

## DHS R&D Climbs 11 Percent in Senate Plan

### AAAS R&D Funding Update on DHS R&D in FY 2008 Senate Appropriations

#### Highlights

- The Senate would give the Department of Homeland Security's (DHS) R&D portfolio a large \$104 million or 10.9 percent increase to \$1.1 billion in FY 2008 (see Table). The Senate would far exceed smaller increases in the DHS request and the House appropriation, with much of the increase going to congressional earmarks.

- The Senate would give DHS' University Programs the requested \$39 million, down \$10 million from 2007 and the 2008 House appropriation. DHS would support 11 university-based centers by 2008.

- Research on radiological and nuclear countermeasures would continue to increase, by 9.3 percent to \$336 million in the Senate plan for the newly created Domestic Nuclear Detection Office (DNDO), but within the main Science and Technology Directorate chemical and biological countermeasures R&D would fall 5.8 percent to \$216 million.

- The Senate would trim the request for the Innovation program to develop revolutionary technological breakthroughs, but its funding would still jump from \$38 million to \$46 million in the 2008 Senate plan.

#### DHS R&D in FY 2008 Senate Appropriations

The 110<sup>th</sup> Congress kicked off its FY 2008 appropriations process earlier this month with the House Appropriations Committee's approval of its first bill of the year, the 2008 Homeland Security appropriations bill (HR 2638). A few weeks later, the Senate Appropriations Committee also kicked off its appropriations season with its version of the 2008 Homeland Security appropriations bill (S 1644) on June 14. Both the House and Senate versions contain more than \$36 billion in 2008 discretionary spending for the Department of Homeland Security (DHS), \$4 billion or 14 percent more than the current year and \$2 billion more than the President's request. **Included in the Senate bill is \$1.1 billion for DHS R&D (see Table), 10.9 percent or \$104 million more than 2007 and well above both the House appropriation (\$986 million) and the DHS request (\$996 million).** But 2008 DHS R&D would still be a steep drop from the \$1.3 billion DHS had in 2006.<sup>1</sup> (See the June 12 AAAS R&D Funding Update for details of DHS R&D in FY 2008 House appropriations; see Chapter 11 of *AAAS Report XXXII: R&D FY 2008* or the February 23 AAAS R&D Funding Update for details of DHS R&D in the President's request.)

After starting from virtually nothing four years ago and rapidly becoming the seventh-largest R&D funding agency, the DHS Science and Technology (S&T) unit ran into trouble spending money, knowing where the money went, and linking R&D to the technology requirements of DHS operating units. Under the leadership of Undersecretary of S&T Jay Cohen, the new head of the DHS S&T Directorate, the entire DHS R&D operation is reorganizing. Cohen proposed an extensive restructuring of the DHS R&D

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<sup>1</sup> Note: The AAAS estimates of DHS R&D in the Table differ significantly from R&D data in the *Budget of the U.S. Government FY 2008*. AAAS has corrected inaccurate codings of non-R&D programs as R&D, added back some R&D funding left out of the Budget, and removed some non-R&D programs from the R&D data after examination of DHS budget documents. The data in the Table also differ from data in the April report *AAAS Report XXXII: R&D FY 2008* because of recent transfers out of the S&T directorate and because of 2007 supplemental appropriations enacted in May in Public Law 110-28.

portfolio in the 2008 budget request, consolidating many program lines and reshuffling others to create new program portfolios. Now, both the House and Senate Appropriations Committees have agreed to Cohen's proposal and would fund DHS R&D in 2008 under his proposed structure, as shown in the Table. The report accompanying the Senate bill goes out of its way to praise Cohen's work so far.

