

## Department of Homeland Security

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### HIGHLIGHTS

- The FY 2015 Department of Homeland Security (DHS) Science and Technology Directorate (S&T) request totals \$1.1 billion, a decrease of 12 percent from the FY 2014 enacted amount. It is the most significant cut in the DHS portfolio, followed by the 4.5 percent reduction in the Immigration and Customs Enforcement budget (ICE).
- A large portion of this decrease would come from the Laboratory Facilities account, with a \$433 million adjustment-to-base. \$300 million is included for the construction of the National Bio-Agro-Defense Facility (NBAF) in Kansas.
- The decrease also reflects a decrease in the CBE Defense, Counter Terrorist, Cyber Security/Information Analytics and First Responder/Disaster Resilience RDT&E thrust areas. Those reductions are 11.6 percent, 15.6 percent, 4.0 percent, and 3.6 percent respectively.
- The Acquisitions and Operations Support Programs, Projects, and Activities (PPA) account is the only account not to be cut from the previous fiscal year; the Administration requests a flat line budget of \$42 million.
- The request for the Laboratory Facilities PPA is reduced by 21 percent, mostly due to a 26 percent cut in the request for NBAF funding; this is likely due to the completion of site preparation and progress in construction of the central utility plant. NBAF construction received \$404 million in FY2014; \$300 million is requested in FY 2015.

## HISTORICAL TRENDS, IMPACTS AND CONTEXT

Funding for the S&T Directorate has fluctuated over the last several years, partly due to Congressional concern over its inability to measure return on investment and for setting R&D priorities; these concerns and recommendations for addressing them were made by the National Association for Public Administration (NAPA) and the Government Accountability Office (GAO) as recently as 2013. A 2012 GAO report recommended that DHS develop “policies and guidance for defining, reporting, and coordinating R&D activities across the department, and that DHS establish a mechanism to track R&D projects.”<sup>1</sup> In its March 2013 explanatory statement for the Consolidated and Further Continuing Appropriations Act, 2013 (P.L. 113-6), Congress directed the Secretary of Homeland Security, through the Under Secretary for Science and Technology, to “establish a review process for all R&D work within DHS” and GAO once again pointed to this lack of review process in its April 2013 annual report on fragmented, overlapping, or duplicative federal programs.<sup>2</sup>

Both the House and Senate, in their respective FY 2014 report language, address this concern again; the House bill directed DHS to “submit a report on reforms to its R&D programs, including a formal process for setting R&D priorities, a formal process for DHS-wide involvement in R&D decision-making and review, metrics for R&D program status and return on investment, and on the implementation of GAO’s recommendations.”<sup>3</sup> It is unclear where the disconnect is between the significant changes made by former Under Secretary Tara O’Toole and Congress; it remains to be seen if the new Under Secretary for Science & Technology will finally bridge that gap. Doing so would likely go a long way in assuaging Congressional concerns and, as a result, minimizing fluctuations in funding for the Directorate.<sup>4</sup>

In addition to the above Congressional concerns, the Senate noted that there remains no clear path to “bring innovative security technologies to the attention of Department decision makers, which may result in

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<sup>1</sup> “*Federal Research and Development Funding: FY2014*”, John F. Sargent Jr., Coordinator, November 5, 2013, Congressional Research Service, R43086, p.21

<sup>2</sup> Ibid

<sup>3</sup> Ibid

<sup>4</sup> Dr. L. Reginald Brothers was nominated as Tara O’Toole’s successor for Under Secretary for Science & Technology on January 30, 2014; his nomination hearing was held on March 5, 2014. He was confirmed on April 7, 2014.

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creative, cost-effective homeland security technology solutions being missed.”<sup>5</sup> In its language, the Senate once again underscores its desire to ensure that the DHS “customer” agencies are aware of cutting edge technologies developed not only within the Department but also by industry and the university community through outreach by the S&T Directorate in order to stay ahead of evolving homeland security threats: in its FY 2014 appropriations report, the Senate requests that the Department submit a report to Congress detailing “efforts the agency is making to identify innovative technologies developed by industry, other Federal agencies, and universities that could improve the effectiveness, efficiency, and safety of DHS missions.” This requirement underscores another ongoing theme in S&T activities: that the Directorate should serve as the principal conduit for innovative technologies and homeland security solutions for the mission agencies and to ensure that its activities are focused on identifying and providing those “customer-based” solutions.

