

**Testimony of Dr. Steven Binkley
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**Before the
Committee on Science, Space and Technology
Subcommittee on Research and Technology
United States House of Representatives
Hearing entitled: SBIR Turns 40: Evaluating Support for Small Business Innovation**

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Thank you, Chairwoman Stevens, Ranking Member Feenstra, and Members of the Subcommittee. I am pleased to join you today to discuss the Department of Energy's (DOE or Department) programs for Small Business Innovation Research (SBIR) and Small Business Technology Transfer (STTR) and how legislation like the proposed *Small Business Innovation Research and Small Business Technology Transfer Improvements Act of 2021* can contribute to the Department's innovation and technology transition goals.

The SBIR/STTR programs are an important Federal contribution of our Nation's innovation enterprise. They address a critical stage of technology development where innovations may stall because of a lack of access to funding, particularly for those where commercialization times can be long. SBIR/STTR funding enables small businesses to prove feasibility and demonstrate successful working prototypes, after undergoing scientific peer review. These achievements assist them in obtaining further investment to scale and manufacture the technology. Small businesses also serve an important networking role in the innovation ecosystem because of their need to partner to achieve success. The SBIR/STTR programs help to catalyze the relationships small businesses build with research institutions, larger businesses and the investment community.

Currently, innovations funded through SBIR/STTR programs serve Federal R&D needs. DOE utilizes its SBIR/STTR program to address innovation opportunities in its mission areas such as clean energy and scientific instrumentation to support discovery science. The opportunity exists to further explore whether the current technology focus areas of Federal SBIR/STTR programs are matched to future needs of the U.S. economy.

Within DOE, the Office of Science (SC) has managed the DOE SBIR/STTR programs since they were first authorized in 1992. The DOE SBIR/STTR programs work collaboratively with research and development program offices throughout the Department to leverage their technical expertise and identify opportunities for small business innovation that are aligned with the DOE mission. ARPA-E independently manages its own SBIR/STTR programs. In FY 2021, DOE obligated \$353 million for the SBIR/STTR programs, issuing 465 Phase I awards 229 Phase II awards. The awards were made to small businesses in 44 states and the District of Columbia.

Over the last 10 years, Congress has made some important changes to the SBIR/STTR programs

that have allowed DOE to improve the commercialization outcomes of its awardees, including the introduction of second Phase II awards (authorized in 2012) and third Phase II awards enabled by the commercialization assistance pilot program (authorized in 2019). Both of these awards have enabled DOE to address longer horizon innovation opportunities for which a single Phase I and II award are not sufficient. In addition, the 2019 expansion of technical and business assistance provided more funds and greater flexibility in using these funds to support commercialization. Finally, the administrative funding pilot program has enabled DOE to offer Energy I-Corps training to its Phase I awardees.

The DOE SBIR/STTR program is complemented by other efforts within the Department that support innovation. Examples of other early-stage programs include the Energy Program for Innovation Clusters¹ and Energy I-Corps², both sponsored by the DOE Office of Technology Transitions, and the Lab Embedded Entrepreneurship Program³ sponsored by the Advanced Manufacturing Office within the Office of Energy Efficiency and Renewable Energy. As part of the Department's realignment in February 2022, DOE has moved later stage commercialization support programs under the new Under Secretary for Infrastructure. Two new offices, the Office of Clean Energy Demonstrations and the Office of Manufacturing and Energy Supply Chains, will complement existing offices, such as the Loan Programs Office, to assist with demonstrating and deploying new technologies at scale.

Past evaluations of the DOE SBIR/STTR programs by the National Academies of Sciences, Engineering and Medicine have found that DOE needs to do more to improve participation by under-represented groups.⁴ Our first major initiative in this area was the introduction in 2014 of our Phase 0 application assistance program targeted at under-represented groups: women-owned small business, socially and economically disadvantaged small businesses, and small businesses from under-represented states. We have since expanded this program to include all first-time applicants, but two thirds of the participants to this program continue to come from under-represented groups. In 2020, the Office of Science created the Office of Scientific Workforce Diversity, Equity, and Inclusion to address under-represented groups broadly across all of its programs, including SBIR/STTR. Through efforts initiated by this office, the SBIR/STTR programs brought attention to under-represented groups during its award selection process in FY 2021 and implemented diversity-promoting policy factors in FY 2022. These efforts have led to consistent improvement in the percentage of awards going to under-represented groups. In FY 2021, women-owned small businesses and socially and economically disadvantaged small businesses each made up more than 10 percent of our Phase I awardees, which is up from close to 5% in 2013. Since 2013, the number of phase I and II awards to small business in under-represented states has trended up, with nearly 20% of phase I and more than 15% of phase II awards going to such states in FY 2021.⁵

DOE recognizes that we need to do more to encourage women and socially and economically disadvantaged individuals to explore entrepreneurial STEM careers. To that end, we

¹ <https://www.energy.gov/technologytransitions/energy-program-innovation-clusters>

² <https://www.energy.gov/technologytransitions/energy-i-corps>

³ <https://www.energy.gov/eere/amo/lab-embedded-entrepreneurship-program>

⁴ Past National Academies studies on the SBIR/STTR programs were in 2008, 2016, and 2020.

