

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



FY 2022 PHASE I RELEASE 2

**FUNDING OPPORTUNITY ANNOUNCEMENT (FOA) NUMBER:
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FOA Issue Date:	December 13, 2021
Submission Deadline for Letters of Intent:	January 3, 2022, at 5:00 PM Eastern Time
Submission Deadline for Applications:	February 15, 2022, at 11:59 PM Eastern Time

UPDATES AND REMINDERS

RECOMMENDATION

Please register in all systems as soon as possible, as described in [Section VIII](#) of this FOA. You are also encouraged to submit letters of intent and applications well before the deadline.

TECHNICAL AND BUSINESS ASSISTANCE

DOE has changed the terminology associated with technical and business assistance to be consistent with statutory references and terminology at other agencies. In the FOA, the term technical and business assistance (TABA) is used in place of commercialization assistance that was used in past FOAs.

COMMERCIALIZATION HISTORY REPORT

DOE has changed the reporting requirements for the commercialization history report

COMMERCIALIZATION HISTORY SUBMISSION FOR STTR-ONLY APPLICATIONS

Review the instructions for how to submit the commercialization history for STTR-only applications.

CURRENT AND PENDING SUPPORT AND BIOSKETCHES

The instructions for the content of current and pending support and biosketches have changed. Please read the instructions carefully and follow them.

REPORTING AND ADMINISTRATIVE REQUIREMENTS

DOE is implementing enhanced reporting requirements for applications and awards. Reporting and administrative requirements, including but not limited to those pertaining to other sources of support and potential conflicts of interest or commitment, are subject to change before the Federal award date. The terms and conditions of award will specify changed requirements: Applicants have the right to reject any proposed awards. Terms and conditions may be modified at the time of an award modification: Recipients have the right to reject such modifications and allow an award to expire.

UNIQUE ENTITY IDENTIFIER (UEI)

The Federal Government is transitioning from the Data Universal Numbering System (DUNS), assigned by Dun and Bradstreet at <https://fedgov.dnb.com/> to the UEI, assigned by the System for Award Management at <https://www.sam.gov>. Information systems including SAM.gov, Grants.gov and PAMS (<https://pamspublic.science.energy.gov>) are being updated: Please follow the on-screen instructions or contact each system's Help Desk for additional information. Detailed information about the transition is available at <https://www.gsa.gov/about-us/organization/federal-acquisition-service/office-of-systems-management/integrated-award-environment-iae/iae-information-kit/unique-entity-identifier-update>.

AVOIDING ERRORS

The following advice is compiled from actual experiences of applicants for financial assistance awards.

- Please ensure that the research narrative is comprised of one and only one Portable Document Format (PDF) file, including all appendices, when it is attached to the SF-424(R&R) form.
- Please ensure that all attachments to your application have filenames of less than 50 characters.
- When using the PAMS website at <https://pamspublic.science.energy.gov>, please avoid using the back-arrow button in your web browser to navigate.
- Please ensure that the application contains no sensitive or protected personally identifiable information (PII).
- Please ensure that the budget is calculated using the applicable negotiated indirect cost and fringe benefit rates.

Online assistance is available for application preparation: <https://science.osti.gov/SBIRLearning>.

GRANTS.GOV WORKSPACE

Applications submitted through Grants.gov at <https://www.Grants.gov> must be submitted through a “Workspace,” or through an applicant’s system-to-system software. Workspace permits members of a team to simultaneously work on their application in an online collaborative environment. Application forms may exist as both online webforms and downloadable forms. More information is available at <https://www.grants.gov/web/grants/applicants/workspace-overview.html>.

WHERE TO SUBMIT

Applications must be submitted through Grants.gov to be considered for award. You cannot submit an application through [Grants.gov](https://www.Grants.gov) unless you are registered. Please read the registration requirements carefully and start the process immediately. See [Section VIII](#) of the FOA for more information.

WHERE TO FIND THE TOPICS

To download the FY 2022 Phase I Release 2 Topics in a searchable PDF file, please visit the DOE SBIR/STTR web site by clicking on the following link:
<https://science.osti.gov/sbir/Funding-Opportunities>.

DON’T FAIL THE INITIAL REVIEW

The number one reason applications are declined without merit review is applicants fail to submit a letter of intent or to submit required documents as specified [Section VIII, A](#). Also, be sure not to exceed the maximum award budget associated with an individual topic.

PHASE I PRINCIPAL INVESTIGATOR MEETING

Phase I Principal Investigators are expected to attend a DOE SBIR/STTR Phase I Principal Investigator Meeting. This two-day meeting will be held in the DC metro area. Applicants may include the registration cost (\$250) and Principal Investigator travel in their Phase I budget and, if necessary, registration cost (\$250) and travel expenses for a person from the small business representing the commercialization interests of the company to attend the DOE SBIR/STTR Phase I Principal Investigator Meeting.

GET ASSISTANCE WITH YOUR APPLICATION

If you are applying for a DOE SBIR or STTR grant for the first time, you may be able to get assistance with completing your Phase I application through DOE's Phase 0 assistance program. [Learn more](#).

PDF GENERATION

The research narrative in an application must be one single machine-readable PDF file that may not be scanned from a printed document and must be attached in Field 8 on the Grants.gov form. You are strongly encouraged to submit the combined research narrative file through a "Print to PDF" or equivalent process to ensure that all content is visible in one PDF file.

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SECTION I – FUNDING OPPORTUNITY DESCRIPTION

GENERAL INQUIRIES ABOUT THIS FOA SHOULD BE DIRECTED TO:

TECHNICAL/SCIENTIFIC PROGRAM CONTACT:

Please refer to the appropriate DOE Program Manager listed after each subtopic in the accompanying DOE SBIR/STTR Topics document located on the DOE SBIR/STTR Programs web site at <https://science.osti.gov/sbir/Funding-Opportunities>. Administrative Contact (questions about budgets and eligibility):

Carl Hebron, (301) 903-5707, SBIR-STTR@science.doe.gov

STATUTORY AUTHORITY

Section 646 of Public Law 95-91, U.S. Department of Energy Organization Act
Section 9 of the Small Business Act (15 U.S.C. § 638)

APPLICABLE REGULATIONS

Uniform Administrative Requirements, Cost Principles, and Audit Requirements for Federal Awards, codified at 2 CFR 200
U.S. Department of Energy Financial Assistance Rules, codified at 2 CFR 910
Size and Eligibility Requirements for the Small Business Innovation Research (SBIR) and Small Business Technology Transfer (STTR) Programs, codified at 13 CFR 121.701 *et seq.*

SUMMARY

This FOA describes two distinct funding opportunities for DOE: the Small Business Innovation Research (SBIR) and the Small Business Technology Transfer (STTR) programs for Fiscal Year (FY) 2022 Phase I Release 2.

A. PHASE I

Phase I grants resulting from this competition will be made during FY 2022 to small businesses with maximum award sizes of \$200,000 or \$250,000. Refer to the individual topic for its respective maximum award size (a proposal submitted that exceeds the maximum award size for the respective topic will be declined without review). The period of performance will depend on the scope of the effort but will not exceed 12 months. Please note that the Phase II grant application will be due approximately 9.5 months after the grant start date. This will be the only opportunity to submit a Phase II application for a Phase I award made under this FOA. Grantees that select a Phase I period of performance of 9 months or less will be able to complete their Phase I project prior to submission of their Phase II grant application. Grantees that select a Phase I longer than 9 months will be able to continue research and development (R&D) after their Phase II application is submitted but will not be able to utilize these results in the preparation of their Phase II application.

