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AAAS September R&D Funding Update:

Federal Research Funding Flat in 2009 as Federal Budget Stalls

(This report is a summary of AAAS estimates and analyses of federal R&D appropriations in the FY 2009 appropriations process as of the October 1 start of FY 2009.)

Congress has made little progress on the federal government's budget for fiscal year (FY) 2009, which begins October 1, leaving federal funding for research and development (R&D) in limbo. Congress is preparing to leave Washington for the rest of the year after completing action on a bailout for the financial sector, postponing final budget decisions for most federal agencies until 2009. To keep the government operating, lawmakers approved a continuing resolution (CR) extending funding for all programs in unsigned 2009 appropriations bills at 2008 funding levels through March 6. The CR contains final FY 2009 appropriations for the Departments of Defense (DOD), Homeland Security (DHS), and Veterans Affairs (VA); all three receive substantial increases for their R&D portfolios, but other federal agencies in the remaining 9 of the 12 appropriations bills will be operating temporarily at or below 2008 funding levels for several months. Earlier in the year, congressional appropriators endorsed large increases for the three physical sciences agencies in the American Competitiveness Initiative (ACI), increases for human spacecraft development, increases for biomedical research in the National Institutes of Health (NIH), and increases in other parts of the federal research and development (R&D) portfolio. But instead, most federal programs will continue to operate at or below 2008 funding levels for several months into the new fiscal year. In real terms, the federal investment in basic and applied research has already declined since 2004, and under the CR federal funding of research would decline again in 2009 for the fifth year in a row.

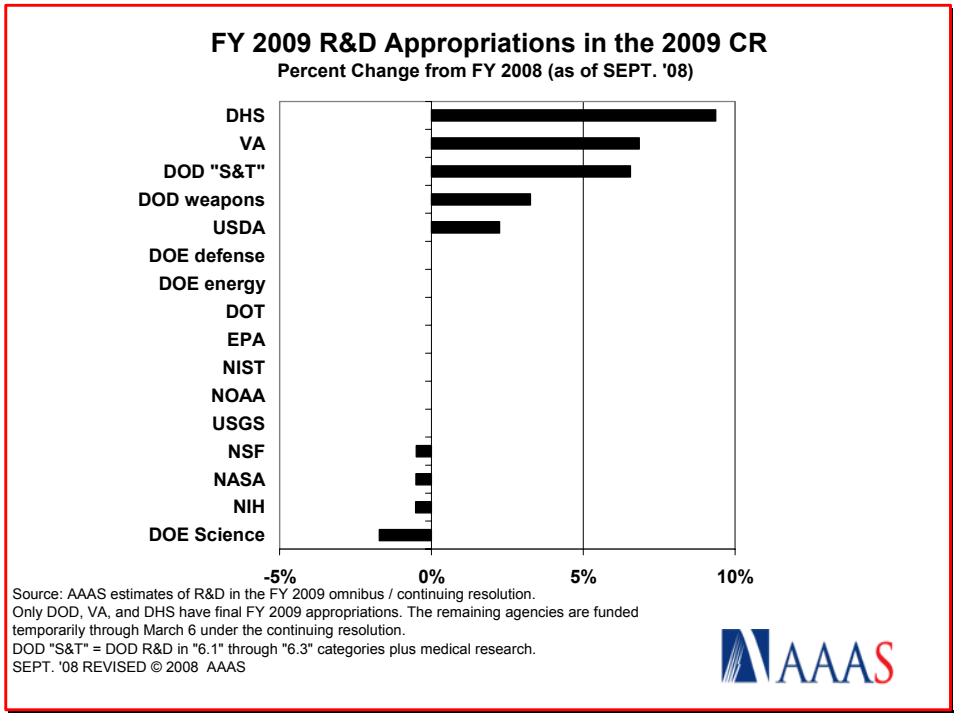

Figure 1. (click on image for PDF)

Highlights So Far of Federal R&D in FY 2009 Appropriations

Although the federal government's fiscal year (FY) 2009 begins on October 1, most of the government's FY 2009 budget is still unfinished. Congress has enacted none of the 12 annual appropriations bills separately. Instead, last week Congress drafted and then quickly approved a continuing resolution (CR) extending funding for all programs in unfinished 2009 appropriations bills at 2008 funding levels through March 6. President Bush is expected to sign the CR shortly. The CR also contains three final FY 2009 appropriations bills, covering the Departments of Defense (DOD), Homeland Security (DHS), and Veterans Affairs (VA); all three receive substantial increases for their R&D portfolios and will have final budgets in time for the start of FY 2009 (see Table 1 and Figure 1), but all other federal agencies in the remaining 9 of the 12 appropriations bills will be operating temporarily at 2008 funding levels when the new fiscal year begins until next spring, when a new Congress resumes work on 2009 appropriations.

