The DOE Webinar is scheduled to begin at 2:00 p.m. ET

• Why is there no sound?
  – This webinar is broadcast via your computer. You may need to turn your volume on or up as the sound for this webinar comes through your computer speakers.
    • We recommend using GOOGLE CHROME for this and other DOE SBIR webinars.
    • Use the dial-in number if you are having trouble with your computer sound

• Will DOE provide access to the recorded webinar after the meeting?
  – Yes, we will post the slides and the recorded webinar on the DOE SBIR/STTR web site.

• Where can I find the FOA being discussed today?
  – This link will take you to the FY 2022 Phase I Release 1 FOA: https://science.osti.gov/sbir/Funding-Opportunities

• What if my question was not answered at today’s webinar?
  – If you have a question about the grant application process, please send us an email at: sbir-sttr@science.doe.gov or call us at (301) 903-5707
DOE’s
Small Business Innovation Research (SBIR) and Small Business Technology Transfer (STTR) Programs

Eileen Chant
Outreach Manager, DOE Office of SBIR/STTR Programs

eileen.chant@science.doe.gov, (301) 903-5713

August 13, 2021
Federal SBIR/STTR Programs Overview
What is the Federal SBIR/STTR Program?

- A >$3.5 Billion early stage nondilutive R&D fund for small businesses*
- A mechanism to fund best early-stage high-risk innovation ideas
- Funds ideas that are too high risk for the private sector
- Stimulates technological innovation

*“small business” is defined as a for-profit business with fewer than 500 employees, owned by one or more individuals who are citizens of, or permanent resident aliens in, the United States of America.
# SBIR vs STTR

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

**If you fulfill requirements of SBIR & STIR, you can submit the same application to both programs**

*They are two pots of funding*

SBIR and STTR were reauthorized on December 23, 2016 (P.L. 114-840) through September 30, 2022
SBIR vs STTR – R&D expenditure requirements in %

Our level of effort workbook can be used to ensure compliance prior to submitting your proposal.
SBIR & STTR Funding Levels

- Agencies allocate a percentage of their extramural R/R&D budgets for the SBIR & STTR programs
  - SBIR: 3.2% (FY 2020), for agencies with >$100M in extramural R/R&D
  - STTR: 0.45% (FY 2020), for agencies with >$1B in extramural R/R&D
- Congress has increased the allocation percentages since the programs were initiated
Estimated SBIR/STTR Budgets by Agency, FY 2019

<table>
<thead>
<tr>
<th>Agency</th>
<th>Budget (Millions)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Department of Defense (DoD)</td>
<td>$1,800</td>
</tr>
<tr>
<td>Department of Health and Human Services (HHS), incl. National Institute of Health (NIH)</td>
<td>$1,150</td>
</tr>
<tr>
<td>Department of Energy (DOE), incl. Advanced Research Projects Agency (ARPA -E)</td>
<td>$308</td>
</tr>
<tr>
<td>National Science Foundation (NSF)</td>
<td>$212</td>
</tr>
<tr>
<td>National Aeronautics and Space Administration (NASA)</td>
<td>$183</td>
</tr>
<tr>
<td>Department of Agriculture (USDA)</td>
<td>$30</td>
</tr>
<tr>
<td>Department of Homeland Security (DHS)</td>
<td>$17</td>
</tr>
<tr>
<td>Department of Commerce, National Oceanic and Atmospheric Administration (NOAA), National Institute of Standards and Technology (NIST)</td>
<td>$13</td>
</tr>
<tr>
<td>Department of Education (ED)</td>
<td>$8.4</td>
</tr>
<tr>
<td>Department of Transportation (DOT)</td>
<td>$5.2</td>
</tr>
<tr>
<td>Environmental Protection Agency (EPA)</td>
<td>$3.6</td>
</tr>
</tbody>
</table>

SBIR: $3.28 Billion
STTR: $453 Million
Small Business Eligibility for SBIR & STTR

- For-profit U.S. business
- 500 employees or fewer, including affiliates
- Ownership (*applies to all agencies*)
  - Be a concern which is more than 50% directly owned and controlled by one or more individuals (who are citizens or permanent resident aliens of the United States), other small business concerns (each of which is more than 50% directly owned and controlled by individuals who are citizens or permanent resident aliens of the United States), or any combination of these
  - Joint ventures where the entities meet the requirements above
- Portfolio Companies (*some agencies, not DOE*)
  - Be a concern which is more than 50% owned by multiple venture capital operating companies, hedge funds, private equity firms, or any combination of these. No single venture capital operating company, hedge fund, or private equity firm may own more than 50% of the concern.
- Performance of R&D
  - All R&D must be performed in the United States
How does our funding work?

