Update on the DOE SBIR/STTR Programs

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Agenda

- National Academies Study
- Energy I-Corps for SBIR/STTR
- COVID-19 Impacts

National Academies Study

Issued March 2020

https://www.nap.edu/catalog/25674/review-of-the-sbir-and-sttr-programs-at-the-department-of-energy

Study Committee

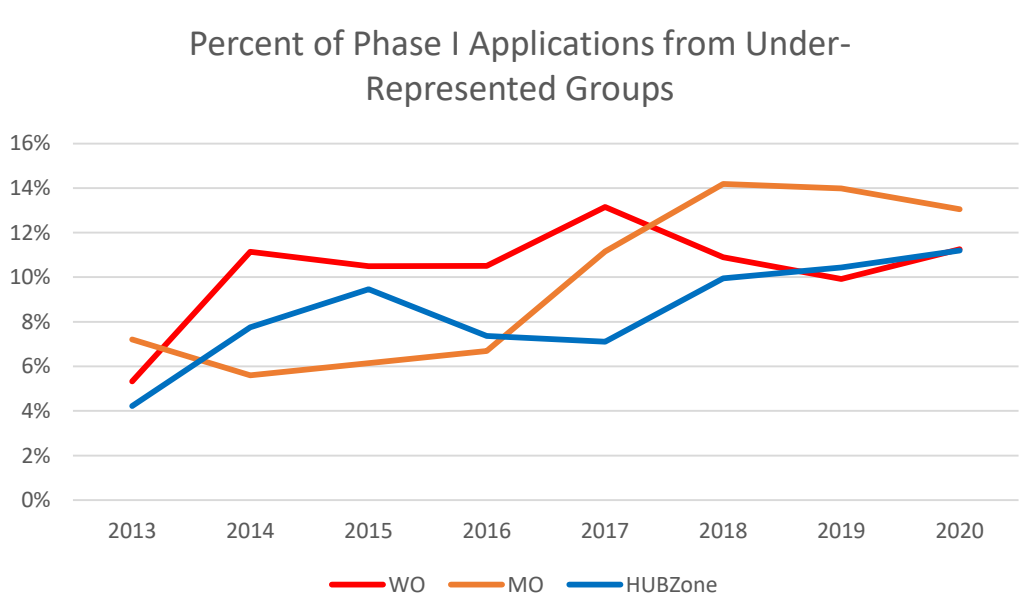
- Maryann P. Feldman, Co-Chair, University of North Carolina at Chapel Hill
- Scott Stern, Co-Chair, Massachusetts Institute of Technology
- Daniel Erian Armanios, Carnegie Mellon University
- Aaron Chatterji, Duke University Fuqua
- Jeannette Colyvas, Northwestern University
- Lisa D. Cook, Michigan State University
- David Hsu, University of Pennsylvania
- Kaye Husbands Fealing, Georgia Institute of Technology
- Amol Joshi, Oregon State University
- Jennifer Kuan, California State University Monterey Bay
- Lauren Lanahan, University of Oregon
- Robin Rasor, Duke University Office of Licensing and Ventures
- Stephanie S. Shipp, University of Virginia, Biocomplexity Institute & Initiative