### **ADDRESSING ONGOING ISSUES**

#### *Basic Versus Applied Research*

As his predecessor learned quickly, newly-confirmed Under Secretary for S&T Reggie Brothers must balance the need to respond to mission agency needs in the near term while ensuring that they have access to the latest in cutting-edge technologies and developments over the long term; that is, to balance basic research with applied research and “off-the-shelf” technologies. The challenge is being able to supply the latter while ensuring that the groundwork is laid for transformational innovations through the former. And Congress isn’t a long-term institution. Legislators want results and they want them immediately, which does not lend itself well to long-term investments in basic research. That said, both Dr. Brothers and Anh Duong, the director of the Borders and Maritime Security Division under S&T, have both indicated that they intend to keep basic research in the S&T mix.

At a Border Security Expo in March, Duong stated that S&T’s focus has definitely been on the “near-term stuff” for their customers but that the result has been an S&T Directorate with a “little S and big T.” She continued that the agency intends, over the next five years, to lean more

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<sup>5</sup> Senate Report 113-77, DEPARTMENT OF HOMELAND SECURITY APPROPRIATIONS BILL, 2014, p. 134

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toward a balance between near-term and transformational, risky longer-term research.<sup>6</sup>

Dr. Brothers is no stranger to this issue: in his previous position as Deputy Assistant Secretary of Defense for Research in the Office of the Assistant Secretary of Defense for Research and Engineering, as well as DARPA and BAE Systems, he was similarly challenged with this issue. In his confirmation hearing, Dr. Brothers also mentioned longer-term research: “With respect to balance in the science and technology portfolio, I believe the S&T Directorate should dedicate a significant portion of its portfolio to meeting the short-term needs of its customers....However, S&T should balance near-term investments with mid- and longer-term higher-payoff investments that provide new capabilities and new opportunities for customers.”<sup>7</sup>

Another persistent irritant for Congress has been the budget structure instituted by Under Secretary O’Toole beginning with the FY 2012 budget. The Directorate realigned its budget structure, putting all of its research and development activities into one Program, Project, and Activity (PPA) titled Research, Development, and Innovation (RD&I). Other activities were put into three other PPAs: Acquisition and Operations Support, Laboratory Support, and University Programs. S&T justified the realignment by stating that the new categories better aligned with the DHS Quadrennial Homeland Security Review priorities and, in its view, would provide more transparency. S&T also opined that the changes would make the budget “organizationally neutral.” Both chambers objected, stating that the creation of the RD&I category was too large and too vague, and that it reduced transparency and accountability.<sup>8</sup> They would object again in both the FY 2013 and FY 2014 appropriations bill language, directing S&T to divide the RD&I PPA into six PPAs: Apex, Border Security, Chem/Bio/Radiological/Nuclear/Explosives Defense, Cybersecurity, and Disaster Resilience. Instead of creating six new PPAs, the Directorate instead created six “thrust” areas that correlate roughly with what Congress requested. It is unclear at this time whether that change adequately addressed Congressional concerns about clarity and transparency.

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<sup>6</sup> “*S&T Ready to invest in riskier science*”, Zach Rausnitz, Fierce Homeland Security, March 20, 2014

<sup>7</sup> Statement of Dr. L. Reginald Brothers before the U.S. Senate Homeland Security and Governmental Affairs Committee, March 5, 2014

<sup>8</sup> “*The DHS S&T Directorate: Selected Issues for Congress*”, Dana Shea, Congressional Research Service, R43064, September 17, 2013, p. 4