In fact, because the CR counts only regular appropriations in its funding formula, agencies such as NIH and the Department of Energy (DOE) that received supplemental appropriations in June will start out FY 2009 with less money than they currently have (see Figure 1). Various proposals to give science agencies such as NIH and DOE more money at the start of FY 2009 have so far failed in Congress. (All FY 2009 figures reflect the FY 2009 CR, including final appropriations for the DOD, DHS, and VA and temporary funding at mostly FY 2008 funding levels through March 6, 2009, for the remaining agencies. FY 2008 figures reflect supplemental appropriations, including supplementals enacted in June 2008.)

- **The federal government enters FY 2009 with an R&D portfolio of $147.3 billion**, an increase of $2.9 billion or 2.0 percent due entirely to a large increase for DOD's R&D (see Table 1 and Figure 1). Defense R&D gains strongly with a 3.6 percent or $3.0 billion boost to $86.1 billion in 2009, nearly all of which is final, but the flat-funding formula of the CR results in a $61.2 billion total for nondefense R&D at the start of FY 2009, a cut of 0.1 percent compared to 2008.

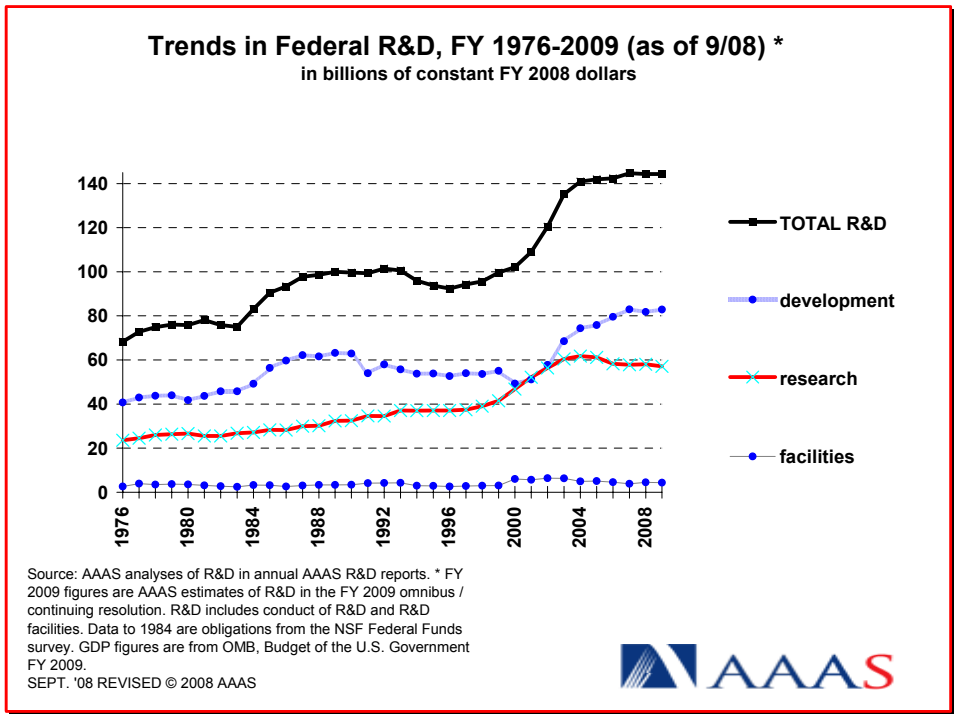

Figure 2. (click on image for PDF)

- **The federal investment in basic and applied research totals $58.2 billion at the start of FY 2009, a small $244 million or 0.4 percent increase** due to large research increases in the finalized DOD, DHS, and VA budgets offset by cuts in research funding for agencies such as NSF, DOE Office of Science, and NIH that received supplemental 2008 appropriations in June but lose those funds in the CR. After adjusting

for inflation, **the federal investment in research could decline for the fifth year in a row in 2009** (see Figures 2 and 3; current trends show a slight real increase in 2008 federal research because of a bump up from the June 2008 supplemental, but inflation figures are expected to be revised upward in the next few months).

