

**U.S. HOUSE OF REPRESENTATIVES
SUBCOMMITTEE ON RESEARCH & TECHNOLOGY
COMMITTEE ON SCIENCE, SPACE, AND TECHNOLOGY
HEARING CHARTER**

SBIR Turns 40: Evaluating Support for Small Business Innovation

Wednesday, April 6, 2022

10:00 a.m.

2318 Rayburn House Office Building

PURPOSE

On Wednesday, April 6, 2022, the Subcommittee on Research and Technology of the Committee on Science, Space, and Technology will hold a hearing to review the role of the Small Business Innovation Research (SBIR) Program and Small Business Technology Transfer (STTR) Program in translating Federally funded research into commercial development, generating new economic growth, as well as in assisting federal science agencies in meeting their respective missions. The Subcommittee will also consider recommendations for improvements to the SBIR and STTR Programs and receive testimony on *Small Business Innovation Research and Small Business Technology Transfer Improvements Act of 2021*.

WITNESSES

- **J. Stephen Binkley Ph.D.**, Acting Director, Office of Science, Department of Energy
- **Dr. Ben Schrag**, Program Director and Policy Liaison, SBIR/STTR Program, Directorate for Technology, Innovation and Partnerships, National Science Foundation
- **Dr. Maryann Feldman**, S.K. Heninger Distinguished Professor of Public Policy, Department of Public Policy; Professor of Finance, Kenan-Flagler Business School; Research Director, Kenan Institute of Private Enterprise; The University of North Carolina at Chapel Hill
- **Mr. George Caravias**, Chief Executive Officer, Geofabrica Inc.
- **Dr. Nigel Reuel**, Associate Professor, Jack R. and Carol A. Johnson Faculty Fellow, Director of Graduate Education, Iowa State University

OVERARCHING QUESTIONS

- What role does, or could, SBIR and STTR play in U.S. innovation policy? What is the value of the SBIR and STTR programs for start-ups and early-stage entrepreneurs?
- What do the data and assessments tell us about the SBIR and STTR programs' successes and/or challenges? Are there any policy recommendations for the current reauthorization process?
- What are additional ways to increase commercialization of federally funded university research and to achieve the goals of the SBIR Program?

- How do the SBIR and STTR programs fulfill their mission to “Foster and encourage participation in innovation and entrepreneurship by women and socially or economically disadvantaged persons.”? What additional authorities or directives would better enable agencies to fulfil this mission?

SBIR and STTR

Congress established the Small Business Innovation Research Program (SBIR) in 1982 and the Small Business Technology Transfer (STTR) Program in 1992 [hereafter referred to as “SBIR” collectively unless otherwise noted] as a way to encourage and facilitate small business participation in the federal research mission and to support transfer of federally funded research into market-ready technologies. The law governing these programs is found under Section 9 of the Small Business Act (15 U.S.C. 638). SBIR awards are made using a competitive and merit-based selection process. The key distinction between the programs is that STTR requires collaboration with universities or federally funded research and development centers.

The Small Business Administration (SBA) administers the SBIR program; however, the program is funded from set-asides in extramural research and development (R&D) accounts at each agency required to participate in the Program. Each agency with an annual extramural R&D budget over \$100 million is required allocate 3.2% of its budget for SBIR grants and contracts¹ and each agency with an annual extramural R&D budget of \$1 billion or more must allocate an additional 0.45% of its extramural budget to STTR.² The five agencies required to participate in STTR account for over 97% of the overall SBIR program’s expenditures, which totaled approximately \$3.3 billion for SBIR and \$429 million for STTR in FY19, the most recent year for which data is available.

Agencies award SBIR and STTR grants and contracts in three designated phases. In Phase I, agencies may award funding up to \$150,000 for six to 12 months. These funds are to be used for determining technical and scientific merit and feasibility of ideas. During Phase II, agencies may make awards up to \$1,000,000 for up to two years, which are to be used for further development activities and for determining commercial potential.³ Phase III of the program is for commercialization and is funded by non-federal sources for most agencies. One benefit of the program for awardees is the possibility of direct purchasing power by the Federal government.

¹ Eleven agencies are required to have SBIR programs, these include: Department of Agriculture; Department of Commerce – National Institute of Standards and Technology; Department of Commerce – National Oceanic and Atmospheric Administration; Department of Defense; Department of Energy; Department of Health and Human Services (the National Institutes of Health); National Aeronautics and Space Administration; U.S. Department of Education (DoEd), Department of Transportation, Department of Homeland Security, Environmental Protection Agency, and National Science Foundation.

² Five agencies are required to have STTR programs, these include: Department of Defense; Department of Energy; Department of Health and Human Services (National Institutes of Health); National Aeronautics and Space Administration; and National Science Foundation.

³ Agencies are authorized to make awards up to 50 percent greater than the award guidelines without seeking a waiver from the SBA. Phase I can be up to \$256,000 and Phase II can be up to \$1.7 million.