**Phase I**
- Two annual Funding Opportunity Announcements
- 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 II**
- 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

**Phase IIA/IIB**
- For projects that require additional R&D funding to transition to commercialization
- $1,100,000
- 2 years duration
- ~30 awards per year

**Phase IIC**
- Pilot program to leverage 1:1 matching funds for commercialization
- $1,100,000
- 2 years duration
SBIR and STTR Awards

• Critical, Early-Stage R/R&D funding
  – The SBIR & STTR programs provide funding for innovative, early-stage research
  – Awards process is competitive, i.e. high quality and aligned applications are funded
  – SBIR & STTR awards provide credibility when seeking investors or partners

• SBIR/STTR awards are executed as grants or contracts
  – No repayment
  – No dilution of company equity
  – No cost sharing is required for Phases I and II
Intellectual Property

• Patent rights
  – Small business concerns normally retain the principal worldwide patent rights to any invention developed with Government support

• Government Use
  – The Federal Government receives a royalty-free license for Federal Government use
Data Protection

• Protection Period
  – Data generated from Phase I and II awards is protected from public disclosure for a minimum of 20 years from the start of your award. New policy change implemented in 2019

• Government Use
  – The Government retains a royalty-free license for Government use of any technical data delivered under an SBIR award, whether patented or not
Technical and Business Assistance

• For awardees, in addition to funding for research and development, funding is provided to assist small businesses commercialize their innovations
  – Phase I: $6,500
  – Phase II: $50,000
  – Funding levels increased in FY 2019

• Companies can select their own vendors to provide assistance or use a vendor that is funded directly by DOE.
U. S. Department of Energy Mission & Program Offices

• **DOE’s Mission** is to ensure America's security and prosperity by addressing its energy, environmental, and nuclear challenges through transformative science and technology solutions.

  – **Goal 1**: Catalyze the timely, material, and efficient transformation of the nation's energy system and secure **U.S. leadership in energy technologies**.

  – **Goal 2**: Maintain a **vibrant U.S. effort in science and engineering** as a cornerstone of our economic prosperity, with clear leadership in strategic areas.

  – **Goal 3**: Enhance **nuclear security** through defense, nonproliferation, and environmental efforts.

### Program Offices Participating in DOE SBIR/STTR

<table>
<thead>
<tr>
<th>Program Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cyber Security, Energy Security and Emergency Response</td>
</tr>
<tr>
<td>Electricity</td>
</tr>
<tr>
<td>Fossil Energy and Carbon Management</td>
</tr>
<tr>
<td>Energy Efficiency and Renewable Energy</td>
</tr>
<tr>
<td>Nuclear Energy</td>
</tr>
<tr>
<td>Advanced Scientific Computing Research*</td>
</tr>
<tr>
<td>Basic Energy Sciences*</td>
</tr>
<tr>
<td>Biological and Environmental Research*</td>
</tr>
<tr>
<td>Fusion Energy Sciences</td>
</tr>
<tr>
<td>High Energy Physics</td>
</tr>
<tr>
<td>Nuclear Physics*</td>
</tr>
<tr>
<td>Defense Nuclear Nonproliferation</td>
</tr>
<tr>
<td>Environmental Management</td>
</tr>
</tbody>
</table>

* Release 1
### Specific Topics Aligned with DOE Mission

#### 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

Review topics at [https://science.osti.gov/sbir/Funding-Opportunities](https://science.osti.gov/sbir/Funding-Opportunities)
Release 1 Technology Areas
Topics Released: July 12, 2021

DOE SBIR & STTR Programs: Technology Areas
Advanced Scientific Computing Research

- Website: Advanced Scientific Computing Research
- Research Areas
  - High Performance Computing
  - High Performance Networking
  - Edge Computing
  - Artificial Intelligence
  - Quantum Computing
Basic Energy Sciences

- Website: Basic Energy Sciences
- Research Areas
  - Technologies to Support Advanced X-ray, Electron, and Neutron-based Scientific Instruments
  - Advanced Materials for Energy Systems
    - Membranes for energy storage
    - Nuclear reactor structures
Biological and Environmental Research

- Website: [Biological and Environmental Research](#)
- Research Areas
  - Scientific Tools for Subsurface and Atmospheric Monitoring
  - Tools and Technologies for Biological Synthesis and Structural Biology Relating to Bioenergy
Nuclear Physics

- Website: [Nuclear Physics](#)
- Research Areas
  - Technologies to Support Advanced Accelerators
  - Nuclear Isotope Production
Release 2 Technology Areas
Topics Released: November 8, 2021
FY2022 Phase I Release 2 Program Offices

Release 2
Nov 8 (topics) → Feb 22 (applications due)

- Defense Nuclear Nonproliferation
- Electricity
- Energy Efficiency and Renewable Energy
- Fossil Energy and Carbon Management
- Fusion Energy Sciences
- High Energy Physics
- Nuclear Energy
- Environment Management
Information Available at DOE Program Office Websites

- Mission
- Funding Priorities and Announcements (non-SBIR)
- Technical Reference Data and Reports
- Workshop & Conference Proceedings
- Contact Information
DOE SBIR & STTR Programs: Application & Award Process
Operation of the DOE SBIR and STTR Programs

