



The DHS Small Business Innovation Research Program: Engaging Small Businesses to Meet DHS Needs and Achieving Results

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The Small Business Innovation Research (SBIR) Program, created in 1982 through the Small Business Innovation Development Act, is one of the largest public-private partnerships in the United States. The SBIR Program encourages small businesses to provide quality research and to develop new processes, products and technologies in support of the missions of the U.S. government. Specifically, the Program goals are to:

- stimulate technological innovation;
- use small business to meet Federal research or research and development (R/R&D) needs;
- foster and encourage participation by socially and economically disadvantaged small business companies (SBCs), and by SBCs that are 51 percent owned and controlled by women, in technological innovation; and
- increase private sector commercialization of innovations derived from Federal R/R&D, thereby increasing competition, productivity and economic growth.

Federal agencies with an extramural budget for R/R&D in excess of \$100,000,000 must participate in the SBIR Program by reserving, in each fiscal year, no less than 2.5 percent of its extramural budget for awards to SBCs for R/R&D through a uniform, three-phase process. Phases I and II help SBIR agencies meet R/R&D and commercialization objectives through awards to SBCs. Phase III helps Federal agencies in three ways by: providing Federal agencies the benefits of commercial applications derived from Government-funded R/R&D which stimulates technological innovation and enhances the national return on investment from R/R&D; providing SBIR awardees access to the Federal market through non-SBIR awards; and providing SBIR awardees access to private sector markets to stimulate economic growth and create jobs.

By definition, a small business for SBIR Program purposes is one that, on the day of the award, is:

- organized for profit, with a place of business located in the United States, which operates primarily within the United States or which makes a significant contribution to the United

States economy through payment of taxes or use of American products, materials or labor;

- in the legal form of an individual proprietorship, partnership, limited liability company, corporation, joint venture, association, trust or cooperative. (If the entity is a joint venture, there can be no more than 49% participation by business entities in the joint venture.);
- is (i) at least 51% owned and controlled by one or more individuals who are citizens of the United States or permanent resident aliens in the United States; (ii) at least 51% owned and controlled by another business concern that is itself at least 51% owned and controlled by individuals who are citizens of, or permanent resident aliens in the United States; or (iii) a joint venture in which each entity to the venture must meet the requirements of either (i) or (ii); and
- has, including its affiliates, no more than 500 employees.

Eleven Federal departments and agencies have SBIR Programs, and in FY10, collectively disbursed approximately \$2.5B in competitive awards to innovative small firms to convert Federal R&D funding into new commercial products and new high-technology exports. The SBIR Program at the Department of Homeland Security (DHS) was initiated in 2004¹ and two organizations within DHS currently have SBIR Programs: the Science and Technology Directorate (S&T) and the Domestic Nuclear Detection Office (DNDO). Each organization provides a minimum of 2.5 percent of its extramural R&D funds each year to meet DHS needs. In FY10, the S&T Directorate received \$863.3M in its RDA&O appropriation, with \$596.2M of that for R&D funding. Of this amount, the Directorate provided \$15.515M for its SBIR Program, exceeding the 2.5% statutory amount. In FY10, DNDO received \$383M in its RD&O appropriation, with \$208M of that available for R&D funding DNDO provided \$6.636M for its SBIR Program, also exceeding the 2.5% statutory amount.

S&T's SBIR Program supports the Directorate's mission to strengthen America's security and resiliency by providing knowledge products and innovative technology solutions for the Homeland Security Enterprise (HSE). Two solicitations are issued each fiscal year, generally in the November and May timeframes, to which small businesses may submit proposals. Each solicitation contains topics which are developed by Program Managers in each of the six Science and Technology (S&T) Divisions. Similar to R&D programs of the S&T Directorate, the SBIR R&D areas are chosen for their applicability to support homeland security missions and generally address the needs of the seven operating components of DHS, i.e., U.S. Coast Guard, U.S. Transportation Security Administration, U.S. Customs and Border Protection, Federal Emergency Management Agency, U.S. Citizenship and Immigration Services, U.S. Immigration and Customs Enforcement, and U.S. Secret Service, as well as First Responders.

¹ The DHS SBIR Program is currently administered within the Office of Public-Private Partnership, R&D Partnerships Group, Science and Technology Directorate.