Phase I is to evaluate, insofar as possible, the scientific or technical merit and feasibility of ideas that appear to have commercial potential and/or substantial application in support of DOE mission research. The grant application should concentrate on research that will contribute to proving scientific or technical feasibility of the approach or concept. Success in a DOE Phase I is a prerequisite to further DOE support in Phase II.

Only awardees issued Phase I grants under this FOA are eligible to submit a Phase II application under the corresponding FY 2023 Phase II FOA, i.e., FY 2023 Phase II Release 2.

Approximately 40% of Phase I awardees submitting a Phase II application will receive a Phase II award. Instructions and eligibility requirements for submitting Phase II grant applications will be posted at a later date on the internet at <https://www.grants.gov/>.

Grant opportunities are announced pursuant to the Small Business Innovation Development Act of 1982 (Public Law 97-219), the Small Business Research and Development Enhancement Act of 1992 (Public Law 102-564), and the SBIR/STTR Reauthorization Act of 2011 (Public Law 112-81). Small businesses (see definition in [Section III – Eligibility Information](#)) with strong research capabilities in science or engineering are encouraged to apply. Some topics may seek manufacturing-related innovations in accordance with Executive Order 13329, “[Encouraging Innovation in Manufacturing](#).”

B. SBIR/STTR PROGRAM OBJECTIVES

The objectives of the SBIR/STTR programs include increasing private sector commercialization of technology developed through DOE-supported research and development (R&D), stimulating technological innovation in the private sector, encouraging participation by women-owned and minority-owned small businesses, and improving the return on investment from Federally-funded research for economic and social benefits to the nation. DOE will support high-quality research or R&D on innovative concepts concerning important mission-related scientific or engineering problems and opportunities that have high potential for commercialization. The DOE SBIR/STTR Programs do not support either basic science or demonstration projects.

Other than different eligibility requirements (see [Section III – Eligibility Information](#)), the major difference between the SBIR and STTR programs is that STTR grants must involve substantial cooperative research collaboration between the small business and a single Research Institution (see definitions in [Appendices/Reference Material](#) at the end of this FOA). However, it should be noted that the SBIR program also permits substantial collaboration between the small business and other organizations, including Research Institutions. The difference is that in SBIR, the collaboration is optional, while in STTR, the collaboration is required and must be cooperative in nature.

An important goal of the SBIR/STTR programs is the commercialization of DOE-supported research or R&D. Following the start of Phase I, DOE encourages its awardees to begin thinking about and seeking commitments from private sector or Federal non-SBIR/STTR funding sources

in anticipation of Phases II and III. The commitments should be obtained prior to the Phase II grant application submission. The commitment for Phase III may be made contingent on DOE-supported research or R&D meeting some specific technical objectives in Phase II, which if met, would justify funding to pursue further development for commercial purposes in Phase III. For Phase I applicants, more details will be provided in the Phase II FOA.

Under Phase III, it is intended that non-SBIR/STTR funds be used by the small business to pursue commercial applications of the R&D. That is, the non-SBIR/STTR Federal funding pays for research or R&D meeting DOE mission-related objectives identified by DOE Phases I and II; non-SBIR/STTR capital provides follow-on developmental funding to meet commercial objectives for Phase III. Additionally, under Phase III, Federal agencies may award non-SBIR/STTR funded follow-on grants or contracts to Phase I and Phase II awarded projects for (1) products or processes that meet the mission needs of those agencies, or (2) further research or R&D. The competition for SBIR/STTR Phase I and Phase II awards satisfies any competition requirement of the Federal Property and Administrative Services Act, and the Competition in Contracting Act. Therefore, an agency that funds an SBIR/STTR Phase III project is not required to conduct another competition in order to satisfy those statutory provisions.

The receipt of earlier Phase funding does not represent any commitment or obligation to fund a later Phase.

C. TECHNOLOGY TRANSFER OPPORTUNITY

A Technology Transfer Opportunity (TTO) is an opportunity for small businesses, in the course of an SBIR/STTR award, to leverage technology that has been developed at a participating DOE Research Institution. Please refer to the [Topics](#) document associated with this FOA. The TTO will be described in a particular subtopic and additional information may be obtained by using the link in the subtopic to the DOE Research Institution that has developed the technology. Typically, the technology was developed with DOE funding of either basic or applied research at a DOE Research Institution and is currently available for licensing. The level of technology maturity will vary, and applicants are encouraged to investigate what work has been done prior to submitting an application.

Those selected for award under a TTO subtopic, will be able to perform research and development of the technology during their Phase I or Phase II grants under the Government Use License. Please note that these are NOT commercial rights allowing an awardee to license, manufacture, or sell, but only rights to perform research and development during the performance of the award.

In addition, the DOE Research Institution will provide the grantee, prior to the start of its Phase I grant, with a no-cost, six-month option to license the technology. A written statement certifying that the small business and Research Institution have executed at least an option to license any patents owned by the Research Institution related to the TTO topic will be required after notification of selection of an award. It will be the responsibility of the small business to demonstrate adequate progress towards commercialization and to negotiate an extension to the option or convert the option to a license with the Research Institution. A copy of the option

agreement template will be available at the Research Institution's website owning the TTO. A small business' failure to maintain suitable commercialization rights (at least an option to a license) could result in delayed work, deferment or removal from the program.

SECTION II – AWARD INFORMATION

A. TYPE OF AWARD INSTRUMENT

DOE anticipates awarding grants under this FOA.

B. ESTIMATED FUNDING

Approximately \$54,000,000 is expected to be available for new awards under this FOA. Funding for all awards and future budget periods are contingent upon the availability of funds appropriated by Congress for the purpose of this program and the availability of future-year budget authority.

C. MAXIMUM AND MINIMUM AWARD SIZE

Ceiling (i.e., the maximum amount for an individual award made under this FOA): \$200,000 or \$250,000 for SBIR and STTR grants. Refer to the individual topic for its respective maximum award size.

Floor (i.e., the minimum amount for an individual award made under this FOA): N/A

D. EXPECTED NUMBER OF AWARDS

DOE anticipates making approximately 260 awards under this FOA. SBIR and STTR awards are subject to the availability of appropriated funds and this FOA does not obligate DOE to make any awards.

E. ANTICIPATED AWARD SIZE

The anticipated median Phase I award will be approximately \$200,000.

F. PERIOD OF PERFORMANCE

DOE anticipates making Phase I awards that will have a period of performance of 6 to 12 months with a start date of June 27, 2022.

Please note that applications for Phase II are due approximately 9.5 months after the grant start date. DOE permits periods of performance greater than 9 months to provide funding during the gap between Phase I and Phase II awards.

G. TYPE OF APPLICATION

DOE will accept new Phase I applications under this FOA.

SECTION III – ELIGIBILITY INFORMATION

A. ELIGIBLE SBIR AND STTR APPLICANTS

SBIR/STTR program eligibility requirements are in place to ensure that the funds go only to small, independent United States (U.S.) businesses. The regulations, 13 CFR 121, include restrictions about (1) the type of firm, (2) its ownership structure, and (3) the firm's size in terms of the number of employees.

