

Congress of the United States
U.S. House of Representatives
Committee on Small Business
2561 Rayburn House Office Building
Washington, DC 20515-0515

Memorandum

To: Members, Committee on Small Business
From: Committee Staff
Date: February 29, 2016
Re: Hearing: “Commercializing on Innovation: Reauthorizing the Small Business Innovation Research and Small Business Technology Transfer Programs”

I. Introduction

On Wednesday, March 2, 2016 at 11:00 a.m., the Committee on Small Business will conduct a hearing titled, “Reauthorizing Small Business Innovation Research and Small Business Technology Transfer Programs.” This will be the first of two hearings the Committee will conduct in the next two weeks examining potential improvements to the Small Business Innovation Research (SBIR) and Small Business Technology Transfer (STTR) Programs. The objectives of these programs include expansion of commercialization of federally funded small business research and development (R&D), stimulation of technological innovation in the small business sector, and increased use of this community to meet the government’s diverse research and development needs. Government witnesses will discuss their programs and suggest potential improvements to help stimulate commercialization rates, modify reporting requirements that improve data collection, and limit paperwork burdens on the participating small firms.

II. SBIR Program

Congressional support for the SBIR initiative was predicated upon the belief that while technology-based companies under 500 employees tended to be highly innovative, and innovation being essential to the economic well-being of the United States, these businesses were underrepresented in the award of government R&D contracts. In order to increase participation of such entities in federal R&D efforts, Congress passed the Small Business Innovation Development Act in 1982,¹ which established the SBIR program. The purpose of the Act was to increase government funding of small businesses that conduct R&D with a particular focus on technology that has high commercial potential. Prior to the most recent reauthorization, the SBIR program had been reauthorized and extended several times. Each reauthorization made significant changes to the SBIR program, including increasing award

¹ Pub. L. No. 97-219, 96 Stat. 217 (1982) (codified at 18 U.S.C. § 638).

sizes for inflation, codifying agency independence within a framework established by the Small Business Administration (SBA), increasing the percentage participating agencies must set aside for the program, and increasing the general focus of the program on the commercialization of the technologies developed.

The objectives of the SBIR program include expansion of commercialization of federally funded R&D, stimulation of technological innovation in the small business sector, increased use of this community to meet the government's diverse R&D needs, and additional involvement of minority and disadvantaged individuals in the process. The program requires federal departments with an extramural research budget of \$100 million or more to set aside a small percentage of their agency's overall research budget and award technology development contracts to small firms. The percentage of research and development activities to be conducted by small firms originally was set at 1.25 percent but has increased incrementally to 3.0 percent where it now stands.

Currently, eleven agencies have research budgets large enough to require participation in the SBIR program: the Departments of Agriculture, Commerce, Defense, Education, Energy, Health and Human Services, Homeland Security, and Transportation; the Environmental Protection Agency; the National Aeronautics and Space Administration; and the National Science Foundation. Each agency's SBIR activity reflects that organization's management style. Individual departments select R&D interests, administer program operations, and control financial support. Funding may be disbursed in the form of contracts, grants, or cooperative agreements. Separate agencies issue solicitations for R&D at specific times and small businesses submit competing proposals to do the work.

Congress delegated to the SBA the authority for creating broad policy and guidelines under which qualifying agencies operate their SBIR programs. The SBA monitors and reports to Congress on the conduct of the separate departmental SBIR activities. While the SBA provides direction and monitors the program, it does not provide funding for the awards, select the award winners, or distribute the award dollars.

Criteria for eligibility in the SBIR program include companies that are: independently owned and operated; not dominant in the field of research proposed; for profit; the employer of 500 or fewer people; and at least 51 percent owned by one or more United States citizens or lawfully admitted permanent resident aliens.

The SBIR program is designed to award grants via a three-phase process. In the first phase, awards up to \$150,000 are provided to evaluate a concept's scientific or technical merit and feasibility. The project must be of interest to and coincide with the mission of the supporting organization. Projects that demonstrate potential after the initial endeavor may compete for Phase II awards of up to \$1 million to perform the principal R&D. Phase III funding, directed at the commercialization of the product or process, is expected to be generated in the private sector. Federal dollars, but not SBIR funds, may be used if the government perceives that the final technology or technique will meet public needs.

