U.S. Department of Energy SBIR/STTR Programs

SBIR – Small Business Innovation Research (Est. 1982)
STTR – Small business Technology TransfeR (Est. 1992)

Also known as America's Seed Fund

Eileen Chant
Outreach Program Manager
DOE SBIR/STTR Programs
eileen.chant@science.doe.gov
301.578.2386

America's Seed Fund Program Goals

SBIR

- Stimulate technological innovation.
- Meet Federal research and development needs.
- Foster and encourage participation in innovation and entrepreneurship by women and socially or economically disadvantaged persons.
- Increase private-sector commercialization of innovations derived from Federal research and development funding.

STTR

- Stimulate and foster scientific and technological innovation through cooperative research and development carried out between small business concerns and research institutions
- Foster technology transfer between small business concerns and research institutions

America's Seed Fund

AMERICA'S SEED FUND
SBIR·STTR

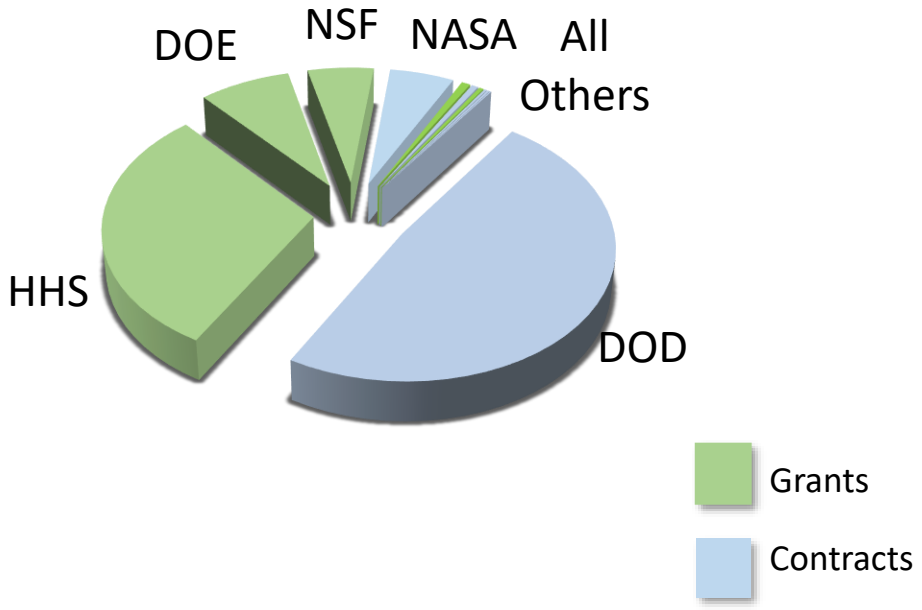
SBIR/STTR are federally funded contracts & grants designed to stimulate the commercialization of technological innovation using small businesses

SBIR and STTR funding provides ***early-stage, nondilutive R&D funding*** for ***U.S. small businesses*** with ***innovative ideas*** that have ***commercial potential***…too ***high risk*** for private sector

FY 2022 SBIR/STTR Budgets by Agency

AGENCIES WITH SBIR & STTR PROGRAMS	APPROX BUDGET
Department of Defense (DOD)	$ 2.24 B
Department of Health and Human Services (HHS), including the National Institutes of Health (NIH)*	$1.25 B
Department of Energy (DOE), including Advanced Research Projects Agency – Energy (ARPA-E)	$348 M
National Science Foundation (NSF)	$ 231 M
National Aeronautics and Space Administration (NASA)	$215 M
Department of Agriculture (USDA)	$38 M
AGENCIES WITH ONLY SBIR PROGRAMS	**APPROX BUDGET**
Department of Homeland Security (DHS): Science and Technology Directorate (S&T) & Countering Weapons of Mass Destruction Office (CWMD)	$20 M
Department of Commerce: National Oceanic and Atmospheric Administration (NOAA) & National Institute of Standards and Technology (NIST)	$12M
Department of Transportation (DOT)	$12 M
Department of Education (ED)	$11 M
Environmental Protection Agency (EPA)	$4 M

