

# 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 2024 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](mailto:sbir-sttr@science.doe.gov)
  - or call us at (301) 903-5707



U.S. DEPARTMENT OF  
**ENERGY**

Office of SBIR/STTR  
Programs



# DOE's Small Business Innovation Research (SBIR) and Small Business Technology Transfer (STTR) Programs

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**August 11, 2023**

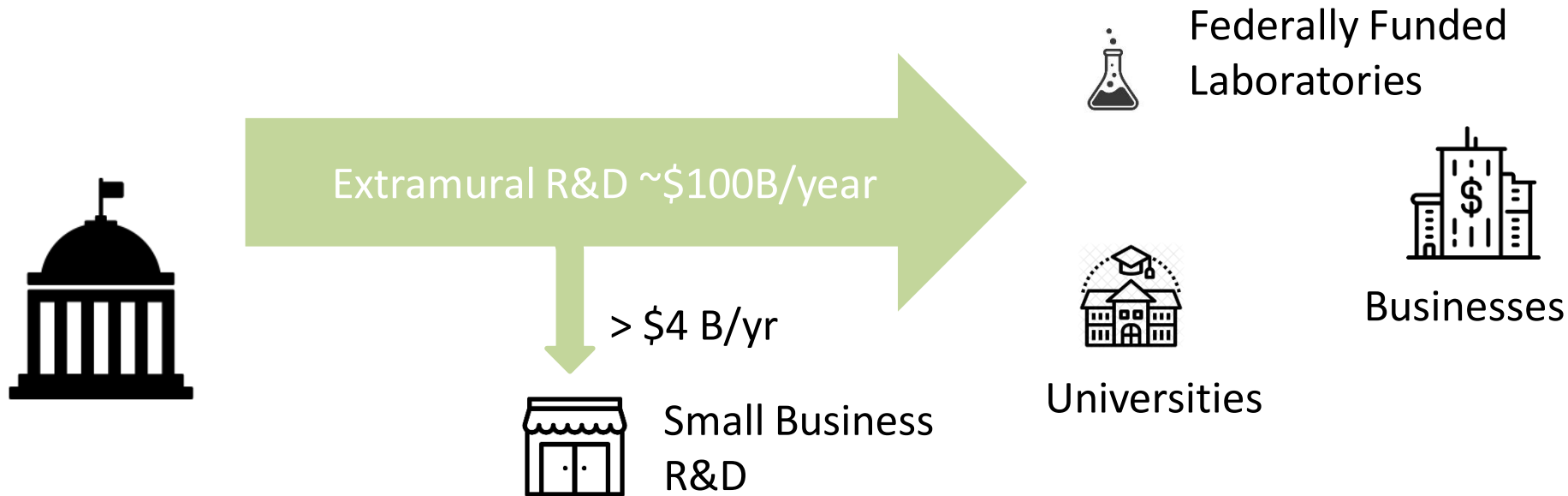
A large American flag is shown waving vigorously against a bright blue sky with scattered white clouds. The flag is attached to a tall, thin pole on the left side of the frame. The stars and stripes are clearly visible, and the flag's movement creates a sense of dynamic energy.

# Federal SBIR/STTR Programs Overview

# What are the Federal SBIR & STTR Programs?



- A >\$4 Billion early stage nondilutive R&D fund for US-based small businesses
- Must be U.S. Citizen or permanent resident majority owned
- A mechanism to fund best early-stage high-risk innovation ideas
- Funds ideas that are too high risk for the private sector
- Use U.S. Small Businesses to stimulates technological innovation





# FY 2022 SBIR/STTR Budgets by Agency

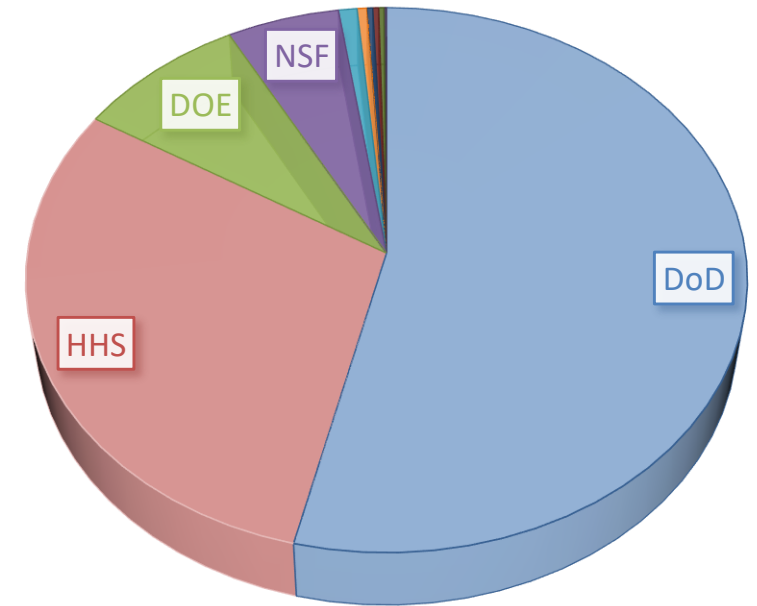


| Agency  | Budget (Millions) |
|---|-------------------|
| Department of Defense (DoD)   | \$ 2,240          |
| Department of Health and Human Services (HHS), incl. National Institute of Health (NIH)   | \$ 1,250          |
| Department of Energy (DOE), incl. Advanced Research Projects Agency (ARPA -E)   | \$ 348            |
| National Science Foundation (NSF)   | \$ 231            |
| National Aeronautics and Space Administration (NASA)  | \$ 215            |
| Department of Agriculture (USDA)  | \$ 38             |
| Department of Homeland Security (DHS)   | \$ 20             |
| Department of Commerce: National Oceanic and Atmospheric Administration (NOAA), National Institute of Standards and Technology (NIST) | \$ 12             |
| Department of Education (ED)  | \$ 12             |
| Department of Transportation (DOT)*   | \$ 11             |
| Environmental Protection Agency (EPA)   | \$ 5              |

SBIR & STTR  
(> \$1B in  
extramural  
R&D)

SBIR only  
(> \$100M in  
extramural  
R&D)

## 2022 BUDGETS



SBIR: \$3.85 Billion  
STTR: \$532 Million



U.S. DEPARTMENT OF  
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Office of SBIR/STTR  
Programs

Contracting agency

Granting agency

Both

# Are Agencies' Programs all the Same?



- There are lots of differences!
- Grants (DOE) vs Contracts
- Focused topics (e.g. DOE), to no topics (e.g. NSF)
- Who will be your customer? Not likely to be DOE, maybe DoD
- Application processes, systems and deadlines are all different

*Search [SBIR.gov awards](https://www.sbir.gov/awards) to understand what agencies are most likely to fund your technology. Focus on a limited set of agencies.*

*Get to know the agencies you are interested in*

# 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.

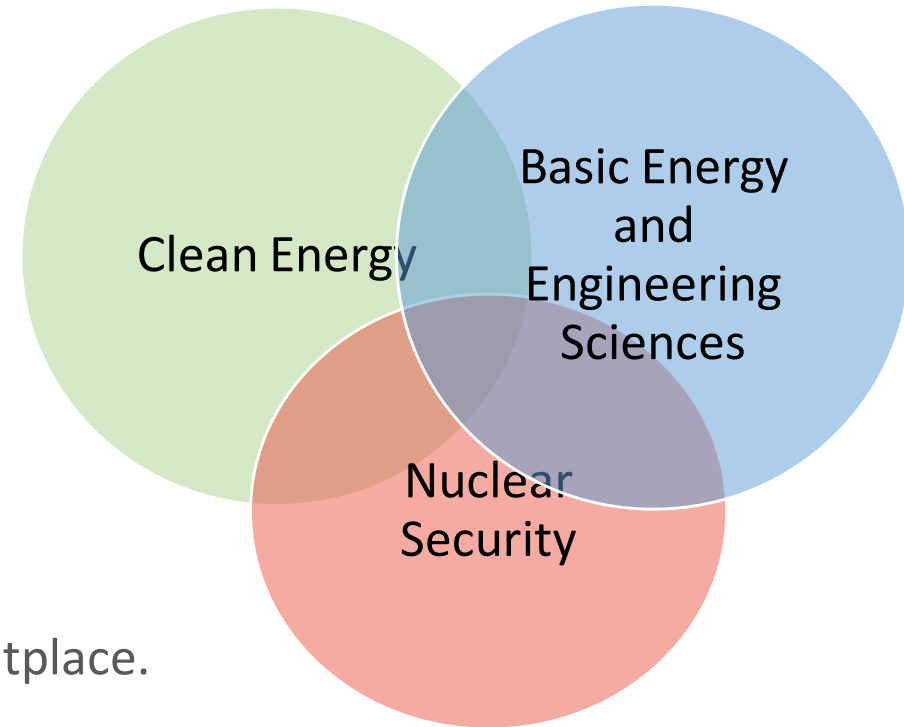


# DOE SBIR/STTR Programs – The Specifics



- 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/>

## DOE Mission



U.S. DEPARTMENT OF  
**ENERGY**

Office of SBIR/STTR  
Programs



# SBIR vs STTR?



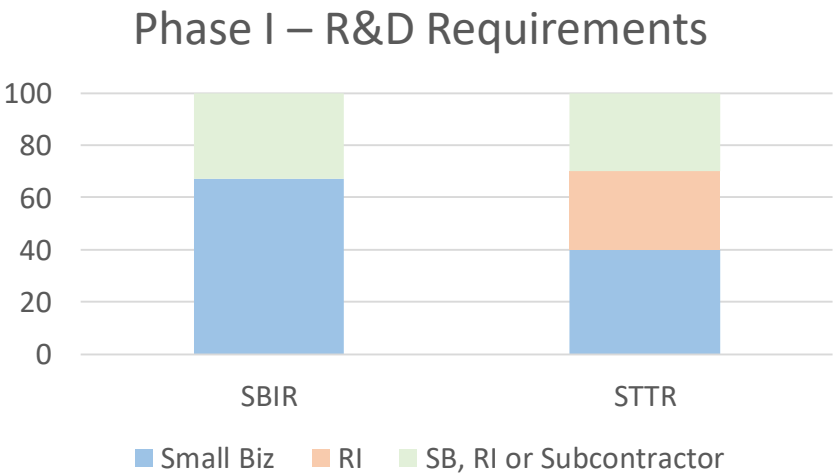
| Small Business Innovation Research (SBIR)<br>est. 1982   | Small Business Technology Transfer (STTR)<br>est. 1992   |
|--|--|
| <ul style="list-style-type: none"> <li>• Allows non-profit research institution partner</li> <li>• Principal Investigator (PI) employee of small business</li> </ul> | <ul style="list-style-type: none"> <li>• Foster technology transfer between small business concerns and research institutions</li> <li>• Requires non-profit research institution (RI) partner</li> <li>• PI can be employee of either small business or RI</li> </ul> |