**Technical Expertise Leveraged Throughout DOE**

<table>
<thead>
<tr>
<th>DOE Program Office</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Develop Topics</td>
</tr>
<tr>
<td>- Identify Reviewers (Scientific Peer Review)</td>
</tr>
<tr>
<td>- Recommend Awardees</td>
</tr>
<tr>
<td>- Oversee Projects</td>
</tr>
</tbody>
</table>

**Single Grants Office for Awardees**

<table>
<thead>
<tr>
<th>DOE Chicago Office</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Negotiate Grants</td>
</tr>
<tr>
<td>- Issue New and Continuation Awards</td>
</tr>
<tr>
<td>- Grant Closeout</td>
</tr>
</tbody>
</table>

**Single Administrative Office for Applicants**

<table>
<thead>
<tr>
<th>DOE SBIR/STTR Programs Office</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Develop Funding Opportunity Announcements</td>
</tr>
<tr>
<td>- Administer Review and Selection Process</td>
</tr>
<tr>
<td>- Ensure Compliance with SBIR/STTR Legislation</td>
</tr>
<tr>
<td>- Conduct Outreach</td>
</tr>
</tbody>
</table>
Application & Award Timelines

**Phase I**
- Issue FOA
- Applications Due
- Award Notification
- Start of Budget Period

**Phase II**
- Issue FOA
- Applications Due
- Award Notification
- Start of Budget Period

Budget Period:
- Phase I: 6-12 months
- Phase II: up to 24 months

Maximum Award Amounts:
- Phase I: $200,000 or $250,000 (varies by topic)
- Phase II: $1,100,000 or $1,600,000 (varies by topic)

*FOA: Funding Opportunity Announcement
LOI: Letter of Intent*

*Phase I & II Award Amounts were increased in FY 2019*
## Schedule: FY 2022 Phase I, Releases 1 & 2

<table>
<thead>
<tr>
<th>Phase I FOA Schedule</th>
<th>Release 1</th>
<th>Release 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Topics Issued</td>
<td>Monday, July 12, 2021</td>
<td>Monday, November 8, 2021</td>
</tr>
<tr>
<td>Webinar(s)</td>
<td>Week of July 19, 2021</td>
<td>Week of November 15, 2021</td>
</tr>
<tr>
<td>FOA Issued</td>
<td>Monday, August 9, 2021</td>
<td>Monday, December 13, 2021</td>
</tr>
<tr>
<td>Webinar(s)</td>
<td>Friday, August 13, 2021</td>
<td>Friday, December 17, 2021</td>
</tr>
<tr>
<td>Letters of Intent (LOI) Due</td>
<td>Monday, August 30, 2021</td>
<td>Monday, January 3, 2022</td>
</tr>
<tr>
<td>Non-Responsive LOI Feedback Provided</td>
<td>Monday, September 20, 2021</td>
<td>Monday, January 24, 2022</td>
</tr>
<tr>
<td>Applications Due</td>
<td>Monday, October 12, 2021</td>
<td>Monday, February 22, 2022</td>
</tr>
<tr>
<td>Award Notification</td>
<td>Monday, January 03, 2022*</td>
<td>Monday, May 16, 2022*</td>
</tr>
<tr>
<td>Projected Grant Start Date</td>
<td>Monday, February 14, 2022</td>
<td>Monday, June 27, 2022</td>
</tr>
</tbody>
</table>

*preliminary dates subject to change
## Schedule: FY 2022 Phase II, Releases 1 & 2

<table>
<thead>
<tr>
<th>Phase II FOA Schedule</th>
<th>Release 1</th>
<th>Release 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>FOA Issued</td>
<td>Monday, October 18, 2021</td>
<td>Monday, February 28, 2022</td>
</tr>
<tr>
<td>Letters of Intent Due (All Phase II Applications)</td>
<td>Tuesday, November 9, 2021</td>
<td>Wednesday, March 30, 2022</td>
</tr>
<tr>
<td>Full Applications Due</td>
<td>Tuesday, December 7, 2021</td>
<td>Tuesday, April 19, 2022</td>
</tr>
<tr>
<td>Award Notification</td>
<td>Tuesday, February 22, 2022*</td>
<td>Monday, July 11, 2022*</td>
</tr>
<tr>
<td>Grant Start Date</td>
<td>Monday, April 4, 2022</td>
<td>Monday, August 22, 2022</td>
</tr>
</tbody>
</table>

*preliminary dates subject to change
Free Application Assistance

Phase 0 for first-time DOE applicants (yes – it’s free!)
http://www.dawnbreaker.com/doephase0/

Recorded Topic and FOA Webinars

Online learning center for application process including videos
https://science.osti.gov/SBIRLearning

Explore DOE National Lab Collaboration Opportunities:
https://science.osti.gov/sbir/Applicant-Resources/National-Labs-Profiles-and-Contacts

