

Senate Offers Modest Increases for DOE Science

(This analysis is part of a series of AAAS R&D Funding Updates on the FY 2003 congressional appropriations process. This analysis includes information on R&D in Senate-approved FY 2003 appropriations for the Department of Energy. The complete series of AAAS R&D Funding Updates, including continually updated analyses of R&D by agency in FY 2003 appropriations, is available on the AAAS R&D Web Site (<http://www.aaas.org/spp/rd>) in the "FY 2003 R&D" or the "What's New" sections.)

The U.S. Senate recently drafted its versions of two appropriations bills providing funding for the Department of Energy (DOE). On July 24, the Senate Appropriations Committee approved its FY 2003 Energy-Water appropriations bill (S. 2784), which funds most of DOE. Earlier on June 27, the Committee approved its FY 2003 Interior appropriations bill (S 2708), which funds the remainder of DOE. Together, the two bills would provide **\$8.7 billion for DOE's R&D programs in FY 2003, \$379 million or 4.5 percent more than FY 2002; the Senate would reverse the proposed cuts to DOE R&D proposed by the Bush Administration, especially for energy R&D** (see Table). R&D in DOE's three mission areas of energy, science, and defense would all increase, with the smallest increase going to the science mission.

The total FY 2003 DOE budget would be \$22.4 billion in the Senate bills, an increase of 5.5 percent with an emphasis on DOE's defense activities (see Table). About two-thirds of the DOE budget goes to defense-related activities involving the U.S. nuclear weapons stockpile and related environmental clean-up costs. The Senate would provide \$15.8 billion for DOE's defense activities (up 5.9 percent; see Table). DOE's nondefense programs would also increase compared to FY 2002.

DOE's R&D programs would share in the gains to the total DOE budget. **Total DOE R&D would be \$8.7 billion in the Senate plan. There would be increases slightly above the rate of inflation for science R&D (up 2.5 percent) and larger increases for defense R&D and energy R&D (both up 5.7 percent). All would be greater increases than the request, especially energy R&D which was proposed for an 11 percent cut.** (For details of R&D in the FY 2003 request, please see Chapter 9 of *AAAS Report XXVII: R&D FY 2003*). The House has approved its Interior bill, but has not drafted an Energy-Water bill yet.

While the Bush Administration proposed cuts in many of DOE's energy R&D programs, the Senate would provide large increases for selected programs. While the Administration requested a modest 2.8 percent increase for **Renewable Energy Resources R&D**, the Senate would boost funding by 16.7 percent over FY 2002 to \$410 million, \$49 million above the request. The Senate would add funds across the board to programs in this account, including research on hydropower, solar, geothermal, hydrogen, wind, and electric energy storage systems. In a separate account, Nuclear Energy R&D would fall 14.8 percent to \$82 million, although this would still be above the even steeper requested cut.

In the Senate Interior bill, **Fossil Energy R&D** would increase 8.3 percent to \$545 million, a dramatic reversal from the requested cut of 17.3 percent. The request would have reduced funding for several fossil energy areas such as oil and gas by as much as 50 percent, and even the Administration priority of coal research would have taken a hit. The Senate plan would keep funding for most fossil fuels at close to FY 2002 levels, while providing additional funds for coal technologies. The Senate would cut **Energy Conservation R&D** by 1.1 percent to \$459 million, a sharp contrast to a requested 10.9 percent cut. Although the overall Energy Conservation account would show a slight increase, the additional funds would go to non-R&D state energy and weatherization assistance grants programs.

The Senate report accompanying the Energy-Water bill offers praise for DOE's **Science** programs, and stresses their importance for the U.S. physical sciences and engineering enterprise. The report states, "Investment in the physical sciences and engineering plays a critical role in enabling U.S. technological innovation and global economic leadership" and describes how the Office of Science contributes to that leadership. But despite the warm words, the Senate could only provide a modest increase in Science R&D

to \$3.1 billion, \$75 million or 2.5 percent above the FY 2002 level. Most Science programs would receive funding slightly above FY 2002 funding levels. **Fusion Energy Sciences** would receive \$259 million for R&D in FY 2003 (up 4.8 percent). The **High Energy Physics** (up 2.4 percent to \$730 million) and **Nuclear Physics** (up 7.9 percent to \$387 million) programs would also increase. Within the **Basic Energy Sciences** (BES) program, the Senate would provide \$225 million for the **Spallation Neutron Source (SNS)**, the same as the request, within a total BES program budget of \$1.0 billion (up 4.5 percent). The **Biological and Environmental Research** (BER) program would be the only program within Science to fall (down 6.9 percent to \$531 million), but only because the Senate would not renew over \$60 million in FY 2002 congressional earmarks. The BER appropriation would be \$27 million more than the request, with increases for the Genomes to Life (\$47 million, up from \$22 million in FY 2002) and Low Dose Radiation Research (\$25 million, up from \$17 million) programs. The Genomes to Life program funds biological research on the genomic structures of microbes that could have a positive impact on DOE's cleanup and environmental missions. The Low Dose program funds research on the human health effects of low levels of radiation.