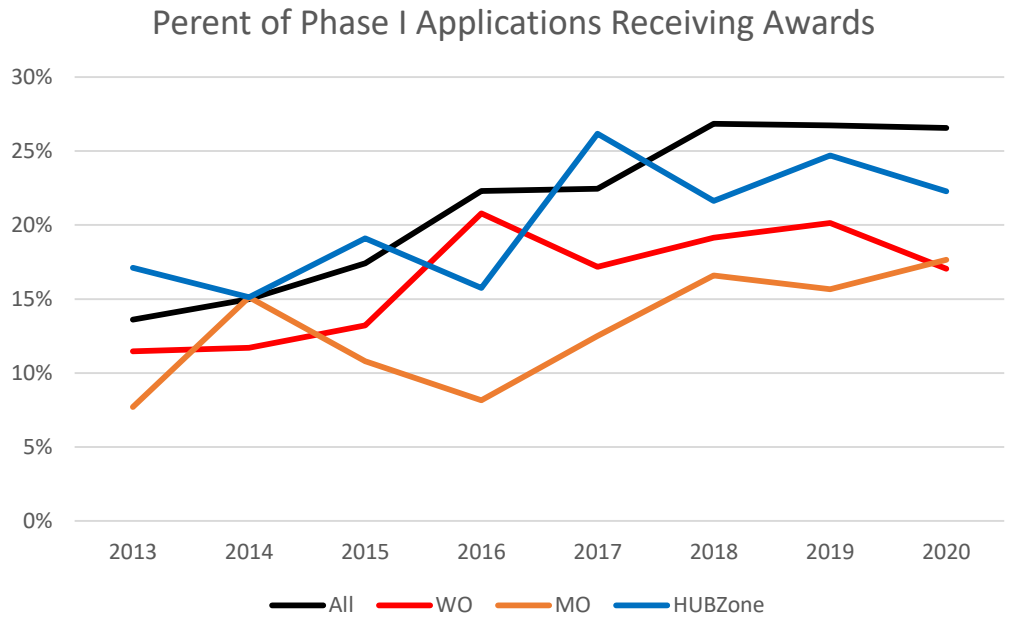
Diversity: Findings

- Finding 3.2: The SBIR/STTR programs are run as R&D competitive grant programs with inadequate effort placed on expanding the perceived community to increase diversity, equity, and inclusion in the applicant pool. Although efforts by the SBIR/STTR Programs Office, which include Phase 0 and webinars, have increased the quality of applications, the topic, reviewer, and awardee selection processes limit the diversity of program participants.
- Finding 4.1: The SBIR/STTR programs help to diversify the geographic reach of DOE research activities.
- Finding 4.2: The DOE SBIR/STTR programs attract only a small number of successful applications from businesses that are (a) woman-owned, (b) minority-owned, or (c) from underrepresented states. Moreover, neither the DOE SBIR/STTR programs nor the review and solicitation processes have made a measurable impact in increasing the incidence of successful applicants from these groups since 2012.
- Finding 4.3: The DOE SBIR/STTR programs attract only a small fraction of successful applications from businesses that are new to the program. After programmatic changes in 2012, there was an uptick in the number of new awardees. Thirty percent of funding still goes to multiple award recipients.

Phase I

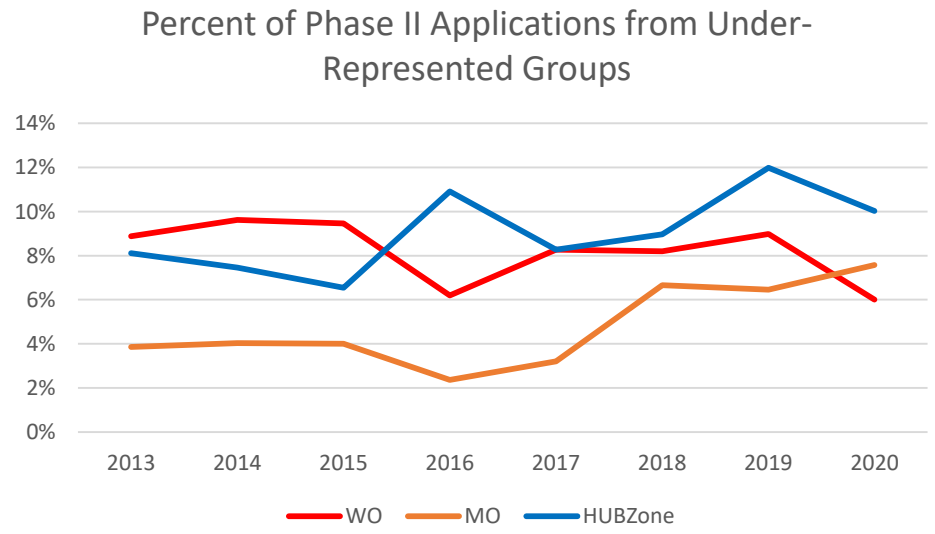
- Percent of women-owned (WO) and minority-owned (MO) applications have improved, particularly for MO
- However, the percent of applications from those groups that receive awards is lower than the overall pool. We are investigating the reasons for the differences.