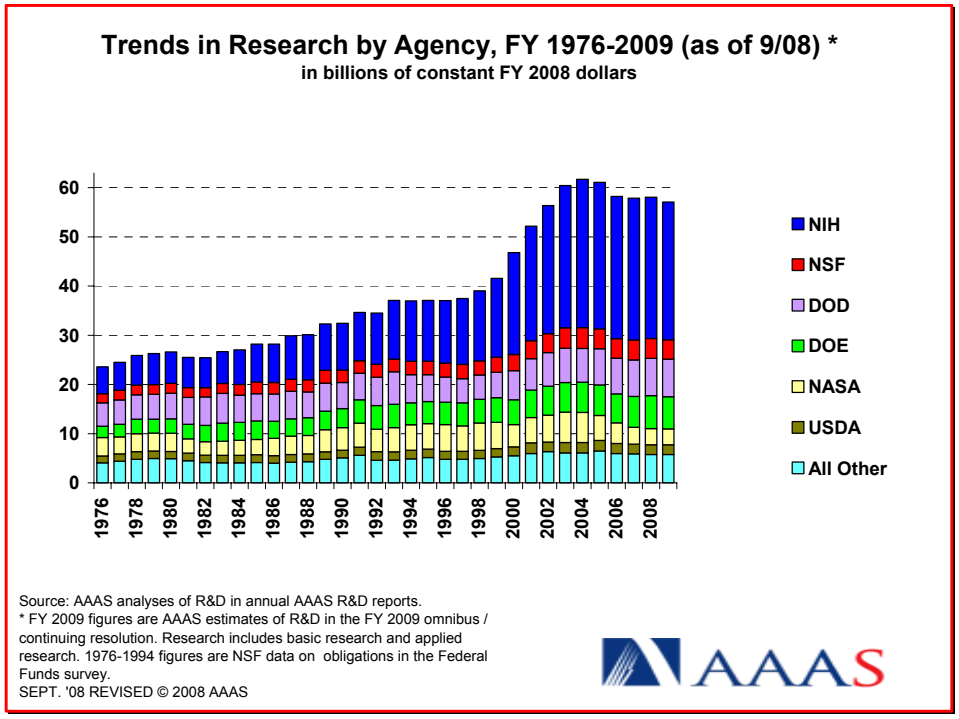

Figure 3. (click on image for PDF)

- Development funding gains in 2009, increasing $2.7 billion or 3.3 percent to $84.6 billion (see Table 1 and Figure 2). 80 percent of all federal development goes to DOD for weapons systems development. Most of the federal government's investment in R&D facilities falls under the agencies flat funded by the CR, resulting in a slight 0.4 percent cut to $4.5 billion under the CR, below a $4.7 billion request containing requested increases for NASA and DOE facilities.

- The flat funding levels of the CR put requested increases for **the three agencies in the Bush Administration's American Competitiveness Initiative (ACI) on hold.** Although Senate appropriators had endorsed and even added to large requested increases for the National Science Foundation (NSF), the Department of Energy's Office of Science (DOE OS), and Commerce's National Institute of Standards and Technology laboratories (NIST) in early versions of the 2009 appropriations bills, the next Congress may have to start all over again and in the meantime, the three key physical sciences agencies begin FY 2009 with funding levels at or slightly below 2008.

- Four science agencies that received additional 2008 funding in a June supplemental start FY 2009 at a reduced funding level because the CR does not count supplementals as part of its funding formula. The National Institutes of Health (NIH) received $150 million in June, but without those funds in the 2008 base NIH begins 2009 with a budget of $29.5 billion in the CR, down $150 million or 0.5 percent. DOE's Office of Science loses $63 million in 2008 supplementals in the 2009 CR, for a 1.7 percent cut to $3.6 billion for its R&D portfolio. The National Science Foundation (NSF) begins FY 2009 under the CR with $4.5 billion in R&D funding, down $23 million or 0.5 percent. And the National Aeronautics and Space Administration (NASA) sees its R&D funding fall $63 million or 0.5 percent to $12.2 billion. All four agencies hope to receive increases eventually, when 2009 appropriations are finalized.

- **Most agencies' support of basic and applied research would remain flat in 2009 under the CR** (see Table 2 and Figure 3). One bright spot is that DOD support of basic research ("6.1") increases 13 percent

to $1.8 billion in final 2009 DOD appropriations, an increase of 15 percent if earmarks are excluded. Basic and applied research in all three agencies with final 2009 budgets (DOD, VA, and DHS) would increase (see Table 2), as well as USDA research because new mandatory research funding becomes available (up 2.9 percent to $2.1 billion. But research support from all other federal agencies would remain flat or decline under the CR, including cuts in NASA, NSF, DOE, and NIH research because 2008 supplementals would not be carried over to 2009 under the CR (see Table 2).

- Defense R&D currently makes up nearly 59 percent of the federal R&D portfolio under the CR, since large DOD increases become final while most nondefense programs are flat funded (see Table 3). Overall nondefense R&D would decline slightly under the CR by 0.1 percent to $61.2 billion (see Table 3), and among the nondefense missions only agriculture R&D would show a slight uptick (up 2.6 percent) because new mandatory agricultural research funds become available in FY 2009.