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*Addressing GAO Concerns*

Since at least 2012, GAO has reported on the inability of DHS to account for its total investment in R&D agency-wide. Those concerns continue to plague DHS. Specifically, GAO has pointed out that “According to DHS budget officials, S&T, DNDO, and the U.S. Coast Guard are the only components that conduct R&D; they are also the only components that report budget authority, obligations, or outlays for R&D activities to OMB [the White House Office of Management and Budget]...”<sup>9</sup> However, GAO also noted that the information reported to OMB by DHS underreported DHS R&D obligations because DHS components obligated money for R&D contracts that were not reported to OMB as R&D. According to GAO, DHS R&D budget accounts also mixed R&D and non-R&D spending, complicating its ability to identify its total R&D investment.<sup>10</sup> In response to these concerns, DHS had reported that its Program Accountability and Risk Management office would evaluate “the most effective path forward to guide uniform treatment of R&D across the department in compliance with OMB rules” and would consider developing a new management directive, steering committee, or policy guidance to help better coordinate R&D.<sup>11</sup> To date, DHS has not completed these actions. Moreover, while DHS has begun portfolio reviews related to R&D, it has not yet developed a policy to define who should coordinate R&D activities across the agency; doing so could, according to GAO, mitigate the risk of unnecessary overlap, fragmentation, or duplication.

**IN-DEPTH REVIEW**

The S&T Directorate has four RDT&E PPAs, and a number of thrust areas within each PPA.

The FY 2015 request for the Research, Development, and Innovation (RD&I) PPA is \$433.8 million, down 6 percent from FY 2014 enacted levels. RD&I has six thrust areas:

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<sup>9</sup> “*Oversight and Coordination of Research and Development Efforts Could be Strengthened*”, Statement of Dave C. Mauer, Director, Homeland Security and Justice, Government Accountability Office, before the Committee on Homeland Security and Governmental Affairs, U.S. Senate, July 17, 2013, p.4

<sup>10</sup> Ibid, p.4

<sup>11</sup> Ibid, p. 5

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- APEX, which consists of crosscutting, multidisciplinary projects agreed to by the requesting DHS Component Head and the Under Secretary for Science and Technology;
- Border Security, which conducts R&D for technologies and solutions to prevent the illicit movement and illegal entry or exit of people, weapons, dangerous goods, and contraband, and to manage the risk posed by people and goods in transit;
- CBE Defense, which focuses on prevention of terrorism; reduction of vulnerability of critical infrastructure from terrorist attacks and other hazards; and prevention of the illicit movement and illegal entry or exit of people, weapons, dangerous goods, and contraband by providing technology, methods, and procedures to detect CBE threats;
- Counter Terrorist, which conducts R&D to identify individuals or groups that intend to conduct terrorist attacks or to illicitly move weapons, dangerous goods, and contraband. It also provides threat assessments of the high-consequence attack methods such as CBE that terrorists may use to attack the nation;
- Cyber Security/Information Analytics, which conducts and supports RDT&E and technology transition for advanced cybersecurity and information analytics technologies to secure the nation's current and future cyber and critical infrastructures, and to provide solutions for analyzing extremely large data sets to provide useful information for DHS Component use. This includes user identity and data privacy technologies, end system security, research infrastructure, law enforcement forensic capabilities, secure protocols, software assurance, cybersecurity education, and big data analytics and data manipulation; and
- First Responder/Disaster Resilience, which aims to reduce vulnerability of critical infrastructure, key leadership, and events to terrorist attacks and other hazards. The thrust works with state, local, tribal, and territorial governments to secure their information systems; works with local and regional partners to identify hazards, assess vulnerabilities, and develop strategies to manage risks associated with all hazards; increases the state of preparedness of state, local, regional, tribal, and territorial partners, as well as nongovernmental organizations, the private sector, and the general public; advances and improves disaster emergency and interoperable communications

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capabilities; and improves the capabilities of DHS to lead in emergency management.