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

# 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. **DOE does not allow portfolio company applicants.**
- Performance of R&D
  - All R&D must be performed in the United States



# 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
- DOE SBIR/STTR awards are executed as grants
  - No repayment
  - No dilution of company equity
  - No cost sharing is required for Phases I and II



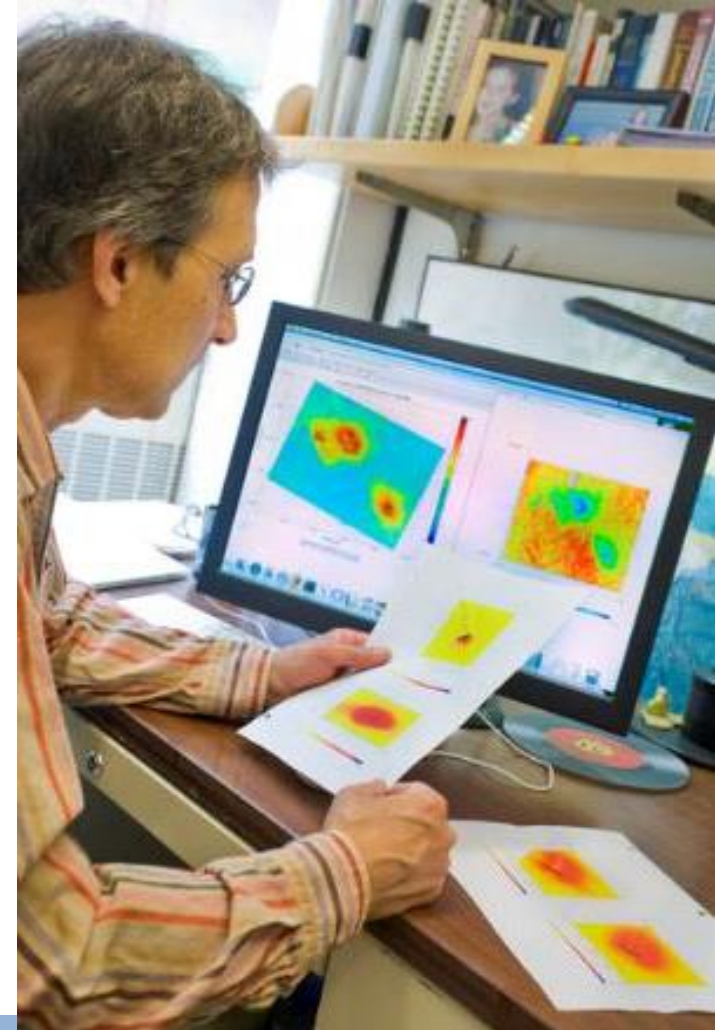
# Intellectual Property

- Patent rights
  - Small business concerns 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





# Participating DOE Program Offices – 2 Releases/year

 Release 1 – July 10, 2023 <- Out Now!

Advanced Scientific  
Computing Research  
(ASCR)

Fusion Energy Sciences  
(FES)

Basic Energy Sciences  
(BES)

High Energy Physics  
(HEP)

Biological & Environmental  
Research (BER)

Nuclear Physics  
(NP)

 Release 2 – November 6, 2023

Nuclear Nonproliferation  
(NNSA)

Cybersecurity, Energy  
Security & Emergency  
Response (CESER)

Energy Efficiency &  
Renewable Energy (EERE)

Electricity  
(OE)

Nuclear Energy  
(NE)

Environmental  
Management (EM)

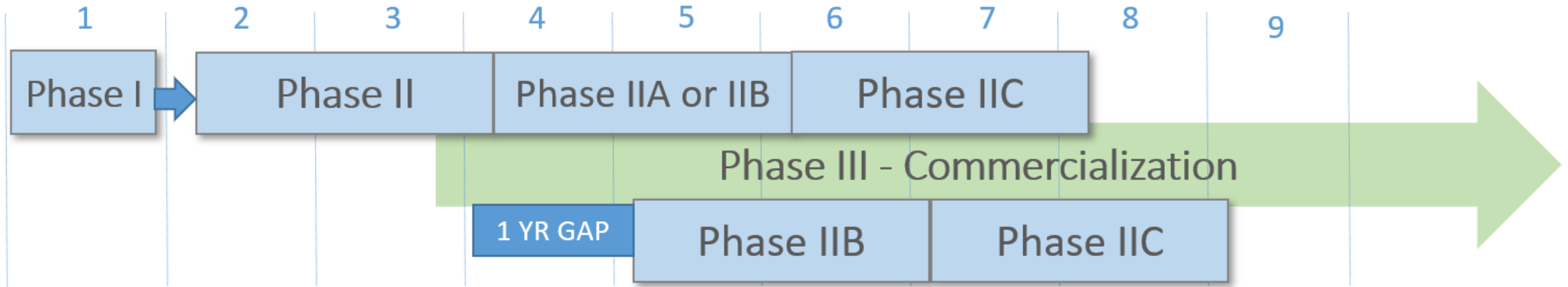
Fossil Energy & Carbon  
Management (FECM)



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Programs

# How does our funding work?



| Phase I   | Phase II  | Phase IIA/IIB  | Phase IIC   |
|---|---|--|---|
| <ul style="list-style-type: none"> <li>• Focused, mission-aligned topics</li> <li>• Proof of feasibility</li> <li>• Feedback provided on letters of intent</li> <li>• \$200,000/\$250,000</li> <li>• 6 - 12 months duration</li> <li>• ~ 350-400 awards per year</li> </ul> | <ul style="list-style-type: none"> <li>• Phase I awardees apply for Phase II the following year</li> <li>• Focus on prototype, demonstration and commercialization</li> <li>• \$1,100,000/\$1,600,000</li> <li>• 2 years duration</li> <li>• ~ 160 awards per year</li> </ul> | <ul style="list-style-type: none"> <li>• For projects that require additional R&amp;D funding for commercialization</li> <li>• \$1,100,000</li> <li>• 2 years duration</li> <li>• ~30 awards per year</li> </ul> | <ul style="list-style-type: none"> <li>• Pilot program to leverage 1:1 matching funds for commercialization</li> <li>• \$1,100,000</li> <li>• 2 years duration</li> </ul> |

The background of the slide features a blue field with several 3D molecular models. These models consist of yellow spheres (likely representing sulfur or phosphorus) and red spheres (likely representing oxygen) connected by green and red bonds. Some models are enclosed in a transparent blue wireframe. In the upper right corner, a bright, multi-colored laser beam (showing a gradient from blue to green to yellow) is depicted as it enters a medium.

## Release 1 Technology Areas Topics Released: July 10, 2023

# DOE SBIR & STTR Programs: Technology Areas



U.S. DEPARTMENT OF  
**ENERGY**

Office of SBIR/STTR  
Programs

# Advanced Scientific Computing Research



- Website: [Advanced Scientific Computing Research](#)

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World's fastest supercomputer  
at ORNL



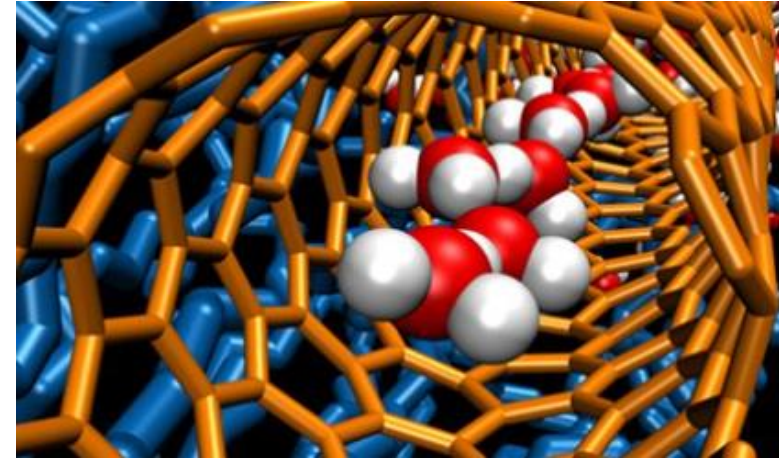


# Basic Energy Sciences



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- Website: [Basic Energy Sciences](#)

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# Biological and Environmental Research

- Website: [Biological and Environmental Research](#)