R&D Appropriations for Key Agencies

Detailed analyses of FY 2009 House, Senate, and conference appropriations for individual agencies are available in AAAS R&D Funding Updates on the AAAS R&D Web site. Three agencies receive their final 2009 budgets in time for the October 1 start of FY 2009:

- Congress has agreed on $82.4 billion for **Department of Defense (DOD)** R&D programs in FY 2009, an enormous increase of $3.0 billion or 3.8 percent to an all-time high (see Table 1). DOD's support of basic research would gain 12.9 percent or $210 million to $1.8 billion in 2009 (see Table 2), a 15 percent increase if earmarks are excluded. Congress would renew a provision to cap indirect costs on basic research grants at 35 percent. Congress would add $2.7 billion to the request for DOD's future-oriented investments, almost entirely for earmarked projects, to turn a steep requested cut into a sizeable increase. DOD "Science and Technology" (S&T) spending would reach $14.3 billion in 2009, up 6.6 percent or $882 million over 2008 to reach 2.80 percent of the regular DOD budget (see Table 1). The research-oriented Defense Advanced Research Projects Agency (DARPA) would do well with an 11 percent increase to $3.1 billion in 2009, despite congressional concerns about the agency's ability to execute its portfolio. And DOD weapons development would increase dramatically by $2.1 billion or 3.3 percent to an all-time high of $68.0 billion (see Table 1 and Figure 2).

- Congress has also finalized an appropriations bill providing $1.1 billion in fiscal year (FY) 2009 for R&D in the **Department of Homeland Security (DHS**), a 9.4 percent or $93 million increase over 2008. R&D on radiological and nuclear countermeasures in the Domestic Nuclear Detection Office (DNDO) would fall slightly with a $5 million or 1.9 percent cut to $269 million, and chemical and biological countermeasures R&D in the Science and Technology Directorate would also fall (down 3.7 percent to $200 million). But there would be large increases for R&D to support other DHS missions such as explosives, technology transitions, border and maritime security, and protecting infrastructure, and a dramatic 56 percent increase for DHS laboratory facilities to $162 million. University Programs funding would gain slightly by $1 million to $50 million.

- The **Department of Veterans Affairs (VA)** R&D portfolio, after climbing the past two years from emergency appropriations, would continue to increase in the recently finalized 2009 VA budget. Congress would give VA R&D a 6.8 percent increase over 2008 to $952 million in 2009 (see Table 1).

The remaining agencies are temporarily funded at FY 2008 funding levels, minus any 2008 supplementals, through March 6 or until a final appropriations bill is enacted. The Senate drafted appropriations bills for most agencies, although none were debated on the Senate floor. The House did not draft appropriations bills for any of the agencies below:

- Although the Senate had hoped to add $1.0 billion to the 2009 request for the **National Institutes of Health (NIH)** for a total of $30.5 billion, an increase of 3.0 percent over 2008, the CR funds NIH at an annual rate of $29.5 billion, the same as the request and $150 million below 2008 (down 0.5 percent). NIH R&D would fall 0.5 percent to $28.7 billion in the 2009 CR (see Table 1). NIH won $150 million in supplemental appropriations in June for 2008, but those funds are not carried over into the 2009 CR

funding formula. Most of NIH's institutes and centers (IC's) would have seen their budgets increase by 2 to 2.5 percent in the Senate plan, in contrast to a request and CR that would keep IC funding flat or slightly declining. If the CR ends up as the final word on the NIH 2009 budget, then NIH funding would decline in real terms for the fifth year in a row. Funding for the NIH Common Fund (NIH Roadmap) in the Office of the Director would have grown substantially in the request as well as the Senate plan, but the Roadmap increase appears to be on hold until a final NIH appropriation is enacted. Elsewhere in the Department of Health and Human Services (HHS), a proposal to more than double biomedical countermeasures R&D funding for the Biomedical Advanced Research Development Authority (BARDA) in the Office of the Secretary to $250 million is on hold under the CR.

- The **National Science Foundation (NSF)** begins FY 2009 with a declining budget instead of a double-digit percentage gain. The Senate Appropriations Committee drafted a spending bill that would match the Bush Administration's request for a 12.5 percent increase in the National Science Foundation (NSF) budget for 2009 to $6.9 billion (see Table), a large increase designed to keep NSF on track to double its budget between 2006 and 2016, but NSF begins FY 2009 under the terms of the CR with $6.0 billion, the same as the 2008 budget minus $63 billion in 2008 supplementals. NSF's R&D investments would total $4.5 billion under the CR, a 0.5 percent or $23 million cut that falls nearly $700 million short of the request. All of NSF's research directorates would have received large increases in 2009 under both the Senate and Administration plans. NSF's education and human resources programs were set to gain 3.3 percent to $790 million in 2009, on top of $40 million these programs just received in the current year as part of a 2008 supplemental bill, but they now enter 2009 with less money than in 2008.

- Although the **National Aeronautics and Space Administration (NASA)** received $92.5 million in supplemental funding for 2008 in June and in the CR, NASA starts FY 2009 with a reduced budget when it was counting on a large increase. NASA starts FY 2009 with a budget of $17.1 billion, far short of a $17.8 billion request and Senate appropriation. Excluding non-R&D items such as the Space Shuttle, NASA R&D would be an annual rate of $12.2 billion under the CR, 0.5 percent below FY 2008 and nearly $600 million below the request (see Table 1). In a Senate plan, the Constellation Systems program to develop the next generation of human spacecraft was in line to receive $3.1 billion, an increase of 24.5 percent or $606 million, and the International Space Station $2.1 billion, a $247 million or 13.6 percent increase, as construction ramps up toward completion in 2010. But with the NASA budget frozen under the CR, NASA has only limited authority to move funds around to keep these and other projects on track. Separately, Congress gave final approval in late September to a NASA authorization bill authorizing $20.2 billion for the agency in FY 2009, far more than it now has.