Application Process Q&A Webinars

Email us!
sbir-sttr@science.doe.gov

Join our mailing list!
https://science.osti.gov/sbir

Follow us on Twitter! @DOESBIR
Topics

• Topics Document
  • DOE primarily uses focused topics
  • Issued 4 weeks prior to the FOA
• Communication with DOE program managers
  • Open communication permitted about topic scope
• Webinar
  • DOE program managers discuss their topics
  • Applicants submit questions in advance or during the webinar
  • Webinars are recorded and available at our website
More about Topics

- DOE Mission-Focused Specific Topics
- Open communication permitted about the topic scope with DOE Technical Topic Managers
- At Topic Webinar (recorded), DOE Program Managers discuss the topic then Q&A
- Letter of Intent and Application must specify same Topic and Subtopic
- Reading references is highly recommended

| 31. BIOLOGICAL APPROACHES AND TECHNOLOGIES FOR SYNTHETIC POLYMER UPCYCLING |
| Maximum Phase I Award Amount: $250,000 | Maximum Phase II Award Amount: $1,600,000 |
| Accepting SBIR Applications: YES | Accepting STTR Applications: YES |

Globally, more than 350 million metric tons of plastics or petroleum-based synthetic polymers are produced annually, and their production is anticipated to quadruple by 2050. Approximately 2% of total energy consumption in the United States is used to manufacture plastics, resins, and synthetic rubber. While plastic production consumes nearly 6% of global oil production, plastic consumables are largely only used once and then discarded into landfills and the environment. This suggests that a significant opportunity exists to recover both energy and carbon from plastic waste. DOE therefore seeks to support development of new methods to improve petroleum-based synthetic polymer recycling and upcycling technologies.

a. Biological Approaches and Technologies for Synthetic Polymer Upcycling

This topic addresses the need to develop biological solutions for petroleum-based synthetic polymer upcycling that may offer unique advantages over traditional recycling methods. Though petroleum-based synthetic polymers are typically considered to be highly recalcitrant to biological depolymerization, there is evidence that some plastics can be enzymatically deconstructed. Therefore, enzymatic pathways may exist or may be modified to breakdown polymers that currently cannot be recycled. With this topic, BER seeks projects that apply the principles of genome engineering and microbiome science to re-design metabolic pathways in established or emerging model organisms and/or within complex communities to deconstruct petroleum-based synthetic polymers and/or to convert polymer waste streams to usable monomers for new materials that have desirable performance and end-of-life characteristics. Projects should include identifying and developing novel biological mechanisms, enzymes, and pathways for petroleum-based synthetic polymer deconstruction and conversion focused on elucidating novel enzymes and biochemical pathways for petroleum-based synthetic polymer breakdown and/or designing new biosynthetic pathways for the conversion of polymers into new products or their precursors.

Applications on the environmental dimension of plastics pollution and/or degradation are not within scope. Primarily descriptive studies that aim only to survey strains, environments, enrichments, or consortia via metagenomic or transcriptomic sequencing are not encouraged. Studies that target human or environmental health aspects of polymers or their breakdown products are not within scope. Applications for research that would result in incremental advances in our current understanding or technology are not encouraged. Experimental studies should be focused on the biological conversion of polymers and synthetic biology. Studies that do not target petroleum-based synthetic polymers as substrates or are solely focused on just the chemical analogs or monomers for petroleum-based synthetic polymer breakdown products are not encouraged.

Questions – Contact: Dawn M. Adin (dawn_adin@science.doe.gov)

b. Other

In addition to the specific subtopic listed above, the Department invites grant applications in other areas that
Technology Transfer Opportunities (TTOs)

- An opportunity to transfer inventions made by a DOE National Lab or university to your small business for commercialization.
- Awardees receive:
  - an SBIR/STTR grant and
  - an option to license the technology.
- Please review TTO information section at the beginning of the topics document if you plan to submit an application to a TTO.
Technology Transfer Opportunity Topic

- Technology Transfer Opportunity
  - The topic or subtopic will be clearly labeled
- Research Organization
  - The DOE National Lab or university responsible for the TTO is listed along with contact information and other references
  - Please contact the Lab or university to obtain information about the TTO
- DOE Program Manager contact info is provided
Funding Opportunity Announcement (FOA)

- FOA
  - Available at the [DOE SBIR website](http://www.energy.gov) or [Grants.gov](http://www.grants.gov) and includes information on
    - Anticipated number of awards and funding available
    - Eligibility
    - Application Requirements
    - Review Criteria
    - Award Administration
  - Open for approximately 9 weeks
  - Communications with DOE program managers
    - Open communication permitted to clarify the scope of the topic and subtopic prior to submitting an application
Letters of Intent (LOI)

• Requirement
  – You must submit an LOI by the due date to be eligible to submit an application

• Primary purpose
  – begin reviewer assignment to reduce award selection time
  – due 3 weeks after FOA is issued