On the defense side, most of DOE's R&D is funded by the **National Nuclear Security Administration (NNSA)**, which was created three years ago by Congress in response to national security concerns and allegations of espionage at DOE weapons laboratories. The Senate would boost the total NNSA budget up to \$8.3 billion (up 8.9 percent from FY 2002). The Senate has traditionally been more supportive of NNSA activities than either the House or the White House because of the patronage of Senator Pete V. Domenici (R-NM), ranking member of the Energy-Water subcommittee. New Mexico is home to two of the three major NNSA laboratories (Los Alamos and Sandia; the other is Lawrence Livermore in California).

Maintaining the U.S. nuclear weapons stockpile is one of DOE's major defense responsibilities, and since the U.S. banned nuclear testing DOE has relied on science to ensure the continuing reliability and safety of U.S. nuclear weapons. DOE's major R&D program in that effort is in Weapons Activities. **The Senate would provide \$3.0 billion for Weapons Activities R&D in FY 2003, a substantial 9.1 percent or \$254 million increase.** This program funds most of the R&D at the three weapons labs which are responsible for the nation's nuclear weapons stockpile. Within the overall increases, the Senate would cut funding for **Advanced Simulation and Computing**, an effort to develop the next generation of computer processing technologies to better model nuclear explosions, to \$704 million (down 1.9 percent). The Senate report notes with concern the recent announcement that a Japanese supercomputer has demonstrated far better computational performance for research than any NNSA computer, and demands a reevaluation by the National Academy of Sciences of NNSA's computing strategy. The Senate is also critical of NNSA efforts on the **National Ignition Facility**, although the Senate would provide the requested \$214 million for continued construction. The project is behind schedule and over budget, and the Senate report warns NNSA not to downscale the project or its performance targets.

The Interior and Energy-Water bills now move to the Senate floor for expected approval by the full Senate. Approval may come the week of July 29, though one or both bills could be delayed because as many as 10 appropriations bills will be ready for floor debate that week. If delayed, the Senate will consider them after a month-long August recess. The full House approved its version of the Interior bill on July 17, but the House Appropriations Committee will not draft its Energy-Water bill until September.

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**Table. Department of Energy
Senate Appropriations Committee Action on R&D in the FY 2003 Budget
(budget authority in millions of dollars)**

	FY 2002 Estimate	FY 2003 Request	FY 2003 Senate	Action by Senate		Chg. from FY 2002 Amount	Chg. from FY 2002 Percent
				Chg. from Request Amount	Chg. from Request Percent		
DOE Appropriations Containing R&D:							
1. Energy Supply R&D	447	424	491	67	15.9%	44	9.9%
2. Fossil Energy R&D	503	416	545	129	31.0%	42	8.3%
3. Energy Conservation	464	413	459	46	11.0%	-5	-1.1%
4. Science	3,048	3,059	3,123	64	2.1%	75	2.5%
5. Atomic Energy Defense Activities	3,839	3,947	4,058	111	2.8%	219	5.7%
6. Clean Coal Technology ¹	0	0	0	0	--	0	--
7. Radioactive Waste Management	60	64	64	0	0.0%	3	5.7%
Total DOE R&D	8,361	8,323	8,740	417	5.0%	379	4.5%
Detail of selected appropriations:							
1. Energy Supply R&D							
Solar and Renewables	351	361	410	49	13.4%	58	16.7%
Nuclear Energy	96	63	82	19	29.7%	-14	-14.8%
TOTAL Energy Supply	447	424	491	67	15.9%	44	9.9%
4. Science ²							
High Energy Physics	713	725	730	5	0.7%	17	2.4%
Nuclear Physics	359	382	387	5	1.3%	28	7.9%
Fusion Energy Sciences	247	257	259	2	0.8%	12	4.8%
Basic Energy Sciences	1,000	1,020	1,045	25	2.5%	45	4.5%
(Spallation Neutron Source)	291	225	225	0	0.0%	-66	-22.8%
Adv. Scientific Computing Res.	157	170	170	0	0.0%	12	7.8%
Biological and Environmental Res.	570	504	531	27	5.4%	-39	-6.9%
Energy Research Analyses	1	1	1	0	0.0%	0	2.5%
TOTAL Science ²	3,048	3,059	3,123	64	2.1%	75	2.5%
5. Atomic Energy Defense Activities							
National Nuclear Security Administration (NNSA)							
Naval Reactors	665	683	683	0	0.0%	17	2.6%
Weapons Activities	2,784	2,919	3,038	119	4.1%	254	9.1%
(Stockpile R&D)	357	467	467	0	0.0%	110	30.8%
(Science Campaigns)	260	238	273	36	14.9%	13	4.9%
(Adv. Simulation and Computing)	718	725	704	-21	-2.8%	-13	-1.9%
(ICF Ignition and High Yield) ³	266	235	268	33	14.0%	3	1.0%
(Nat'l Ignition Facility Construction)	245	214	214	0	0.0%	-31	-12.6%
(All Other Weapons Acts. R&D)	938	1,039	1,111	71	6.8%	172	18.4%
Nonproliferation & Verification R&D	238	215	222	8	3.5%	-15	-6.4%
Fissile Materials Disposition	16	9	9	0	0.0%	-7	-41.3%
Total NNSA R&D	3,703	3,826	3,952	127	3.3%	249	6.7%
Environmental Management	105	95	79	-15	-16.3%	-25	-24.2%
Nuclear Safeguards & Security	25	21	21	0	0.0%	-4	-16.8%
Intelligence	6	6	6	0	0.0%	0	0.0%
TOTAL Atomic Defense R&D	3,839	3,947	4,058	111	2.8%	219	5.7%
(continued)							

