Order Code RS22523
October 31, 2006

Federal R&D Funding Under a Continuing Resolution

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Summary

On September 29, 2006, President Bush signed a continuing resolution, or CR (P.L. 109-289, H.Rept 109-676) which provides spending at FY2006 levels (through November 17, 2006), for those agencies lacking enacted FY2007 appropriations bills. The House has passed 10 of its 11 appropriations bills, and the Senate has passed 2 of its 12 appropriations bills (the Senate Appropriations Committee has passed its remaining 10 appropriation bills). Congress has 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). Based on these current House and Senate actions, total federal R&D could reach an estimated $140 billion for FY2007. The centerpiece of the President's proposed FY2007 R&D budget is the American Competitiveness Initiative (ACI). The President proposed this initiative in response to growing concerns about America's ability to compete in the technological global marketplace.

The Bush Administration requested $137.2 billion in federal research and development (R&D) funding for FY2007. This sum represents a 2.4% increase over the estimated $133.7 billion that was approved in FY2006. As in the recent past, the FY2007 increase over the FY2006 estimated funding levels is 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 is the National Research Council's (NRC) report entitled *Rising Above the Gathering Storm and Energizing and Employing America for a Brighter Future*. The report expresses growing concerns about America's ability to compete in the technological global market place.[1]

[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
(continued...)

In response to the NRC report, the President has requested the American Competitiveness Initiative (ACI). As proposed, over the next 10 years, this $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 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 has 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. Based on these current House and Senate actions, total federal R&D could reach an estimated $140 billion for FY2007. This represents an estimated 4.4% increase over FY2006 estimated federal R&D expenditures. Despite the ACI, most of this increase can be attributed to large funding increases for development spending in defense, and the National Aeronautics and Space Administration. CRS estimates that total federal basic research funding for FY2007 will 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

American Competitiveness Initiative (ACI). As part of the $50 billion for research initiative, the President has 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.

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

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[1] (...continued)
20001, 2005.

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 have 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 has scheduled floor action. The House committee recommended funding most of the NIH accounts at the same level as the request. The Senate bill would provide 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, has received recent congressional action in the House. After holding a hearings over the past several years, the Energy and Commerce Committee marked up a draft bill, the NIH Reform Act of 2006. It proposes 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 requires detailed tracking of the research portfolio and periodic review of NIH's organizational structure. The measure authorizes, for the first time, overall funding levels for NIH, although not for the individual institutes and centers, and establishes a "common fund" for trans-NIH research.

Science-State-Justice-Commerce. The House and Senate appropriations committees oversees 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.

On September 26, 2006, Senator William H. Frist and Senator Harry Reid, along with 34 cosponsors, introduced the American Competitiveness and Innovation Act (S. 3936). According to the authors, the bill contains most of the recommendations contained in the ACI proposal. The Senate bill would authorize doubling NSF funding in five years, doubling DOE's Office of Science budget over ten years, and establish a variety of programs to train better science and math teachers, and to attract more students into science, technology, engineering, and math fields.[3]

Two bills passed by the House Science Committee are aimed at increasing the number of students majoring in science, technology, engineering and math careers (STEM). The Science and Mathematics Education for Competitiveness Act (H.R.5358) provides scholarships to STEM undergraduates who commit to teaching after graduating from college. The second bill (H.R. 5356) the Early Career Research Act would authorize programs at NSF and DOE to give merit-reviewed, competitive awards to tenure track science and engineering faculty in early stages of their careers. Nevertheless, given the scope and complexity of the Senate legislation, and the opposition of some House members to any new spending, according to Science Committee Chairman Sherwood Boehlert (as reported in *Science* magazine), it appears unlikely any of these initiates will be enacted.[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. In general, under the continuing resolution, no new projects or initiatives that had been planned for FY2007 can be funded. Consequently, this means that the President's ACI proposal cannot be implemented until the participating agencies have enacted FY2007 appropriation bills.

The CR could force some agencies to put off construction of new facilities or stop construction until their respective FY2007 appropriations bills are passed. Construction

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[3] Science, *Hopes for Innovation Bill Rest on Lame-Duck Session*, vol. 314, 6 October 2006. P.31.

[4] Ibid., p. 31.

can move forward with those programs that have been fully funded, but not others. For example, a representative from NSF stated that to keep major research and facilities construction on track, NSF might have to request a formal reprogramming to cover increasing costs for some ongoing projects.[5] Further, while most civilian R&D agencies will continue their request for research proposal activities, many will have to delay or restrict the number of awards given until they know the fate of their FY2007 budget request. For some agencies, like the NSF, if the CR were extended until late in the calendar year, this might affect its ability to recruit top graduate students for their fellowship programs. This could force some universities to initiate new competitions for graduate students, if some fellowship candidates decide to pursue other employment opportunities.

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.[6] 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.[7]

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[5] Based on a phone discussions with an NSF official, October 12, 2006.

[6] 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.

[7] *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, p.5.

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	546	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	134,451	137,725	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.