As in past years, R&D against threats from weapons of mass destruction dominates the DHS R&D portfolio (see Table and Figure 1). **Radiological and nuclear countermeasures R&D in the new Domestic Nuclear Detection Office (DNDO) would be the largest part of the DHS R&D portfolio in 2008** (see Figure 1). DNDO was carved out of the S&T Directorate last year and is now a stand-alone entity devoted to radiological and nuclear countermeasures. Its mainly applied research portfolio would climb 9.3 percent to \$336 million in 2008 within a total budget of \$550 million in the Senate bill. (The difference between the two totals is procurement of nuclear detection devices for U.S. ports of entry, and management costs.) The 2008 Senate increase would have been larger, except that just a few weeks ago on May 25 DNDO received an extra \$35 million for R&D (and \$100 million for non-R&D procurement) for 2007 as part of the war supplemental bill. Both the House and Senate agree with DNDO's plan for large increases in transformational R&D (to \$100 million) to develop breakthrough methods of detecting radiological and nuclear threats in operational settings, and in systems development of new Advanced Spectroscopic Portal (APS) systems.

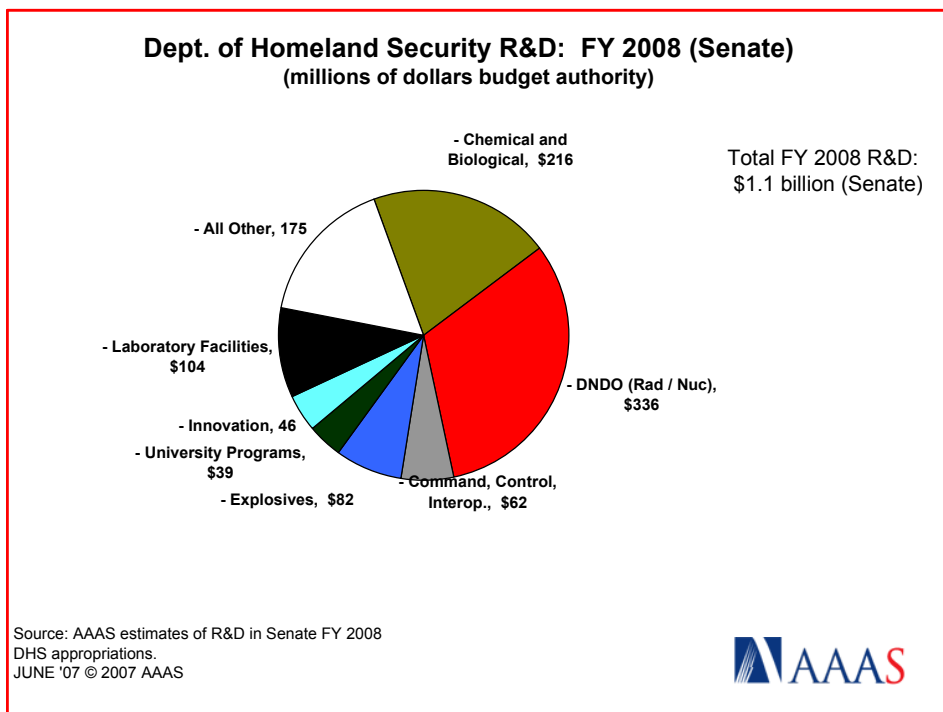


Figure 1. (click on the image for PDF)

The chemical and biological countermeasures portfolio would receive \$216 million in the Senate plan, \$13 million less than both 2007 and the 2008 request (see Figure 1). Although this portfolio has been larger in previous years, in 2007 DHS spins off non-R&D programs such as the BioWatch surveillance system to other DHS units, leaving behind only purely R&D programs such as development of next-generation BioWatch 3 systems to better identify bioterror attacks. Separately, in the Laboratory Facilities appropriation (\$104 million, down 1.7 percent), construction of the National Biodefense Analysis and Countermeasures Center (NBACC) continues toward a target completion date of 2008. NBACC will be part of a biodefense complex of DHS, NIH, and DOD facilities at Fort Detrick, Maryland. There would also be \$11 million in funding for preliminary work on the National Bio and Agrodefense Facility, working toward the beginning of construction in 2010 after a site selection later this year, and a \$15 million earmarked appropriation for a Physical Science Facility at the Pacific Northwest National Laboratory in

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eastern Washington. There would be other earmarks in the Senate appropriation as well, including \$35 million for a South East Region Research Initiative centered around Oak Ridge National Laboratory (Tennessee) and \$10 million for the multi-state Regional Technology Initiative.