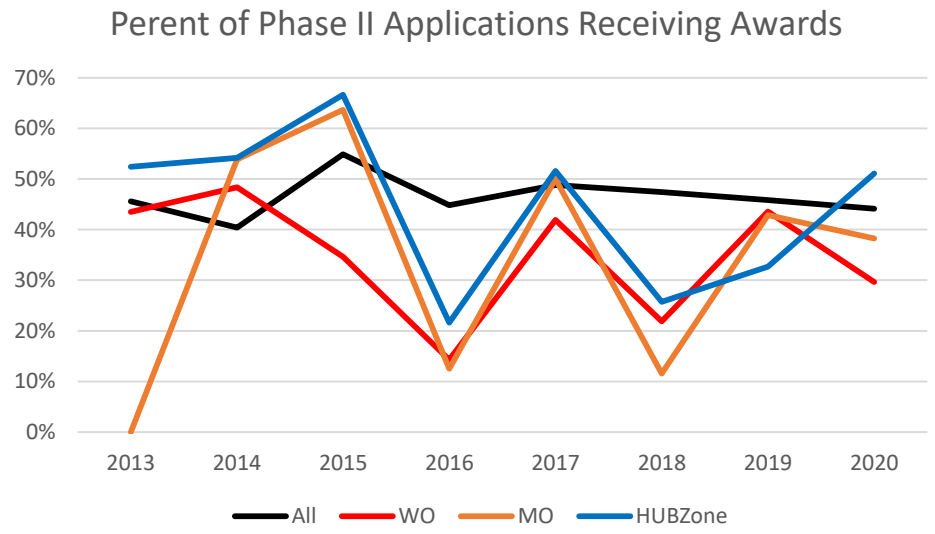




Phase II

- In contrast to Phase I, the percent of WO and MO applications has not improved. This is to be expected given the lower award rates in Phase I
- The percent of WO and MO applicants receiving awards is also lower than the overall pool but on average not as significantly as Phase I





Diversity: Recommendations

- Recommendation 3.1: The **DOE SBIR/STTR Programs Office** should actively take steps to ensure the diversity of the reviewer pools as a means to increase the diversity of the applicant pool.
- Recommendation 3.2: The **Secretary of Energy** should enlist outside experts in diversity to facilitate guidelines and processes for achieving greater diversity within DOE, which will carry through to DOE's SBIR/STTR programs. Outside experts can facilitate a framework for providing agreed-upon observable and measurable outcomes to track diversity, clear processes that use these outcomes to influence decision making, and better linkages between diversity, equity, and inclusion efforts across DOE.

Diversity Actions We Will Take

- Improving Award Diversity
  - *The Office of Science is taking actions to improve diversity for all programs*
- Improving Applicant Diversity
  - *Where are applicants (WO, MO, first-time) and new businesses are coming from? And how do we best target outreach?*
  - *We are soliciting input from past under-represented applicants to understand how we can improve future outreach.*

Operations

Findings and Recommendations

Operations: Findings

- Finding 3.1: The solicitation process promotes the mission of DOE, and there is fidelity to the prescribed SBIR/STTR guidelines. The review and solicitation process is clearly articulated and transparent to program staff and applicants.
- Finding 3.3: Outreach to potential applicants who have never done business with DOE and its SBIR/STTR programs is limited. This may give an advantage to labs, universities, and small businesses that receive other grants or contracts with DOE.
- Finding 3.4: With the exception of DOE's approach to addressing diversity, equity, and inclusion, the program is flexible, although strict adherence to budget control lines may inhibit that flexibility with collaborations across program offices, applicants, and state and local governments.
- Finding 3.5: There is a tension behind the speed at which applications are processed (required 90 days between application deadline and award selection) and the number of applications received. This tension may encourage some program offices to limit applications and outreach to new applicants.