• Secondary purpose
  – provide email notification to applicants who appear to be non-responsive; you may submit an application if you receive this notification
  – Applicants whose LOI appears responsive will NOT receive a notification

• Limits
  – Small businesses may submit only 10 letters of intent (and 10 applications) per solicitation
  – Each letter of intent and application must be unique

Content of LOI
• Title
• Topic and Subtopic
• Abstract (<500 words)
  – Provide sufficient technical detail to enable reviewer assignment
  – Non-proprietary
• List of Collaborators
• Small Business Information
  – Name, address
  – Business Official and contact information
  – Principal Investigator
Letter of Intent (LOI) Submission

• Submit LOI online directly to the DOE Portfolio Analysis and Management System (PAMS) website: https://pamspublic.science.energy.gov/

  • Select “Create New PAMS Account” (if you do not have an account)
    • No prior registrations (SAM, etc.) are required to submit a LOI
  • Submit your abstract as a PDF file
  • Utilize the LOI instructions available at the DOE website to ensure that you submit all the required information
  • For additional details on the LOI submission process, see the FOA
ABC LLC will develop a new class of low cost battery separator materials for lithium ion batteries. It is anticipated that the cost of this separator will be 70% lower than separator materials available today and will be a critical factor in reaching the $150/kWh cost target specified in topic 4b for lithium ion batteries for electric vehicle applications.

These separators will utilize a new optically-activated method of producing pores in nano-structured polyolefin films. This optical pore formation method results in a 10x increase in the speed of creating porous films. During Phase I, ABC LLC will (1) develop the compositions and methodology for formulating the dense nano-structured polyolefin films and (2) carry out preliminary feasibility studies to characterize the appropriate optical intensities and wavelengths to achieve uniform, high speed, pore formation. It is anticipated that multiple iterations will be required to optimize the composition and nanostructure of the precursor films to achieve the desired porosity and process speeds. All processing work will be carried out at ABC LLC but polymer characterization will leverage capabilities of the Polymer Lab at State University to evaluate the structure, porosity, tortuosity, and thermal properties of the polymer films. In addition we will be collaborating with Lion Battery Inc. who will do preliminary battery testing of our separator materials to identify any manufacturing or performance issues of the separators.

**Clearly explain why the proposed R&D is responsive to the subtopic**

**Provide sufficient technical detail about the R&D so that DOE program managers can select reviewers with appropriate technical expertise.**

**Do not include proprietary information in a letter of intent.**
Application Process: Registrations

- Applications must be submitted through Grants.gov
- Registration at Grants.gov is a 3 step process
  - Obtain a DUNS number (This will be replaced by a Unique Entity Identifier (UEI) in the near future.)
  - Complete a SAM registration.
    - Must be updated annually
  - Complete Grants.gov registration
    - Start this process as early as possible!
- See the Grants.gov website for instructions
- Small Business Administration (SBA) company registry
  - Small businesses must register at the SBA company registry (http://www.sbir.gov/registration) and submit a copy of their registration with their grants.gov application
Completing a Grants.gov Application

• Workspace
  – Online application completion and submission
  – Online tutorials are available
Elements of Your Application

- Project Narrative
  - Page and word limits
    - Phase I: 15 pages, 7,500 words
    - Phase II: 20 pages, 10,000 words
- Budget & Budget Justification
- Key Personnel
  - Provide a resume for each person listed on the budget form
- Commercialization Plans
  - Phase I commercialization plan (2000 words)
    - an example can be found here at https://science.osti.gov/sbir/Applicant-Resources/Grant-Application
  - Phase II commercialization plan (7,500 words)
- SBIR/STTR Information form
- Data Management Plan

Your Application must include the following documents:

<table>
<thead>
<tr>
<th>Name of Document</th>
<th>Format</th>
<th>Attach to</th>
</tr>
</thead>
<tbody>
<tr>
<td>Application for Federal Assistance, SF-424 Form</td>
<td>PDF</td>
<td></td>
</tr>
<tr>
<td>Research and Related: Budget Form</td>
<td>PDF</td>
<td>Field A. 9</td>
</tr>
<tr>
<td>Additional Senior Key Persons, if applicable</td>
<td>PDF</td>
<td>Field C. 11</td>
</tr>
<tr>
<td>Additional Equipment, if applicable</td>
<td>PDF</td>
<td>Field K</td>
</tr>
<tr>
<td>Budget Justification</td>
<td>PDF</td>
<td></td>
</tr>
<tr>
<td>Research and Related: Senior/Key Person Profile Form</td>
<td>PDF</td>
<td></td>
</tr>
<tr>
<td>Biographical Sketch for each person</td>
<td>PDF</td>
<td>Appropriate Block</td>
</tr>
<tr>
<td>Current &amp; Pending Support for each person, if applicable</td>
<td>PDF</td>
<td>Appropriate Block</td>
</tr>
<tr>
<td>Research and Related: Other Project Information Form</td>
<td>PDF</td>
<td></td>
</tr>
<tr>
<td>Project Abstract and Summary</td>
<td>PDF</td>
<td>Field 7</td>
</tr>
<tr>
<td>Project Narrative</td>
<td>PDF</td>
<td>Field 8</td>
</tr>
<tr>
<td>Bibliography and References Cited, if applicable</td>
<td>PDF</td>
<td>Include in Project Narrative</td>
</tr>
<tr>
<td>Facilities and Other Resources, if applicable</td>
<td>PDF</td>
<td>Include in Project Narrative</td>
</tr>
<tr>
<td>Equipment, if applicable</td>
<td>PDF</td>
<td>Include in Project Narrative</td>
</tr>
<tr>
<td>Other—Data Management Plan</td>
<td>PDF</td>
<td>Field 12</td>
</tr>
<tr>
<td>Other—Level of Effort Worksheet</td>
<td>PDF</td>
<td>Field 12</td>
</tr>
<tr>
<td>Other—Letter of Commitment for consultant, sub-award,</td>
<td>PDF</td>
<td>Field 12</td>
</tr>
<tr>
<td>or research institution, if applicable</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other—Letters of Support, if applicable</td>
<td>PDF</td>
<td>Field 12</td>
</tr>
<tr>
<td>Other—SBA Company Registration</td>
<td>PDF</td>
<td>Field 12</td>
</tr>
<tr>
<td>Authorization for non-DOE/NNSA FFRDCs, if applicable</td>
<td>PDF</td>
<td>Field 12</td>
</tr>
</tbody>
</table>
Completing an Application

- Important documents to assist you with completing the application package
  - Topics Document, Funding Opportunity Announcement, & Instructions are available at the [DOE SBIR/STTR website](http://www.doesbirlearning.com/)
  - Online tutorials are available at [http://www.doesbirlearning.com/](http://www.doesbirlearning.com/)
Data Management Plan

• Purpose – Disseminate, as widely as possible, data generated with public funding

• Requirement – All SBIR and STTR applications must select one of the two Data Management Plan (DMP) options below:
  – Option 1
    • The Option 1 DMP is: “It is anticipated that all generated digital data will be protected as SBIR/STTR data and therefore will not be publicly shared during the applicable SBIR/STTR data protection period.” If any data generated under this award are published, an effort will be made to also release any related digital data that is not protected SBIR/STTR data.”
    • Please note that if you do not include a DMP with your application, Option 1 for the DMP will be assumed for your application. However, If you plan to publicly disclose generated digital data, you must provide a DMP under Option 2.
  – Option 2
    • If you plan to publicly disclose technical data during the data protection period or, for data not expected to be asserted as protected SBIR/STTR rights data, please submit a DMP. Use the DMP requirements outlined in the FOA.
## Top Application Errors

<table>
<thead>
<tr>
<th>Error</th>
</tr>
</thead>
<tbody>
<tr>
<td>Updating SAM registration at the last minute – and unable to submit on Grants.gov</td>
</tr>
<tr>
<td>Fail to submit letter of intent by the deadline</td>
</tr>
<tr>
<td>Fail to check level of effort is compliant (see slide 6)</td>
</tr>
<tr>
<td>Fail to meet PI effort requirements (a minimum of 3 hours/week on average)</td>
</tr>
<tr>
<td>Incorrect/missing marking of proprietary data. Instructions in FOA</td>
</tr>
<tr>
<td>Missing letters of commitment, required for each consultant and subaward</td>
</tr>
<tr>
<td>Proposing a technology that is not new</td>
</tr>
<tr>
<td>Unresponsive to the subtopic/ Not clearly addressing technology need</td>
</tr>
<tr>
<td>Not including the required documents</td>
</tr>
<tr>
<td>Proposal reflects unfamiliarity with the current literature</td>
</tr>
<tr>
<td>Budget form and budget justification are in agreement (to the penny). Subawards too!</td>
</tr>
<tr>
<td><strong>Not fully reading the FOA!!</strong></td>
</tr>
</tbody>
</table>
Review and Selection of Applications

- DOE primarily uses external peer review to evaluate your applications
  - Typically at least 3 technical reviewers
  - 1 reviewer for the Phase II commercialization plan
- Review Criteria (equally weighted)
  - Strength of the Scientific/Technical Approach
  - Ability to Carry Out the Project
  - Impact
- Selection
  - DOE ranks the most meritorious applications—award selections are made based on available funding
- You will be notified of the decision on your application within 90 days of the application deadline
  - Reviewer comments will be made available to you through PAMS. Use this feedback constructively to improve future applications
Phase I Application & Award Statistics for FY 2021

- Phase I
  - 2,084 applications
  - 439 awards

![Chart showing distribution of Phase I applications and awards for FY 2021]
Phase II Application & Award Statistics for FY 2021