AAAS R&D Funding Update - DOE R&D in FY 2003 Senate Appropriations

DOE R&D by Budget Function:

Defense	3,839	3,947	4,058	111	2.8%	219	5.7%
General Science	3,048	3,059	3,123	64	2.1%	75	2.5%
Energy	1,474	1,317	1,559	242	18.4%	85	5.7%

AAAS estimates based on FY 2003 appropriations bills. Includes conduct of R&D and R&D facilities.

FY 2002 and FY 2003 request figures based on OMB R&D data and supplemental agency budget data.

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

All figures adjusted to exclude President's proposal to fully fund federal retiree costs, and therefore differ from figures presented in *AAAS Report XXVII*.

¹ Does not reflect previously appropriated funds in this program, nor rescissions and deferrals. True budget authority in this account is as follows: \$-40 million FY 2002, and \$-60 million FY 2003 (Senate).

² Does not include program direction, waste management, and other non-R&D costs.

³ Inertial Confinement Fusion Ignition and High Yield. DOE has proposed a name change to High Energy Density Physics.

July 26, 2002 - Senate Appropriations Committee-approved funding levels.

These funding levels may be amended or rejected on the Senate floor.

Department of Energy Budget (budget authority in millions of dollars)

	FY 2002 Estimate	FY 2003 Request	FY 2003 Senate	Action by Senate			
				Chg. from Request Amount	Chg. from Request Percent	Chg. from FY 2002 Amount	Chg. from FY 2002 Percent
Weapons Activities (NNSA)	5,560	5,867	6,109	242	4.1%	549	9.9%
Other NNSA Activities	2,031	2,156	2,158	2	0.1%	127	6.3%
Total NNSA	7,591	8,023	8,267	244	3.0%	676	8.9%
Defense Environmental Restoration	5,235	5,344	5,407	62	1.2%	172	3.3%
Nuclear Waste and Other Defense	2,074	2,033	2,101	68	3.3%	27	1.3%
Total DOE defense	14,900	15,401	15,775	374	2.4%	875	5.9%
Science	3,233	3,279	3,329	50	1.5%	96	3.0%
Energy Supply	667	694	815	121	17.5%	149	22.3%
Fossil Energy	583	475	641	166	34.9%	58	10.0%
Energy Conservation	913	902	922	20	2.2%	9	1.0%
Other Energy Programs	326	477	353	-124	-25.9%	27	8.4%
Nondefense Environmental Mngmt.	236	166	176	10	6.0%	-60	-25.5%
Power Marketing Administrations	215	197	204	6	3.1%	-11	-5.3%
Departmental Administration	105	199	135	-64	-32.1%	30	28.4%
Total DOE Budget	21,178	21,791	22,351	560	2.6%	1,173	5.5%

Source: Department of Energy budget justification and FY 2003 appropriations bills.

DOE appropriations only (does not include offsets and other mandatory).

Excludes deferrals of funds in Clean Coal Technology and other deferrals.

FY 2002 figures adjusted to reflect rescissions and supplementals in FY 2002 emergency and supplemental bills.

All figures adjusted to exclude President's proposal to fully fund federal retiree costs, and therefore differ from figures presented in *AAAS Report XXVII*.

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