**The Senate would cut funding for University and Fellowship Programs down to the requested \$39 million instead of \$49 million** in the House appropriation and in 2007. This program funds university-based Centers of Excellence that are multi-year university consortia to perform R&D on homeland security-related topics and also fellowships to encourage U.S. students to pursue scientific and technical degrees in areas of study related to homeland security. There are now seven DHS Centers of Excellence, and another four (on the areas of explosives detection, mitigation, and response; border security and immigration; maritime, island, and extreme/remote environment security; and natural disasters, coastal infrastructure, and emergency management) will be awarded in 2007.

The Innovation portfolio, a Cohen initiative to develop breakthrough technologies and highly innovative approaches to homeland security problems, would gain \$8 million or 21 percent to \$46 million in the Senate, falling short of even greater increases in the request and the House plan. Among the technologies this new program will tackle are tunnel detection devices, improvised explosive devices, and critical infrastructure resiliency.

### 2008 DHS R&D Appropriations in Historical Context

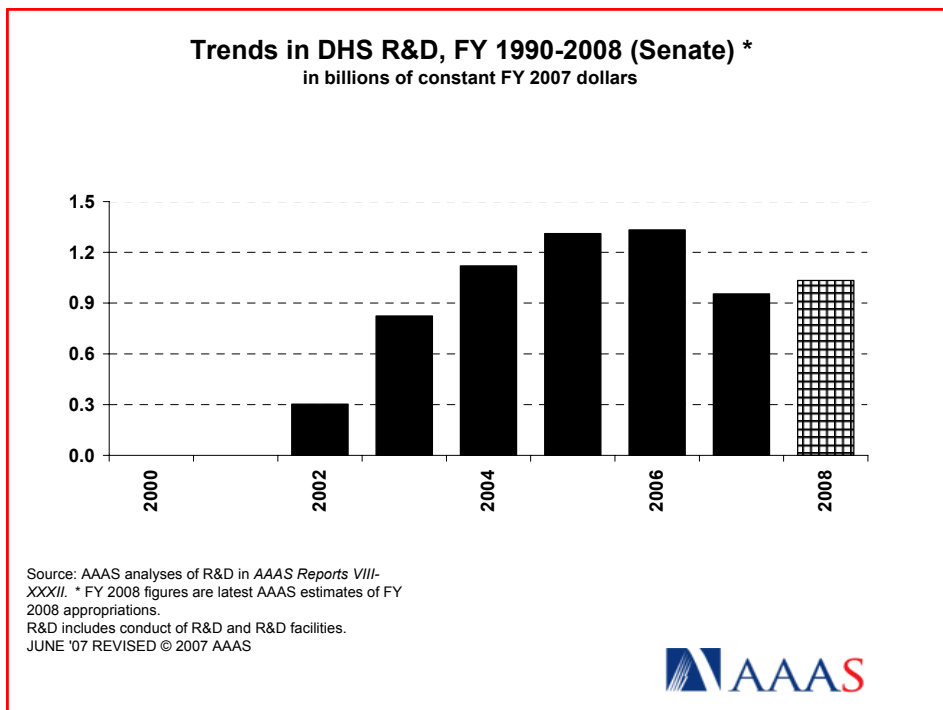


Figure 2. (click on the image for PDF)

DHS R&D, after a rapid ramp-up phase, grew too rapidly and is now in retrenchment and reorganization. As shown in Figure 2, DHS began life with only a few R&D laboratories and programs that it inherited from USDA, DOE, and DOD, unlike the massive transfer of personnel and capabilities that happened in the rest of the new department. From a transfer of less than \$300 million of programs in 2002, DHS began creating new R&D capabilities after its foundation in FY 2003 (see Figure 2), adding portfolios on long-neglected technology areas, establishing relationships with existing national laboratories and federal laboratories, and setting up new structures for funding external R&D.