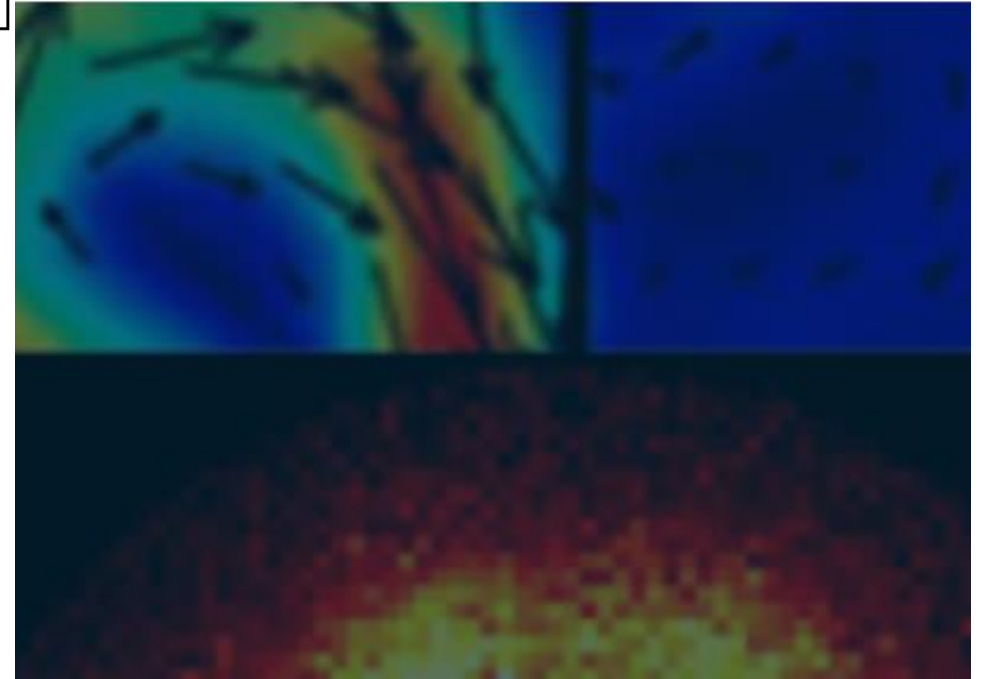
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- Website: [Fusion Energy Sciences](https://fusion.energy.gov)

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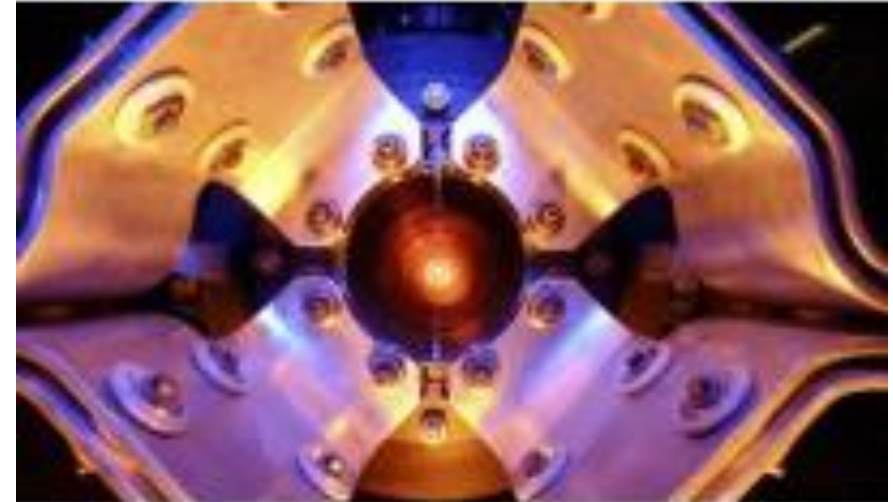
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- Website: [High Energy Physics](#)



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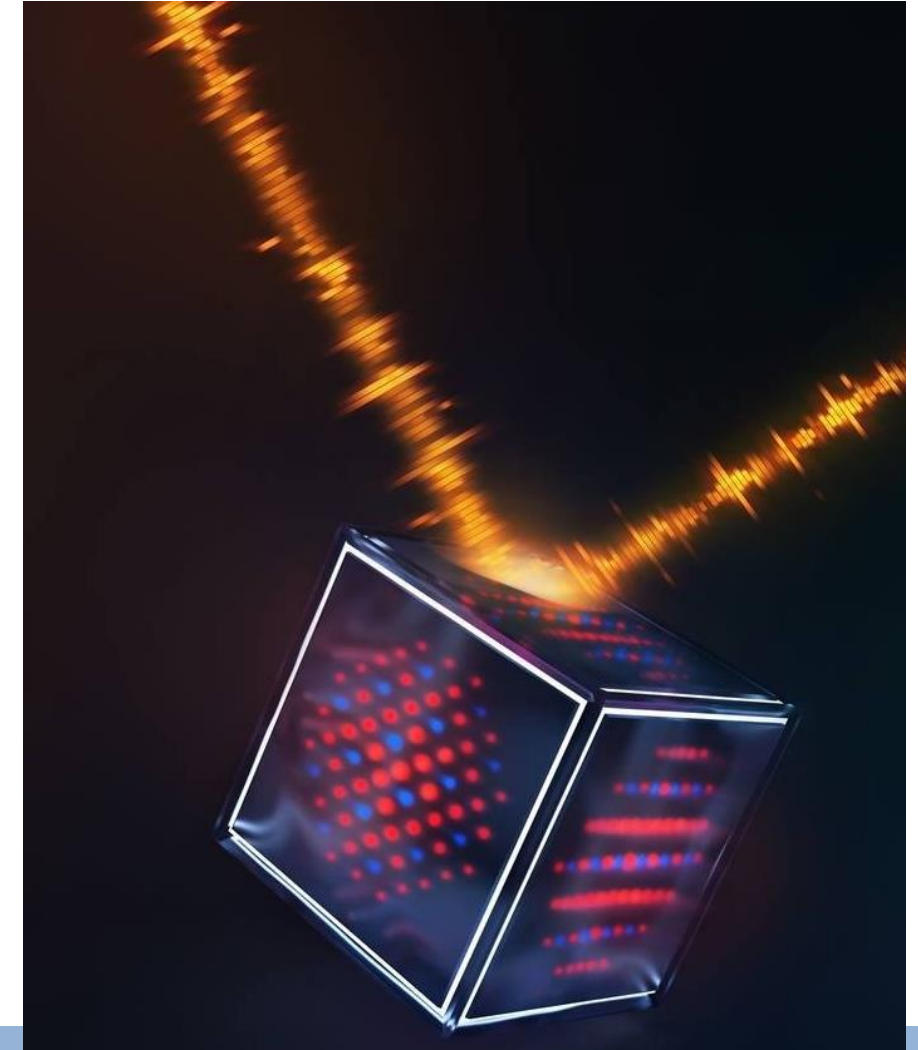




# Nuclear Physics

- Website: [Nuclear Physics](#)

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Release 2  
Technology  
Areas  
Topics Released:  
November 6,  
2023



## DOE SBIR & STTR Programs: Technology Areas





# FY2024 Phase I Release 2 Program Offices



## Release 2

**November 6 (topics) → February 21 (applications due)**

Mark your  
calendar for  
November 6!

- [Cyber Security, Energy Security, and Emergency Response](#)
- [Defense Nuclear Nonproliferation](#)
- [Electricity](#)
- [Energy Efficiency and Renewable Energy](#)
  - Solar Energy
  - Wind Energy
  - Geothermal
  - Hydrogen & Fuel Cells
  - Advanced Manufacturing
  - Building Technologies
  - Water Power
  - Vehicles
  - Bioenergy
  - Industrial Efficiency & Decarbonization
- [Fossil Energy and Carbon Management](#)
- [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

A screenshot of the U.S. Department of Energy Office of Science Basic Energy Sciences (BES) website. The header includes the DOE logo, "Office of Science", and a search bar. A blue navigation bar contains links: Home, About, Laboratories, Science Features, Universities, User Facilities, Funding, Initiatives, and Programs. Below this is a breadcrumb trail: Home | Programs | Basic Energy Sciences (BES). The main content area features a large molecular structure background with the title "Basic Energy Sciences (BES)". A left sidebar lists links: About, Research, Facilities, Science Highlights, Benefits of BES, Funding Opportunities, Basic Energy Sciences Advisory Committee (BESAC), and Community Resources. The main text area has a "What's New" section with links to a new message from the Director, BES 40th Anniversary Report Summaries, and Awards Archive. Below this is an "SC Statement on Quantum Information Science" section. To the right, there are two featured items: "Summary" with a BES logo image and "Program Update" with a molecular image. The "Program Update" section includes a paragraph about BES supporting fundamental research and a list of three divisions: Materials Sciences and Engineering, Chemical Sciences, Geosciences, and Biosciences, and Scientific User Facilities. A final paragraph discusses the research disciplines supported by BES.