The DHS S&T Directorate SBIR Program is a three-phase competitive program as illustrated in Figure 1 below. The objective of Phase I is to determine the scientific and technical merit of the proposed effort. Phase I awards are limited to \$100,000 for the base effort and are typically six months in duration. There is the potential for a small business to receive an additional \$50,000 to extend the Phase I efforts if the company is selected for a Phase II award. This additional funding and time is most beneficial to a small business as it awaits the Phase II award. Approximately 16% of all small businesses that apply receive a Phase I award. The objective of Phase II is to continue the R&D effort from the completed Phase I project. Phase II awards are limited to \$750,000 for the base effort and are generally 24 months in duration. Typically, Phase II projects result in a proof of concept/prototype. There is the potential for a small business to receive an additional \$250,000 to extend the Phase II efforts if the company receives a commitment of DHS component interest and follow-on funding. Approximately 35% of the Phase I award winners receive Phase II awards. Phase III refers to work that derives from, extends, or logically concludes efforts performed under prior SBIR awards, but is funded by sources other than the SBIR Program. Typically, Phase III work is oriented towards commercialization of the SBIR research or technology. Phase III work may be for products, production services, R/R&D or any combination thereof. A Phase III award is, by its nature, an SBIR award, has SBIR status and must be accorded SBIR data rights. There is no limit on the number, duration, and type or dollar value of Phase III awards made to a business concern. There is no limit on the time that may elapse between a Phase I or Phase II award and Phase III award, or between a Phase III award and any subsequent Phase III award. During Phase III, the Phase II innovation moves from the laboratory into the marketplace. To date, approximately 10% of the S&T Directorate's SBIR Phase II efforts have moved to Phase III.

DHS S&T Directorate SBIR Structure – A Competitive Three-Phase Program

	Phase I: Scientific and Technical Feasibility	<ul style="list-style-type: none"> * \$100K for base effort <ul style="list-style-type: none"> • not to exceed 6 months * potential for additional \$50K for Phase I option <ul style="list-style-type: none"> • additional 4 months * 33% may be outsourced
	Phase II: Concept Development	<ul style="list-style-type: none"> * \$750K for base effort <ul style="list-style-type: none"> • not to exceed 24 months * potential for additional \$250,000 for Phase II option * 50% may be outsourced
	Phase III: Product Development	<ul style="list-style-type: none"> * Private or non-SBIR government funding * No dollar or time limits * Size standards do not apply

Figure 1. DHS S&T Directorate SBIR Structure – A Competitive Three-Phase Program

The DHS SBIR Program is a national program. Since FY04 and through the second competition of FY10 (i.e., FY10.2), 2,609 Phase I proposals have been received from every state in the

United States, as well as from the District of Columbia and Puerto Rico. Three hundred and nine small businesses in 41 states have received 424 Phase I awards. Although small businesses from all states have submitted Phase I proposals, small businesses from six states have submitted more than 1,500 proposals. Those states are California (553), Massachusetts (282), Virginia (247), Maryland (179), Texas (142), and New York (104). Small businesses in these same six states have received more than 20 Phase I awards: California (105), Massachusetts (55), Virginia (35), New York (28), and Maryland and Texas (each with 23). As of April 2011, 148 of the Phase I efforts have moved to Phase II.

Of the 309 small businesses that received 424 Phase I awards, 76 companies (or 25%) that received DHS SBIR Phase I awards participated in the Federal SBIR program (i.e., across all Federal agencies) for the first time. Twenty eight (or 37%) of these Phase I companies received Phase II awards; and of these 28 small businesses, two received Phase III awards. Seventeen of the 309 small businesses were either merged or acquired. This data set from DHS SBIR closely correlates with the national SBIR statistics. It is clear that the DHS SBIR program attracts new entrepreneurs who successfully moved beyond Phase I.

Small businesses responding to DHS SBIR solicitations are truly “small”. Figure 2 shows the Phase I proposal distribution by size of company (based on number of employees). Beginning with the second solicitation of FY04 (FY04.2) through the second solicitation of FY10 (10.2), 65% of the Phase I proposal submissions have come from companies with fewer than 24 employees. As can be seen in the table, the majority of Phase I proposals come from small businesses with between 2 and 9 employees.

Proposal Submissions by Size of Company (FY04.2 – FY10.2 data)

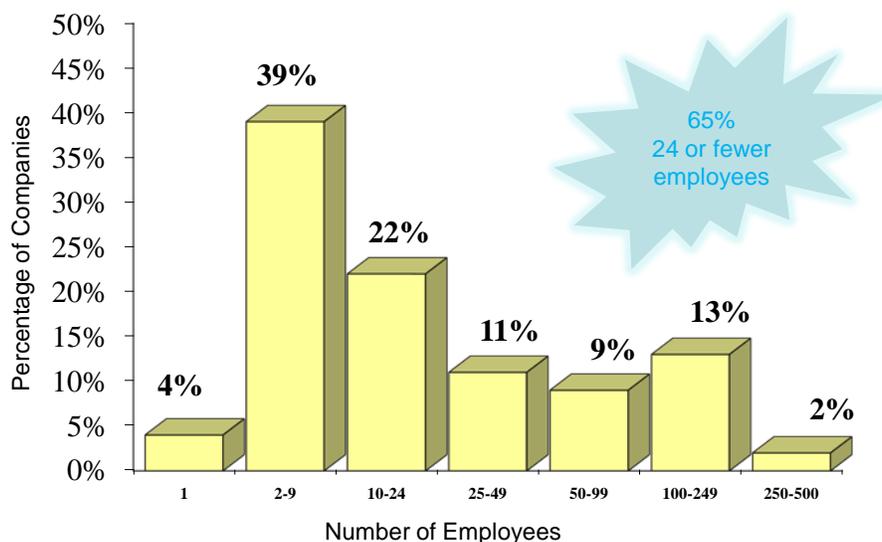


Figure 2. Proposal Submissions by Size of Company (based on number of employees)