The purpose of the requirement regarding type of firm is to target the awards to firms with an economic interest in developing the idea or research into a commercial application. The purpose of the ownership requirement is to limit the program to independent firms controlled by U.S. citizens or permanent resident aliens as a way of maximizing the likelihood that the funding will stimulate innovative activity within the U.S. economy. The purpose of the size restriction (number of employees of the firm and its affiliates) is to limit program funding to small business concerns with a unique capacity for innovation, which are more likely to be constrained by lack of access to such funding.

Ownership and Control

A majority (more than 50%) of your firm's equity (e.g., stock) must be directly owned and controlled by one of the following:

1. One or more individuals who are citizens or permanent resident aliens of the U.S. Each individual you include as part of the eligible majority ownership of your company must be either a citizen or permanent resident alien of the U.S. The term "individual" refers only to actual people—it does not refer to companies or other legal entities of any sort. "Permanent resident alien" refers to an alien admitted to the U.S. as a lawful permanent resident by the U.S. Citizenship and Immigration Services.;
2. Other for-profit 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 U.S.); or
3. A combination of (1) and (2) above.

Small Business Concern (SBC)

An SBC is one that, at the time of award for both Phase I and Phase II SBIR/STTR awards, meets all of the following criteria (time of award is the date when the grant is signed by Grants/Agreements Officer, and DOE anticipates that this date will be at or around the grant start date listed in [Section II F.](#), Period of Performance, of this FOA):

- Organized for profit, with a place of business located in the U.S., which operates primarily within the U.S. or which makes a significant contribution to the U.S. economy through payment of taxes or use of American products, materials or labor;
- Is in the legal form of an individual proprietorship, partnership, limited liability company, corporation, joint venture, association, trust or cooperative, except that where the form is a joint venture, there can be no more than 49% participation by foreign business entities in the joint venture;
- Meets the Ownership and Control requirements stated above; and
- Has, including its affiliates, not more than 500 employees and meets the other regulatory requirements found in 13 CFR 121. Business concerns, other than investment companies

licensed, or state development companies qualifying under the Small Business Investment Act of 1958, 15 U.S.C. 661, et seq., are affiliates of one another when either directly or indirectly, (a) one concern controls or has the power to control the other; or (b) a third-party/parties controls or has the power to control both. Control can be exercised through common ownership, common management, and contractual relationships. The term “affiliates” is defined in greater detail in 13 CFR 121. The term “number of employees” is defined in 13 CFR 121.

Additional Information

A joint venture, as defined in [Appendices/Reference Material](#), may apply, provided the entity created also qualifies as an SBC at the time of the award.

SBCs that are majority-owned by multiple venture capital operating companies, hedge funds, or private equity firms, or any combination of these, are not eligible for funding under this FOA. SBCs must meet this criterion at both time of submission and time of award.

If a size determination of your firm is conducted, you may be asked to show proof of ownership.

Further information on eligibility for the SBIR/STTR programs is available from the Small Business Administration at <https://www.sbir.gov/faqs/eligibility-requirements>.

SBC's submitting to both the SBIR and STTR programs must meet eligibility requirements of both SBIR and STTR applicants. If an application is submitted to both programs but fails to meet the eligibility requirements for one of the programs, it will only be considered for the one program for which it does meet the eligibility requirements.

There are two eligibility requirements associated with prior progress from Phase I to II (Phase I to Phase II Transition Rate Benchmark) and from Phase II to Phase III (Commercialization Rate Benchmark):

- To be eligible to submit a DOE Phase I SBIR or STTR application, the applicant must meet the Phase I to Phase II Transition Rate Benchmark as required by the SBIR/STTR Reauthorization Act of 2011. The Transition Rate Benchmark applies only to SBIR and STTR Phase I applicants that have received more than 20 Phase I awards over the past five fiscal years, excluding the most recently completed fiscal year. For these companies, the benchmark establishes a minimum number of Phase II awards the company must have received for a given number of Phase I awards received during the five-year time period in order to be eligible to receive a new Phase I award. This requirement does not apply to companies that have received 20 or less Phase I awards over the five-year period.
- The Commercialization Rate Benchmark applies only to SBIR and STTR Phase I applicants that have received more than 15 Phase II awards during the past 10 fiscal years, excluding the two most recently completed fiscal years. For these companies, this benchmark establishes the minimum levels of commercialization activity a company must have achieved to-date that result from its Phase II awards from this 10-year period of time. SBCs are encouraged to update commercialization results for their prior

SBIR/STTR awards at SBIR.gov to ensure accuracy in assessing the Commercialization Rate Benchmark.

On June 1 of each year, SBIR/STTR awardees registered on SBIR.gov are assessed to determine if they meet the benchmark requirements. Companies that fail to meet the transition rate benchmark on June 1, 2021 are not eligible to submit a Phase I application during the period June 1, 2021 through May 31, 2022.

The Transition Rate is calculated as the total number of SBIR and STTR Phase II awards a company received during the past five fiscal years divided by the total number of SBIR and STTR Phase I awards it received during the past five fiscal years, excluding the most recently completed year. The benchmark minimum Transition Rate is currently 0.25.

In accordance with 2 CFR 910.126, Competition, eligibility for award is restricted to SBC's as described above.

B. PARTICIPATION BY FEDERALLY FUNDED RESEARCH AND DEVELOPMENT CENTERS

Federally Funded Research and Development Centers (FFRDC) are not eligible for an award under this FOA, but they may be proposed as a team member subject to the following guidelines:

1. Authorization for non-DOE/NNSA FFRDCs

The Federal agency sponsoring the FFRDC must authorize in writing the use of the FFRDC on the proposed project and this authorization must be submitted with the application. The use of an FFRDC must be consistent with its award and must not place the FFRDC in direct competition with the private sector.

2. Authorization for DOE/NNSA FFRDCs

The cognizant DOE Contracting Officer must authorize in writing the use of a DOE/NNSA FFRDC on the proposed project and this authorization should be submitted with the application, if available. The following wording is acceptable for this authorization.

“Authorization is granted for the (insert name) National Laboratory and its Contractor to participate in the proposed project entitled _____. The work proposed for the National Laboratory Contractor is consistent with or complementary to the missions of the Laboratory, will not adversely impact execution of the DOE/NNSA assigned programs at the Laboratory, and will not place the Laboratory in direct competition with the domestic private sector.”

Failure to obtain such approval in a timely manner may delay the project if a grant is awarded, as work may not be performed by the FFRDC until DOE Contracting Officer approval is provided.

3. Responsibility

A successful applicant will be the responsible authority regarding the settlement and satisfaction of all contractual and administrative issues, including but not limited to, disputes and claims arising out of any agreement between the applicant and the FFRDC.

CONFLICTS OF INTEREST

Applicants must be aware of potential conflicts of interest in the event their SBIR or STTR application includes a subcontract to a research institution (e.g., National Laboratory, University, etc.) and the applicant's employee(s)/ownership is (are) also an employee(s) of the research institution. A potential conflict of interest can also arise when an applicant obtains a license or option license for a TTO from a National Laboratory Contractor and the applicant subcontracts to the same National Laboratory Contractor for work to be performed in commercializing the TTO. The subcontracted work might either be a Work for Others or a Cooperative Research and Development Agreement (CRADA).

Any conflict of interest related to a subcontracted effort with DOE or its contractors shall be addressed prior to award by providing (to DOE) a statement from the DOE Contracting Officer at the Laboratory Site Office, that he/she confirmed that the National Laboratory Contractor is aware of the ownership (or dual employment) and that the National Laboratory Contractor has conducted a conflict review in accordance with its approved conflict procedures. A similar statement should be obtained from the Sponsored Program Office or similar business office in the event the subcontract is with a University or other research institution.

