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PRESIDENT'S FY 2009 BUDGET REQUESTS 3.4% INCREASE IN R&D FUNDING

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The Bush administration has proposed a total budget authority of $143 billion for federally funded research and development in FY 2009, an increase of 3.4% in current dollars over the preliminary FY 2008 figure of $138 billion (table 1). Defense R&D is slated to rise by 3.8% and nondefense R&D by 2.8%. In constant FY 2000 dollars, federally supported R&D is expected to increase 1.3% in FY 2009, with growth in defense R&D (1.7%) outpacing proposed growth in nondefense R&D (0.8%).

Unless otherwise indicated, all references to dollar amounts or percentages for the remainder of this InfoBrief are in current dollars.

Proposed Defense R&D Funding

The defense component of federal R&D budget authority proposed for FY 2009 is $84.1 billion, an increase of $3.0 billion over FY 2008 amounts. This increase reverses a $1.2 billion decline in national defense R&D the previous year. The proposed defense R&D budget would keep the defense share of total federal R&D level with the FY 2008 share at 59%. According to the American Association for the Advancement of Science (AAAS), the great majority of federal defense R&D (90% in FY 2009) is allocated for development, whereas the nondefense portion of the federal R&D budget is directed mostly toward funding research (78% in FY 2009).[2]

Nearly 95% ($79.6 billion) of FY 2009 defense dollars will be funded from Department of Defense (DOD) military research, development, test, and evaluation (RDT&E) programs (table 2). The Air Force, Army, Navy, and two defense agencies, the Missile Defense Agency and the Defense Advanced Research Projects Agency, will account for 88% ($70.1 billion) of the RDT&E account.

The Air Force is slated to get the largest portion of defense R&D funding ($28.1 billion), up $2.2 billion, or 8.4%, over the FY 2008 level. The Air Force increases are for development programs "for engineering, development, and testing work on specific weapons systems" (AAAS 2008: p. 61).[2] Other than for the Army (a 12.5% decrease), increases in R&D funding levels are expected for each of the other RDT&E DOD departments, ranging from 3.7% to 11.0% (table 2).

A 4.4% increase in R&D funding, to $3.6 billion in FY 2009, is proposed for Department of Energy (DOE) atomic energy defense activities, mainly for support of weapons development (table 2).

Proposed Nondefense R&D Funding

Total nondefense R&D budget authority is scheduled to increase by $1.6 billion, to $58.5 billion in FY 2009. The nondefense share of federal R&D budget authority decreased from 43% in FY 2004 to 40% in FY 2007 but rose to an estimated 41% for both FY 2008 and FY 2009. Nevertheless, in constant FY 2000 dollars, increases in nondefense R&D have barely exceeded inflation in each of the past 2 years and, in real terms, its proposed FY 2009 R&D budget authority total is

TABLE 1. Federal R&D budget authority ordered by FY 2009 proposed amounts, by budget function: FY 2004–09

Funding category	FY 2004 actual	FY 2005 actual	FY 2006 actual	FY 2007 actual	FY 2008 preliminary	FY 2009 proposed	% change FY 2008–09
	Current $millions						
All categories conducting R&D	121,867	126,601	131,624	138,087	137,972	142,605	3.4
National defense	69,593	74,047	78,037	82,272	81,050	84,091	3.8
Nondefense	52,274	52,553	53,586	55,815	56,921	58,514	2.8
Health	28,251	28,824	28,797	29,461	29,634	29,783	0.5
Space research and technology	7,612	7,300	8,204	9,024	9,233	9,728	5.4
General science	6,466	6,570	6,691	7,809	7,915	9,012	13.9
Energy	1,343	1,296	1,195	1,893	2,374	2,463	3.7
Natural resources and environment	2,168	2,168	2,120	1,936	2,008	1,987	-1.0
Agriculture	1,750	1,820	1,869	1,857	1,852	1,616	-12.7
Other functions[a]	4,684	4,575	4,710	3,836	3,905	3,924	0.5
	FY 2000 constant $millions						
All categories conducting R&D	111,600	112,335	113,050	115,506	113,221	114,708	1.3
National defense	63,730	65,703	67,025	68,818	66,511	67,641	1.7
Nondefense	47,870	46,631	46,025	46,688	46,710	47,067	0.8
Health	25,871	25,576	24,733	24,643	24,318	23,956	-1.5
Space research and technology	6,971	6,477	7,046	7,548	7,577	7,825	3.3
General science	5,921	5,830	5,747	6,532	6,495	7,249	11.6
Energy	1,230	1,150	1,026	1,583	1,948	1,981	1.7
Natural resources and environment	1,985	1,924	1,821	1,620	1,648	1,599	-3.0
Agriculture	1,603	1,615	1,605	1,553	1,520	1,300	-14.5
Other functions[a]	4,289	4,059	4,045	3,326	3,205	3,156	-1.5