The DHS S&T SBIR Program is achieving results. In a few years since its inception in FY04, small businesses funded by the S&T Directorate's SBIR Program have had tremendous impact. In the Fall of 2010, the DHS SBIR program surveyed 98 companies that had completed their Phase II projects as of March 2010. As of January 2011, 54 companies (or 55%) responded with the following results:

- Jobs: The smallest companies (i.e., < 49 employees at the time of proposal submission) created the most new jobs. Twenty of the 54 companies surveyed added a total of 100 jobs. (Note: Companies that were acquired were not included in this job creation metric.)
- Patents: 16 companies received a total of 24 patents; 6 companies have patents pending.
- Technology Products:
 - 17 companies reported technology product "in the market"
 - 10 companies reported technology product "close to market"
- Sales:
 - 52 of 54 companies reported sales either to the government and/or primes and/or the open market.
- Technology Readiness Levels (TRLs) (a common terminology used by all SBIR agencies and DHS SBIR companies):
 - 35 companies reported that their technology was at TRL 4-6; 11 of these (or 31%) reported that they had internal company funds for further development
 - 20 companies reported that their technology was at TRL 4-6 but need third party funds to continue development

The SBIR Program Office conducts extensive outreach to the small business community throughout the United States, presenting information about the DHS SBIR Program and meeting one-on-one with the small businesses. In addition to participating in two national SBIR/STTR² Conferences each year, SBIR Program Office personnel participate in regional, state and local conferences and workshops. The SBIR Program Office works closely with the DHS Office of Small and Disadvantaged Business Utilization (OSDBU) by participating in vendor outreach sessions held monthly in Washington, DC and regionally two times each year. The vendor outreach sessions afford the SBIR Program Office the opportunity to meet directly with minority-owned, HUBZone, veteran-owned and women-owned small businesses that have the potential to offer solutions to DHS needs.

The DHS Science and Technology (S&T) Directorate is committed to supporting small businesses. The DHS SBIR Program continues to deliver results through its awardees that meet the objectives of the program by generating multiple knowledge outputs, including but not

² STTR: Small Business Technology Transfer – a program which began in 1992 to stimulate a partnership of ideas and technologies between innovative small business concerns and research institutions through Federally-funded R/R&D.

limited to: knowledge embodied in data, publications, patents and licenses, presentations, analytical models, algorithms, reference samples, prototypes of products and processes and spin-off companies. The DHS SBIR Program is providing widely distributed support for innovation activity, e.g., a large number of small business companies participate in the Program with many new participants and increasing private sector commercialization of innovation. There is no doubt that DHS, through its SBIR Program, is using small businesses to meet its R&D needs.

Additional information about the DHS SBIR Program can be found at <https://sbir2.st.dhs.gov>. For further information, please contact the DHS SBIR Program Director, Elissa Sobolewski at elissa.sobolewski@dhs.gov or the SBIR Program Analyst, Frank Barros at francis.barros@dhs.gov.

The SBIR Program office resides within the Research and Development Partnerships Group (RDP) at DHS S&T. RDP was formed in November 2010 for the express purpose of facilitating “win-win” relationships with members of the Homeland Security Enterprise (HSE), which is comprised of government and non-government agencies, organizations and industry. RDP contributes to the many technology foraging activities at S&T aimed at discovering and leveraging technology development taking place in all sectors of the HSE. Effective stewardship of technology foraging will allow S&T to focus its strategic R&D investments and establish cooperative partnerships when appropriate. For additional information on all the offices and programs within the RDP Group please visit: http://www.dhs.gov/xabout/structure/editorial_0530.shtm#portfolios.

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Elissa I. Sobolewski is the DHS SBIR Program Director. She has extensive experience in managing and overseeing R&D programs in the Departments of Defense, Commerce, and Homeland Security. She actively promotes the DHS SBIR Program and challenges the small business community to develop knowledge products and technologies to meet DHS needs. She is a sought out speaker for many state and local conferences and workshops.



Thomas A. Cellucci, Ph.D., MBA is the U.S. Department of Homeland Security’s Director of Research & Development Partnerships Group (Acting) and the first Chief Commercialization Officer in the Department. He leads the private sector outreach initiatives for DHS S&T has written a series of resource guides to facilitate the development and articulation of operational requirements for DHS stakeholders.