Operations: Findings (cont.)

- Finding 3.6: The statutory requirement to use external vendors for commercialization assistance may hinder small business commercialization prospects and business development in the long run. Moreover, because Phase II applicants are judged, in part, on their commercialization plan, the commercialization assistance in Phase II is given too late for an applicant to use to develop a robust commercialization plan.
- Finding 4.4: Finding the right research partner may be difficult, especially for first-time applicants.
- Finding 4.5: Woman-owned STTR-awarded firms have a research partner that is, on average, substantially farther away than overall STTR awardees.

Operations: Recommendations

- Recommendation 3.3: Each program office should share and explain exemplary proposals to DOE's SBIR/STTR Programs Office. The **SBIR/STTR Programs Office** should communicate information on exemplary proposals to state agencies and other regional actors and publicize this information at regional conferences important to the field. This can form a part of general outreach to these entities to increase awareness of the SBIR/STTR funding opportunity.
- Recommendation 3.4: **Congress** should consider allowing DOE greater flexibility in allocating funding for SBIR/STTR programs across different offices in DOE to maximize the broad match between small businesses and DOE's mission to ensure America's security and prosperity by addressing its energy, environmental, and nuclear challenges through transformative science and technology solutions.
- Recommendation 4.1: The **DOE SBIR/STTR Programs Office** should provide additional information to prospective applicants regarding the pool of prospective R&D partners.

Operations: Recommendations (cont.)

- Recommendation 4.2: The **Secretary of Energy** and the SBIR/STTR Programs Office should collaborate on deploying virtual mentoring programs to connect the national labs with SBIR/STTR applicants.
- Recommendation 5.1: **Congress** should consider allowing firms to use commercialization assistance funds to hire in-house marketing and business expertise. Moreover, Congress should consider increasing the amount of funding available for commercialization assistance provided in conjunction with Phase I awards.

Operations: Actions We Will Take

- Outreach
  - *Will be exploring what other venues, particularly technical conferences (as opposed to SBIR events) might hold promise for identifying new prospective applicants*
- Application Process
  - *Research institution (RI) partnering: examining current status of research institution subawards and will survey awardees to understand how we can enhance future partnering opportunities*

	Percent of FY 2020 SBIR/STTR Awards that Included:	
	1 or more RI	1 more same-state RI
Phase I	48%	15%
Phase II	63%	23%

	Percentage of FY 2020 SBIR/STTR RI Subawards by type of RI		
	College or University	DOE National Lab	Other RI
Phase I	68%	28%	4%
Phase II	60%	37%	3%

Operations: Actions We Will Take

- Commercialization Assistance
  - *Continue with our current approach until statutes are amended*
    - Provide maximum amounts allowed by statute (Phase I, $6500; Phase II: $50,000)
    - Implementing Energy I-Corps for Phase I

Outcomes

Findings and Recommendations

Outcomes: Findings

- **Finding 5.1:** The DOE SBIR/STTR programs stimulate technological innovation and contribute to DOE R&D needs.
- **Finding 5.2:** SBIR/STTR awardees perform technical research that is usually distant from commercialization but closely connected to DOE R&D needs. The management teams of SBIR/STTR awardees tend to have technical rather than commercial backgrounds.
- **Finding 5.3:** DOE's SBIR/STTR programs enable a measurable level of innovation that creates formal intellectual property by private-sector innovators. This occurs through a direct impact on awardees and indirectly through the stimulation of complementary innovation.
- Finding 5.4: A small number of SBIR/STTR awardees ultimately achieve significant employment growth. There was no evidence of a statistically significant difference in employment growth between DOE SBIR/STTR-awarded firms and non-awarded firms.
- Finding 5.5: DOE's SBIR and STTR programs are effective at funding small businesses that provide research and innovation in the energy sector.

