The DOE Webinar will begin shortly . . .

- **Why is there no sound?**
  - Once you logged into the webinar, you were provided two options to listen to this broadcast. The first option is through your computer speakers, the second option is via dialing the phone number provided to you upon login to the webinar. If you chose to listen through your computer speakers, you may need to turn your speaker volume on or up.
- **Will DOE provide access to the recorded webinar after the meeting?**
  - Yes, all those who registered will receive a link to the slides and to the recorded webinar soon after the meeting. It will also be available on the DOE SBIR/STTR web site.
- **Where can I find the Topics being discussed today?**
  - This link will take you to the Funding Opportunity Announcement (FOA) page that lists the FY 2025 Phase I Release 2 Topics: https://science.osti.gov/sbir/Funding-Opportunities
- **What if my question was not answered at today's webinar?**
  - Please contact the point of contact that follows each subtopic in the document listed above for further clarification.
  - If you have a question about the grant application process, please send us an email at: sbir-sttr@science.doe.gov.

DOE SBIR/STTR
Phase I Release 2 Topics Webinar

Topics associated with the
FY 2025 Phase I Release 2
Notice of Funding Opportunity

Topics 17-19 & 22-31

DOE SBIR/STTR Programs Office

November 22, 2024

TODAY'S AGENDA

Topics Introduction	DOE SBIR/STTR Programs Office
Topics 17-19	Office of Environmental Management
Topics 22-28	Office Of Defense Nuclear Nonproliferation Research And Development
Topics 31-32	Office of Nuclear Energy

FY 2025 Phase I Schedule

	Release 1	Release 2
Topics Issued	Monday, July 8, 2024	Tuesday, November 12, 2024
Webinar(s)	Week of July 22, 2024	Week of November 18, 2024
NOFO Issued	Monday, August 5, 2024	Monday, December 16, 2024
NOFO Webinars	Thursday, August 8, 2024 (Webinar) Friday, August 9, 2024 (Q&A)	Thursday, December 19, 2024 (Webinar) Friday, December 20, 2024 (Q&A)
Letters of Intent (LOI) Due	Tuesday, August 27, 2024	Tuesday, January 7, 2025
Non-responsive LOI Feedback Provided	Monday, September 16, 2024	Monday, January 27, 2025
Applications Due	Tuesday, October 8, 2024	Wednesday, February 26, 2025
Award Notification	Monday, January 6, 2025	Tuesday, May 27, 2025

Phase I Funding Opportunity Announcements
Participating DOE Programs (FY 2025)

Phase I Release 1

- Office of Advanced Scientific Computing Research
- Office of Basic Energy Sciences
- Office of Biological and Environmental Research
- Office of Fusion Energy Sciences
- Office of High Energy Physics
- Office of Nuclear Physics