**NIH also issues contracts*

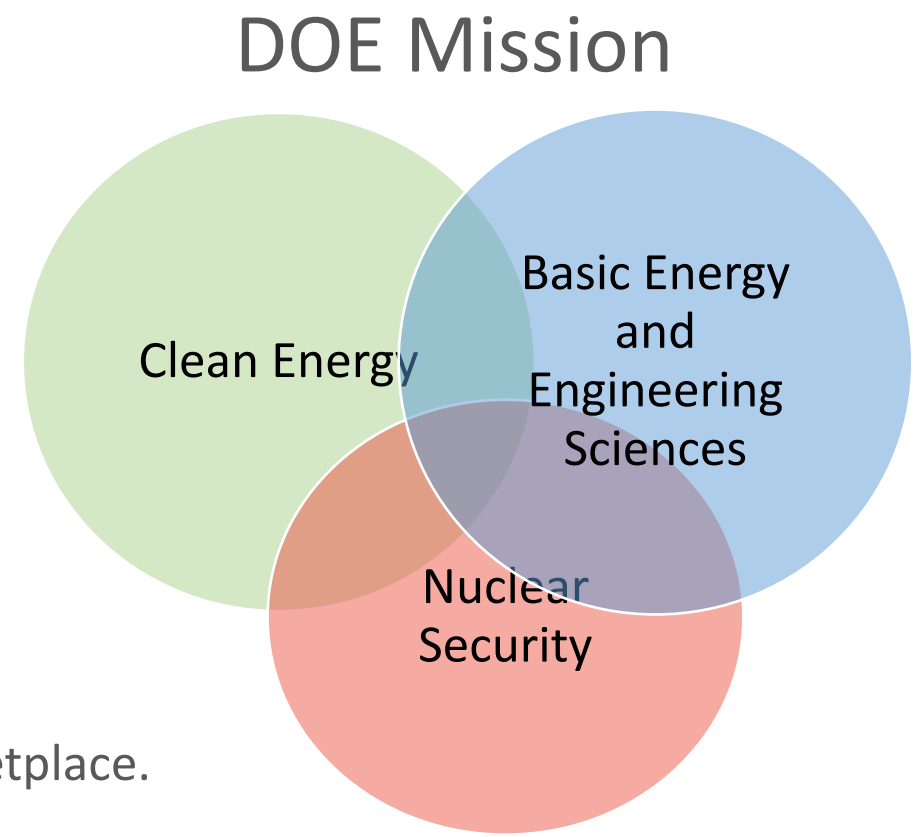


~ $4.4B in FY22 across all 11 agencies

~7,000 small biz funded per year

SBIR/STTR at the DOE – The Specifics

- Historically awards in excess of $300 Million per year
- Grants not contracts – your idea & your execution
- Focused topics are aligned with DOE Mission
- Topics are more wide ranging than most expect
- Two Phase I solicitations per year
- Letter of Intent is required
- DOE unlikely to be your customer, so understand the marketplace.
- We offer an expansive application assistance program “Phase 0”. It opens for an application cycle when the topics document are released https://doephase0.dawnbreaker.com/



SBIR vs STTR?

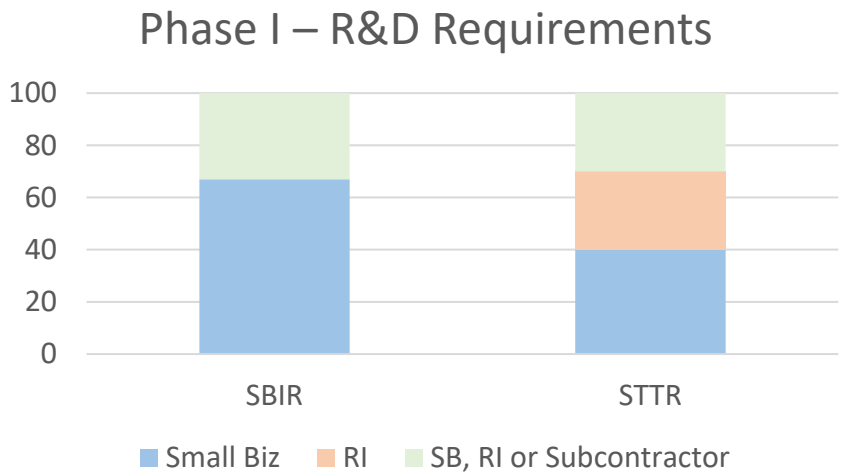
Small Business Innovation Research (SBIR) est. 1982	Small Business Technology Transfer (STTR) est. 1992
• Allows non-profit research institution partner • Principal Investigator (PI) employee of small business	• Foster technology transfer between small business concerns and research institutions • Requires non-profit research institution (RI) partner • PI can be employee of either small business or RI

There are different level of effort requirements to meet
use our workbook to check compliance !