**Table 1.** S&T Directorate Research, Development, Acquisition and Operations Budget (budget authority in millions of dollars)

	FY 2013	FY 2014	FY 2015	Change FY 14-15	
	Actual	Estimate	Budget	Amount	Percent
Acquisitions and Ops Support	46	42	42	0	0.0%
University Programs	38	40	31	-9	-22.0%
Laboratory Facilities	158	548	435	-113	-20.6%
Research, Development, and Innov	425	462	434	-28	-6.1%
<i>Apex R&amp;D</i>	--	15	15	0	0.0%
<i>Border Security</i>	--	44	51	7	16.5%
<i>Chem/Bio/Expl</i>	--	142	125	-16	-11.6%
<i>Counterterrorist R&amp;D</i>	--	77	65	-12	-15.6%
<i>Cybersecurity</i>	--	80	77	-3	-4.0%
<i>Disaster Resilience</i>	--	104	101	-4	-3.6%

Source: DHS S&T FY 2015 estimates by program/project activity (PPA).  
 Figures rounded to the nearest million. Changes calculated from unrounded figures.

The FY 2015 request for Acquisition and Operations Support (AOS) is \$41.7 million, the same as the FY 2014 enacted amount. AOS assists in the transition, acquisition, and deployment of technologies, information, and procedures that improve the efficiency and effectiveness of the operational capabilities across the HSE mission. It has five thrust areas: Operations Research and Analysis; SAFETY (Support Antiterrorism by Fostering Effective Technologies) Act; Standards; Technology Transition Support; and Testing and Evaluation.

The FY 2015 request for the Laboratory Facilities PPA is \$435.2 million, a reduction of 21 percent from FY 2014 levels. Managed by the Office of National Laboratories (ONL), the Laboratory Facilities programs consist of Construction, Laboratory Infrastructure Upgrades, and Laboratory Operations. The reduction includes an adjustment-to-base of \$433 million, and includes a current services request of \$115 million, plus a \$300 million request for continued construction activities at the NBAF.

The FY 2015 request for the University Programs PPA is \$31 million, a 22 percent reduction below FY 2014 enacted levels. University Programs supports critical homeland security-related research and education at U.S. colleges and universities to address high-priority issues and to enhance homeland security capabilities over the long term. University Programs oversees the university-based Centers of Excellence and Minority Serving Institutions.

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The two most significant reductions to the S&T account are under Explosives Detection (within CBE Defense), which is decreased by \$15.5 million, and University Programs, which is reduced by \$8.7 million.

The Explosives Detection cut decreases development of technologies for the Mass Transit and Dynamic X-Ray Imaging efforts, which provide screening and detection technologies for both aviation and surface mass transit. The decrease eliminates funding for the Algorithm & Analysis of Raw Images project. The University Programs cut reduces operational support to Centers of Excellence (COE) and will affect the number of future competitions for COEs.

#### **CONCLUSION AND OUTLOOK**

The confirmation of Dr. Reggie Brothers as Tara O'Toole's replacement to lead the S&T Directorate provides an opportunity to Dr. Brothers to finally put to rest ongoing Congressional and GAO concerns about coordination and management of R&D at the Department. Indeed, Dr. O'Toole took a very dysfunctional directorate and left it far better than when she began there in 2009. There is every indication that Dr. Brothers will continue down the path that O'Toole created for him. But it is clear there is far more work to be done to assuage those concerns. Dr. Brothers would do well to be mindful of Congressional concerns and to use every opportunity afforded him to make clear that the Directorate has a firm grasp on R&D being conducted throughout DHS.

With regard to appropriations, the two-year Murray-Ryan budget deal has assured something close to regular order, so Dr. Brothers, as well as other Administration leaders, know the kinds of budgets they will have to work with. Constraints will continue to necessitate that he make the most of the budget he's got for S&T and to ensure not only coordination, but complementary R&D across the Department. The Directorate has regained some of the funding from the significant cuts leveled upon it in the enacted FY 2012 budget, in which Congress expressed its supreme displeasure with the path it was taking. But, if the most recent Congressional appropriations report language and GAO testimony are any indication, coordinating R&D activities at DHS, and in particular the S&T Directorate's role in keeping those activities straight, will continue to stymie efforts to turn the tide.