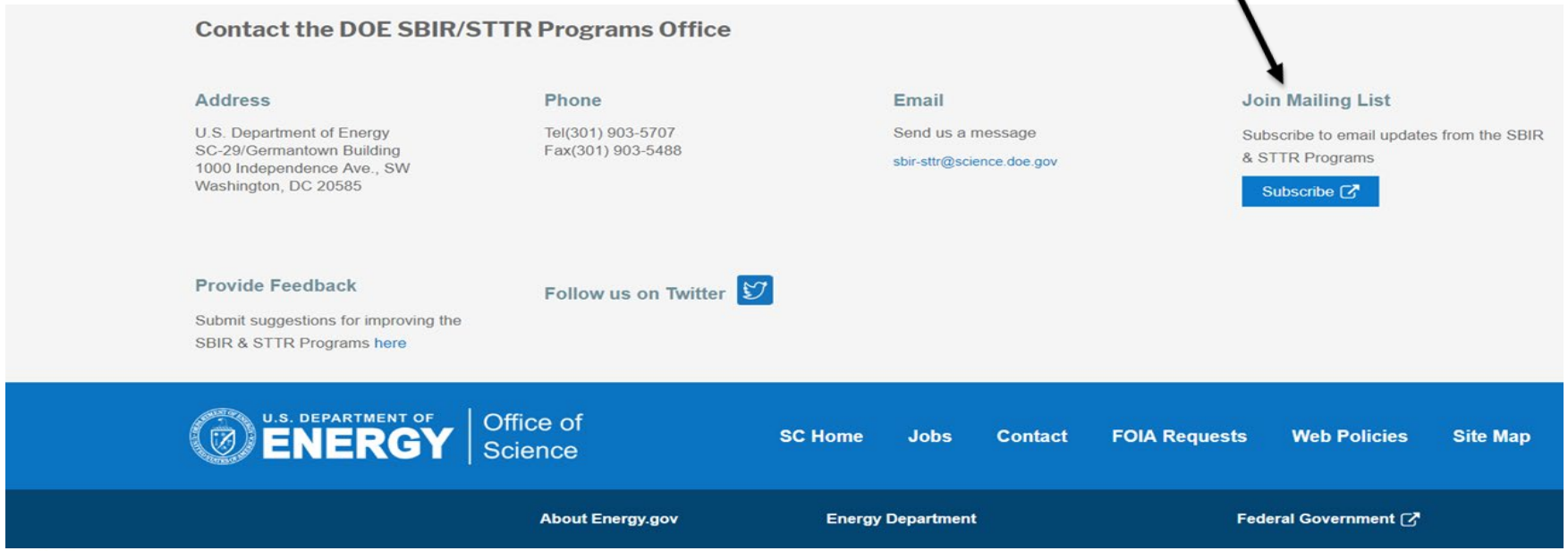
Phase I Release 2

- Office of Cyber Security, Energy Security, and Emergency Response
- Office Of Defense Nuclear Nonproliferation Research And Development
- Office of Electricity
- Office of Energy Efficiency and Renewable Energy
- Office of Environmental Management
- Office of Fossil Energy and Carbon Management
- Office of Nuclear Energy

Notice of Funding Opportunity (NOFO) Webinar

- FY25 Phase I Release 2 NOFO will be issued on **December 16th**
- Join our Mailing List – this field is on every DOE SBIR/STTR web page
  - Following the issuance of the NOFO, look for an email with a link to the NOFO

- Webinar on **December 19th** and Q&A Webinar for this **December 20th**
  - Overview of the FY 2025 DOE SBIR/STTR Programs
    - Following the issuance of the NOFO, look for an email announcing this webinar



Reminder - Phase 0 Application Assistance Program

- Phase 0 application assistance program is available for first-time DOE SBIR/STTR applicants
- Participants receive an individual coach who is an expert in our application process.
- Registration is open now and onboarding is in process!
- Services are expected to begin in December
- Visit http://www.dawnbreaker.com/doephase0/ to determine your eligibility and apply to Phase 0

Topic Basics

- Topics are created by DOE program managers and define important technology breakthroughs needed in R&D areas that support the DOE mission
- Topics are organized by DOE Program Office, e.g., EERE, FECM, etc.
- DOE program managers are listed with each subtopic
  - Questions to DOE program managers are limited to clarification of the topic and subtopic (including references)
  - Clarification is provided to help ***you*** determine whether your technology fits within the topic and subtopic
  - You may communicate with these topic managers from the release of topics until the grant application due date
  - The decision to apply is ***yours***

Example Topic

- Topic & Subtopic
  - You must specify the same topic and subtopic in your Letter of Intent and grant application
- Topic Header
  - Lists the maximum award amounts for Phase I & Phase II and the types of application accepted (SBIR and/or STTR)
- Program Manager
  - Each subtopic lists the responsible DOE program manager
- "Other" Subtopic
- References

12.INSTRUMENTATION FOR ADVANCED CHEMICAL IMAGING

Maximum Phase I Award Amount: $150,000	*Maximum Phase II Award Amount:* $1,000,000
Accepting SBIR Applications: YES	*Accepting STTR Applications:* YES

The Department of Energy seeks to advance chemical imaging technologies that facilitate fundamental research to understand, predict, and ultimately control matter and energy at the electronic, atomic, and molecular levels. The Department is particularly interested in forefront advances in imaging techniques that combine molecular-scale spatial resolution and ultrafast temporal resolution to explore energy flow, molecular dynamics, breakage, or formation of chemical bonds, or conformational changes in nanoscale systems.