In addition, the recipient shall provide to DOE prior to award, a document detailing how it will exercise both financial and managerial control over the project and how the recipient will isolate the Research Institution employee(s) from influencing control of the project.

C. COST SHARING

Cost sharing under this FOA is not required. However, any commercial contribution will be considered as part of the evaluation.

D. OTHER ELIGIBILITY REQUIREMENTS

All funded research or R&D must be performed in the U.S. for both Phases I and II, except under exceptional circumstances, for which an explanation must be submitted to DOE and an approval, if made, has been conveyed in writing by DOE. "U.S." means the 50 states, the territories, and possessions of the U.S., the Commonwealth of Puerto Rico, the Republic of the Marshall Islands, the Federated States of Micronesia, the Republic of Palau, and the District of Columbia. Non-U.S. citizens are eligible to perform work on SBIR/STTR projects provided they are legally empowered to work in the U.S. at the time that an award is made and throughout the duration of the project. That is, a foreign national working on an SBIR/STTR project must NOT be an illegal alien and must be an immigrant alien or a foreign national visiting the U.S. on an approved visa.

In exceptional circumstances, where expertise or facilities do not exist in the U.S. to perform the R&D, applicants may propose to perform R&D outside the U.S. in their application. In these situations, the applicant must clearly justify the need for foreign R&D including details of domestic experts and facilities that were contacted to make this determination. No pre-approval of foreign R&D will be granted in advance of the application. DOE will make a determination on whether performance of R&D outside the U.S. is justified as part of the application review process. Insufficient justification may result in declination of the application.

None of the employees or owners of the applicant small business may be paid as consultants. None of the employees or owners of the applicant small business may be employees of a subcontractor, except when the subcontractor is a research institution. Consultants must not be employees of any proposed subcontractor. Please note, a person listed on the budget form (Section A - Key/Senior Person or Section B - Other Personnel) as an employee of the SBC is required to be either (a) an owner of the business, (b) paid using a W-2 form, or (c) possess an Internal Revenue Service Form SS-8 determination that the person is an employee. Persons receiving a 1099 (and not possessing an employee determination using Form SS-8) are to be treated as independent contractors and should be listed on the budget form in Section F - Other Direct Costs.

An applicant may be required to submit proof that its personnel may legally perform work on this project before a new, continuation, or transition award is made.

Applicants must include all mandatory documents described in [Section IV.D](#). Failure to include mandatory documents will result in the declination of the application during initial review.

E. SUBMITTING LETTERS OF INTENT

A single Letter of Intent (LOI) is required for each application and must be received by the deadline printed on the cover of this FOA. Only those applicants for which an LOI has been received by the due date are eligible to submit an application under this FOA. DOE uses LOIs to identify reviewers. Therefore, applicants are requested to submit an LOI only when there is serious intent for submission of an application.

Applicants are limited to submitting a total of 10 different LOIs under this FOA and each LOI must be uniquely responsive to the topic and subtopic to which it is submitted. Duplicate LOIs (those containing essentially similar abstracts) will not be accepted to this FOA, only the last submission will be accepted. If more than 10 LOIs are received under this FOA, only the last 10 LOIs received will be accepted. Please refer to [Section IV, B.](#) for LOI content guidance.

F. RESTRICTIONS ON SUBMITTING APPLICATIONS

1. Choice of Topic and Subtopic

Each application must be submitted to only one topic, including a Technology Transfer Opportunity topic, if applicable, and, within the topic, to only one subtopic. DOE will not assign a topic and/or subtopic to applications; this must be done by the applicant. When an application

has relevance to more than one subtopic within a topic, the applicant must decide which subtopic is the most relevant and submit the application under that subtopic only. Each grant application must fall within the description of the subtopic and also satisfy any conditions contained in the introductory section of that topic. Applications that do not directly address the subtopic statement will not be peer reviewed. The language in both the topic introductions and the subtopics should be taken literally.

2. Responsiveness

Applications will be evaluated for responsiveness by DOE technical program experts to ensure that they (1) meet stated FOA requirements described in [Section III - Eligibility Information](#), and [Section IV, C. and D.](#), (2) identify a topic and subtopic, (3) contain sufficient information for a meaningful technical review, (4) are for research or for research and development, (5) do not duplicate other previous or current DOE-funded work, and (6) are consistent with program area mission, policies, and other strategic and budget priorities. Applications failing to pass this initial review will be declined without further review.

3. Submitting to both SBIR and STTR Programs

Applications that include at least 30%, but not more than 33%, of cooperative research collaboration with a single research institution may be considered for funding in both SBIR and STTR programs. Applicants may indicate their interest in being considered for both SBIR and STTR programs by selecting the appropriate box under “Program Type” on the “SBIR/STTR Information” form.

4. Duplicate Applications

Duplicate or substantially similar applications, even if submitted to different topics and/or subtopics, will be rejected without review. That is, the application with the latest Grants.gov submission date and time will be the only version considered for evaluation.

5. Multiple Applications

Applicants are limited to submitting a total of 10 different applications under this FOA and each application must be uniquely responsive to the topic and subtopic to which it is submitted. If more than 10 applications are received under this FOA, only the last 10 applications received will be considered for evaluation.

6. Classified Applications

Classified applications are not accepted under the DOE SBIR/STTR Programs and will be appropriately destroyed. Applications that have a probability of resulting in classified work will be administratively declined. Applicants are expected to comply with the following clause, which will be included in any grant awarded:

- 1) This award is intended for unclassified, publicly releasable research. You will not be granted access to classified information. DOE/NNSA does not expect that the results of the research

project will involve classified information. Under certain circumstances, however, a classification review of information originated under the award may be required. The Department may review research work generated under this award at any time to determine if it requires classification.

- 2) Executive Order 13526 (75 Fed. Reg. 707 (January 5, 2010)) states that basic scientific research information not clearly related to the national security shall not be classified. Nevertheless, some information concerning (among other things) scientific, technological, or economic matters relating to national security or cryptology may require classification. If you originate information during the course of this award that you believe requires classification, you must promptly:
 - a) Notify the DOE Project Manager and the DOE Award Administrator;
 - b) Submit the information by registered mail directly to the Director, Office of Classification and Information Control, SO-10.2; U.S. Department of Energy; P.O. Box A; Germantown, MD 20875-0963, for classification review.
 - c) Restrict access to the information to the maximum extent possible until you are informed that the information is not classified, but no longer than 30 days after receipt by the Director, Office of Classification and Information Control.
- 3) If you originate information concerning the production or utilization of special nuclear material (i.e., plutonium, uranium enriched in the isotope 233 or 235, and any other material so determined under section 51 of the Atomic Energy Act) or nuclear energy, you must:
 - a) Notify the DOE Project Manager and the DOE Award Administrator;
 - b) Submit the information by registered mail directly to the Director, Office of Classification and Information Control, SO-10.2; U.S. Department of Energy; P. O. Box A; Germantown, MD 20875-0963 for classification review within 180 days of the date the recipient first discovers or first has reason to believe that the information is useful in such production or utilization; and
 - c) Restrict access to the information to the maximum extent possible until you are informed that the information is not classified, but no longer than 90 days after receipt by the Director, Office of Classification and Information Control.
- 4) If DOE determines any of the information requires classification, you agree that the Government may terminate the award with consent of the recipient in accordance with 2 CFR 200.340(a)(3). All material deemed to be classified must be forwarded to the DOE, in a manner specified by DOE.
- 5) If DOE does not respond within the specified time periods, you are under no further obligation to restrict access to the information.