If you fulfill requirements of SBIR & STTR
you can submit the same application to both programs

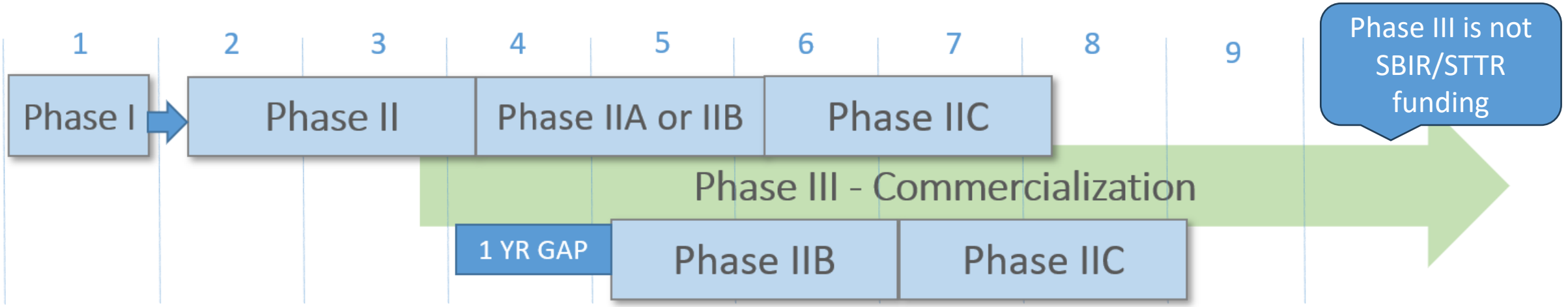
Award always goes to the Small Business

They are two pots of funding



SBIR and STTR were reauthorized on September 30, 2022

How does DOE funding work?



Phase I	Phase II	Phase IIA/IIB	Phase IIC
• Focused, mission-aligned topics • Proof of feasibility • Feedback provided on letters of intent • $200,000/$250,000 • 6 - 12 months duration • ~ 350-400 awards per year	• Phase I awardees apply for Phase II the following year • Focus on prototype, demonstration and commercialization • $1,100,000/$1,600,000 • 2 years duration • ~ 160 awards per year	• For projects that require additional R&D funding for commercialization • $1,100,000 • 2 years duration • ~30 awards per year	• Pilot program to leverage 1:1 matching funds for commercialization • $1,100,000 • 2 years duration

Participating DOE Program Offices – 2 Releases/year

AMERICA'S SEED FUND SBIR·STTR

Release 1 – July 15, 2024

Release 2 – November 6, 2024

Advanced Scientific Computing Research (ASCR)	Fusion Energy Sciences (FES)	Nuclear Nonproliferation (NNSA)	Cybersecurity, Energy Security & Emergency Response (CESER)
Basic Energy Sciences (BES)	High Energy Physics (HEP)	Energy Efficiency & Renewable Energy (EERE)	Electricity (OE)
Biological & Environmental Research (BER)	Nuclear Physics (NP)	Nuclear Energy (NE)	Environmental Management (EM)
		Fossil Energy & Carbon Management (FECM)	

Mark your calendars!

Specific Topics Aligned with DOE Mission

AMERICA'S SEED FUND SBIR·STTR

Leadership in Clean Energy

- Advanced Turbine Technology
- Clean Coal, Oil and Gas Technologies
- Advanced Materials/Technologies for Nuclear Energy
- Smart Grid Technologies
- Cyber Security
- Energy Storage
- Bio-energy & Biofuels
- Hydrogen & Fuel Cells
- Solar Power
- Water Power
- Wind Energy
- Advanced Manufacturing
- Efficient Buildings & Vehicles

Leadership in Basic Energy and Engineering Sciences

- Advanced Detectors
- Accelerator technology
- RF Components and Systems
- Data Acquisition, Processing and Analysis
- Fusion Energy Systems
- High Performance Computing & Networking
- Quantum Information Sciences
- Modeling and Simulation
- Atmospheric Measurement Technology
- Genomic Science and Related Biotechnologies
- Advanced Sources: neutron, x-ray, electron

Enhancement of Nuclear Security

- Advanced Detectors
- Novel Radiation Monitoring Concepts
- In Situ Remediation
- Facility Deactivation and Decommissioning
- Remote Sensing
- Global Nuclear Safeguards R&D
- Nuclear Detonation Detection

Many more and wide-ranging topics than you would expect!