- Phase II
  - 358 applications
  - 146 awards

- Phase IIA
  - 31 applications
  - 18 awards

- Phase IIB
  - 83 applications
  - 28 awards
Phase I Principal Investigator Meeting

• Phase I Principal Investigators are expected to attend a two-day DOE SBIR/STTR Principal Investigator Meeting held in the DC area
  – Release 1: June
  – Release 2: October
• Objectives
  – In-person meetings with DOE program managers and DOE Commercialization Assistance provider
  – Presentations relating to Phase II and Commercialization
  – Small business networking
• You may include the cost for the trip (registration, travel) in your Phase I budget
• Exceptions
  – If the DOE program office that funds your topic has a separate principal investigator meeting, you will be notified that your participation in the Phase I PI meeting is optional
Commercialization Assistance

- **DOE Commercialization Assistance**
  - Phase I assistance
    - Assistance with development of Phase II commercialization plans
    - Or, Industry-specific business consultant
  - Phase II assistance
    - Flexible offerings to meet a variety of commercialization needs
    - Or, Industry-specific business consultant
  - Vendor website: [http://www.larta.org/doecap](http://www.larta.org/doecap)

- **Company-selected commercialization assistance vendor**
  - Companies may select their own vendor(s) to provide commercialization assistance
  - **Company must include this vendor(s) as a subcontractor or consultant in their Phase I or II application**
  - Up to $6,500 for Phase I

- **Energy I-Corps for SBIR/STTR**
  - New program for Phase I awardees with a focus on customer discovery
Commercialization

- DOE topics are drafted by program managers who are aware of the important technology roadblocks that are preventing progress in their mission areas
- Small business applicants are expected to address the commercialization challenges and ensure that there is a profitable, self-sustaining, business opportunity
  - Phase I & II Applications must include Commercialization Plans
  - Commercialization Plans can accommodate long commercialization timeframes
  - Ability to address adjacent markets can also be included in your commercialization plan
- DOE performs follow-up surveys to track commercialization outcomes of its SBIR/STTR awards
DOE SBIR & STTR Programs: Examples of Phase III Success
https://science.osti.gov/sbir/SBIR-STTR-Phase-III-Success-Stories
**DOE OFFICE:** Advanced Scientific Computing Research (ASCR)

**TECHNOLOGY:** Developed Keymaker, an AI based analytics platform which enhances network connectivity

**IMPACT:** Reduces costly networking distributions and improves productivity

**TIMELINE:** Phase II SBIR award in 2019 has led to sales approaching DoD and DOE investments. Solutions are implemented in NewNode used by 24 organizations and 2.5 Million users. Expanding products to other markets.
DOE OFFICE: Basic Energy Sciences

TECHNOLOGY: Acoustic and Aerodynamic “levitation” forces allowing liquids to float for materials investigation in a container-less environment

IMPACT: Resulted in a specially developed facility for materials investigation in length scales from atomic to mid-range. Instrument developed for commercial market. Job creation.

TIMELINE: Multiple Phase II SBIR awards during 2011 through have led to sales exceeding $1 Millions with more in the pipeline.
IMPACT
Ground-breaking characterization tool enabling 3D, element sensitive, high resolution imaging for next-generation energy-efficient and nanotechnology devices

DOE OFFICES: Basic Energy Sciences (BES), High Energy Physics (HEP).

TECHNOLOGY: table-top, femtosecond pulsed x-ray lasers for imaging and time-resolved spectroscopy with applications in semiconductor industry, bio-imaging and neuroscience.

COMMERCIALIZATION TIMELINE: SBIR support starting in 2002 with a DOD grant and 6 DOE SBIR Phase II award since 2007. $14M in product sales; >$13M in two rounds of investments by Intel Capital, Kairos Ventures and Colorado Impact Fund.

TECHNOLOGY: Fiber optic interconnects.

TIMELINE: 3 DOE SBIR Phase II awards and a Phase IIB since 2010. First Phase II lead to significant Angel Investments.

ROI: $5M in product sales rapidly growing. $15M in Angel Investments. 36 employees. Deployed in 15 large data centers. Customers include Verizon. 38+ patents.

TAKEAWAY MESSAGE: Game-changing technology born from a String Theory mathematical representation.
DOE OFFICES: Basic Energy Sciences (BES).

TECHNOLOGY: Nanoscale IR spectroscopy through AFM.

TIMELINE: 5 DOE SBIR Phase II awards in 2010 - 2017. Critical to validate a large potential market.

ROI: By 2018 Anasys’ growing sales made the acquisition by Bruker possible.