- The **Department of Energy's (DOE)** Office of Science was in line for a 15 percent or more increase in 2009 because of its key role in the President's American Competitiveness Initiative (ACI). But under the CR, the Office starts 2009 with $4.0 billion, $63 million below 2008 funding levels because of the removal of 2008 supplementals from the CR funding formula, and roughly $700 million short of the request. R&D in DOE Science totals $3.6 billion in the CR, down 1.7 percent or $63 million from 2008 and down $740 million from the request. Most Science programs would have received substantial increases to hit historic highs, but those plans are on hold until Congress finalizes 2009 appropriations. Total DOE R&D would remain mostly flat under the CR at $9.7 billion, down 0.6 percent, with the energy and defense portfolios starting the new fiscal year flat. The Senate was planning to dramatically boost funding for DOE's energy R&D programs by 22 percent to $2.9 billion in 2009 after enormous increases in 2007 and 2008, in contrast to a flat request, but those plans have been shelved for now. A last-minute attempt to add up to $500 million in emergency 2009 appropriations for energy R&D also appears to have failed.

- The **U.S. Department of Agriculture** (USDA) is one of the few federal departments to do better under a CR than in earlier budget proposals. The Senate hoped to add hundreds of millions of dollars to a 2009 budget request for USDA R&D that proposed a 16 percent cut, for a new Senate total of $2.3 billion, 1.7 percent less than 2008 (see Table). But the CR retains 2008 funding for discretionary programs, including funding for 2008 earmarks, and allows additional mandatory funding to become available so USDA starts the year with $2.4 billion for R&D programs, $457 million more than requested and $53 million or 2.2 percent more than 2008. Although USDA will have to ration its CR discretionary funds in the expectation that a final appropriation will be lower, the agency can begin spending $88 million in new 2009 mandatory

research funding enacted in the June 2008 farm bill (up from $30 million in 2008) for organics research, specialty crops research (fruits and vegetables), and bioenergy research.

- Congress hoped to give large increases for both of the **Department of Commerce's** main R&D units, the National Institute of Standards and Technology (NIST) and the National Oceanic and Atmospheric Administration (NOAA), but instead Commerce starts FY 2009 flat funded at $1.1 billion for its R&D portfolio. The Senate would have awarded increases for all parts of the Department of Commerce R&D portfolio, trimming proposed increases for the intramural research activities of the National Institute of Standards and Technology (NIST) in order to save two extramural NIST programs from proposed elimination. R&D in the National Oceanic and Atmospheric Administration (NOAA) would have gained 8.9 percent to $633 million in the Senate plan instead of a requested cut. For now, the Bush Administration's plans to eliminate NIST's Technology Innovation Program (TIP) and the non-R&D Manufacturing Extension Partnership (MEP) program are on hold.

- The House, Senate, and the President all proposed to boost R&D funding in the **Department of Transportation (DOT)**, with cuts to aviation R&D balanced by large increases for highway R&D, but with Congress failing to complete action on a final 2009 DOT appropriation, the department's programs are flat funded under the CR. DOT R&D begins the new fiscal year at $820 million, even with 2008.

- Neither the House nor the Senate Appropriations Committees drafted an Interior-Environment appropriations bill, so there are no figures as to how Congress would like to fund R&D in the **Department of the Interior** or the **Environmental Protection Agency (EPA)**. The Bush Administration requested cuts for R&D in both agencies, and early indications were that Congress would turn the requested cuts into increases. But in the face of presidential veto threats over the committees' plan to add billions in funding on top of the request, and in the face of a growing movement to add offshore oil-drilling language, both committees canceled markups of the Interior-Environment bill. Both agencies start FY 2009 at 2008 funding levels, meaning both have more money now than they requested.

Budget Outlook: Waiting Until the New Year

In June, the Congress reached final agreement on an FY 2009 budget resolution, which established a congressional total for discretionary appropriations. The budget resolution allocated $1,013 billion for regular (non-emergency) FY 2009 appropriations, $21 billion more than the President's request. The budget assumed roughly the requested amount for defense discretionary programs, so the additional $21 billion would have allowed nondefense programs overall to increase slightly ahead of inflation, instead of declining as in the President's request. Congress hoped to use a significant chunk of the additional $21 billion to turn some requested cuts in R&D programs into flat funding or increases while sustaining large increases for key science programs. In Senate appropriations actions, appropriators endorsed large requested increases for three signature Bush Administration priorities: research funding in the three physical sciences agencies of the ACI, development funding in NASA for new human spacecraft, and development funding for new weapons systems in DOD. But appropriators also turned requested cuts into increases for agricultural and environmental research programs, NIH biomedical research, NASA's research portfolio and NIST's extramural programs, among others.