Promoting Inclusive and Equitable Research (PIER) Plans

In pursuit of SC's commitment to advancing DEI, the Office of Science has added a Promoting Inclusive and Equitable Research (PIER) Plan Requirement for all solicitations beginning in FY 2023.

Technology development and incorporation of diversity, equity, inclusion, and accessibility are not mutually exclusive. In fact, research has shown that the strong solution sets come from teams who recognize the importance of diversity of thought and reasoning to good sound scientific discovery.

https://science.osti.gov/sbir/Applicant-Resources/PIER-Plan

Are you a good fit with DOE?

AMERICA'S SEED FUND SBIR·STTR

Phase I Application Review Criteria

- Technical Merit
- Ability to Carry Out the Project
- Impact
- PIER Plan ★

- Must be technology development R&D
- Idea is novel
- Solid work plan to prove feasibility
- Responsiveness to the topic & subtopic
- Your team is composed of the right expertise
- Potential impact if R&D is successful

- Promoting Inclusive and Equitable Research (PIER) Plan
- *The first three review criteria are equally weighted and of greater weight than the fourth criterion*

About DOE Specific & Mission-Focused Topics

- ***Specify grant maximum*** amounts and whether ***STTR and Fast-Track applications*** are being accepted
  - *If SBIR and STTR criteria are met, you can apply to both*
  - *2 different pots of funding*
- ***Carefully read the topic***
- ***Be an expert in your technology area***

C58-12. INDUSTRIAL EFFICIENCY AND DECARBONIZATION OFFICE (IEDO)

Maximum Phase I Award Amount: $200,000	Maximum Phase II Award Amount: $1,100,000
Accepting SBIR Phase I Applications: YES	Accepting STTR Phase I Applications: YES
Accepting SBIR Fast-Track Applications: NO	Accepting STTR Fast-Track Applications: NO

The U.S. Department of Energy's (DOE) Industrial Efficiency and Decarbonization Office (IEDO) is working to build an efficient and competitive U.S. industrial sector with net-zero greenhouse gas emissions by 2050 [1]. IEDO provides funding, management, and the strategic direction necessary for a balanced national program of research, development, and demonstration (RD&D), as well as technical assistance and workforce development, to drive improvements in energy, materials, and production efficiency and to accelerate decarbonization across the industrial sector. IEDO's RD&D strategy focuses on two complementary approaches: tackling subsector-specific decarbonization challenges in energy- and emissions-intensive industries and pursuing cross-sector challenges that are common across many industries.

This topic focuses on disruptive industrial innovations, including RD&D, small-scale demonstrations, and technology partnerships to drive U.S. industrial decarbonization, productivity, and economic competitiveness.

All applications to this topic must:

- Clearly indicate the subtopic and area of interest;

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- Explicitly and thoroughly differentiate the proposed innovation with respect to existing commercially available products or solutions using appropriate metrics, key performance parameters, or properties as well as justify all performance claims with theoretical predictions and/or relevant experimental data;
- The program should include quantitative technical milestones, timelines, and expected deliverables that demonstrate aggressive but achievable progress toward meeting performance parameter targets;
- Provide evidence that the applicant has relevant experience and capability to successfully accomplish the

More About DOE Topics

- ***Carefully read the subtopic***
- ***Open communication permitted*** about the topic/subtopic scope with DOE Program Managers
- ***Reading references is highly recommended.***
- Review our market studies page to see if there is anything for you

https://science.osti.gov/sbir/Funding-Opportunities

a. Enabling Industrial Grid Interactivity

Industrial electrification combined with the use of clean electricity is a key strategy for decarbonizing the industrial sector [2,3]. However, increased electrification across the economy (including the transportation, buildings, and industrial sectors) combined with increased generation from variable renewable energy may lead to significant impacts across the energy system. Newly electrified loads that can operate flexibly and that can provide grid services have the potential to ease this transition by increasing operational efficiency of the electric grid [4].