[a] Other functions include transportation; veterans benefits and services; education, training, employment, and social services; income security; commerce and housing credit; international affairs; administration of justice; and community and regional development.

NOTES: Data reflect budget information collected through March 2008. Data for FY 2004–07 are final appropriations. Preliminary budget authority for FY 2008 does not reflect 2008 supplemental appropriations. Proposed budget authority for FY 2009 from the Bush administration will be revised to reflect congressional appropriation and actual program-funding decisions. Detail may not add to total because of rounding. Percent change is derived from unrounded data.

SOURCES: Agencies' submissions to the Office of Management and Budget; agencies' budget documents; and supplemental data obtained from agencies' budget offices.

less than it was 5 years ago, in FY 2004 (table 1). The six functions accounting for most (93%) of the federal budget proposed for nondefense-related R&D activities are discussed below and are shown in table 1.

Health

R&D funding for health mostly includes programs of the National Institutes of Health and is proposed to increase by $0.15 billion from the FY 2008 level, or by 0.5%. Health, projected to be $29.8 billion in FY 2009, is the second largest R&D budget function after national defense. However, in constant FY 2000 dollars, health R&D budget authority fell for the fifth consecutive year, this time by 1.5%. The health share of total federal R&D budget authority reached 23% in FY 2004 and FY 2005 then declined, dipping to 21% in 2007, where it has remained each year since.

Space Research and Technology

The Bush administration has proposed a 5.4% increase in R&D budget authority, to $9.7 billion, for space research and technology, an increase of about $0.5 billion from FY 2008. National Aeronautics and Space Administration programs account for this entire amount. The share of R&D funding for space research and technology has increased each year since FY 2005, rising from

TABLE 2. Federal R&D budget authority for national defense: FY 2006–09
(Millions of dollars)

Funding category and agency	FY 2006 actual	FY 2007 actual	FY 2008 preliminary	FY 2009 proposed	% change FY 2008–09
Total	78,037	82,272	81,050	84,091	3.8
Department of Defense-military (DOD)	74,125	78,949	77,640	80,531	3.7
Research, development, test, and evaluation (RDT&E)	72,855	77,549	76,387	79,616	4.2
Defense agencies	19,803	21,862	20,499	21,499	4.9
Defense Advanced Research Projects Agency	2,871	2,908	2,959	3,286	11.0
Missile Defense Agency	7,682	9,381	8,552	8,891	4.0
Other defense agencies	9,250	9,573	8,988	9,323	3.7
Department of the Air Force	22,220	24,566	25,902	28,067	8.4
Department of the Army	11,693	11,303	12,032	10,524	-12.5
Department of the Navy	18,973	19,638	17,776	19,337	8.8
Operational test and evaluation	166	180	178	189	6.2
Other military funding[a]	1,270	1,400	1,253	915	-27.0
Department of Energy-atomic energy defense activities (DOE)	3,536	3,323	3,410	3,560	4.4
Environmental restoration and waste management	34	21	22	33	50.0
Naval reactors development	692	712	680	739	8.7
Nonproliferation	244	209	208	208	0.0
Weapons activities	2,562	2,378	2,497	2,577	3.2
Other defense activities	4	3	3	3	0.0
Department of Homeland Security (DHS)[b]	376	0	0	0	na

na = not applicable.