But the S&T directorate struggled to ramp up its capabilities, staffing, and spending, prompting Congress to slash its funding dramatically in 2007 and impose numerous restrictions and demands. In the 2007 appropriations process, a congressional report described the directorate as “a rudderless ship without a clear way to get back on course,” criticized its lack of clear research goals, absence of detailed budget information, mystifying accounting conventions, and even an inability to spend past appropriations it had been given. At the end of 2006, the S&T Directorate had an unusually large \$400 million in the bank from previous appropriations that it had been unable to spend, and up to one-third of its staff positions were vacant. The final 2007 appropriations bill rescinded \$125 million in these unspent R&D funds, made program cuts in most areas, and required S&T to submit a five-year research plan with priorities, performance measures, and resource needs for each R&D area.

Undersecretary for Science and Technology Jay Cohen was sworn in as the new S&T directorate leader in August 2006, midway through the bruising 2007 appropriations season and also midway through the internal deliberations on the 2008 budget. The 2008 budget marks the new leadership’s first budget proposal, and so far appropriators have endorsed his structural changes and his spending plans. Although the 2007 and 2008 R&D totals are well below appropriations of previous years, DHS is still working through its backlog of unspent funds; at the end of FY 2007, even after rescissions and budget cuts, the S&T Directorate still expects to have more than \$100 million in unspent funds to carry over to FY 2008. So while DHS’ appropriations history in Figure 2 is uneven, the actual outflow of money will be smoother as appropriations get stretched out into outlays over several years.

**Impacts of the DHS R&D Portfolio**

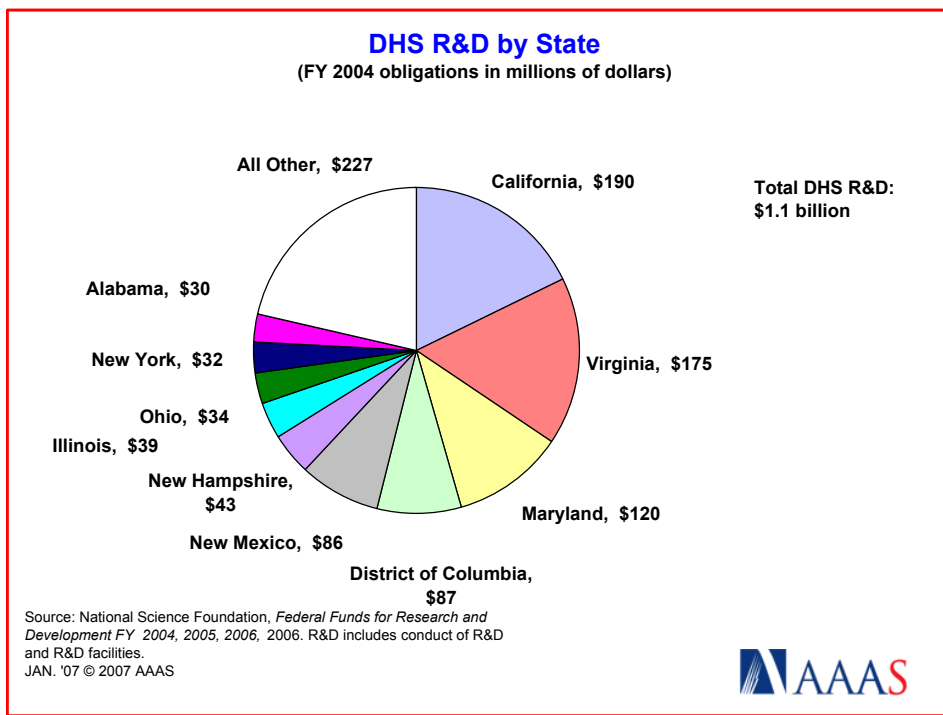


Figure 3. (click on the image for PDF)