The program gives any agency the authority to directly purchase SBIR-funded technology; however, an agency must use non-SBIR federal funds to fund Phase III. In FY 2019, Phase III procurements were made by DOD, NASA, DOE, and DHS.^{4,5}

The Science Committee shares SBIR jurisdiction with the House Small Business Committee (SBC). The House passed a bipartisan SBIR reauthorization bill in 2018; however, it was not taken up by the Senate. The current authorization expires on September 30, 2022. The *America COMPETES Act* includes a program extension through 2027 to minimize the risk of disruption to the program. In June 2021, Congressman Baird and Chairwoman Stevens introduced H.R. 4033, “*The Small Business Innovation Research and Small Business Technology Transfer Improvements Act of 2021.*” The bill is largely based on the 2018 House-passed bill. SBC is in the process of developing their own legislative proposal. This hearing is an opportunity to receive recommendations for additional improvements Congress should consider for the SBIR program as it moves toward a more comprehensive reauthorization.

SBIR Program Flexibility

As administrator of the overall SBIR program, the SBA issues, and periodically updates, SBIR policy directives for the general conduct of the SBIR program. However, each Federal agency required to participate in SBIR implements the program to fit its own mission and existing processes. Each agency determines the categories of projects, solicitation schedule, review process, and final decisions on proposals, and makes other decisions in the administration of the SBIR program. As a result, the SBIR program varies significantly across agencies. For example, one goal of the program is increasing private sector commercialization of Federally funded research through awards to small businesses, including existing businesses and new businesses created around the awarded topic. NSF SBIR recipients are often young businesses, or start-ups, exploring high-risk, high-reward technologies that use the program to de-risk the technology to attract follow-on investments for commercialization. NASA often uses SBIR to fund innovative work in a niche area to produce a new technology necessary for a future mission. Mission-based awards enable small businesses to develop a technology with an intended government customer while also advancing their technological capacity to possibly enter new commercial markets. In DOE’s case, they may not be the ultimate customer, but they are seeking to meet a niche R&D need for the energy sector.

Congress has continued to amend the statutory authorities over time to reflect the diversity in mission needs. This has included the creation of pilot programs to encourage participation and improve commercialization outcomes, as well as granting exceptions to make the SBIR program more flexible to suit the needs of the participating Federal agencies. For example, NIH, DOD, and DoEd have a pilot authority to offer “Direct to Phase II” awards. If the small business meets the merit and feasibility qualifications required for Phase I, these agencies may provide a Phase

⁴ Phase III acquisitions for FY 2019: DOD, \$1,183 million; NASA, \$30.8 million; DOE, \$18.8 million; DHS, \$4.1 million

⁵ Small Business Administration, 2019 SBIR and STTR Annual Report

II award on a project that has not received Phase I support. H.R. 4033 would expand this authority to all SBIR awarding agencies.

ADDITIONAL ISSUES

Entrepreneur Training and First-time awardees

Moving an idea from lab to prototype to customer draws on a range of skills and know-how beyond technical and scientific expertise. SBIR applicants often unsuccessfully apply for SBIR support multiple times before successfully receiving an award. The lack of success may be due to a mismatch with the solicitation, poorly demonstrated route to commercialization, or mistakes in the application process. Once successful, young businesses that are first-time recipients are often able to leverage the SBIR support for a larger impact on commercialization over repeat award winners.^{6,7,8}

Several programs attempt to better prepare academics for entrepreneurship or the SBIR application process. The 2011 SBIR reauthorization established a Phase 0 Proof of Concept Partnership pilot program at NIH. Specifically, it allowed NIH to use \$5 million of its STTR funds to make awards to universities and research institutions to make grants to individual researchers for technical validations, market research, clarifying intellectual property rights, and investigating commercial or business opportunities.⁹

In 2012, NSF launched the Innovation Corps, or I-Corps program, which is supported separately from SBIR, but whose mission complements that of the SBIR program. The I-Corps program provides funding and mentorship to help assess the viability for possible commercialization of nascent technological ideas developed through research funded by NSF.¹⁰ In order to help SBIR awardees better navigate commercialization, NSF has adapted the I-Corps curriculum to create the “Beat-the-Odds Boot Camp” for all Phase I awardees to participate in. I-Corps may be considered another approach to “Phase 0” for SBIR and additional resources in support of the I-Corps program may strengthen the overall SBIR outcomes. H.R. 4033 would make the Phase 0 program a permanent part of SBIR and expand the authority to all agencies with STTR programs.

Participation of Socially & Economically Disadvantaged Persons and Businesses

Encouraging participation in innovation and entrepreneurship by women and socially or economically disadvantaged persons is among SBIR’s program goals¹¹.

⁶ The National Academies Press “[Assessment of the SBIR and STTR Programs at the National Institutes of Health](#),” 2022

⁷ The National Academies Press “[Review of the SBIR and STTR Programs at the Department of Energy](#),” 2020

⁸ Howell, Sabrina T, Financing Innovation: Evidence from R&D Grants (July 23, 2016).