⁵ Historical data on the award rates as a percentage of total awards for under-represented groups dating back to 2013 is provided at <https://science.osti.gov/sbir/About/Diversity-Equity-and-Inclusion>

implemented diversity supplements—an NIH best practice—in our FY 2020 Phase II solicitations. Diversity supplements enable SBIR/STTR Phase II awardees to hire an under-represented undergraduate or graduate summer intern to provide exposure to entrepreneurial research and development. Among the first group of eligible Phase II awardees this past year, 21% applied for and received a diversity supplement. To further extend our efforts to broaden participation in the SBIR/STTR program, we are committed to working across the Department on initiatives such as Justice40 to document and improve participation not only by disadvantaged individuals, but also disadvantaged communities.

From a broad policy perspective, we note that the strength of the SBIR/STTR programs has been the flexibility provided to agencies to adapt the programs to serve their respective missions. We encourage Congress to continue to provide agencies with such flexibility, for example, by continuing the administrative funding pilot program, and not to assume that there is one best model for executing the SBIR/STTR programs.

Chairwoman Stevens, Ranking Member Feenstra, and Members of the Subcommittee, thank you again for the opportunity to speak about DOE's SBIR/STTR program, and for your continued efforts to enhance the Nation's ability to apply innovative discoveries to Federal agency missions and accelerate their transition to market. I look forward to discussing our program further, and how the *SBIR/STTR Improvements Act of 2021* can contribute. I'd be happy to take any questions you may have.

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J. Stephen (Steve) Binkley is the Principal Deputy Director in the Office of Science (SC) at the U.S. Department of Energy (DOE). In this capacity, Dr. Binkley is the senior career science official in the Office of Science, which is third largest Federal sponsor of basic research in the United States, the primary supporter of the physical sciences in the U.S., and one of the premier science organizations in the world.

As the Principal Deputy Director of SC, Dr. Binkley serves as the principal overall advisor to the Director on all aspects of the Office of Science. Dr. Binkley determines the financial and personnel resources needed to achieve mission objectives and support mission operations; oversees and directs the internal organization, staffing, policies, and personnel authorities required to carry out the responsibilities of the organization, including the recruitment of senior managers and technical experts necessary to ensure the success of the programs. He ensures that program activities are strategically conceived and executed to maximize the benefit to organization, the Department, and the United States. Dr. Binkley also serves as the champion for crosscutting issues that affect more than one program office and special research initiatives of priority to Director and the Department leadership.

Dr. Binkley has held senior positions at Sandia National Laboratories, the Department of Homeland Security (DHS), and the Department of Energy. He has conducted research in theoretical chemistry, materials science, computer science, applied mathematics, and microelectronics. At Sandia, Dr. Binkley managed computer science, fundamental chemistry, combustion science, and chemically reacting flow organizations. He also has served as the manager for the Office of Science's Combustion Research Facility, at Sandia's Livermore, California location. Dr. Binkley managed Sandia's Office of Science Program, comprising activities in materials science, chemistry, geoscience, magnetic fusion energy, atmospheric measurement technology, and scientific computing at Sandia's New Mexico and California locations. He also managed activities in Sandia's national security program, including distributed information systems technology.

At DOE, Dr. Binkley served as a technical advisor to the Assistant Secretary of Defense Programs (subsequently the Deputy Administrator for Defense Programs after the establishment of the National Nuclear Security Administration). At DHS, Dr. Binkley served as the deputy director for technology within the DHS Operations Directorate, where he led and managed the development of systems for monitoring and disseminating situational awareness to federal, state, and local law-enforcement organizations and for coordinating emergency response activities. Returning to DOE in 2006, Dr. Binkley served as a senior technical advisor to the Under Secretary for Science and the Director of the Office of Science.

As head of SC's Office of Advanced Scientific Computing Research, Dr. Binkley served as one of the Associate Directors for the Office of Science, and was responsible for the overall management of the ASCR program including: strategic planning; budget formulation and execution; project management; program integration with other Office of Science activities and with the DOE technology offices; and interagency integration.