But the President's threat to veto any appropriations bills that exceed his request and the Democratic Congress' decision to therefore delay most bills until a new President takes office in January brought the entire 2009 process to a halt. Congress hopes to avoid a repeat of last year's 2008 process, when Congress went into the 2008 appropriations season with $21 billion more than the President, but after actual and threatened presidential vetoes gave up the extra $21 billion and produced a December 2008 omnibus appropriations bill that stuck to the President's total and trimmed the ACI increases in order to increase funding for other areas.

The CR extends to March 6, indicating that Congress intends to wait until after the inauguration to finalize the remaining 2009 appropriations bills. Most likely, lawmakers will spend the month of February writing final versions of the 9 remaining appropriations bills and then roll them into a single omnibus bill. Clearly, Democratic leaders hope that Sen. Barack Obama (D-IL), who voted for the budget resolution containing

the additional $21 billion, will be the President to sign the remaining 2009 appropriations into law, instead of Sen. John McCain (R-AZ) who did not vote on the budget resolution but who has voted with his Republican colleagues to sustain the President's budget priorities in the past.

But even though Sen. Obama is regarded as more likely to accept additional domestic appropriations than his opponent, whoever is President in early 2009 will face a more difficult fiscal climate. The financial sector rescue moving through Congress could be in full force by early next year, with hundreds of billions of dollars flowing out of the U.S. Treasury to buy mortgage-backed securities. The projected budget deficit in FY 2009 will almost certainly climb over the next few months, putting pressure on Congress and the next President to scale back government spending. In response, lawmakers may hold to their attempts to add $21 billion to the request for domestic appropriations, but there is also a strong chance they will scale back spending when finalizing the remaining appropriations bills, or even extend the current CR to cover the entire fiscal year.

Although Congress supports the full requested increases for American Competitiveness Initiative programs and funding well above requested levels for biomedical research, environmental, and energy R&D, the later the appropriations process goes the more likely it is that lawmakers will abandon or scale back these increases. Federal agencies, most of which already face frozen budgets five months into the new fiscal year, are left with few clues as to what their final funding levels will look like. And the U.S. science and engineering community once again faces many months of waiting to find out what the federal government's fiscal commitment to R&D in FY 2009 will be.

> (This analysis is one of a series of AAAS R&D Funding Updates on FY 2009 congressional appropriations. The complete series of AAAS R&D Funding Updates, including continually updated analyses of R&D in FY 2009 appropriations, is available on the AAAS R&D Web Site (http://www.aaas.org/spp/rd) in the "FY 2009 R&D" or the "What's New" sections.)

- September 30, 2008

AAAS R&D Budget and Policy Program
(202) 326-6607
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Table 1. Total R&D by Agency
Congressional Action on R&D in the FY 2009 Budget (as of September 30, 2008)
(budget authority in millions of dollars)