Traditional demand response programs have seen limited participation from industry due to weak incentives and the continuous and complex nature of many industrial operations. Many manufacturing facilities that currently participate in peak shaving programs often limit their flexible capabilities to less-critical, lower energy-intensity, and/or time-flexible process loads such as HVAC. However, the industrial sector has the potential to realize emissions and economic benefits by modulating energy consumption and optimizing the use of onsite and offsite resources, especially as facilities adopt clean onsite energy sources and energy storage technologies. Few core industrial processes are currently flexible, but to realize a widely electrified industrial sector, many more industrial processes will need to be adapted to enable flexible operation.
For this subtopic, IEDO seeks controls-based solutions, including integrated systems of advanced sensors, controls, data platforms, and industrial energy resources, to enable industrial load flexibility and grid interactivity. Industrial energy resources with capacity to enable flexible operations include onsite generation (e.g., CHP, renewables) and storage, plant utilities (e.g., compressed air), flexible industrial processes (e.g., cold storage, batch processes), and transportation (e.g., electric forklifts, electric transportation refrigeration units) [5]. Projects are encouraged to consider a diverse collection of such energy resources, but the project scope must include flexible industrial processes. Applications must demonstrate an increased capability for flexibility in energy usage compared to the state of the art.

Innovations under this subtopic may enable industrial facilities to:

- Reduce emissions, costs, and downtime through forward-looking and/or real-time adjustments to operations in response to price volatility, generation mix, and other parameters from the grid;
- Operate as "virtual batteries" to capitalize on the enormous amounts of energy used in the industrial sector to increase resilience and provide value-added ancillary services;
- Minimize impacts of outages, including loss of production, reduced product quality, damage to equipment, and long start-up times;

Table 1. Requirements for Technologies in Subtopic a

Objective/Goal	Metric	Target	Baseline
Enable increased flexibility	% energy usage around baseline	±30%	*Applicant defined*

Additional targets and metrics appropriate to the project should be included. Possible metrics include, but are not limited to: reduce unplanned downtime, reduce emissions intensity, reduce operating expenses, increase productivity, and reduce peak load.

Questions – Contact: Yaroslav Chudnovsky, yaroslav.chudnovsky@ee.doe.gov

Commercialization is a statutory goal of the SBIR/STTR programs

- *"Increase private sector commercialization of innovations derived from Federal R-R&D, thereby increasing competition, productivity and economic growth."*
- Agencies are required to evaluate the commercial potential of R&D conducted under SBIR/STTR.
- "Commercialization" encompasses different aspects of early commercial activity: product launch, licensing, patenting, raising **non-SBIR** funds.

Phase I Commercialization Plan

ABC LLC estimates sales revenues of $ and licensing revenues of $ during the first 10 years of commercialization

1. Customer discovery
2. Understand your target market and the opportunity.
3. Understand your competition and the industry.
4. Team – often strong technically; put together a time-phased plan to incorporate key business functions if not in place today; ***do you need partners?***

   Businesses are 50% more likely to succeed if they develop partnerships
5. Strategy for protection of IP is critical
6. Model for revenue generation
7. Where funding comes from after SBIR (early but begin to think about it…)

Reviewed as part of ***IMPACT*** criteria

Applicant Assistance Help is Available

[Phase 0 Application Assistance](#) begins accepting applications on day that topics are released. For first-time DOE SBIR/STTR applicants

[New! Phase I Application Guidance & Planning Resource](#)

Email us!
General application questions: sbir-sttr@science.doe.gov
Phase 0 and Outreach: eileen.chant@science.doe.gov

Stay Connected!

[Subscribe to our mailing list](#)

SBIR Partnering Platform provides searchable database where SBIR/STTR applicants (***INNOVATORS***) can find potential ***PARTNERS*** and ***SBIR/STTR funding*** opportunities

Being on our mailing list is the most important way to stay up to date on our funding opportunities, topic, FOA and Q&A webinars!

Why Partners Are Needed?

- Commercialization is a statutory goal of the SBIR/STTR programs
- Congress wants to see return on investment of taxpayer dollars:
  - *taxable revenues*
  - *job creation*
  - *scientific and/or societal benefit*
- SBIR funding only goes so far…
- *Use partnerships to strengthen your DOE application and increase your chances of successful commercialization*

sbirpartnering.com

Awardee Resources

Technical and Business Assistance (TABA)

Need help preparing your Phase II Commercialization Plan?

$6500 for Phase I Awardees (Our vendor or subaward)
$50,000 for Phase II Awardees (must be subaward)

Phase Shift (formerly I-Corps)

Phase Shift I is an 8-week, 30-customer interview, learn-by-doing experience. For more details about the current Phase Shift I offering, please visit the Phase Shift I web page.