Grant applications are sought in the following subtopics:

a. **High Spatial Resolution Ultrafast Spectroscopy**
Chemical information associated with molecular-scale processes is often available from optical spectroscopies involving interactions with electromagnetic radiation ranging from the infrared spectrum to x-rays. Ultrafast laser technologies can provide temporally resolved chemical information via optical spectroscopy or laser-assisted mass sampling techniques. These approaches provide time resolution ranging from the breakage or formation of chemical bonds to conformational changes in nanoscale systems but generally lack the simultaneous spatial resolution required to analyze individual molecules. Grant applications are sought that make significant advancements in spatial resolution towards the molecular scale for ultrafast spectroscopic imaging instrumentation available to the research scientist. The nature of the advancement may span a range of approaches including sub-diffraction limit illumination or detection, selective sampling, and coherent or holographic signal analysis.

Questions – Contact: James Rustad, James.Rustad@Science.doe.gov

b. **Time-Resolved Chemical Information from Hybrid Probe Microscopies**
Probe microscopy instruments (including AFM and STM) have been developed that offer spatial resolution of molecules and even chemical bonds. While probe-based measurements alone do not typically offer the desired chemical information on molecular timescales, methods that take advantage of electromagnetic interactions or sampling with probe tips have been demonstrated. Grant applications are sought that would make available to scientists new hybrid probe instrumentation with significant advancements in chemical and temporal resolution towards that required for molecular scale chemical interactions. The nature of the advancement may span a range of approaches and probe techniques, from tip-enhanced or plasmonic enhancement of electromagnetic spectroscopies to probe-induced sample interactions that localize spectroscopic methods to the molecular scale.

Questions – Contact: James Rustad, James.Rustad@Science.doe.gov

c. **Other**
In addition to the specific subtopics listed above, the Department invites grant applications in other areas that fall within the scope of the topic description above.

Questions – Contact: James Rustad, James.Rustad@Science.doe.gov

References:

1. U.S. Department of Energy, 2006, Office of Science Notice DE-FG01-05ER05-30, Basic Research for Chemical Imaging, BES Chemical Imaging Research Solicitation. (http://science.energy.gov/~/media/grants/pdf/foas/2005/DE-FG01-05ER05-30.pdf).

2. National Research Council, 2006, Visualizing Chemistry, The Progress and Promise of Advanced Chemical Imaging, National Academies Press. (http://www.nap.edu/catalog.php?record_id=11663).

Topic C60-17: IN-SITU CHARACTERIZATION METHODS

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**

a. Development of new technologies to advance autonomous monitoring of soil and groundwater contamination at sites undergoing both active and passive remediation.
b. Deep aquifer characterization
c. Other

Questions: Latrincy Bates, Latrincy.Bates@em.doe.gov
Charles Denton, Charles.Denton@em.doe.gov

Topic C60-18: MITIGATION METHODS FOR DIFFICULT TO TREAT SOIL AND GROUNDWATER CONTAMINANTS

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**

a. Microplastics and PFAS

Questions: Latrincy Bates, Latrincy.Bates@em.doe.gov
Charles Denton, Charles.Denton@em.doe.gov

Topic C60-19: IMPROVEMENTS FOR DECONTAMINATION OF EQUIPMENT/STRUCTURES

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**

a. Characterization
b. Decontamination methods
c. Fixatives

Questions: Latrincy Bates, Latrincy.Bates@em.doe.gov
Charles Denton, Charles.Denton@em.doe.gov

Topic C60-22: SENSORS FOR UNDERGROUND NUCLEAR EXPLOSION MONITORING

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: NO**
Accepting SBIR Fast-Track Applications: NO	**Accepting STTR Fast-Track Applications: NO**

a. Beta-gamma detector technology improvements
b. Fieldable Quantum Sensors to Detect Underground Explosions
c. Other

Questions: John Lazarz, John.Lazarz@nnsa.doe.gov

Topic C60-23: NUCLEAR FORENSICS

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: NO**
Accepting SBIR Fast-Track Applications: NO	**Accepting STTR Fast-Track Applications: NO**

a. High-Purity Separations of Rare Earth Elements from Phosphogypsum
b. Representative Milligram Subsampling of Small Powder Samples