III. STTR Program

STTR is an important small business program that also expands funding opportunities in the federal innovation R&D arena. Central to the program is expansion of the public/private sector partnership to include joint venture opportunities for small businesses and the nation's network of nonprofit research institutions. Much like SBIR, STTR is a highly competitive program that reserves a specific percentage of federal R&D funding for award to small businesses and nonprofit research institution partners.

Often, the risk and expense of conducting serious R&D efforts can be beyond the means of many small businesses, especially those who have just initiated their businesses. Conversely, nonprofit research laboratories are instrumental in developing high-tech innovations. But frequently, innovation is confined to the theoretical, not the practical. STTR combines the strengths of both entities by introducing entrepreneurial skills to high-tech research efforts. The technologies and products are then transferred from the laboratory to the marketplace.

Eligibility criteria for businesses in STTR mirror those of SBIR; they must be American-owned and independently operated; for-profit; and employ no more than 500 workers. The nonprofit research institution must also meet certain eligibility criteria, such as being located the United States, and meet one of the three following definitions: it must be a nonprofit college or university; a domestic nonprofit research organization; or a federally funded R&D center.²

Each year, five federal departments and agencies are required by STTR to reserve a portion (currently 0.45 percent) of their R&D funds for award to small business/nonprofit research institution partnerships. Those are the Department of Defense; the Department of Energy; the Department of Health and Human Services; the National Aeronautics and Space Administration; and the National Science Foundation.³ As with SBIR, SBA develops broad guidelines but the agencies designate R&D topics, accept proposals, and award funds.

Similar to the SBIR program, agencies make STTR awards based on small business/nonprofit research institution qualification, degree of innovation, and future market potential. Small businesses that receive awards then begin a three-phase program. Phase I and II awards are capped at the same levels as SBIR. The Phase III (commercialization) portion of the project is designed to encourage private sector investment or non-STTR or SBIR federal agency funding, which is also similar to SBIR.

² Examples of each of these could be a major research university such as the University of Pittsburgh, a nonprofit research organization such as the Cystic Fibrosis Foundation, or a federally funded R&D center such as the Los Alamos National Laboratory.

³ Federal agencies with extramural R&D budgets that exceed \$1 billion are required to participate in the STTR program.

IV. Independent Evaluations of the SBIR and STTR Programs

In 2007, after more than three years of research and analysis, the National Research Council (NRC) of the National Academies of Science (NAS) released its assessment of the SBIR program as administered by the five federal agencies (DOD, National Institutes of Health, the National Aeronautics and Space Administration, the Department of Energy, and the National Science Foundation) that together made up approximately 96 percent of SBIR program expenditures at that time. The core finding of the study is that the SBIR program is sound in concept and effective in practice.⁴ In support of the report's core finding, the NRC concluded that the SBIR program is: (1) stimulating technological innovations; (2) increasing private sector commercialization of research; (3) using small businesses to meet federal research and development needs; and (4) providing widely distributed support for innovation activity.⁵

To expand on this research and to provide greater information to policymakers in the future, Congress directed⁶ the NRC to continue its examination of the SBIR program as well as expand its review to include the STTR program. By and large, the NRC found that the SBIR program is meeting most of its statutory objectives. For instance, the NRC points out that SBIR projects at the Department of Defense (DOD) commercialize at a substantial rate, with the percentage of Phase II projects reporting sales continues to be greater than 45 percent.⁷ The NRC also found that the SBIR program at the National Institutes of Health is having a positive overall impact and is meeting three of the four legislative objectives of the program with regard to stimulating technical innovation, using small businesses to meet federal R&D needs and increasing private-sector commercialization of innovations derived from federal R&D.⁸ Finally, the NRC found that STTR is meeting its statutory objective of fostering cooperation between small business concerns and research institutions, and does so in some respects to an extent that SBIR does not.⁹

As a result of Public Law 112-81, the Government Accountability Office (GAO) conducted several investigations constituting a comprehensive body of work to assess, among other things, participating agency management, development, and transitioning SBIR/STTR and STTR technologies across their science and technology enterprises. By and large, the reports pointed to a strong and vibrant program, with a few caveats. For example, the GAO found that the SBA's ability to fully determine compliance with spending requirements for the SBIR and STTR programs is limited because most agencies submitted incorrect data; GAO recommended that SBA should update its guidance to require that adequate information be provided.¹⁰

⁴ NRC, NATIONAL ACADEMIES OF SCIENCE, AN ASSESSMENT OF THE SMALL BUSINESS INNOVATION RESEARCH PROGRAM 3 (2007).