[a] This item includes appropriate personnel costs in direct support of conduct of research and development, other appropriations funding certain DOD programs, and medical research funded outside RDT&E accounts.

[b] DHS has reclassified its defense activities; these activities are now classified as general science.

NOTES: Data reflect budget information collected through March 2008. Data for FY 2006–07 are final appropriations. Preliminary budget authority for FY 2008 does not reflect 2008 supplemental appropriations. Proposed budget authority for FY 2009 from the Bush administration will be revised to reflect congressional appropriation and actual program-funding decisions. Detail may not add to total because of rounding. Percent change derived from unrounded data.

SOURCES: DOD, DOE, and DHS submissions to Office of Management and Budget; supplemental data obtained from agencies' budget offices; and DOD, RDT&E Programs (R-1).

5.8% to an expected 6.8% of the proposed total federal R&D budget authority in FY 2009.

General Science

Research funding for general science is expected to increase 13.9% in FY 2009, or by nearly $1.1 billion, to a total of $9.0 billion. This represents the largest dollar and percentage increase proposed for any individual nondefense R&D funding category. The National Science Foundation accounts for 53% ($4.7 billion) of these general-science funds, and DOE and the Department of Homeland Security account for the remaining portion ($4.3 billion). Under the proposed budget, general science would account for 6.3% of the total federal R&D budget authority, up from 5.7% in FY 2008.

Energy

Energy R&D is budgeted at $2.5 billion in FY 2009, up 3.7% from the FY 2008 level. The Department of Energy accounted for nearly all of these funds. Since FY 2006, energy R&D budget authority will have more than doubled (an average annual increase of 27.3% in current terms). Most of the 3-year increased funding has been to support energy efficiency and renewable energy R&D programs and nuclear energy R&D programs.

Natural Resources and Environment

Proposed natural resources and environment R&D is $2.0 billion in FY 2009, down 1.0% ($21 million) from the FY 2008 level. Four agencies provide nearly all of

the support for R&D in this area: Department of the Interior, Environmental Protection Agency, Department of Commerce, and Department of Agriculture (USDA).

Agriculture

Agriculture R&D is scheduled to total $1.6 billion in FY 2009, down by 12.7% from the FY 2008 funding level. USDA would receive all of these funds for its projects, with the bulk of the dollars going to the Agricultural Research Service and to the Cooperative State Research, Education, and Extension Service.

Data Comments and Availability

The figures used in this report, provided by federal agencies between February and March 2008, represent agencies' best estimates of actual (FY 2007), preliminary (FY 2008), and proposed (FY 2009) federal budget authority for R&D. These data are based primarily on information that agencies provide to the Office of Management and Budget (OMB) and account for nearly all federally sponsored R&D activities. The R&D budget figures reflect estimates of R&D based on agency documents and OMB data through March 2008. They do not reflect 2008 supplemental appropriations. Budget numbers for individual activities, programs, or agencies may therefore differ from those published in the President's budget or agency budget documents. Pending congressional action will determine the final budget authority for R&D in FY 2009.

A full set of detailed tables on the President's requested federal funding of R&D components of agency programs for FY 2007–09 will be available in the forthcoming report *Federal R&D Funding by Budget Function: Fiscal Years 2007–09* at http://www.nsf.gov/statistics/fedbudget/. The report also contains R&D information that became available from the individual agencies after the administration's budget was prepared and reported. Individual detailed tables may be available in advance of the full report. For more information, please contact the author.

Notes

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2. AAAS, Intersociety Working Group. 2008. *AAAS Report XXXIII: Research and Development FY 2009.* AAAS Publication Number 08-1A. Washington, DC. Available at http://www.aaas.org/spp/rd/rd09main.htm.

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