G. RESTRICTIONS ON THE LEVEL OF SMALL BUSINESS PARTICIPATION – PHASE I

For both SBIR and STTR Programs, there are requirements on the amount of the research or analytical effort that must be performed by the small business in order to be selected for and to receive a grant. The research or analytical effort is defined as the total requested funding minus the cost of any work performed by a consultant, a DOE National Laboratory contractor, and any other subcontractor, including TABA. Please refer to the [Level of Effort Worksheet](#) on the DOE SBIR/STTR Programs home page, under Application Resources to assist you in assuring the application is in compliance.

1. SBIR Restrictions on Level of Small Business Participation

To be awarded an SBIR Phase I grant, a minimum of two-thirds or 67% of the research or analytical effort must be carried out by the applicant during Phase I; correspondingly, a maximum of one-third or 33% of the effort may be performed by an outside party such as consultants or subcontractors.

2. STTR Restrictions on Level of Small Business Participation

To be awarded an STTR Phase I grant, at least 40% of the research or analytical effort must be performed by the applicant, and at least 30% of the effort must be performed by a single research institution.

H. GENERAL REQUIREMENTS AND RESTRICTIONS ON THE PI

The Principal Investigator (PI) is the key individual designated by the applicant to direct the project. Only one PI is acceptable per project. **Co-PIs are not allowed and should not be proposed.** The PI must be identified by name at time of application, knowledgeable in all technical aspects of the application, and be capable of leading the research effort. The PI must be primarily employed by the either the small business (SBIR or STTR) or Research Institution (STTR only) by the start date of the award. DOE's evaluation of the application is critically dependent on the qualifications of the PI. Any changes in the PI that are made after award selection are strongly discouraged and must be pre-approved by DOE. Requests for PI changes will be closely scrutinized and may cause delays in grant execution.

A Phase I PI is required to devote to the project a considerable part of his or her time. "Considerable" means a minimum average of three hours per week for the duration of the project for both SBIR and STTR Phase I projects. The number of PI hours must be reported in the budget justification. The SF-424 (R&R) Project Narrative must state the duration of the project in weeks. In order to ensure appropriate technical guidance for the project, only one PI will be accepted per project. Before a grant is awarded, the applicant will be required to sign a statement certifying adherence to these requirements.

1. Additional PI Restrictions when submitting to SBIR Program Only

To be awarded a Phase I SBIR grant, the applicant must meet the general requirements and the PI's primary employment must be with the applicant at the time of award and during the conduct of the proposed research. Primary employment means that no less than 20 hours per week is spent in the employment of the applicant during the conduct of the project and no more than 19 hours per week spent in the employment of another organization.

2. Additional PI Restrictions when submitting to STTR Program Only

To be awarded a Phase I STTR grant, the applicant must meet the general requirements and the PI's primary employment may be with the applicant or the research institution. However, the

applicant must still provide technical control and oversight of the project. **If the PI is employed by the research institution, his or her primary employment (at least 20 hours per week) must be with the research institution in order to qualify under STTR** and the research institution must provide at least 30% of the research effort. **The PI's hours must be budgeted under the organization of his or her primary employment.**

3. PI Restrictions when submitting to both SBIR and STTR Programs

Applicants submitting to both programs must adhere to the PI restrictions set forth. Therefore, if the PI is employed by the applicant, the applicant is eligible to submit to both programs. However, in cases where the PI is employed by the research institution, the application will only be considered under the STTR Program.

I. RESTRICTIONS ON THE MANAGEMENT OF SBIR/STTR PROJECTS

All SBIR and STTR funding agreements are made with the applicant regardless of the proportion of the work or funding of each of the performers (small business, research institution, subcontractor, etc.) under the grant. As the grantee, the applicant has the overall responsibility of the project, including financial management and the direction and control of the performance. For STTR projects, where the PI is employed by the research institution, the applicant will maintain the overall supervision of the project, while the PI will manage the research portion of the project.

All agreements between the applicant and any subcontractor (including the research institution collaborating in an STTR project) are required to reflect the controlling management position of the applicant during the performance of the Phase I and/or Phase II project. This includes, but is not limited to, any business plan concerning agreements and responsibilities between the parties or for the commercialization of the resulting technology or regarding assignments from a DOE National Laboratory Contractor for a Technology Transfer Opportunity.

SECTION IV – APPLICATION AND SUBMISSION INFORMATION

A. ADDRESS TO REQUEST APPLICATION PACKAGE

Application forms and instructions are available at Grants.gov. To access these materials, go to <https://www.Grants.gov>, select “Apply for Grants”, and then select “Download a Grant Application Package.” Enter the Code of Federal Domestic Assistance (CFDA) number (81.049) and/or the FOA number shown on the cover of this FOA and then follow the prompts to download the application package.

Applications submitted through www.FedConnect.net will not be accepted. Applications may not be submitted through PAMS (<https://pamspublic.science.energy.gov/>).

B. LETTER OF INTENT AND PRE-APPLICATION

1. Letter of Intent (LOI)

A letter of intent (LOI) is required and must be submitted by the SBC and is due by the date printed on the cover of this FOA. Only those applicants that submit an LOI which is received by DOE by the due date are eligible to submit an application under this FOA.

Detailed instructions about how to submit an LOI are in [Section VIII](#) of this FOA.

- Your LOI must contain the following information:
 - Business Official name and contact information (telephone number and email address).
 - Name(s) of any proposed subcontractor(s) or consultant(s), if any.
 - Designate that you are submitting a Phase I application.
 - Technical abstract that sufficiently describes your technology and application. The abstract should not exceed 500 words and two pages, and it must provide sufficient technical depth to allow DOE to assign technical reviewers for your application.

Please note that your abstract should not contain any proprietary information.

The technical abstract in the LOI will be used by DOE Program Managers to determine the number of independent scientific and engineering experts that may be required to conduct the application reviews process identified in Section V – Application Review Information. Therefore the innovation described in the LOI technical abstract, and the application should be substantially the same. Substantial changes in the proposed innovation from that described in the technical abstract may result in declination of the application during initial review.

DOE will not provide a letter of encouragement in response to your LOI. Feedback will only be provided to those applicants where the proposed R&D described in the LOI appears to be nonresponsive to the selected topic and subtopic. DOE anticipates providing this feedback within three weeks of the LOI deadline. LOIs must be submitted by eligible small business applicants only. LOIs will not be accepted from research institutions or other partners.

Collaborative Proposals: Each small business applicant in a collaborative proposal must submit an LOI.

Please visit the DOE SBIR/STTR Programs web site under “[Applicant Resources](#)” for an LOI example.

2. Pre-Applications

Pre-Applications are not sought under this FOA.

C. GRANTS.GOV APPLICATION SUBMISSION AND RECEIPT PROCEDURES

Applications in response to this FOA must be submitted through Grants.gov. Detailed instructions for registering in and using Grants.gov are in [Section VIII](#) of this FOA.

D. CONTENT AND APPLICATION FORMS

For detailed application, forms, and other applicant information, please see the “[Instructions for Completing a DOE SBIR/STTR Phase I Grant Application](#)” located on the DOE SBIR/STTR Programs Office web site under “Preparing a DOE SBIR/STTR Phase I Grant Application” at <https://science.osti.gov/sbir/Applicant-Resources/Grant-Application>. If there are any inconsistencies between the information provided in the FOA and the “Instructions for Completing a DOE SBIR/STTR Phase I Grant Application,” the information contained in the FOA prevails.