Outcomes: Recommendations

- Recommendation 5.2: The **DOE SBIR/STTR Programs Office** should develop better metrics of potential commercialization by applicants and commercialization outcomes by awardees.

Outcomes: Actions We Will Take

- Metrics
  - *We explore whether there are better measures of commercialization potential beyond what we have in applications (e.g. commercialization plans) today*
  - *Our internal focus will remain on commercialization success stories, and we can look to leverage external resources to better collect outcomes information*

Energy I-Corps for SBIR/STTR

Office of Technology Transitions

Energy I-Corps Overview

Office of Technology Transitions

HOW IT WORKS:

Based on the validated Lean LaunchPad methodology, Energy I-Corps pairs researchers with industry mentors for an intensive customer discovery and commercialization training program.

Researchers:

- **Define technology value propositions**
- **Conduct "customer discovery" interviews**
- **Develop viable market pathways for their technologies**
- **Use market feedback to define future areas of research and refinement**

"[Energy I-Corps] showed me how I can maximize the benefit of my basic research at Argonne to create technology that has real-world commercial impacts for Americans. That's a very rewarding feeling."

Dr. Ralph Muehleisen
Cohort 1 Grad

Peter Fiske
Cohort 3 Instructor

"I started my first company with a technology from a national lab…If the program had been around when I started my company, I'm sure I would have saved about two and a half years."

Energy I-Corps for SBIR

- **OTT has worked with SBIR and industry experts to customize the Energy I-Corps curriculum for SBIR Phase 1 grantees.**

- **Phase 1 participants will have the opportunity to take advantage of training and mentoring by experienced instructors in the following areas…**
  - Business Model Canvas
  - Value propositions and markets
  - Customer Discovery
  - Market Analysis
  - Technology Transfer and Licensing for Small Business
- **The primary goal is to assist Phase 1 grantees develop a strong commercialization basis for their technologies and develop improved Phase 2 applications.**

Energy I-Corps for SBIR

- **This year OTT and SBIR will be executing this training program through virtual webinars and mentoring sessions.**

- **The initial virtual training will take place in late October/early November of this year, following initial PI meetings in October. We are tentatively planning a January event in Forrestal to present outcomes to DOE staff.**

- **We have initially planned for up to 25 teams to participate in the pilot year of this SBIR training program. Each team will receive**
  - Access to training and materials
  - One-on-one support from experienced instructors
  - Compensation for travel to DOE for the closing event

COVID-19 Impacts

Phase I Principal Investigator Meetings

- FY 2020 Phase I Release 1, June 17-18, 2020
  - *Converted to virtual Zoom meeting*
    - Overall, it was a very good substitute for a in-person meeting, although it lacked the opportunity for informal discussions and networking
- FY 2020 Phase I Release 2, October 13-14, 2020
  - *Will also be virtual meeting, details forthcoming*

FY 2020 COVID-19 Impacts

- FY 2020 Phase II Release 2
  - *Provided applicants with 3 options*
    - Apply by the FOA deadline
    - Request up to 2 week last submission
    - Request submission to FY 2021 Phase II Release 2 FOA
  - *This appeared to address the needs of the applicants, with only a small number (29) requesting a delayed submission until FY 2021*

FY 2021 Impacts

- Phase I awardees from FY 2019 will have been impacted by COVID-19
  - *Company shutdowns*
  - *Research partner shutdowns*
  - *Supplier issues, etc.*
- We plan to survey both Release 1 and Release 2 awardees before issuing FY 2021 Phase II FOAs
  - *Based on survey results we will determine how we will alter the FOA schedules*

Questions?