Recently, DHS released its first data set on how it spent its initial R&D budgets. As shown in Figure 3, DHS R&D is concentrated geographically, with three states and the District of Columbia accounting for the majority of DHS R&D funding in 2004. Though it is likely that DC’s share is due to headquarters funds that eventually went to other states, Maryland and Virginia clearly benefit from the heavy concentration of contractors in the Washington, DC area, while California and New Mexico benefit from the primarily DOE-affiliated national laboratories located in these states.

DHS research, excluding development funding, is heavily oriented to the life sciences and engineering, not surprising since biological countermeasures dominated the early days of DHS R&D. Fully two-thirds of DHS investments in basic and applied research go to these two disciplines, with the remainder devoted mostly to the physical sciences (see Figure 4). This portfolio is expected to shift in 2007 and 2008 as the emphasis shifts away from biological countermeasures toward the radiological and nuclear countermeasures portfolio. The total research portfolio is expected to grow as well, as research becomes a larger part of DHS R&D and development funding shrinks.

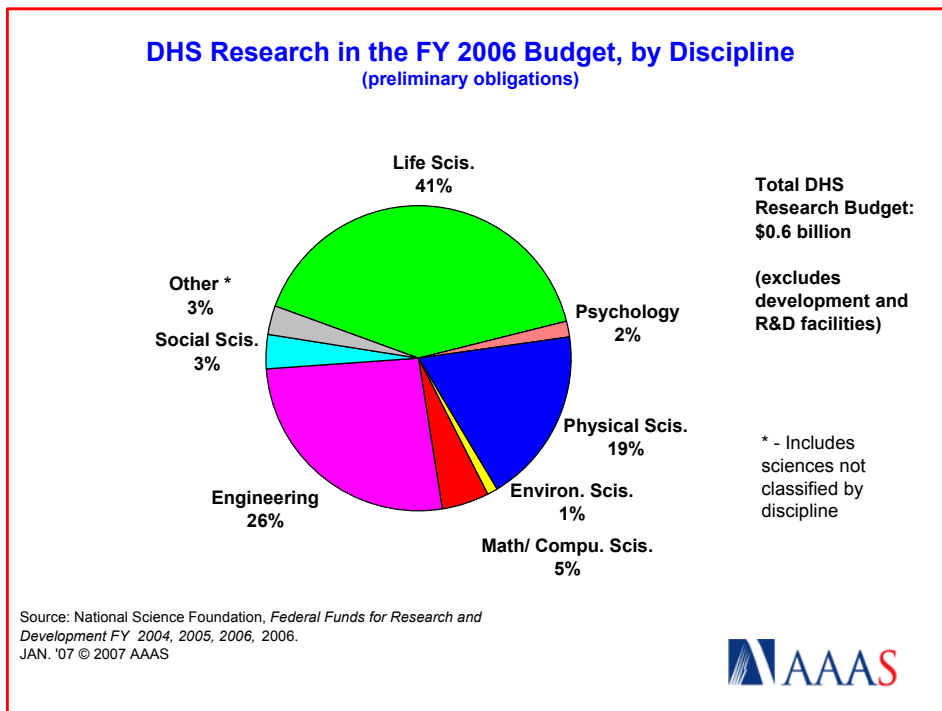


Figure 4. (click on the image for PDF)

### Next Steps and Outlook

The House approved its version of the Homeland Security bill on June 15, but the Senate is not scheduled to debate its version until July. Although there are clear differences between the House and Senate versions, their spending totals are roughly similar so there should be relatively few problems in negotiating a final version of the bill, and the Homeland Security is likely to reach the President's desk well before the October 1 start of FY 2008. But President Bush has threatened to veto any 2008 appropriations that exceed his request, as both the House and Senate bills do by \$2 billion, so a presidential veto could force Congress to redo the bill before it becomes law.