For questions regarding the preparation of an application, you may call the DOE SBIR/STTR Operations Support Staff at (301) 903-5707 or via email at sbir-sttr@science.doe.gov.

Please note, you may only use the following UTF-8 characters when naming your application attachments: A-Z, a-z, 0-9, underscore (_), hyphen (-), space (), and period (.). You must limit the file name to 50 or fewer characters. Attachments that do not follow this rule may cause the entire application to be rejected or cause issues during processing. Each attached file must have a unique filename (for example, don’t use “budget justification” for both the total budget justification and a subaward budget justification).

1. SF-424 (R&R), Application for Federal Assistance [MANDATORY]:

Complete this form first to populate data in other forms. The list of certifications and assurances referenced in Field 17 is available on the DOE Financial Assistance Forms Page at <https://energy.gov/management/office-management/operational-management/financial-assistance/financial-assistance-forms> under Certifications and Assurances.

Applicants are bound by their representations and certifications in SAM.gov.

Complete all the required fields in accordance with the pop-up instructions on the form. Please ensure that the Project Title in field 11 of the SF-424 is identical to the title listed on your Project Narrative cover page and the title listed in our LOI. The project title must be the same as submitted in your LOI; applications not meeting this requirement may be administratively declined.

Use 06/27/2022 as the proposed project start date.

Notice: By signing the SF-424, you are certifying that the statements contained in the SF-424 and all other documents submitted as part of your application are true, complete, and accurate to the best of your knowledge. DOE relies on your certification and all documents submitted as part of your application which includes all mandatory, required, and optional information identified in this FOA. Further, DOE relies on all information that you voluntarily provide which was not requested in this FOA. All information and documents provided by you materially affects the decision to make an award even if the information is not listed as a review criterion in Section V. of this FOA.

DUNS AND EIN NUMBERS (FIELDS 5 AND 6)

The DUNS and Employer Identification Number (EIN) fields on the SF-424 (R&R) form are used in PAMS to confirm the identity of the individual or organization submitting an application.

- Enter each number as a nine-digit number.
- Do not use hyphens or dashes.
- SC does not use the twelve-digit EIN format required by some other agencies.
- SC does not use the DUNS+4 format.

2. RESEARCH AND RELATED Other Project Information: [MANDATORY]

Complete questions 1 through 6 and attach files. If the answer to question 3 is “Yes”, you must identify proprietary information with a legend on the first page of your attached Project Narrative document and on each page that contains proprietary information in accordance with instructions provided in [Section VIII, C.](#) Failure to comply may result in DOE’s inability to treat such information as proprietary and may delay the grant process.

NOTE CONCERNING QUESTION 1.

Applicants that plan to include human subjects as part of their research, should be aware that there are requirements that must be met for this type of research to be federally funded. Please refer to the following webpage to learn about these requirements:
<https://science.osti.gov/ber/human-subjects>

NOTE CONCERNING QUESTION 4.A.

DOE understands the phrase in field 4.a., “potential impact – positive or negative - on the environment”, to apply if the work described in the application could potentially have any of the impacts listed in (1) through (5) of 10 CFR 1021, Appendix B, Conditions that are Integral Elements of the Classes of Action. See Subpart D – Typical Classes of Actions, Appendix B to Subpart D of Part 1021 – Categorical Exclusions Applicable to Specific Agency Actions; B. Conditions that are Integral Elements of the Classes of Actions in Appendix B. (See www.ecfr.gov.)

Additionally, for actions that could have any other negative high consequence impacts to the environment or have any possibility for negative high consequence impacts to human health (e.g., use of human subjects, biosafety level 3-4 laboratory construction/operation,

manufacture or use of certain nanoscale materials known to impact human health, or any activities involving transuranic or high level radioactive waste or materials or exposure to any radioactive materials beyond de minimis levels), applicants should indicate “Yes” under 4.a. and then start their explanation under 4.b. with “Negative potential impact;” followed by their explanation.

Moreover, applicants should indicate potential negative impact on the environment if: 1) there would be extraordinary circumstances (i.e., scientific or public controversy) related to the significance of environmental effects [10 CFR 1021.410(b)(2)], 2) the work is connected to other actions with potentially significant impacts [10 CFR 1021.410(b)(3)], or 3) the work is related to other nearby actions with the potential for cumulatively significant impacts [10 CFR 1021.410 (b)(3)].

If question 4.a. is answered “Yes”, due to actual or potential negative impact(s) on the environment, the applicant will be required to complete the form entitled “National Environmental Policy Act (NEPA) Environmental Evaluation Notification Form” (SC-CH Form 560) upon request by the DOE Contracting Officer.

Lastly, if question 4.a. is answered yes due to an actual or potential positive impact on the environment, applicants should indicate “Yes” under 4.a. and then start their explanation under 4.b. with “Positive potential impact;” followed by their explanation.

For fields 7 through 12, the files that are attached must comply with the following instructions:

PROJECT ABSTRACT AND SUMMARY (FIELD 7 ON THE FORM) [MANDATORY]

The Project Abstract and Summary must contain a summary of the proposed activity suitable for dissemination to the public. This document must not include any proprietary or sensitive business information as DOE may make it available to the public. The Project Abstract and Summary must not exceed one page. Save this information in a file named “Summary.pdf,” and click on “Add Attachment” to attach it.

The purpose of the Project Abstract and Summary is to communicate the overall sense of the combined Phase I and Phase II project, not every step of the work plan or every accomplishment.

Statements of future applications or benefits belong in the section on Commercial Applications and Other Benefits. Do not use acronyms, abbreviations, first-person references, or any proper names (including the name of the small business, any subcontractors or institutions, or any trade or product name) in the body of the summary.

The header must include:

- Company Name
- Project Title
- Principal Investigator
- Topic number/Subtopic letter, e.g. 12b

The body must include:

- Statement of the problem or situation that is being addressed in your application. Describe the problem or situation being addressed—be sure that the DOE interest in the problem is clear, but not in such a way that implies that any services or products are being provided for the direct benefit of DOE rather than for the advancement of a public purpose. (Typically one to three sentences).
- General statement of how this problem is being addressed. This is the overall objective of the Phase I project. How is this problem being addressed? What is the overall project approach? (Ideally, two to four sentences).
- What is to be done in Phase I? (Typically three to four sentences).
- Commercial Applications and Other Benefits (limited to the space provided). Summarize the future applications or public benefits if the project is carried over into Phase II or Phase III and beyond. Do not repeat information already provided above.
- Key Words - Provide listing of key words that describe this effort.
- Summary for Members of Congress: (layperson's terms, two sentences, and maximum 100 words). DOE notifies members of Congress of grants in their districts. Therefore, please provide, in clear and concise layperson's terms, a very brief (100 words or less) summary of the project, suitable for use in a press release from DOE or a Congressional office. The summary should address the relevant problem (why is this project necessary and why did it merit DOE funding?) and the anticipated solution (what does the project hope to accomplish and how will it address the problem?). Two examples of appropriate summaries are provided below
 - *"The next generation "atom smashers" will require dipole magnets of very high magnetic field. This proposal will explore innovative block coil designs that can be used to make magnets shorter and more reliable."*
 - *"Computer simulation is a crucial step in developing clean nuclear energy generators, but the simulation process is currently so complex and esoteric that new users are discouraged from entering the field. This proposal will simplify the simulation process and the software interface to encourage new investment in nuclear energy."*

PROJECT NARRATIVE: (FIELD 8 ON THE FORM) [MANDATORY]

The Project Narrative is considered the main portion of the grant application and must specify clear, measurable goals and milestones that should be achieved in Phase I.