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## DOE SBIR & STTR Programs: Application & Award Process



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# Operation of the DOE SBIR and STTR Programs



## *Technical Expertise Leveraged Throughout DOE*

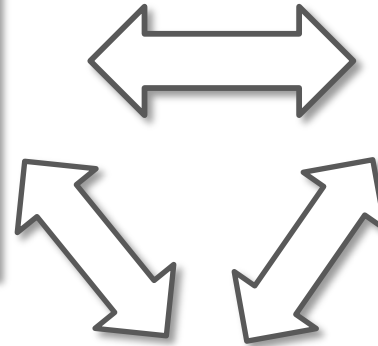
### **DOE Program Office**

- Develop Topics
- Identify Reviewers (Scientific Peer Review)
- Recommend Awardees
- Oversee Projects

## *Single Grants Office for Awardees*

### **DOE Chicago Office**

- Negotiate Grants
- Issue New and Continuation Awards
- Grant Closeout



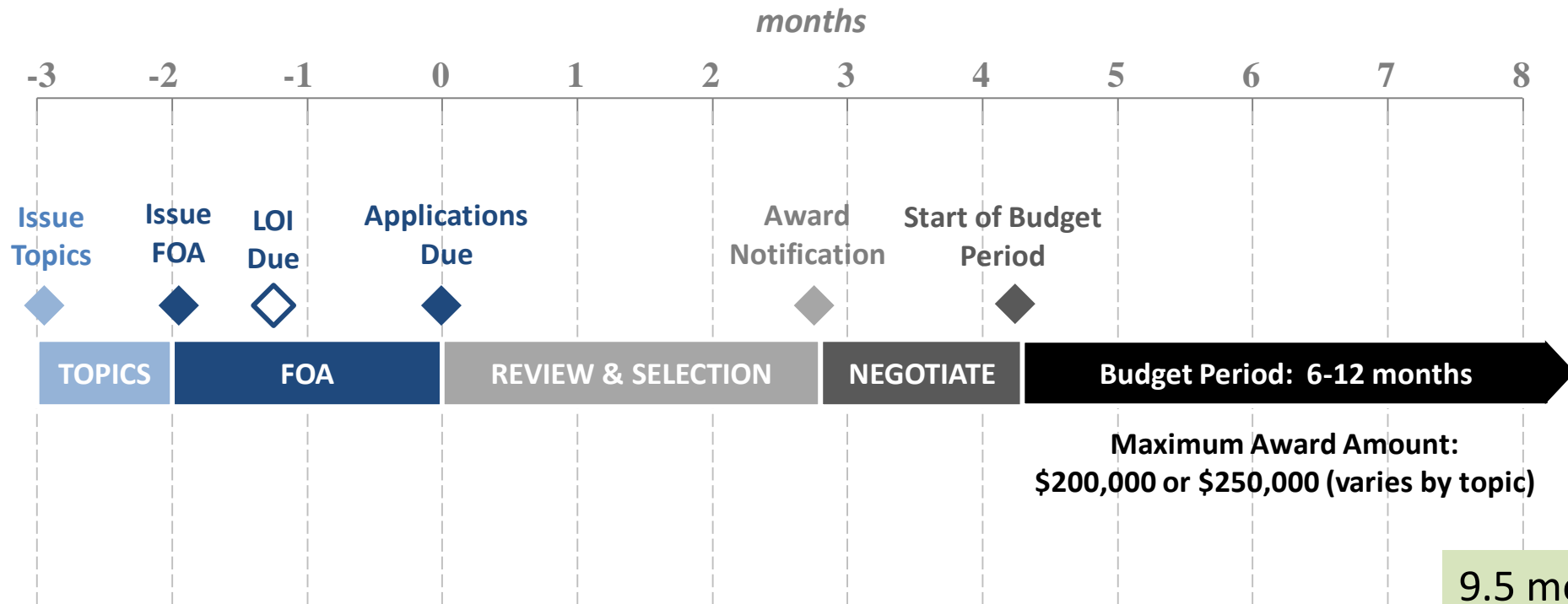
## *Single Administrative Office for Applicants*

### **DOE SBIR/STTR Programs Office**

- Develop Funding Opportunity Announcements
- Administer Review and Selection Process
- Ensure Compliance with SBIR/STTR Legislation
- Conduct Outreach



# Phase I Application & Award Timelines



9.5 months after start of Phase I award, your Phase II application is due





# Schedule: FY 2024 Phase I, Releases 1 & 2



| Phase I FOA Schedule                 | Release 1                  | Release 2                    |
|--------------------------------------|----------------------------|------------------------------|
| Topics Issued                        | Monday, July 10, 2023      | Monday, November 6, 2023     |
| Webinar(s)                           | Week of July 17, 2023      | Week of November 13, 2023    |
| FOA Issued                           | Monday, August 7, 2023     | Monday, December 11, 2023    |
| Webinar(s)                           | Friday, August 11, 2023    | Friday, December 15, 2023    |
| Letters of Intent (LOI) Due          | Monday, August 28, 2023    | Wednesday, January 3, 2024   |
| Non-Responsive LOI Feedback Provided | Monday, September 18, 2023 | Tuesday, January 23, 2024    |
| Applications Due                     | Tuesday, October 10, 2023  | Wednesday, February 21, 2024 |
| Award Notification                   | Tuesday, January 02, 2023* | Monday, May 20, 2024*        |
| Projected Grant Start Date           | Monday, February 12, 2024  | Monday, July 1, 2024         |

*\*preliminary dates subject to change*



# Schedule: FY 2024 Phase II, Releases 1 & 2



| Phase II FOA Schedule                             | Release 1                   | Release 2                   |
|---|-----------------------------|-----------------------------|
| FOA Issued  | Monday, October 16, 2023    | Monday, February 26, 2024   |
| Letters of Intent Due (All Phase II Applications) | Tuesday, November 7, 2023   | Wednesday, March 27, 2024   |
| Full Applications Due                             | Tuesday, December 5, 2023   | Tuesday, April 30, 2024     |
| Award Notification                                | Tuesday, February 20, 2024* | Monday, July 29, 2024*      |
| Grant Start Date                                  | Monday, April 1, 2024       | Tuesday, September 10, 2024 |

*\*preliminary dates subject to change*



# Application Assistance



[Phase 0 application assistance](#) for first-time DOE applicants  
(open now for Phase I Release 1!)

Email us!

General questions: [sbir-sttr@science.doe.gov](mailto:sbir-sttr@science.doe.gov)

Get Connected!

Subscribe to our mailing list: <https://science.osti.gov/sbir>

Stay Connected!



Recorded Topic and FOA Webinars

Ask-Us Anything During the Application Process  
Check your email next week!



Being on our mailing list  
is the most important  
way to stay up to date on  
our funding  
opportunities!



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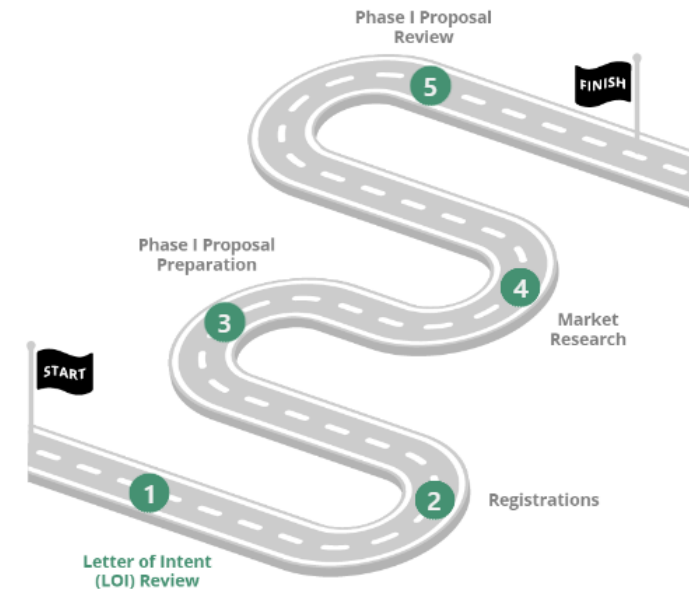
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# Phase 0 Application Assistance



- Do you need help preparing your first DOE SBIR/STTR Phase I application?
- All first –timers are eligible (first come-first serve)
- Go/No-go discussion and decision:
  - Responsive to topic
  - Novel idea
  - Ability to conduct the proposed R&D
- [Apply portal](#) opens when Topics are released
- “Ample” opportunity to enroll
- Phase 0 program informational webinar hosted by provider.
- [Signup for Phase 0 mailing list](#)

## Core Services



## Optional Services (Pick 1 or 2):

- Small business training/mentoring
- Technology Advice & Consultation
- Intellectual Rates & Financial Assistance
- Travel Assistance



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# 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



## U.S. Department of Energy

Small Business Innovation Research (SBIR) and  
Small Business Technology Transfer (STTR) Program

### Topics

FY 2024

Phase I

Release 1

July 10, 2023

- 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



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# More about Topics



- DOE Mission-Focused Specific Topics
- R&D funding limits and type of applications accepted are specified
- At Topic Webinar (recorded and available [here](#)), DOE Program Managers discuss the topic then Q&A
- Letter of Intent and Application must specify same Topic and Subtopic

## C57-17 COMPLEX DATA: ADVANCED DATA ANALYTIC TECHNOLOGIES FOR SYSTEMS BIOLOGY AND BIOENERGY

|   |  |
|---|--|
| Maximum Phase I Award Amount: \$250,000 | Maximum Phase II Award Amount: \$1,600,000 |
| Accepting SBIR Applications: YES        | Accepting STTR Applications: YES           |

The Biological and Environmental Research (BER) program supports transformative science to achieve a predictive understanding of complex biological, earth and environmental systems. BER's Biological Systems Science Division (BSSD) programs integrate multidisciplinary scientific discovery driven science with technology development to understand plant and microbial systems relevant to national priorities in sustainable energy and innovation in life sciences. BSSD program spans Bioenergy research focused on plant genomics, microbial conversion, sustainable energy, Biosystems Design (including secure biosystems design), and Environmental Microbiome Research. BSSD's Computational Biology, Biomolecular Characterization and Bioimaging (including Quantum enabled Bioimaging) programs combined with DOE User Facilities (such as the Joint Genome Institute <https://gbc-word-edit.officeapps.live.com/we/jgi.doe.gov> and the Environmental Molecular Sciences Laboratory <https://www.emsl.pnnl.gov/science>) serve as key enabling capabilities.