(This analysis is one of a series of AAAS R&D Funding Updates on FY 2008 congressional appropriations. The complete series of AAAS R&D Funding Updates, including continually updated analyses of R&D in FY 2008 appropriations, is available on the AAAS R&D Web Site (<http://www.aaas.org/spp/rd>) in the "FY 2008 R&D" or the "What's New" sections.)

- June 19, 2007  
AAAS R&D Budget and Policy Program  
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Table. DHS R&amp;D in FY 2008 Senate Appropriations

**Table. Department of Homeland Security  
Senate Appropriations Committee Action on R&D in the FY 2008 Budget  
(budget authority in millions of dollars)**

	FY 2007 Estimate	FY 2008 Request	FY 2008 House	Action by Senate				
				FY 2008 Senate	Chg. from Request Amount	Chg. from Request Percent	Chg. from FY 2007 Amount	Chg. from FY 2007 Percent
DHS R&D:								
Dom. Nuclear Detection Office 1/ 2/	308	320	317	<b>336</b>	16	5.0%	29	9.3%
Science and Technology 1/ 2/ 3/	628	656	646	<b>697</b>	41	6.2%	69	11.0%
- Chemical and Biological	229	229	215	<b>216</b>	-13	-5.6%	-13	-5.8%
- Command, Control, Interop.	58	64	61	<b>62</b>	-2	-2.9%	4	7.2%
- Explosives	105	64	64	<b>82</b>	18	28.2%	-24	-22.3%
- Human Factors	7	13	13	<b>7</b>	-6	-46.8%	0	-1.4%
- Infrastructure & Geophysical	75	24	24	<b>64</b>	40	166.7%	-11	-14.4%
- Innovation	38	60	52	<b>46</b>	-14	-23.2%	8	21.1%
- Laboratory Facilities	106	89	89	<b>104</b>	15	16.9%	-2	-1.7%
- Test & Eval., Standards	25	26	29	<b>24</b>	-1	-5.1%	-1	-4.8%
- Transition	24	25	26	<b>24</b>	-1	-3.2%	0	-0.6%
- University Programs	49	39	49	<b>39</b>	0	0.0%	-10	-20.3%
- Rescissions 4/	-120	0	0	<b>0</b>	0	--	120	-100.0%
- Homeland Security Inst. 5/	0	0	0	<b>5</b>	5	--	5	--
Coast Guard	19	20	23	<b>26</b>	6	--	7	34.6%
<b>Total DHS R&amp;D</b>	<b>955</b>	<b>996</b>	<b>986</b>	<b>1,059</b>	<b>63</b>	<b>6.3%</b>	<b>104</b>	<b>10.9%</b>
<b>Total Budgets (including non-R&amp;D):</b>								
Sci. & Tech.	762	799	777	<b>838</b>	39	4.9%	76	10.0%
DNDO	616	592	516	<b>550</b>	-42	-7.1%	-66	-10.7%

AAAS estimates based on FY 2008 appropriations bills. Includes conduct of R&D and R&D facilities.

FY 2007 and FY 2008 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.

FY 2007 figures include 2007 supplemental appropriations enacted in Public Law 110-28 and recent transfers out of S&T.

1/ Rad. & Nuc. Countermeasures transferred to the Domestic Nuclear Detection Office in 2007.

2/ R&D items only. Non-R&D components and line items are excluded.

3/ S&T Directorate proposes new account structure in FY 2008. FY 2007 adjusted for comparability.

4/ Undistributed rescissions in FY 2007 appropriations and undistributed supplemental in Public Law 110-28.

5/ FY 2008 Senate bill has a separate line item for the Homeland Security Institute. Funding is included in other accounts for other years.

**June 19, 2007 - AAAS estimates of Senate Appropriations Committee-approved appropriations.**

**These figures may be amended or rejected by the full Senate.**