Phase Shift
Moving Energy Innovation Forward

NERSC Computing Resources

NERSC is the primary scientific computing facility for the DOE. All DOE SBIR/STTR grant projects requiring high performance computing support are eligible to apply to use DOE NERSC resources.

DOE SBIR/STTR Summary of Resources

Early-Stage Innovation
SBIR & STTR

Commercialization
Private Funding

[Applicant Resources]

[Phase 0 Application Assistance]

Free for first-time applicants

[Phase Shift I & Phase Shift II] (formerly I-Corps)

[TABA funds] ($6,500 Ph I and $50,000 Ph II)

[Partnering Resources] and [Phase II Workshops]

[NERSC Computing Resources]

Diversity Supplement for Phase II Awardees

Awardee resources

Federal & Private Sector Funding & Partnering

AMERICA'S SEED FUND
SBIR·STTR

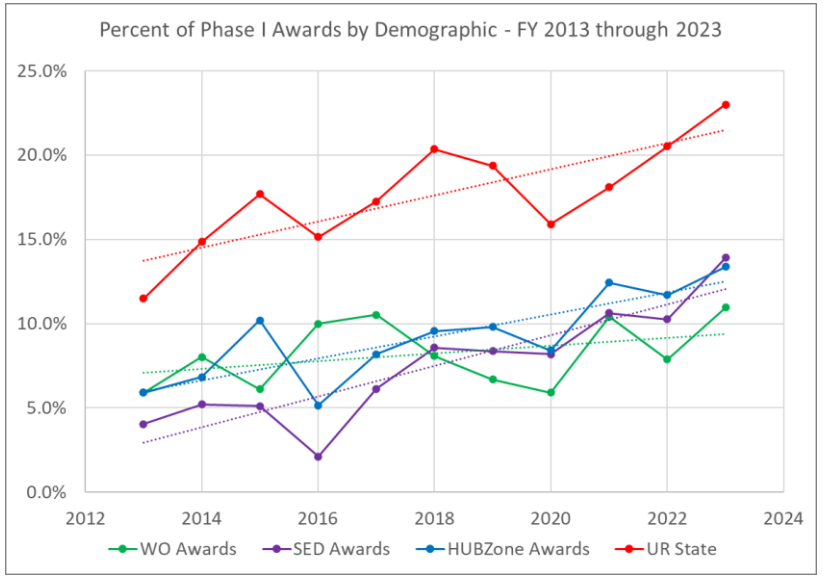
	Early-Stage Innovation	Prototyping & Demonstration	Commercialization
FUNDS	*DOE Program Offices* *SBIR/STTR Phase I* *Prizes & Challenges* *Lab Embedded Entrepreneur (LEEP) , IMPEL, ARPA-e* ***Angels***	*SBIR/STTR Phase II* *CRADAs*, OCED* ***Venture Capital*** ***Joint Ventures***	***Customer Sales*** ***Manufacturing/Distribution*** ***Licensing*** ***Acquisition***
PARTNERING & OTHER RESOURCES	*National Labs* *Federal Data* *sbirpartnering.com* ***SMEs*** ***Collaborators*** ***Subcontractors***	*Testing & prototyping facilities* ***Potential Customers*** ***Engineering Support***	*Loan Program Office* ***Joint ventures*** ***Manufacturing partners***

Note: Bold items more likely to be private sector resources

* Cooperative Research and Development Agreements

Diversity, Equity and Inclusion at DOE SBIR/STTR

Phase I Award Percentages by Demographic



- SBIR/STTR Directive: Fostering and Encouraging participation in DOE SBIR/STTR innovation and entrepreneurship by women and socially and economically disadvantaged persons.
- Our methodology to advance our Program's DEIA mission is to track, educate, support and innovate
- We are always looking for opportunities to elevate awareness to under-represented (UR) startups, researchers and founders developing energy technology, feel free to reach out to me with any suggestions.
- DEI initiatives:
  - *Tracking diversity performance*
  - *Phase 0 for first-time applicants*
  - ***Diversity Supplement for Phase II awardees***
  - *Improving accessibility of application process*
  - *Using software tools such as LinkedIn to identify and reach out to UR entrepreneurs who are a fit with DOE*
  - ***Promoting Inclusive and Equitable Research (PIER) Plans***

WO – Women-owned
SED – Socially and economically disadvantaged-owned
HubZone – In historically underrepresented business zone
UR – In underrepresented state

SBIR Diversity, Equity & Inclusi... | U.S. DOE Office of Science(SC) (osti.gov)

Take the next steps!