Phase I applications must propose research and development required to meet the DOE objectives stated in the technical topic of the FOA and provide sufficient information to convince DOE and members of the research community who review the application that it is worthy of support under the stated evaluation criteria in [Section V](#).

For Phase I there is a 15-page, 7,500 words (10 point minimum font size) of text limitation on the Project Narrative, which includes the cover page. Please note that the word limit applies to the text in the body of the Project Narrative and does not include words in tables and graphs. Also, sections such as the budget, budget justification, key personnel, and commercialization

plan should not be included in the Project Narrative but attached in the appropriate fields for those forms.

The application should be written succinctly using the outline below. To attach a Project Narrative, click “Add Attachment.”

Using the outline below, the Project Narrative must include ALL of the following:

- Cover page – Provide company-specific and project information including company name and address, principal investigator, project title, topic number, and subtopic letter.
- Proprietary Data Legend (Proprietary Application Information – Trade Secrets, Commercial, or Financial Information) – If applicable, see [Section VIII, C](#). If your application contains trade secrets or commercial or financial information, you must include the Notice of Restriction on Disclosure and Use of Data on the first page of your Project Narrative in accordance with guidance under [Section VIII](#) (Proprietary Application Information, Trade Secrets, Commercial or Financial Information) of this FOA.
- Identification and Significance of the Problem or Opportunity, and Technical Approach – Define the specific technical problem or opportunity addressed by your application. Provide enough background information so that the importance of the problem/opportunity is clear. Indicate the overall technical approach to the problem/opportunity and the part that the proposed research plays in providing needed results.
- Anticipated Public Benefits – Discuss the technical, economic, social, and other benefits to the public as a whole anticipated if the project is successful and is carried over into Phases II and III. Identify specific groups in the commercial sector as well as the Federal Government that would benefit from the projected results. Describe the resultant product or process, the likelihood that it could lead to a marketable product, and the significance of the market.
- Technical Objectives - State the specific technical objectives for the Phase I research and development.
- Work Plan – This section should be a substantial part of the application. Provide an explicit, detailed description of the Phase I research approach and work to be performed. Indicate what will be done, the qualifications of the team (principal investigator, key personnel, subcontractors and consultants) to execute the project, where it will be done, and how the work will be carried out.
- Link the Work Plan to the Technical Objectives of the proposed project. Discuss methods planned to achieve each objective or task explicitly and in detail. Be sure to address how the research or research and development effort could lead to a product, process, or service if funded beyond Phase I. Show how the management direction and control of the project will be assured. Regardless of the proportion of the work or funding of each of the performers under the grant, the applicant is to be the primary grantee with overall responsibility for its performance.
- Performance Schedule - The Phase I budget period may be less than, but no longer than 12 months. Briefly describe the important milestones to be achieved and the estimated amount of time for completing each task described in the Work Plan. Please be aware that your Phase II application will be due approximately 9.5 months after the project start date. Critical milestones that will be important to include in your Phase II application should be completed in the first 9 months of your project.

- Facilities/Equipment - Describe available equipment and physical facilities necessary to carry out the Phase I effort. Equipment is defined as an article of tangible, nonexpendable, personal property, including exempt property, charged directly to the grant, having a useful life of more than one year and an acquisition cost of \$5,000 per unit or more. Items of equipment to be leased or purchased must be described and justified in this section. Title to equipment purchased under this grant lies with the government. It may be transferred to the grantee where such transfer would be more cost effective than recovery of the property by the government. Grantees wishing to obtain title should contact their contract specialist prior to project completion for the procedure to follow to make such a request. If the equipment, instrumentation, and facilities are not the property of the applicant and are not to be purchased or leased, the source must be identified and their availability and expected costs specifically confirmed in this section. A principal of the organization that owns or operates the facilities/equipment must provide written verification regarding the availability and cost of facilities/equipment and any associated technician cost. Small businesses may get credit for obtaining this equipment as an in-kind Phase II commercial contribution.
- American-Made - To the extent possible in keeping with the overall purposes of the program, only American-made equipment and products should be purchased with the funds provided by the financial assistance under DOE Phase I grants.
- Research Institution (RI) - If the grant application contains formal collaboration with an RI (required for STTR, optional for SBIR), (1) identify the name and address of the institution, the name, phone number, and email address of the certifying official from the RI, and the total dollar amount of the subcontract; (2) describe in detail the work to be done by this RI in the Work Plan section; and (3) provide a detailed cost estimate including costs for labor, equipment, and materials, if any, as well as a specific statement certifying that they have agreed to serve in the manner and to the extent described in the Work Plan section of the grant application” from RIs.
- The RI will be considered a subcontractor to the applicant. The RI must provide a Letter of Commitment (LOC) on official letterhead from an authorized representative of the RI which commits the institution to participate in the project as described in the application. The LOC should be attached as an “Other Attachment” in field 12, on the Research & Related Other Project Information form. If selected for a grant, participation of the RI will be verified by the DOE Contracting Officer.
- Other Consultants and Subcontractors - Involvement of consultants or subcontractors in the project is permitted provided the work is performed in the United States, for exceptions, see [Section III., D.](#) If consultants and/or subcontractors are to be used, this section of the application must identify them by name, identify whether the party is being proposed as a consultant versus as a subcontractor, and should provide Letters of Commitment (LOC) from an authorized representative of the consultants and/or subcontractors. The LOC must provide a detailed cost estimate, including costs for labor, equipment, and materials, if any, for the consultant or subcontractor, as well as a specific statement certifying that the consultant(s) or subcontractor(s) have agreed to serve in the manner and to the extent described in the Work Plan section of the application. Each LOC must be on official letterhead with an authorizing representative’s contact information provided and submitted as an “Other Attachment” to the application. If selected for a grant, the DOE Contracting Officer will verify the participation of any subcontractor(s) and/or consultant(s) and will require budget and budget explanations for subcontractors and verification of the rates for consultants.

- Phase II Funding Commitment (Commercial Contribution) [OPTIONAL] - While not a requirement to obtain Phase I funding, applicants are strongly encouraged to submit commitments from the private sector or from non-SBIR/STTR funding sources, which will be considered as part of the evaluation criterion on “Impact.” Add as an attachment in field 12, “Other Attachments”, on this form.
- Phase III Follow-On Funding Commitment [OPTIONAL] - Applicants are encouraged to submit a Phase III follow-on funding commitment which will be considered as part of the evaluation criterion on Impact. The commitment must be signed by a person with the authority to make it, indicate when the funds will be made available, and contain specific technical objectives which will make the commitment exercisable by the applicant. If the commitment is firm regardless of achievement of technical objectives, it should state so. The commitment may include: (1) third party financing; (2) self-financing (in which case the applicant must demonstrate the ability to provide the Phase III funding); (3) state or local government financing; or (4) federal funding. In-kind contributions are allowed; however, the applicant or donor must estimate the dollar value of any in-kind contribution. The Phase III funding cannot be contingent on obtaining a patent because of the length of time this process requires. The Phase III Commitment must be submitted with the Phase I application as a separate attachment. Add as an attachment in field 12, “Other Attachments”, on this form. You should also reference it in the technical proposal in the “Work Plan” Section.
- Bibliography & References Cited (Field 9 on this form) - Do not attach a file in this field. Include this information, if any, in the Phase I Project Narrative. Bibliography and References cited count against the Phase I Project Narrative 15 page limit.
- Facilities & Other Resources (Field 10 on this form) - Do not attach a file in this field. Include this information, if any, in the Project Narrative. Facilities and Other Resources information counts against the Phase I Project Narrative 15 page limit.
- Equipment (Field 11 on this form) - Do not attach a file in this field. Include this information, if any, in the Project Narrative. Equipment information counts against the Phase I Project Narrative 15 page limit.