⁵ *Id.* at 3-6.

⁶ Pub. L. No. 112-81, Div. E., 125 Stat. 1850, 1822-62 (2011). The short title of Division E is the SBIR/STTR Reauthorization Act of 2011.

⁷ NRC, NAS, SBIR AT THE DEPARTMENT OF DEFENSE 201 (2014).

⁸ NRC, NAS, SBIR/STTR AT THE NATIONAL INSTITUTES OF HEALTH 234 (2015).

⁹ NRC, NAS, STTR AN ASSESSMENT OF THE SMALL BUSINESS TECHNOLOGY TRANSFER PROGRAM 91 (2016).

¹⁰ GAO, SMALL BUSINESS RESEARCH PROGRAMS: CHALLENGES REMAIN IN MEETING SPENDING AND REPORTING REQUIREMENTS (GAO15-358) (Ap. 2015).

In the conference report to the National Defense Authorization Act for Fiscal Year 2013, the conferees directed the GAO to conduct a study to assess the DOD's transition of technologies developed by small businesses through the SBIR program, including: (1) an analysis of technologies developed under the SBIR program and the extent to which such technologies were incorporated into major weapon systems or major automated information systems; (2) an analysis of established or ad hoc procedures to allow program offices to monitor, evaluate, and transition small business-developed technologies into their programs; and (3) additional actions that may be needed to improve DOD and the military services' processes for monitoring, evaluating, and transitioning small business-developed technologies for use in major weapon systems or major automated information systems (including any appropriate data collection and measures of effectiveness and performance).¹¹

GAO released the report¹² required by the FY 2013 NDAA on December 20, 2013. GAO found that some common and branch-specific transition initiatives, such as the Commercialization Readiness Program and the Navy Transition Assistance Program help to improve small businesses' abilities to transition their products to Phase III.¹³ While some programs are of assistance, GAO recommended that DOD must improve tracking and reporting of technology transition outcomes for SBIR projects in order to improve transition rates. Specifically, the GAO suggested that DOD: establish a common definition of technology transition for all SBIR projects to support annual reporting requirements; develop a plan to meet the new technology reporting requirements that will improve the completeness, quality, and reliability of SBIR transition data; and report to Congress on the Department's plan for meeting the new SBIR reporting requirements, including specific steps for improving the technology transition data.¹⁴

V. Reauthorization of the Programs

The SBIR and STTR programs are currently authorized through September 20, 2017. However, given the popularity of these programs and the desire to provide certainty for the participating agencies and small firms, the committees of jurisdiction (the Committees on Small Business and Science, Space and Technology of the House and the Senate Committee on Small Business and Entrepreneurship) have begun the process of developing reauthorization legislation in 2016.

The Committee is utilizing this hearing as an opportunity to hear from program managers and SBA officials about their thoughts for improvements in these programs. Among the issues that could be discussed are the length of the reauthorization period; whether the size of the program should be adjusted; award sizes; potential for additional resources to be placed nearer the end of Phase II to help commercialization efforts; increasing agency

¹¹ H.R. CONF. REP. NO. 112-705, at 942-943 (2012).

¹² GAO, SMALL BUSINESS INNOVATION RESEARCH: DOD'S PROGRAM SUPPORTS WEAPON SYSTEMS, BUT LACKS COMPREHENSIVE DATA ON TECHNOLOGY TRANSITION OUTCOMES (GAO-14-96) (2013).

¹³ *Id.* at 6-7.

¹⁴ *Id.* at 14-15.

reporting requirements to get a better grasp on program outcomes; and ensuring agencies are spending administrative funds properly.

VI. Conclusion

The SBIR and STTR programs offer competition-based awards to stimulate technological innovation among small private-sector businesses while providing government agencies new, cost-effective, technical and scientific solutions to meet their diverse mission needs. The development of these programs is not only critical to the unique needs of each of the participating federal agencies, but also to our national economy. Small businesses renew the economy by introducing new products and finding lower cost ways of doing business, sometimes with substantial economic benefits and job growth. They play a key role in introducing technologies to the market, often responding quickly to new market opportunities. The hearing will provide Members of the Committee an opportunity to learn more about these programs and hear potential legislative improvements that could be included in a forthcoming reauthorization bill.