Questions: Richard Gostic, richard.gostic@nnsa.doe.gov

Topic C60-24: ARTIFICIAL INTELLIGENCE

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: NO**
Accepting SBIR Fast-Track Applications: NO	**Accepting STTR Fast-Track Applications: NO**

a. Experimentation framework for secure federated learning-as-a-service (FLaaS)
b. Other

Questions: Paul Adamson, paul.adamson@nnsa.doe.gov

Topic C60-25: RADIATION DETECTION MATERIALS

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: NO**
Accepting SBIR Fast-Track Applications: NO	**Accepting STTR Fast-Track Applications: NO**

a. Large-volume, high-performance, room-temperature operational CdZnTe (CZT) semiconductor gamma-ray detectors
b. Other

Questions: Hank Zhu, hank.zhu@nnsa.doe.gov

Topic C60-26: X-RAY IMAGING PANEL FOR FIELD RADIOGRAPHY

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: NO**
Accepting SBIR Fast-Track Applications: NO	**Accepting STTR Fast-Track Applications: NO**

a. High Efficiency Digital Radiographic Imaging Panel
b. Other

Questions: Hank Zhu, hank.zhu@nnsa.doe.gov

Topic C60-27: ALTERNATIVE RADIOLOGICAL SOURCE TECHNOLOGIES

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: NO**
Accepting SBIR Fast-Track Applications: NO	**Accepting STTR Fast-Track Applications: NO**

a. Accelerators for Industrial Radiation Processing
b. Novel Approaches to Accelerator Component Redesign and Domestic Manufacturing
c. Other

Questions: Hank Zhu, hank.zhu@nnsa.doe.gov

Topic C60-28: TECHNOLOGY FOR FUTURE REMOTE DETECTION SENSING

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: NO**
Accepting SBIR Fast-Track Applications: NO	**Accepting STTR Fast-Track Applications: NO**

a. Enhanced photomultiplier base technologies for data readout
b. Demonstration or analysis of Mie-tronic systems for spectroscopic collection
c. Maritime, Limnologic, and Oceanic Hyperspectral Imagery Analysis Advancement

Questions: Christopher Ramos, Christopher.Ramos@nnsa.doe.gov

Topic C60-29: ADVANCED TECHNOLOGIES FOR NUCLEAR ENERGY

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**

a. Advanced Modeling and Simulation
b. Advanced Methods and Manufacturing Technologies (AMMT) Program
c. Graphite Component Development to Support High Temperature Gas Reactors (HTGR) and Molten Salt Reactors (MSR)
d. Thermal Hydraulic Development to Support High Temperature Gas Reactors (HTGR)
e. Component Development to Support Liquid Metal Reactors – Electromagnetic Pumps

Questions: Subtopic a – David Henderson, David.Henderson@nuclear.energy.gov
Subtopic b – Dirk Cairns-Gallimore, Dirk.Cairns-Gallimore@nuclear.energy.gov
Subtopic c & d – Matt Hahn, Matthew.Hahn@nuclear.energy.gov
Subtopic e – Kaatrin Abbott, kaatrin.abbott@nuclear.energy.gov

Topic C60-29: ADVANCED TECHNOLOGIES FOR NUCLEAR ENERGY (Continued)

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**

f. Roller Bearings for High Temperature Sodium Applications
g. Reactor Plant Co-Pilot for Advanced Liquid Metal Reactors
h. Oxygen Sensors for Sodium Service
i. Heat Pipe Heat Exchanger
j. High Speed Power Electronics
k. High Temperature Supercritical CO2 Seals

Questions: Kaatrin Abbott, kaatrin.abbott@nuclear.energy.gov

Topic C60-29: ADVANCED TECHNOLOGIES FOR NUCLEAR ENERGY (Continued)

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**

l. Development of Ancillary Technologies Supporting Molten Salt Reactor (MSR) Deployment
m. Cost to Manufacture and Install Advanced Nuclear Reactor Technologies
n. Fuel Synthesis Reactors for Nuclear E-fuels
o. Advanced and Small Reactor Physical Security Cost Reduction
p. Advanced and Small Reactor Material Control and Accounting (MC&A) Modernization
q. Cybersecurity Technologies for Protection of Nuclear Critical Systems
r. Light Water Reactor Central Alarm Station Simulator Based Human Factors Studies