⁹ NIH implemented the Research Evaluation and Commercialization Hubs (REACH) to develop best practices to translate university innovations into real-world drugs, devices, and diagnostics. NIH has funded eight hubs that provide support for innovators at more than 70 institutions across the United States.

¹⁰ NIH and DOE have created their own I-Corps programs modeled after the NSF program. NASA, DOD, and DHS partner with NSF to provide I-corps training.

¹¹ SBIR and STTR Programs Mission, www.sbir.gov/about

SBA tracks SBIR/STTR participation by women-owned small businesses (WOSB), socially and economically disadvantaged small businesses (SDB), and small businesses located in Historically Underutilized Business Zones (HUBZone). In FY 2019, WOSB, SDB, HUBZone awards made up 10%, 4%, and 4%, respectively, of all Phase II awards at civilian agencies.¹² However, four agencies, USDA, DOC, DOT, DoEd, funded no Phase II awards to businesses classified as SDB.¹³ A 2022 National Academies report of SBIR at NIH found that efforts to increase participation of underrepresented groups have not been successful.¹⁴ Additionally, they found that the STTR collaborations with Historically Black College and Universities (HBCU) and Hispanic Serving Institutions (HSI) were infrequent and had not increased over the past two decades.¹⁵ NAS has repeatedly recommended steps for SBIR participating agencies to improve agency outreach efforts and develop new benchmarks and metrics to improve participation by underserved populations.

Award Timelines

The delay in timing from ideation to application to award notice through funding disbursement can pose a challenge for small businesses with no revenue streams. To address this, in 2019 SBA issued a Policy Directive requiring all agencies (except NIH and NSF) to make award decisions within 90 days of the solicitation closing.¹⁶ In the FY 2019 NDAA, Congress directed the Government Accountability Office (GAO) to report annually on award timeliness. GAO reports that while agencies have adopted practices to address the timelines, significant variability persists across the agencies.¹⁷ The National Academies have also identified the significant time between application and award disbursement at NIH as a barrier to achieving the SBIR program's objectives.¹⁸

Commercialization via Technical and Business Assistance (TABAs)

To help improve SBIR's effectiveness in the later stages of the innovation lifecycle, Congress has authorized agencies to support commercialization assistance programs for SBIR awardees at defense and civilian agencies. Agencies may enter into agreements with vendors to contract with SBIR awardees to provide technical and business assistance.

Unsatisfactory Performance Record

While many small businesses do use SBIR awards as a springboard to private sector funding and commercialization of their business, there are some companies that receive SBIR awards year after year and never fully commercialize. To address this issue, the 2011 reauthorization required agencies to establish a way to measure the rate of commercialization for a small business,

¹² Small Business Administration, 2019 SBIR and STTR Annual Report

¹³ Ibid.

¹⁴ The National Academies Press "Assessment of the SBIR and STTR Programs at the National Institutes of Health," 2022

¹⁵ Ibid.

¹⁶ 15 U.S.C. §§ 638(j), (p); Small Business Administration, SBIR/STTR Policy Directive (May 2, 2019).

¹⁷ GAO-22-104677, Small Business Research Programs: Agencies Should Further Improve Award Timeliness, Oct. 2021

¹⁸ The National Academies Press "Assessment of the SBIR and STTR Programs at the National Institutes of Health," 2022

establish a minimum performance standard, and track commercialization success of the small business and its progress to Phase II and Phase III. If a small business does not meet these performance goals, they are ineligible to receive a Phase I or Phase II award for one year.

Administrative Fee

Congress authorized an administrative pilot program (“administrative fee”) that allowed agencies to use 3% of their SBIR funds for new activities that go toward achieving six program goals including: outreach activities; commercialization; streamlining and simplification; prevention and detection of fraud, waste, and abuse; reporting; and administration and implementation of the reauthorization.

Evaluation

Congress has required quadrennial reviews of each agency’s SBIR program by the National Academies of Science, Engineering, and Medicine. The current round of reviews is ongoing. Reports on DOE and NIH have been published.^{19,20}

GAO reports every four years on fraud, waste, and abuse in the SBIR program and agency adoption of minimum requirements for prevention set out by SBA. The most recent report was published in 2021.²¹ In addition to the annual timeliness report, GAO is also directed by Congress to report on agency use of a flexibility to issue SBIR award to companies funded by venture capital, hedge fund, or private equity. However, GAO has repeatedly reported that most agencies do not use the authority or do so only for a small portion of their overall portfolio.²²

¹⁹ The National Academies Press “[Assessment of the SBIR and STTR Programs at the National Institutes of Health](#),” 2022

²⁰ The National Academies Press “[Review of the SBIR and STTR Programs at the Department of Energy](#),” 2020

²¹ GAO-21-413, Small Business Innovation Research: Agencies Need to Fully Implement Requirements for Managing Fraud, Waste, and Abuse

²² GAO-21-223R, Small Business Innovation Research: Three Agencies Made Awards to Businesses Majority-Owned by Investment Companies and Funds