHS discretionary accounts, dropping the NIH program level to $28.468 billion.)

The House and Senate Appropriations Committees reported separate FY2007 Labor-HHS-Education Appropriations bills (H.R. 5647, H.Rept. 109-515 and S. 3708, S.Rept. 109-287), but neither chamber was able to schedule floor action. The House committee recommended funding most of the NIH accounts at the same level as the request. The Senate bill would have provided a program level of $28.688 billion, an increase of about $220 million (0.8%) over the revised FY2006 amount and $200 million above the request and the House amount. The Senate committee gave every NIH account a modest increase over FY2006, reversing the cuts to institute and center budgets proposed in the request.

Reauthorization legislation for NIH, last enacted in 1993, received recent congressional action in the House. After holding hearings over the past several years, the Energy and Commerce Committee marked up a draft bill, the NIH Reform Act of 2006. It contained managerial and organizational changes for NIH, focusing on enhancing the authority of the central NIH Director's Office for 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 institutes and centers, and established a "common fund" for trans-NIH research. H.R. 6164 was passed with amendments.

**Science-State-Justice-Commerce.** The House and Senate appropriations committees oversee the activities of four major R&D agencies. They include NSF and NIST (who are participating in the ACI), NASA, and the National Oceanic and Atmospheric Administration (NOAA) in the Department of Commerce. The House-passed bill, H.R. 5672, would cut NOAA funding from $610 million in FY2006, to $510 million in FY2007. Concomitantly, the Senate Appropriations Committee reported H.R. 5672 (amended in the nature of a substitute), which included a recommendation of $779 million for NOAA R&D funding in FY2007. The Administration's FY2007 budget includes $581.3 million for NIST, almost 22.7% below the current fiscal year. Support

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[2] DNDO was funded within the S&T Directorate in FY2006. The percentage increases given here for DNDO are relative to its FY2006 funding within S&T. The percentage decreases for S&T are relative to its FY2006 funding exclusive of DNDO.

for internal R&D activities under the Scientific and Technology Research and Services (STRS) account would increase 18.3% to $467 million, most of which is related to the ACI. The House-passed FY2007 appropriations bill, H.R. 5672, provides NIST with $627 million, a decrease of almost 16.6% from the current fiscal year. The version of H.R. 5672 reported from the Senate Committee on Appropriations would fund NIST at $764 million, 1.6% above the current fiscal year. For the first time, both the House and Senate bills would not provide any funding for NIST's Advanced Technology Program.

**Other Budget-related Issues.** The absence of an early House and Senate agreement on the FY2007 Budget Resolution (S.Con.Res. 83) and (H.Con.Res. 376) played a major role in delaying the passage of the remaining FY2007 appropriations bills. How the House and Senate resolve their differences regarding R&D funding remains to be seen. One approach that legislators have traditionally used is for the House and Senate to split the difference in their funding proposals. However, as indicated in **Table 1** below, this approach would result in some agencies receiving no increases or significant funding reductions in FY2007.

In an article in the Washington Post, Representative David Obey, incoming Chairman of the House Appropriations Committee, and Senator Robert Byrd, incoming Chairman of the Senate Appropriations Committee, indicated that they intend to extend the current CR until end of the FY2007 fiscal year. If Congress approves extending the current CR to September 30, 2007, most agencies would see their FY2007 R&D budget remain at FY2006 funding levels. Further, because agencies are usually not allowed to initiate new programs under a CR, the President's ACI may not be implemented in FY2007. [3]

However, Jennifer Reed, a spokeswoman for Senator Byrd said the details of how the CR will play out are still being determined. Reed indicated that the resolution would not rely on formulas like those used in the current CR, but will "evaluate broad priorities and look at areas of desperate need. " As indicated above, agencies cannot start new programs under a CR, unless they are explicitly allowed, but Reed said that such level of detail is yet to be addressed. [4]

**Limitations on R&D Activities.** The current CR allows agencies without enacted FY2007 appropriations to fund existing R&D programs and activities at FY2006 funding levels. However, if Congress approves a year-long continuing resolution, no new initiatives, including the President's ACI proposal could be funded in FY2007.If Congress approves a year-long CR, funding for basic and applied research is estimated to decline 2% in real dollars. Further, based on current Congressional actions, such agencies as the Department of Agriculture, the Department of Energy, and NOAA would see their R&D budgets decline significantly in FY2007. The CR would also cancel most of the congressionally designated, performer-specific R&D projects (traditionally known as earmarks) that were pending in the unfinished 2007 appropriations bills.

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[3] Shailagh Murray and Jonathan Weismam, "Democrats Freeze Earmarks for Now," *The Washington Post*, December 12, 2006, p. A3.

[4] Jenny Mandel, *Year Long Funding Measure Won't Rely on Current Formula*, govexec.com, December 13, 2006.