### a. Complex Data: Advanced Data Analytic Technologies for Systems Biology and Bioenergy

BSSD science programs generate very large, complex, and multimodal data sets that have all the characteristics of Big Data – these data sets and associated analytics are critical to BSSD scientific discovery and bio-design applications. Technology improvements in biological instruments from sequencers to advanced imaging devices are continuing to advance at exponential rates, with data volumes in petabytes today and expected to grow to exabytes in the future. These data are highly complex ranging from high throughput “omics” data, protein structures, experimental and contextual environmental data across multiple scales of observations spanning molecular to cellular to multicellular scale (plants and microbial communities); multiscale 3D and 4D images for conceptualizing and visualizing spatiotemporal expression and function of biomolecules, intracellular structures, and the flux of materials across cellular compartments.



# Subtopics

- Open communication permitted about the topic scope with DOE Technical Topic Managers
- Letter of Intent and Application must specify same Topic and Subtopic
- ***Reading references is recommended***
- You are expected to be highly knowledgeable in your technology area, latest developments, what are the barriers, what are the competing technologies.

Currently, the ability to generate complex multi- “omic” environmental data and associated meta-datasets greatly exceeds the ability to interpret these data. The current need is for general solutions for managing and

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[Return to Table of Contents](#)

interpreting complex data and extracting knowledge and information from data sets rather than generating primary data. The objective of analytical and algorithmic approaches could include taxonomy but should also enable integration and functional connection of experimental components. The objective of generalized approaches to data integration should be generation of testable hypotheses and models that propose functional or causal connections among system components.

Innovative solutions and frameworks for management and analysis of large-scale, multimodal, and multiscale data leveraging artificial intelligence and machine learning methods, that enhance effectiveness and efficiency of data processing for investigations across spatial scales and scientific disciplines and computational approaches correlating protein structural data with genome sequencing and functional information are needed. These include interoperable computational platforms and data resources to facilitate specialized data workflows starting from data collection, processing, access, sharing, integration, and analysis for large-scale, integrated omics, instrumental, and imaging datasets. Novel approaches, software tools and modelling frameworks for managing, integrating, and analyzing ‘big data’ will be considered.

Questions – Contact: Ramana Madupu, [Ramana.Madupu@science.doe.gov](mailto:Ramana.Madupu@science.doe.gov), or Resham Kulkarni [Resham.Kulkarni@science.doe.gov](mailto:Resham.Kulkarni@science.doe.gov)

## b. 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: Ramana Madupu, [Ramana.Madupu@science.doe.gov](mailto:Ramana.Madupu@science.doe.gov), or Resham Kulkarni [Resham.Kulkarni@science.doe.gov](mailto:Resham.Kulkarni@science.doe.gov)

## References:

1. U.S. Department of Energy, ASCR BER Exascale Requirements Review (GSP-Related Report) <https://genomicscience.energy.gov/ascr-ber-exascale-requirements-review-gsp-related-report/> (June 22, 2023)



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# 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.
- Two TTO subtopics in this release





# Technology Transfer Opportunity - Topics

- 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



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## C57-15 TECHNOLOGY TRANSFER OPPORTUNITIES: BASIC ENERGY SCIENCES

|   |  |
|---|--|
| Maximum Phase I Award Amount: \$250,000 | Maximum Phase II Award Amount: \$1,600,000 |
| Accepting SBIR Applications: YES        | Accepting STTR Applications: YES           |

Grant applications are sought in the following subtopics:

### a. TTO: Advanced X-Ray Emission Spectrometer

To fully utilize the high flux and small beam size of DOE's X-ray synchrotron radiation sources, there is an urgent need for a giant leap forward in the manufacturing capabilities of advanced X-ray emission spectrometers that are required for simultaneous multi-element X-ray Emission Spectroscopy (XES) measurements. To meet these goals, Argonne National Laboratory researchers have developed a customizable strategy to manufacture and deploy advanced X-ray emission spectrometers at synchrotron beamlines (US Patent Pending #17/692,004). The high efficiency X-ray emission spectrometer is capable of simultaneous measurements of multiple emission lines for various X-ray emission techniques such as resonant XES, High Energy Resolution Fluorescence Detection X-ray Absorption Spectroscopy (HERFD-XAS), and microprobe measurements. The central purpose of the spectrometer is the simultaneous acquisition of spectra from multiple X-ray emission lines that can interrogate various mixed element species to extract electronic information such as spin dynamics/spin state, oxidation state and orbital interactions within the materials. The high efficiency, flexibility, and the ability to simultaneously measure a variety of emission lines that contain electronic and molecular information, as well as the relative ease of setup for the spectrometer module, will interest any synchrotron radiation facility with XES capabilities, as well as a variety of commercial laboratory X-ray sources. The current X-ray Emission Spectrometer (XES) includes up to 7 K $\beta$  emission lines consisting of a variety of transition metal elements including Zn, Cu, Ni, Co, Fe, Mn, and Cr.

Partnership is sought with industry to rapidly commercialize this technique for wide applications at various synchrotron facilities and other X-ray delivery systems. The joint advanced R&D project will focus on the following aspects:

- Improve XES hosting box and fly-path with metal enclosures for better sealing and X-ray shielding to minimize the scattering.
- Design and expand the current 7 element XES spectrometer to various sizes of pixel array area detectors.
- Scale-up the procedure for high-throughput crystal holder fabrication and crystal installation, aiming at experiment specific crystal sets for different X-ray emission spectrometers such as a set of crystals of Ni K $\beta$ , Co K $\beta$ , and Mn K $\beta$  for Li-ion battery research.
- Investigate and expand the current 7 element XES spectrometer capability (Z from 24 to 30) to include an additional 18 elements (Z from 31 to 48).
- Design a commercialization-ready assembly scheme for a revolving crystal holder that allows fast change of crystals and flexible operation to meet various experimental requirements at synchrotron beamlines such as X-ray emission mapping or/and time-resolved X-ray emission measurements. Crystal changes should be on the order of a few minutes.

### Licensing Information:

Argonne National Laboratory

Contact: Elina Kasman, [ekasman@anl.gov](mailto:ekasman@anl.gov), (630) 252-9395

ANL Technology ID: IN-21-050; IN-21-165, SF-21-050

Patent Status: US Patent pending #17/692,004

Questions – Contact: Dava Keavney, [Dava.Keavney@science.doe.gov](mailto:Dava.Keavney@science.doe.gov)

# Funding Opportunity Announcement (FOA)

- Available at the [DOE SBIR website](#) or [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

DEPARTMENT OF ENERGY (DOE)  
SMALL BUSINESS INNOVATION RESEARCH (SBIR)  
SMALL BUSINESS TECHNOLOGY TRANSFER (STTR)



FY 2024 PHASE I RELEASE 1

FUNDING OPPORTUNITY ANNOUNCEMENT (FOA) NUMBER:  
DE-FOA-0003110  
FOA TYPE: INITIAL  
CFDA NUMBER: 81.049

|  |  |
|--|--|
| FOA Issue Date:                            | August 7, 2023                         |
| Submission Deadline for Letters of Intent: | August 28, 2023 5:00 PM Eastern Time   |
| Submission Deadline for Applications:      | October 10, 2023 11:59 PM Eastern Time |



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# 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 is Required

- Submit LOI online directly to the DOE Portfolio Analysis and Management System (PAMS) website: <https://pamspublic.science.energy.gov/>
  - Due Monday, August 28 by 5 PM EDT
  - 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

The screenshot shows the DOE Portfolio Analysis and Management System (PAMS) login page. At the top, the U.S. Department of Energy logo and 'Office of Science' are visible, along with the title 'Portfolio Analysis And Management System'. Below this is a navigation bar with 'Login' and 'Existing User' tabs. A warning message for Mac users is displayed. The main content area features an 'Existing User Login' form with fields for 'Username' and 'Password', a 'Login' button, and a 'Forgot Password' link. To the right, there is a 'New User Registration' section with links for 'Search Solicitations' and 'Create New PAMS Account', and an 'Other Links' section with links for 'Award Search', 'Recommended Settings', 'Contact Us', and 'PAMS External User Guide'. At the bottom, a 'System Use Notification' section provides information about the system's security and privacy policies.





# Letter of Intent: Sample Abstract

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.

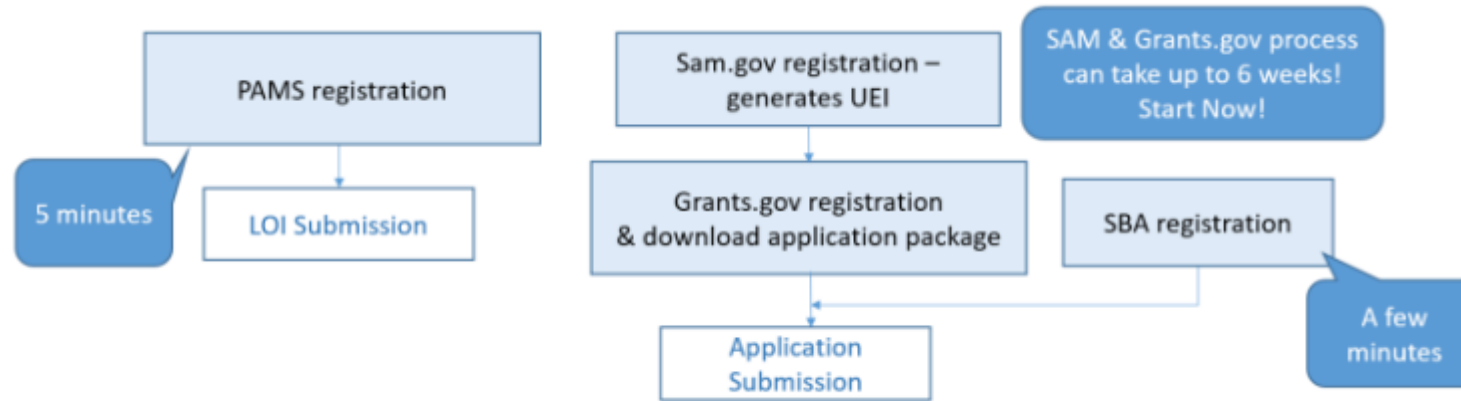
*Clearly explain why the proposed R&D is responsive to the subtopic*

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.