TAKE-AWAY MESSAGE: Intensive multi-disciplinary R&D with significant advances in multiple disciplines like IR lasers, optics, AFM probes, mechanics, and electronics.
DOE Office of Inspector General: Fraud, Waste & Abuse
DOE Office of Inspector General

Combating Fraud

• **What types of fraud are found in the SBIR Program?**

• Application Process
  – submitting a plagiarized proposal
  – providing false information regarding the company, the Principal Investigator (PI), or work to be performed
  – seeking funding for work that has already been completed

• During Award
  – using award funds for personal use or for any use other than the proposed activities
  – submitting plagiarized reports or reports falsely claiming work has been completed
  – claiming results for an award that were funded by a different source
Knowing the Rules

- **Which SBIR rules should you be particularly familiar with?**
  - Duplicate or overlapping proposals may not be submitted to multiple agencies without full disclosure to all agencies.
  - The company must meet SBA’s requirements for a small business, including being majority American owned and have 500 employees or fewer.
  - For SBIR: The PI’s primary employment must be with the company during the grant period. The PI may not be employed full time elsewhere.
  - For SBIR: For Phase I, a minimum of two thirds of the research effort must be performed by the grantee company; for Phase II, a minimum of one-half of the research effort must be performed by the grantee company. Work performed by a university research lab is NOT work completed by the grantee company.
  - University employees participating on an SBIR award should disclose their involvement to the university as well as their use of university facilities.
  - R&D must be performed in the United States.
Consequences

• **What Happens If You Break the Rules?**
  - If you commit fraud or other wrongdoing in applying for or carrying out an SBIR award, we will investigate.
  - We refer violations of civil or criminal law to the Department of Justice (DOJ). If DOJ prosecutes you for fraud or false statements, you may be sentenced to prison and required to pay full restitution. If DOJ pursues a civil action under the False Claims Act, you may have to pay treble damages and $11,000 for each false claim. In addition, DOE may terminate your awards and debar you from receiving grants or contracts from any federal agency.
Recent Prosecution

Friday, September 11, 2015

Scientists Sentenced To Prison For Defrauding The Small Business Innovation Research Program

Tampa, Florida – U.S. District Judge Virginia Hernandez Covington has sentenced Mahmoud Aldissi (a/k/a Matt) and Anastassia Bogomolova (a/k/a Anastasia) for conspiracy to commit wire fraud, wire fraud, aggravated identity theft, and falsification of records. Aldissi was sentenced to 15 years in federal prison and Bogomolova was sentenced to a term of 13 years. As part of their sentences, the court entered a money judgment in the amount of $10.6 million, representing the proceeds of the crime, and ordered them to pay $10.6 million in restitution. Aldissi and Bogomolova were found guilty on March 20, 2015.

According to testimony and evidence presented during the month-long trial, through their two companies, Fractal Systems, Inc., and Smart Polymers Research Corp., Aldissi and Bogomolova fraudulently obtained approximately $10.5 million of small business research awards from the federal government. In order to be awarded contracts, they submitted proposals using the stolen identities of real people to create false endorsements of and for their proposed contracts. In the proposals, they also lied about their facilities, costs, the principal investigator on some of the contracts, and certifications in the proposals.

DOE Office of Inspector General

Reporting Fraud

• The Department of Energy’s Office of Inspector General (OIG) promotes the effective, efficient, and economical operation of DOE’s programs and operations through audits, inspections, investigations, and other reviews.

• Within DOE OIG, the Office of Investigations is responsible for investigating any fraudulent acts involving DOE, its contractors or subcontractors, or any crime affecting the programs, operations, Government funds, or employees of those entities.

• If you want additional information or to report wrongdoing:
  - Internet: ig.energy.gov
  - E-mail: ighotline@hq.doe.gov
  - Telephone: 202-586-4073
  - Hotline: 800-541-1625
  - Fax: 202-586-5697

U.S. DEPARTMENT OF ENERGY
OFFICE OF INSPECTOR GENERAL
ATTN: OFFICE OF INSPECTIONS
1000 INDEPENDENCE AVENUE, SW
MAIL STOP 5D-031
WASHINGTON, DC  20585
Support Programs along the Path to Commercialization

<table>
<thead>
<tr>
<th>Phase I Grant</th>
<th>Phase II, IIA Grants</th>
<th>Phase IIB, IIC Grants</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><strong>Funding Opportunity and Q&amp;A Webinars</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Topic Webinars</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Phase 0 Assistance</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Online learning center and application resources</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>National Laboratories collaboration resource</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Application Assistance</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Awardee Resources</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Commercialization Assistance Program (CAP)</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Energy I-Corps</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>PI Meeting</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Diversity Supplement</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Final Reminders!

Phase 0 for first-time DOE applicants (yes – its free!)
http://www.dawnbreaker.com/doephase0/

Online learning center for application process including videos
https://science.osti.gov/SBIRLearning

Join our mailing list!
https://science.osti.gov/sbir

Email us
sbir-sttr@science.doe.gov

Follow us on Twitter! @DOESBIR

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

Submit suggestions for improving the SBIR & STTR Programs:
https://science.osti.gov/sbir/Anonymous-Feedback

Documents and Webinars for Topics and FOAs are posted here