According to NSF, the loss of the ACI will result in the reduction of 600 new research grants. Also, NSF notes, assuming research proposal pressure remains stable at 2006 levels, there would be a decline of successful research funding rates from 21% in 2006 to an estimated 18% in 2007. NSF also indicated that funding for the EPSCoR program would be frozen, rather than allowed to increase as recommended by both the full House and Senate appropriations committees. In addition, the CR would result in the loss of 40 planned Graduate Research Fellowships occurring at such a time, according to NSF, when many experts are calling for significant increases in this program. According to NSF, without these fellowships, these best and brightest students from all fields of science and engineering may be forced to seek other funding or apply their talents to non-research fields.

Under a CR, DOE contends that university grants could be cut by 10% or more. Due to the significant cut in funding of the Office of Science in FY2006, DOE has been operating below FY2005 levels. The proposed continuing resolution would extend these difficult levels through October 2007. In addition, DOE notes that if Congress does not enact the ACI in 2007, DOE estimates that as many as 2,000 scientific and technical staff could lose their jobs. This would also mean Brookhaven's Relativistic Heavy Ion Collider (RHIC), the nation's premier nuclear physics facility, will cease operations in FY2007. Possibly, FermiLab's Tevatron in Illinois, the nation's largest high-energy physics facility, may also need to close. DOE contends that the US may not be able to live up to its $30 million commitment to the International Thermonuclear Experiment Reactor (ITER).

**The Ratio of Civilian and Defense R&D.** When President Bush took office in 2001, the ratio of defense to civilian R&D was 52% to 48%. If the FY2007 House passed appropriations legislation becomes law, defense related R&D would reach $81.2 billion, or 58% of federal R&D, while civilian R&D would decline to $58.8 billion, or to 42% of total federal R&D spending.[5] This represents the largest discrepancy between defense and civilian R&D spending since the early 1990s. Some argue that defense R&D has little impact on the discovery of new knowledge and the transfer of technological innovation to the commercial market place. This issue was raised during the Reagan Administration when defense research reached 68% of total federal R&D spending in the late 1980s. One of the major recommendations in the NRC's report, *Rising Above the Gathering Storm*, calls for an increase in federal investment in long-term basic research, ideally through reallocation of existing funds, but also if necessary via new funds by consenting to an increase of 10% annually over the next seven years. The report noted that special attention should go to the physical sciences, engineering, mathematics, and information sciences and to DOD basic research funding. According to the report, this special attention does not mean that there should be a disinvestment in such important fields as the life sciences or the social sciences. Instead, the report contends a balanced research portfolio in all fields of science and engineering research is critical to U.S. prosperity.[6]

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[5] This CRS estimate is based on Defense R&D as the sum of DOD's RDT&E programs, the Department of Energy's defense related R&D activities, and an estimated $400 million in homeland security R&D.

[6] *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, (continued...)

## Table 1. Estimated Federal R&D Appropriations in the 109th Congress

(millions $)

| Agency | FY2006 Est. | FY2007 Request | FY2007 House | FY2007 Senate | Approp. 2007 Est. |
|---|---|---|---|---|---|
| Department of Defense | 71,152 | 73,157 | 75,337 | 72,998 | 75,435[a] |
| Homeland Security | 1,505 | 1,552 | 1,470 | 1,370 | 1,371[b] |
| Nat. Institutes of Health | 28,468 | 28,487 | 28,489 | 28,688[c] | |
| NASA | 11,475 | 12,336 | 12,260 | 12,300[d] | |
| Nat. Science Foundation | 5,581 | 6,020 | 6,020 | 5,992[d] | |
| NIST | 552 | 581 | 627 | 764[d] | |
| NOAA | 610 | 533 | 510 | 779[d] | |
| Dept. of Interior | 634 | 598 | 630 | 643[e] | |
| EPA | 730 | 788 | 808 | 793[e] | |
| Dept. Energy | 8,848 | 9,153 | 9,394 | 9,891[f] | |
| Dept. of Transportation | 752 | 581 | 627 | 764[g] | |
| Dept. of Agriculture | 2451 | 2,108 | 2,388 | 2,433[h] | |
| Other | 1,840 | 1,831 | 1,855 | 1,865[i] | |
| Total | 134,515 | 137,770 | 140,415 | 139,280 | |

a. P.L. 109-289, H.Rept. 109-676.
b. P.L. 109-295, H.Rept. 109-699.
c. Labor-HHS-Education, H.Rept. 109- 485; S.Rept. 109-287.
d. Science-State-Justice-Commerce, H.Rept. 109-520; S. Commerce-Justice-Science, S.Rept. 109-280.
e. Interior-Environment, H.Rept. 109-465; S.Rept. 109-275.
f. Energy-Water, H.Rept. 109-474; S.Rept. 109-274.
g. Transportation-Treasury-HUD-Judiciary-D.C., H.Rept. 109-495; S.Rept. 109-293.
h. Agriculture, H.Rept. 109-463, Part 1&2; S.Rept. 109-266.
i. "Other" includes Education, Veterans, Agency for International Development, Nuclear Regulatory Commission, Smithsonian, Justice, Treasury, TVA, and the U.S. Postal Service.

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[6] (...continued)
and the Institute of Medicine, The National Academies, 500 Fifth Street, NW Washington, DC 20001, 2005, p.5.