Questions: Subtopic l – Michael Stoddard, Michael.stoddard@nuclear.energy.gov
Subtopics m & n – Jason Marcinkoski, Jason.Marcinkoski@nuclear.energy.gov
Subtopics o, p, q & r – Dan Warner, daniel.warner@nuclear.energy.gov

Topic C60-29: ADVANCED TECHNOLOGIES FOR NUCLEAR ENERGY (Continued)

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**

s. Plant Modernization
t. Software Development for Digital Instrumentation Control (DI&C) System Risk Assessment and Design Optimization
u. Modular Reactor (SMR) Capabilities, Components, and Systems
v. Advanced Construction Technology (ACT) Initiative
w. Supporting Technologies for Microreactor Operations
x. Robotics for Advanced Nuclear Facilities
y. Microreactor Applications, unattended Operations, and Cost-Reduction Technologies

Questions: Subtopics s & t – Sujata Goetz, Sujata.Goetz@nuclear.energy.gov
Subtopic u – Melissa Bates, Melissa.Bates@nuclear.energy.gov
Subtopics v, w & x – Savannah Fitzwater, savannah.fitzwater@nuclear.energy.gov
Subtopic y – Diana Li, Diana.Li@nuclear.energy.gov

Topic C60-29: ADVANCED TECHNOLOGIES FOR NUCLEAR ENERGY (Continued)

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**

z. Nondestructive Examination (NDE) Techniques for In-situ Monitoring of Cable Insulation
aa. Materials Protection Accounting and Control for Domestic Fuel Cycles
bb. Innovative Fuel Cladding Materials and Core Materials
cc. Filtration of solid particulates suspended in molten salt solutions
dd. Krypton specific capture technologies
ee. Multi-radionuclide Sorbents and Waste Forms

Questions: Subtopic z – Sue Lesica, sue.lesica@nuclear.energy.gov
Subtopic aa – Tansel Selekler, tansel.selekler@nuclear.energy.gov
Subtopic bb – Ming Tang, ming.tang@nuclear.energy.gov
Subtopic cc – James Willit, james.willit@nuclear.energy.gov
Subtopics dd & ee – Kimberly Gray, Kimberly.Gray@nuclear.energy.gov

Topic C60-29: ADVANCED TECHNOLOGIES FOR NUCLEAR ENERGY

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**

ff. Recovery and purification of NO2 for reuse
gg. Production of Zr metal by direct electroreduction of ZZrCI4 in molten salt
hh. Advanced Technologies for the Fabrication, Characterization of Nuclear Reactor Fuel
ii. Other

Questions: Subtopic ff & gg – Bill Del Cul, bill.delcul@nuclear.energy.gov
Subtopic hh – Frank Goldner, Frank.Goldner@nuclear.energy.gov
Subtopic ii – JoAnne Hanners, JoAnne.Hanners@nuclear.energy.gov

Topic C60-30: ADVANCED TECHNOLOGIES FOR NUCLEAR WASTE

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**

a. Disposal Research
b. Novel Materials and Manufacturing Methods for Impact Limiters

Questions: Subtopic a – John Orchard, John.Orchard@nuclear.energy.gov
Subtopic b – Jay Thomas, jay.thomas@nuclear.energy.gov

Topic C60-31: ADVANCED TECHNOLOGIES FOR NUCLEAR ENERGY CROSS CUTTING CAPABILITIES

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: NO**
Accepting SBIR Fast-Track Applications: YES	**Accepting STTR Fast-Track Applications: YES**

a. Advanced Sensors and Instrumentation (ASI) (Crosscutting Research)

Questions: Daniel Nichols, daniel.nichols@nuclear.energy.gov

DOE SBIR/STTR Programs Office
Contact Information

- SBIR/STTR Web: https://science.osti.gov/sbir
- Email: sbir-sttr@science.doe.gov
- Phone Assistance Hotline: 301-903-5707
- DOE Phase 0 Assistance Program: https://doephase0.dawnbreaker.com/
- DOE Application Assistance: https://science.osti.gov/SBIRLearning