			Action by Congress				
	FY 2008	FY 2009	**FY 2009**	Chg. from Request		Chg. from FY 2008	
	Estimate	Request	**Congress**	Amount	Percent	Amount	Percent
Defense (military) *	79,347	81,067	**82,379**	1,311	1.6%	3,032	3.8%
*("S&T" 6.1,6.2,6.3 + Medical) **	*13,456*	*11,669*	***14,338***	*2,669*	*22.9%*	*882*	*6.6%*
*(All Other DOD R&D) **	*65,891*	*69,398*	***68,040***	*-1,358*	*-2.0%*	*2,149*	*3.3%*
National Aeronautics & Space Admin.	12,251	12,780	**12,188**	-592	-4.6%	-63	-0.5%
Energy	9,724	10,519	**9,661**	-858	-8.2%	-63	-0.6%
(Office of Science)	*3,637*	*4,314*	***3,574***	*-740*	*-17.1%*	*-63*	*-1.7%*
(Energy R&D)	*2,369*	*2,380*	***2,369***	*-11*	*-0.5%*	*0*	*0.0%*
(Atomic Energy Defense R&D)	*3,718*	*3,825*	***3,718***	*-107*	*-2.8%*	*0*	*0.0%*
Health and Human Services	29,966	29,973	**29,816**	-157	-0.5%	-150	-0.5%
(National Institutes of Health)	*28,826*	*28,666*	***28,676***	*10*	*0.0%*	*-150*	*-0.5%*
(All Other HHS R&D)	*1,140*	*1,307*	***1,140***	*-167*	*-12.8%*	*0*	*0.0%*
National Science Foundation	4,501	5,175	**4,479**	-696	-13.5%	-23	-0.5%
Agriculture	2,359	1,955	**2,412**	457	23.4%	53	2.2%
Homeland Security *	992	1,033	**1,085**	52	5.0%	93	9.4%
Interior	676	618	**676**	59	9.5%	0	0.0%
(U.S. Geological Survey)	*586*	*546*	***586***	*41*	*7.5%*	*0*	*0.0%*
Transportation	820	902	**820**	-81	-9.0%	0	0.0%
Environmental Protection Agency	548	541	**548**	7	1.3%	0	0.0%
Commerce	1,138	1,152	**1,138**	-14	-1.2%	0	0.0%
(NOAA)	*581*	*576*	***581***	*5*	*0.9%*	*0*	*0.0%*
(NIST)	*521*	*546*	***521***	*-25*	*-4.5%*	*0*	*0.0%*
Education	321	324	**321**	-3	-0.9%	0	0.0%
Agency for Int'l Development	223	223	**223**	0	0.0%	0	0.0%
Department of Veterans Affairs *	891	884	**952**	68	7.7%	61	6.8%
Nuclear Regulatory Commission	71	77	**71**	-6	-7.8%	0	0.0%
Smithsonian	203	222	**203**	-19	-8.6%	0	0.0%
All Other	322	299	**322**	23	7.7%	0	0.0%
TOTAL R&D *	**144,354**	**147,743**	**147,295**	**-449**	**-0.3%**	**2,941**	**2.0%**
Defense R&D *	83,065	84,892	**86,097**	1,204	1.4%	3,032	3.6%
Nondefense R&D *	61,288	62,851	**61,198**	-1,653	-2.6%	-91	-0.1%
Basic Research *	28,837	29,656	**28,952**	-704	-2.4%	115	0.4%
Applied Research *	29,151	27,626	**29,281**	1,655	6.0%	130	0.4%
Total Research *	57,988	57,282	**58,233**	951	1.7%	244	0.4%
Development *	81,890	85,745	**84,605**	-1,140	-1.3%	2,716	3.3%
R&D Facilities and Capital Equipment *	4,476	4,716	**4,457**	-260	-5.5%	-19	-0.4%

AAAS estimates of R&D in FY 2009 appropriations bills. Includes conduct of R&D and R&D facilities.
All figures are rounded to the nearest million. Changes calculated from unrounded figures.
FY 2008 figures have been adjusted to reflect supplementals enacted in Public Law 110-252 and contained in the FY 2009 CR.
These figures have been revised since the publication of *AAAS Report XXXIII: R&D FY 2009.*
*** - Only DOD, DHS, and VA receive their final FY 2009 appropriations in the FY 2009 continuing resolution (HR 2638). All other agencies are temporarily funded at FY 2008 funding levels (excluding supplementals) through March 6.**
September 30, 2008 - AAAS estimates of FY 2009 appropriations.

Table 2. Estimated Research by Agency
Congressional Action on R&D in the FY 2009 Budget (as of September 30, 2008)
(budget authority in millions of dollars)

			Action by Congress				
	FY 2008	FY 2009	**FY 2009**	Chg. from Request		Chg. from FY 2008	
	Estimate	Request	**Congress**	Amount	Percent	Amount	Percent
Basic Research:							
Health and Human Services	15,966	15,861	**15,883**	22	0.1%	-83	-0.5%
National Institutes of Health	*15,963*	*15,858*	***15,880***	*22*	*0.1%*	*-83*	*-0.5%*
National Science Foundation	3,699	4,320	**3,679**	-641	-14.8%	-20	-0.5%
Department of Defense *	1,625	1,699	**1,835**	136	8.0%	210	12.9%
Department of Energy	3,266	3,557	**3,232**	-325	-9.1%	-34	-1.0%
Office of Science	*3,240*	*3,534*	***3,206***	*-328*	*-9.3%*	*-34*	*-1.0%*
National Aeronautics & Space Admin.	2,326	2,287	**2,311**	24	1.0%	-15	-0.6%
Department of Agriculture	868	798	**868**	70	8.8%	0	0.0%
Department of the Interior	43	40	**43**	3	6.9%	0	0.0%
Department of Homeland Security *	248	276	**284**	8	3.0%	36	14.6%
Smithsonian	149	153	**149**	-4	-2.6%	0	0.0%
Environmental Protection Agency	95	95	**95**	1	0.7%	0	0.0%
Department of Commerce (NIST)	149	176	**149**	-27	-15.3%	0	0.0%
All Other *	403	394	**423**	29	7.4%	20	5.0%
Total Est. Basic Research *	28,837	29,656	**28,952**	-704	-2.4%	115	0.4%
RESEARCH (basic and applied):							
Health and Human Services	29,774	29,773	**29,624**	-149	-0.5%	-150	-0.5%
National Institutes of Health	*28,699*	*28,533*	***28,549***	*16*	*0.1%*	*-150*	*-0.5%*
National Science Foundation	4,040	4,742	**4,017**	-725	-15.3%	-23	-0.6%
Department of Defense *	7,510	6,138	**7,821**	1,684	27.4%	312	4.2%
Department of Energy	6,684	7,005	**6,650**	-355	-5.1%	-34	-0.5%
Office of Science	*3,240*	*3,534*	***3,206***	*-328*	*-9.3%*	*-34*	*-1.0%*
National Aeronautics & Space Admin.	3,296	3,103	**3,274**	171	5.5%	-21	-0.6%
Department of Agriculture	2,001	1,720	**2,059**	339	19.7%	58	2.9%
Department of the Interior	592	554	**592**	38	6.9%	0	0.0%
Department of Homeland Security *	629	654	**669**	16	2.4%	41	6.5%
Environmental Protection Agency	468	462	**468**	6	1.4%	0	0.0%
Department of Commerce	821	906	**821**	-85	-9.4%	0	0.0%
NOAA	*442*	*489*	***442***	*-47*	*-9.6%*	*0*	*0.0%*
NIST	*366*	*410*	***366***	*-44*	*-10.7%*	*0*	*0.0%*
Department of Transportation	577	616	**577**	-39	-6.3%	0	0.0%
Department of Veterans Affairs *	835	832	**896**	64	7.7%	61	7.3%
Department of Education	205	203	**205**	2	1.0%	0	0.0%
All Other	557	575	**557**	-18	-3.1%	0	0.0%
TOTAL EST. RESEARCH *	**57,988**	**57,282**	**58,233**	**951**	**1.7%**	**244**	**0.4%**