SBIR.gov

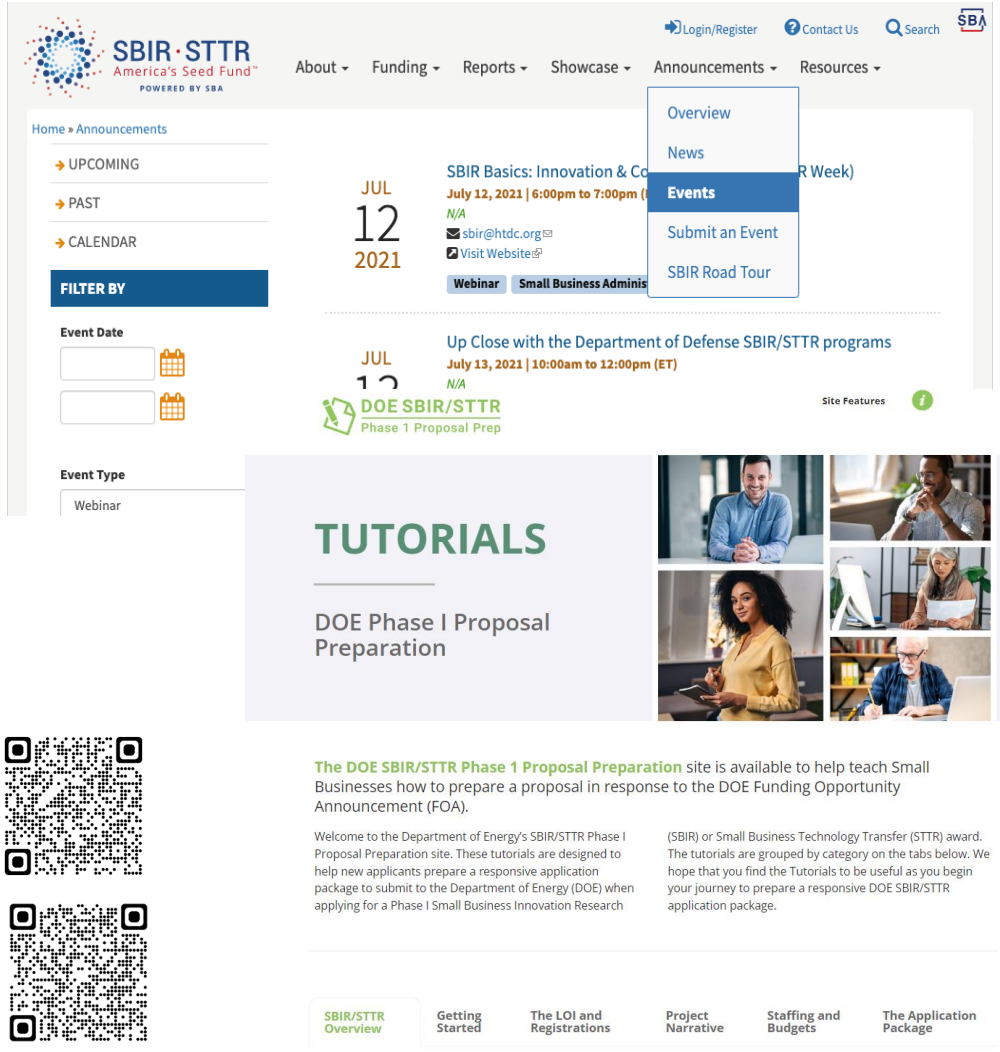
AMERICA'S SEED FUND
SBIR·STTR

General

- Attend SBIR/STTR training events - https://www.sbir.gov/events
- Review SBIR.gov tutorials - https://www.sbir.gov/tutorials
- Research SBIR local assistance in your state/region https://www.sbir.gov
- Search awards, using 5 – 10 keywords to see what agencies are a fit with your technology - https://www.sbir.gov/award/all
- Begin registrations, ***especially SAM.gov***

DOE Specific

- Perform an initial topic search using 5-10 keywords in our closed topic documents to get a feel for what we have funded and whether your technology may fit - https://science.osti.gov/sbir/Funding-Opportunities
- Review our online application guidance - https://pamsexternalhelp.science.energy.gov/pages/viewpage.action?pageId=103186436



Questions??

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