*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

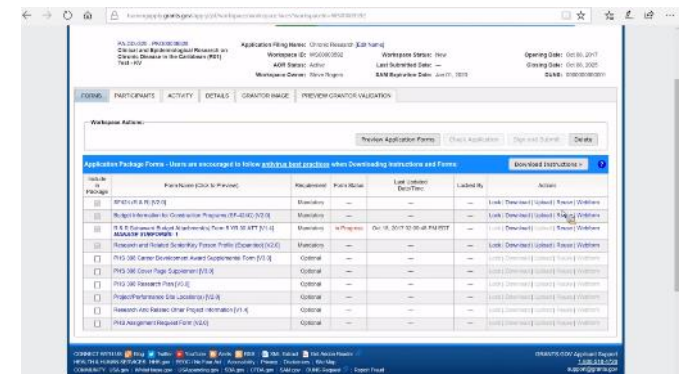


- Applications must be submitted through [Grants.gov](https://www.grants.gov)
- Registration at Grants.gov is a 3 step process
  - Applicants must register with SAM at <https://www.sam.gov> and obtain a Unique Entity Identifier (UEI)\*
    - Complete a SAM registration. *Can take 8 weeks!*
    - Must 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
  - <https://www.grants.gov/applicants/workspace-overview.html>



# Elements of Your Application

- Project Narrative
  - Page and word limits
    - Phase I: 15 pages, 7,500 words
    - **New Requirement - PIER Plan**
  - **Also new - Foreign Relationship Disclosure**
- 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>
- SBIR/STTR Information form
- Data Management Plan

Phase I Application Checklist

| Name of Document  | Format | Attach to   |
|---|--------|---|
| Application for Federal Assistance, SF-424 Form   | PDF    | N/A   |
| Research and Related: Budget Form   | PDF    | N/A   |
| Additional Senior Key Persons, if applicable  | PDF    | Field A. 9  |
| Additional Equipment, if applicable   | PDF    | Field C. 11   |
| Budget Justification  | PDF    | Field K   |
| Research and Related: Senior/Key Person Profile Form  | PDF    | N/A   |
| Biographical Sketch for each person   | PDF    | Appropriate Block                                     |
| Current & Pending Support for each person, if applicable  | PDF    | Appropriate Block                                     |
| Research and Related: Other Project Information Form  | PDF    | N/A   |
| Project Abstract and Summary  | PDF    | Field 7   |
| Project Narrative (PN)<br><b>New – Promoting Inclusive and Equitable Research (PIER) Plan</b>         | PDF    | Field 8<br>PIER Plan is included as an appendix to PN |
| Bibliography and References Cited, if applicable  | PDF    | Include in Project Narrative                          |
| Facilities and Other Resources, if applicable   | PDF    | Include in Project Narrative                          |
| Equipment, if applicable  | PDF    | Include in Project Narrative                          |
| Other— Data Management Plan   | PDF    | Field 12  |
| Other— Disclosure of Foreign Relationships  | PDF    | Field 12  |
| Other—Level of Effort & Max Funding Worksheet   | PDF    | Field 12  |
| Other—Letter of Commitment for consultant, sub-award, or research institution, if applicable          | PDF    | Field 12  |
| Other—Letters of Support, if applicable   | PDF    | Field 12  |
| Other—SBA Company Registration  | PDF    | Field 12  |
| Other – Company Commercialization Report from SBIR.gov for STTR-Only applications, if applicable      | PDF    | Field 12  |
| Authorization for non-DOE/NNSA FFRDCs, if applicable  | PDF    | Field 12  |
| Authorization for DOE/NNSA FFRDC, if applicable and if available                                      | PDF    | Field 12  |
| Research and Related: Sub-award Budget Form, if applicable  | PDF    | N/A   |
| Budget Justification for each Sub-award   | PDF    | Appropriate Block                                     |
| SF-LLL, Disclosure of Lobbying Activities, if applicable  | PDF    | N/A   |
| Project/Performance Site Location(s)  | PDF    | N/A   |
| SBIR/STTR Information Form  | PDF    | N/A   |
| Phase I Commercialization Plan  | PDF    | Field 8   |
| Company Commercialization Report from SBIR.gov for SBIR or Both SBIR/STTR applications, if applicable | PDF    | Field 9   |

Note: N/A is for a Grants.gov supported form



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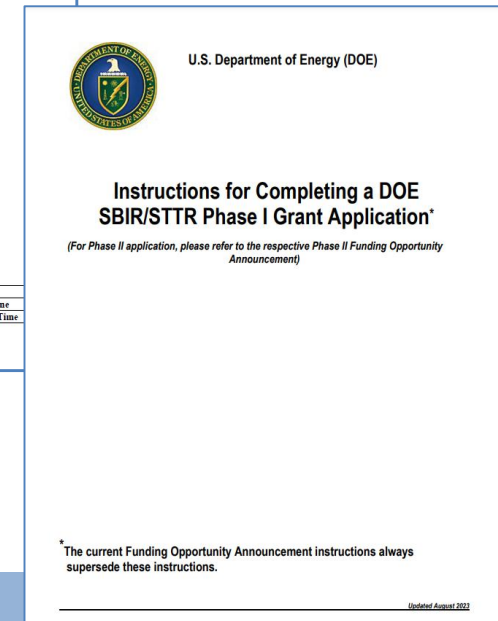
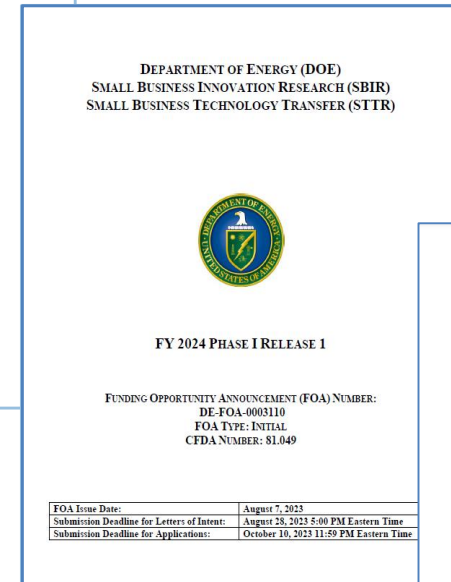
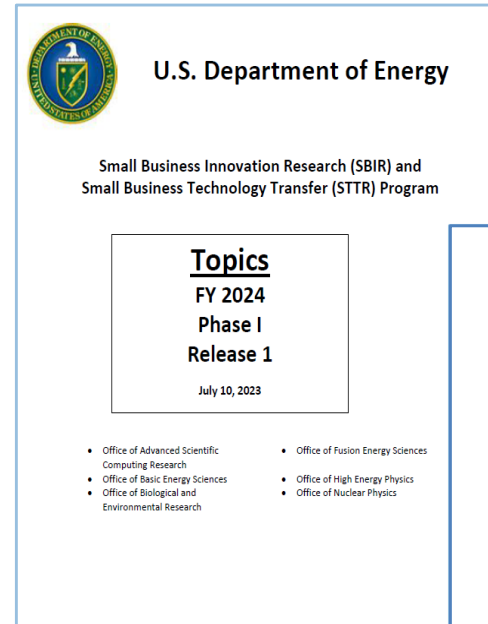
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# Completing an Application



- Important documents to assist you with completing the application package
  - Topics Document, Funding Opportunity Announcement, & Instructions are available at the [DOE SBIR/STTR website](https://doetutorials.dawnbreaker.com/)
  - Online tutorials: <https://doetutorials.dawnbreaker.com/>
  - *Coming later this month, a new application guide! Look for an email announcing the release.*



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# 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.





# DOE SBIR & STTR Programs: What's New?

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# Foreign Relationships Disclosure Form



- Per the SBIR/STTR Extension Act of 2022, you are now **required** to submit a Disclosure of Foreign Relationships using the form on: <https://science.osti.gov/sbir/Applicant-Resources/Grant-Application>
- Your application may be declined if the form is not included
- The disclosure is attached to Field 12 of the Research and Related Other Project Information Form
- Even if your small business has no foreign relationships, you must complete the form *and sign it* to certify



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# NEW REQUIREMENT - Promoting Inclusive and Equitable Research (PIER) Plan



All applications must include a Promoting Inclusive and Equitable Research (PIER) Plan as an appendix to the research project narrative. The PIER Plan will be evaluated as part of the overall technical merit review.

The PIER plan should describe the strategies and activities of the applicant to promote equity and inclusion as an integrated element of the research and development project within the proposing small business concern.

Plans may include, but are not limited to:

- Plans of your small business concern and collaborating institutions (if applicable) to recruit individuals from diverse backgrounds and groups historically underrepresented in the research community;
- Plans to contribute to a research and development environment that fosters a safe, positive, and inclusive workplace, a sense of belonging among all personnel; and/or
- Supporting training, mentoring, and partnering with underrepresented communities. Plans may leverage existing diversity, equity, accessibility, and inclusion efforts of the applicant small business concern, but should not be a statement of broad principles.