AAAS estimates of R&D in FY 2009 appropriations bills. Includes conduct of R&D and R&D facilities.

All figures are rounded to the nearest million. Changes calculated from unrounded figures.

FY 2008 figures have been adjusted to reflect supplementals enacted in Public Law 110-252 and contained in the FY 2009 CR.

These figures have been revised since the publication of *AAAS Report XXXIII: R&D FY 2009.*

*** - Only DOD, DHS, and VA receive their final FY 2009 appropriations in the FY 2009 continuing resolution (HR 2638). All other agencies are temporarily funded at FY 2008 funding levels (excluding supplementals) through March 6.**

September 30, 2008 - AAAS estimates of FY 2009 appropriations.

Table 3. Major Functional Categories of R&D
Congressional Action on R&D in the FY 2009 Budget (as of September 30, 2008)
(budget authority in millions of dollars)

			Action by Congress					
	FY 2008 Estimate	FY 2009 Request	**FY 2009 Congress**	Chg. from Request Amount	Chg. from Request Percent	Chg. from FY 2008 Amount	Chg. from FY 2008 Percent	% of Total ('09)
Defense * [1]	83,065	84,892	**86,097**	1,204	1.4%	3,032	3.6%	58.5%
Nondefense * [2]	61,288	62,851	**61,198**	-1,653	-2.6%	-91	-0.1%	41.5%
Space	11,739	12,334	**11,677**	-657	-5.3%	-63	-0.5%	7.9%
Health *	30,813	30,813	**30,724**	-89	-0.3%	-89	-0.3%	20.9%
Energy	2,460	2,474	**2,460**	-14	-0.6%	0	0.0%	1.7%
General Science *	8,829	10,225	**8,853**	-1,372	-13.4%	24	0.3%	6.0%
Natural Resources & Environ.	2,153	2,060	**2,153**	93	4.5%	0	0.0%	1.5%
Agriculture	2,022	1,640	**2,075**	435	26.5%	53	2.6%	1.4%
Transportation	1,359	1,366	**1,348**	-18	-1.3%	-11	-0.8%	0.9%
Commerce	557	576	**557**	-19	-3.2%	0	0.0%	0.4%
International	255	255	**255**	0	0.0%	0	0.0%	0.2%
Administration of Justice *	355	356	**350**	-6	-1.7%	-5	-1.4%	0.2%
All Other	746	752	**746**	-6	-0.8%	0	0.0%	0.5%
Total R&D *	144,354	147,743	**147,295**	-449	-0.3%	2,941	2.0%	100.0%

AAAS estimates of R&D in FY 2009 appropriations bills. Includes conduct of R&D and R&D facilities.

All figures are rounded to the nearest million. Changes calculated from unrounded figures.

Classifications generally follow the government's budget function categories except health (which here includes health R&D in HHS and VA).

[1] Includes DOD R&D, atomic energy defense R&D in DOE, and defense-related R&D in DHS.

[2] Includes all R&D not in defense (domestic and international discretionary programs).

FY 2008 figures have been adjusted to reflect supplementals enacted in Public Law 110-252 and contained in the FY 2009 CR.

These figures have been revised since the publication of *AAAS Report XXXIII: R&D FY 2009*.

*** - Only DOD, DHS, and VA receive their final FY 2009 appropriations in the FY 2009 continuing resolution (HR 2638).**

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September 30, 2008 - AAAS estimates of FY 2009 appropriations.