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# Promoting Inclusive and Equitable Research (PIER) Plan



Applicants are encouraged to focus on areas, including but not limited to:

- The composition of the project team and partnering institutions
- The research environment—cultivating respectful, professional and accessible environments
- Equitable and inclusive implementation of the research project
- Partnering with underrepresented institutions and/or underserved communities

PIER Plan Requirements:

- Provided as an Appendix to the Project Narrative and 1-3 pages in length.
- May leverage existing Diversity, Equity, Inclusivity and Accessibility (DEIA) plans, but the plan should be tailored to and integral to the proposed project.
- Should include at least one specific, measurable, attainable, realistic and time-bound (SMART) milestone.
- The progress relative to the milestone will be a reporting requirement.
- The complexity and detail of PIER Plans are expected to increase with the size of the small business and the number of personnel supported.
- Funds may be requested for execution of PIER Plan consistent with allowable cost guidelines for financial assistance.



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# Promoting Inclusive and Equitable Research (PIER) Plan



## Phase I Note:

Since the Phase I award is of limited duration (6 – 12 months) and the award size is \$200,000 to \$250,000, it is expected that, one-page PIER Plans are suitable and will be most typical. The PIER Plan should be simple, focused, and relevant to the scope and duration of the award.

Visit our new web page providing [PIER Plan resources](#)

*Genuine PIER plans are sought!*



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# Proprietary Data



An application may include technical data and other data, including trade secrets and commercial or financial information that are privileged or confidential, which the applicant does not want disclosed to the public or used by the Government for any purpose other than application evaluation.

Certain documents may contain proprietary information.



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# Proprietary Data



To protect such data, the following guidelines must be followed:

The following legend must appear on the title page of the document:

*This proposal contains information that shall not be disclosed outside the Federal Government and shall not be duplicated, used, or disclosed in whole or in part for any purpose other than evaluation of this proposal, unless authorized by law. The Government shall have the right to duplicate, use, or disclose the data to the extent provided in the resulting contract if an award is made as a result of the submission of this proposal. The information subject to these restrictions are contained on all pages of the proposal except for pages **[insert page numbers or other identification of pages that contain no restricted information.]***

The following legend must appear on each page of the proposal that contains information the Applicant wishes to protect:

*Use or disclosure of information contained on this sheet is subject to the restriction on the title page of this proposal.*

There are no longer marking requirements (highlight, asterisks, brackets) of specific text containing protected information.

[See Example](#)



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# What makes you a good fit with DOE?



## 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
- *The first three review criteria are equally weighted and of greater weight than the fourth criterion*



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# Top Application Errors



Updating SAM registration at the last minute – and unable to submit on Grants.gov

Fail to submit letter of intent by the deadline

Fail to check level of effort is compliant (see slide 6)

Fail to meet PI effort requirements (a minimum of 3 hours/week on average)

Incorrect/missing marking of proprietary data. Instructions in FOA

Missing letters of commitment, required for each consultant and subaward

Proposing a technology that is not new

**Unresponsive to the subtopic/ Not clearly addressing technology need**

Not including the required documents

Proposal reflects unfamiliarity with the current literature

Budget form and budget justification are in agreement (to the penny). Subawards too!

**Not fully reading the FOA!!**



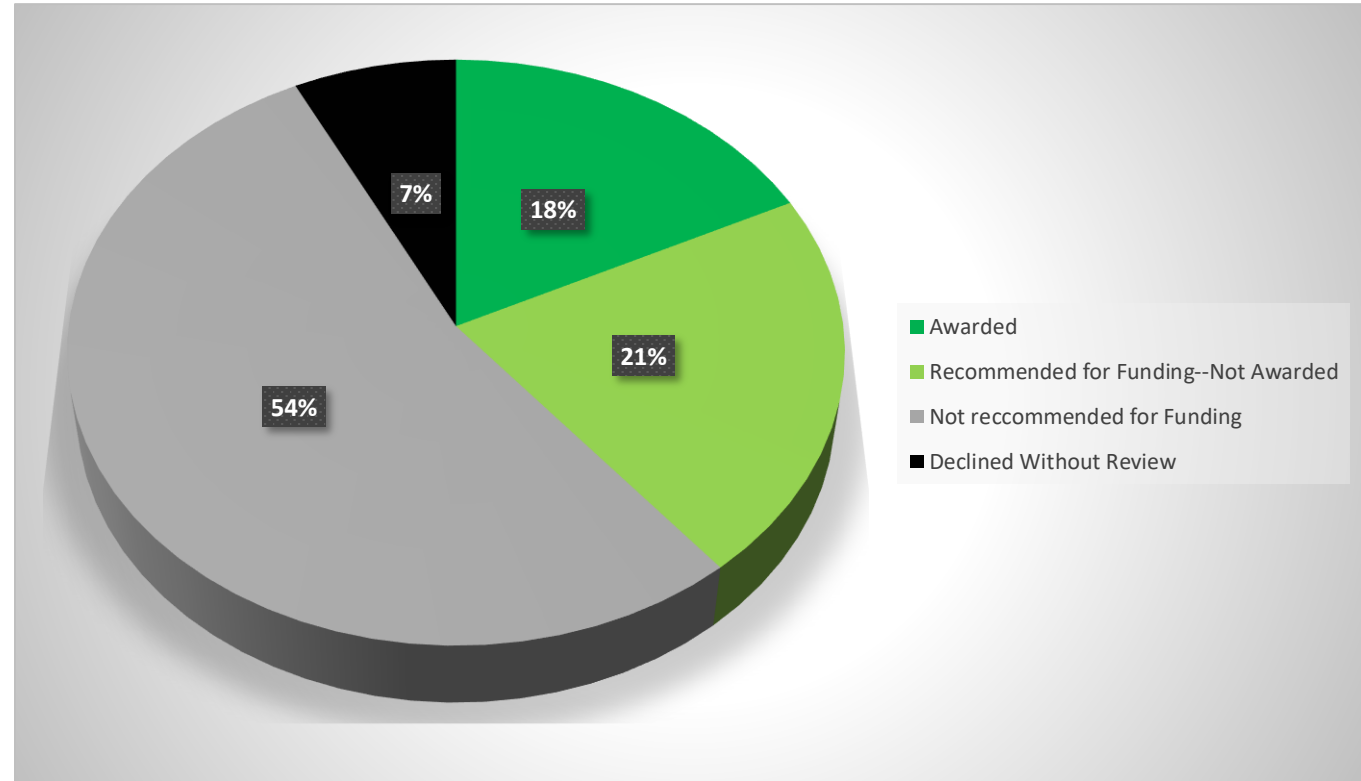
# Review and Selection of Applications

- DOE primarily uses external peer review to evaluate your applications
  - Typically at least 3 technical reviewers
- 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 2023

- Phase I
  - 2110 applications
  - 374 awards

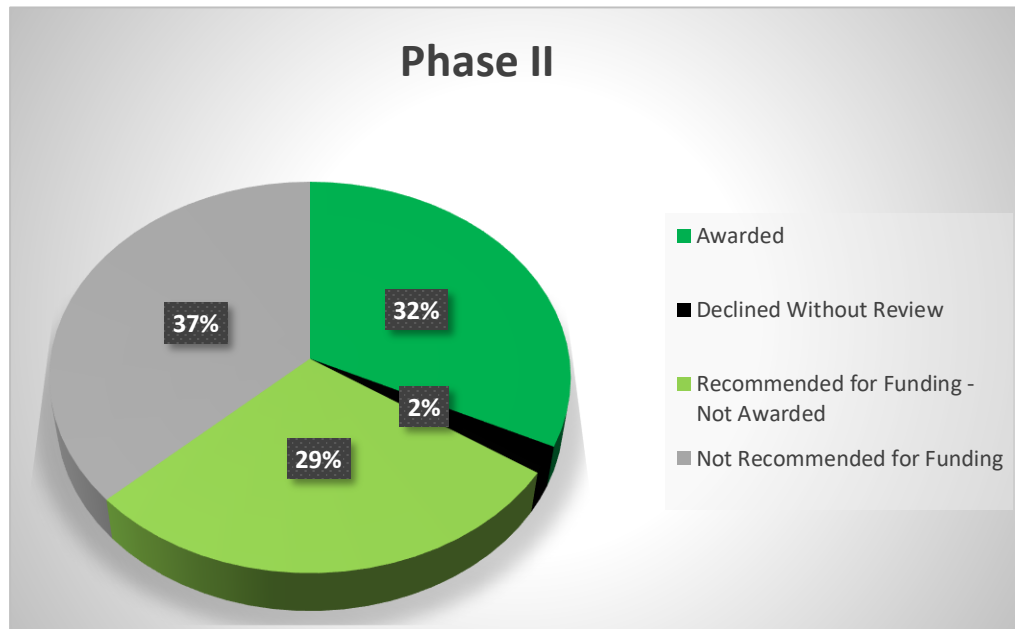




# Phase II Application & Award Statistics for FY 2023

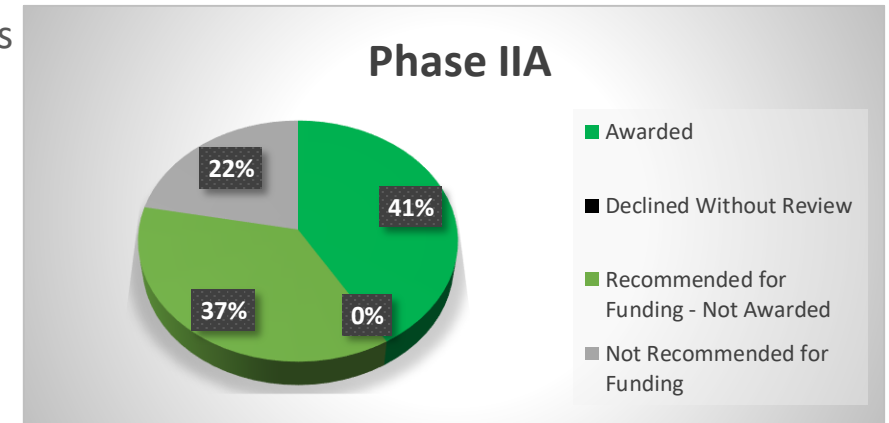
- Phase II

- 401 applications
- 129 awards



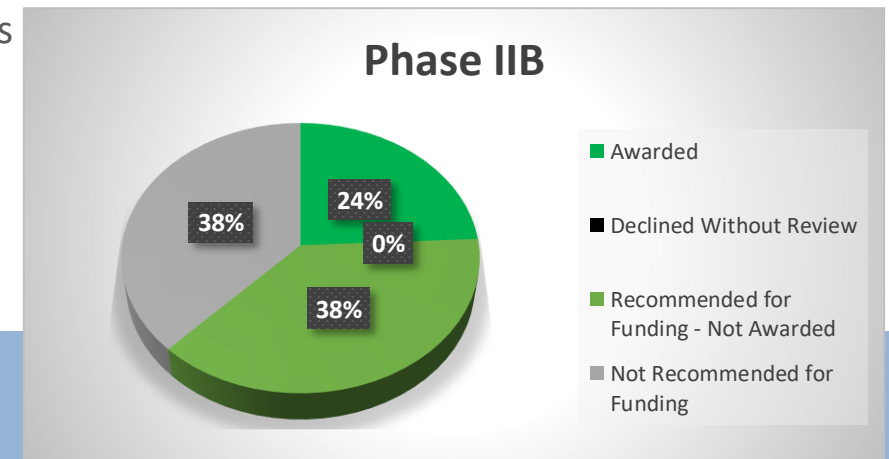
- Phase IIA

- 41 applications
- 17 awards



- Phase IIB

- 66 applications
- 16 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



- New for Applicants and Awardees! [DOE SBIR/STTR Partnering Resources](#)
  - Looking for SMEs, collaborators, subcontractors?
  - Understand related research being done at research institutes
  - Email [carol.rabke@science.doe.gov](mailto:carol.rabke@science.doe.gov) to discuss your partnering needs



## Technical and Business Assistance (TABA)

\$6,500 above maximum award amount in Phase I

- Select your own vendor
- Use DOE vendor

\$50,000 above maximum award for Phase II

Current vendor: <http://www.larta.org/doecap>

- Energy I-Corps
  - 40 are selected
  - Designed to educate on entrepreneurial concepts
  - 2 months training at no cost to participants
  - Customer discovery process



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# 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 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.





# There are many Success Stories



<https://science.osti.gov/sbir/SBIR-STTR-Phase-III-Success-Stories>



Three years from the end of its first SBIR award Advanced Conductor Technologies has achieved a sales revenue of over \$0.5M, including several purchases by LBNL to build the first CORC®-based accelerator magnet.

## IMPACT

Advanced Conductor Technologies' CORC® cable will enable magnets producing fields of 20 T and above for the next generation fusion reactors, research and medical particle accelerators.

## DOE PROGRAMS

Fusion Energy Sciences (FES), High Energy Physics (HEP).



## PHASE III SUCCESS

After support from multiple SBIRs, including a recent DOE Phase I, ColdQuanta has raised \$17M in two rounds of VC investments and doubled its employee count.

## IMPACT

ColdQuanta's precision instruments trap and manipulate atoms to produce arrays of qubits for quantum-computing and quantum-networking hardware.

## DOE PROGRAM OFFICES

Advanced Scientific Computing Research (ASCR).



A quarter-century-old polarized helium target continues to improve through multiple alliances, record-breaking innovations, and progressively more powerful lasers, like this 200W laser developed by Raytum Photonics.

## PHASE III SUCCESS

Raytum Photonics has achieved significant revenue targets leveraging DOE SBIR funding

## IMPACT

Raytum breakthroughs have enabled leaps forward in the study of subatomic particles

## DOE PROGRAM

Office of Nuclear Physics (NP)

<http://www.raytum-photonics.com/>



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# DOE Office of Inspector General: Fraud, Waste & Abuse



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# 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



# DOE Office of Inspector General

## 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.

<https://www.justice.gov/usao-mdfl/pr/scientists-sentenced-prison-defrauding-small-business-innovation-research-program>



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# 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](http://ig.energy.gov)  
E-mail: [ighotline@hq.doe.gov](mailto: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



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# DOE SBIR/STTR Resources



Early-Stage  
Innovation  
SBIR & STTR

Commercialization  
Private Funding



[Applicant Resources](#)

[Phase 0 Application Assistance](#)

Sequential Phase IIs

Phase I Commercialization Program

[Phase Shift I & Phase Shift II](#)

[TABAs](#)

[Partnering Resources](#) and [Phase II Workshops](#)

Diversity Supplement for Phase II Awardees



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# Other DOE Resources



Early-Stage  
Innovation  
SBIR & STTR

Commercialization  
Private Funding



Partnering with National Laboratories  
National Labs – POCs and Core Capabilities  
Technology Commercialization Fund (TCF)

Demonstration Facilities: Idaho, NREL, ORNL  
Office of Clean Energy Demonstrations  
Loan Programs Office

Lab-Embedded Entrepreneurship Program (LEEP)

American-Made Challenges

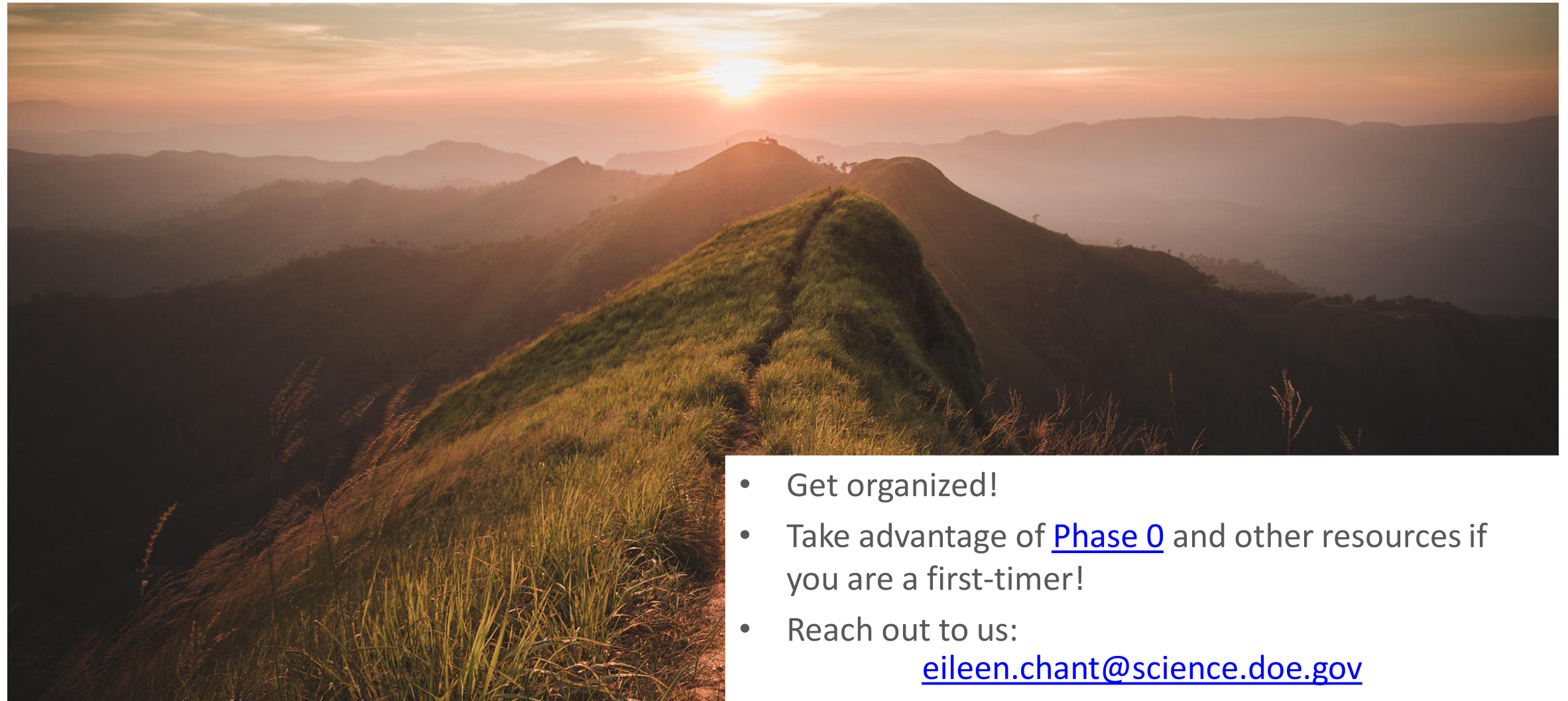
National Energy Research Scientific Computing Center (NERSC)



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# Thank you!



- Get organized!
- Take advantage of [Phase 0](#) and other resources if you are a first-timer!
- Reach out to us:

[eileen.chant@science.doe.gov](mailto:eileen.chant@science.doe.gov)

[sbir-sttr@science.doe.gov](mailto:sbir-sttr@science.doe.gov)

(301) 903-5707



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