3. Other Attachments: (Field 12 on this form)

Note: Field 12 will hold more than one attachment. If you need to elaborate on your responses to questions 1 – 6 on the “Other Project Information” form, provide the information in a single file named “projinfo.pdf.” Click on “Add Attachments” in Field 12 to attach file.

DIGITAL DATA MANAGEMENT PLAN REQUIREMENT (REQUIRED)

All SBIR and STTR applicants must select one of the following options for their Data Management Plan (DMP):

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.” Applications that select Option 1 must not include publication costs in their budget, as this implies that data will be shared publicly.

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, following the instructions in [Section VIII.](#)

ALSO, ATTACH THE FOLLOWING FILES IN FIELD 12:

- SBA Company Registration (Required).
- Authorization for non-DOE/NNSA FFRDCs, if applicable.
- Authorization for DOE/NNSA FFRDCs, if applicable, if available.
- Signed Letter of Funding Commitment, if applicable.
- Phase III Follow-On Funding Commitment, if applicable.
- Signed Letter of Commitment (LOC) from research institution, as applicable. LOC must include name and address of institution, dollar amount of subcontract, and certifying official's name, phone number and email address.
- LOC from consultants, subcontractors or other third parties.
- [Level-of-Effort Worksheet](#) (discussed in [Section III](#)) may be found on the DOE SBIR/STTR Programs web site at <https://science.osti.gov/sbir/Applicant-Resources/Grant-Application>.

4. RESEARCH AND RELATED Senior/Key Person: [MANDATORY]

Complete this form before the Budget form to populate data on the Budget form.

Principal Investigator and other Key Personnel - The Principal Investigator (PI) is the key individual designated by the applicant to direct the project. Only one PI is acceptable per project. The PI and Key Personnel do not need to be U.S. citizens; however, all work must be performed in the United States. For exceptions, see "Other Eligibility Requirements" in [Section III. D.](#) See "General Requirements and Restrictions on the PI" in [Section III. H.](#)

Beginning with the PI, provide a profile for each senior/key person proposed. Each senior/key person must be aware that he/she is included in the application and must agree to perform the work if awarded. A senior/key person is any individual who contributes in a substantive, measurable way to the scientific/technical development or execution of the project, whether or not a salary is proposed for this individual. Senior/key personnel should only be named in the application if the person will be an employee of the small business as of the start date of the grant. If the person will be joining the small business at a later date, please list them by the position title (e.g. Senior Engineer) only. Sub-awardees and consultants must be included if they meet this definition. For each senior/key person provide:

BIOGRAPHICAL SKETCH

Complete a biographical sketch for each senior/key person and attach to the “Attach Biographical Sketch” field in each profile, following the instructions in [Section VIII](#).

WARNING: These instructions have been significantly revised to require disclosure of a variety of potential conflicts of interest or commitment, including participation in foreign government-sponsored talent recruitment programs.

The PI and each senior/key person at the prime applicant and any proposed subaward must provide a list of all sponsored activities, awards, and appointments, whether paid or unpaid; provided as a gift with terms or conditions or provided as a gift without terms or conditions; full-time, part-time, or voluntary; faculty, visiting, adjunct, or honorary; cash or in-kind; foreign or domestic; governmental or private-sector; directly supporting the individual’s research or indirectly supporting the individual by supporting students, research staff, space, equipment, or other research expenses. All foreign government-sponsored talent recruitment programs must be identified in current and pending support.

CURRENT AND PENDING SUPPORT

Provide current and pending support for each senior/key person and attach to the “Attach Current and Pending Support” field in each profile, following the instructions in [Section VIII](#).

5. RESEARCH AND RELATED BUDGET: [MANDATORY]

You must provide a budget for the period of support requested and a cumulative budget for the total project. In accordance with the SBIR/STTR topic funding allowance, applicants may request funding for up to 12 months, but not less than six months. Any application that proposes less than a 6 month Phase I budget period will be revised upward to six months by DOE. The amount budgeted cannot exceed the Phase I maximum grant amount for the topic. In the event you choose to use your own commercialization vendor, you may exceed the topic amount by up to \$6,500. Please refer to the [TABA section](#) for guidance.

Complete the Research and Related Budget form in accordance with the instructions on the form and the following instructions. The form will generate a cumulative budget for the total project period. You may request funds under any of the categories listed as long as the item and amount are necessary to perform the proposed work, meet all the criteria for allowability under the applicable Federal cost principles, and are not prohibited by the funding restrictions in this FOA (See [Section IV](#)). All budget items should be rounded to the nearest dollar and consistent with the budget justification form.

Phase I Principal Investigator meeting: Applicants may include in their Phase I budget a registration fee (\$250) and travel expenses for the Principal Investigator and, if necessary, a registration fee (\$250) and travel expenses for a person from the small business representing the commercialization interests of the company to attend the DOE SBIR/STTR Phase I Principal

Investigator Meeting. Attendance by the Principal Investigator is expected. This two-day meeting, held in the DC metro area, will provide opportunities to meet with DOE Program Managers and TABA providers, as well as learn about the DOE SBIR/STTR programs, with an emphasis on the Phase II application. The DOE SBIR/STTR Phase I Principal Investigator Meeting will be held approximately four months after the Phase I period of performance begins. Principal Investigators will be notified of the exact date and venue for the DOE SBIR/STTR Phase I Principal Investigator Meeting approximately eight weeks after the Phase I grant start date by an e-mail from the DOE contractor managing the meeting. The email will contain the URL for the DOE SBIR/STTR Phase I Principal Investigator Meeting website, where participants will be able to register, make lodging reservations, and view the agenda for the meeting.

TECHNICAL AND BUSINESS ASSISTANCE (FORMERLY COMMERCIALIZATION ASSISTANCE) (SECTION F, FIELD 8, 9, OR 10 [OPTIONAL])

In accordance with the John S. McCain National Defense Authorization Act for Fiscal Year 2019, DOE is able to fund discretionary technical and business assistance (TABA) to all DOE SBIR and STTR Phase I grantees. Grant recipients have two options for receiving TABA: (1) utilize services provided by a DOE vendor or (2) identify their own TABA provider(s).

If you wish to receive TABA from a DOE-funded vendor, you do not need to include this expense in your budget. If you are awarded a Phase I grant, you will receive notification from DOE and follow-up contact from a DOE-funded vendor on what services are available to you and how to obtain these services at no cost to your small business.

If you wish to utilize your own TABA provider(s), you are required to include this as one or more subcontracts or consultants in your budget and to provide a detailed budget justification. You may include up to \$6,500 per project. Please note that the TABA does not count toward the maximum grant size listed in [Section II, C.](#); e.g., seeking TABA from your provider could result in a maximum grant in the amount of \$206,500 for topics that specify a maximum award amount of \$200,000. TABA costs will not be used to determine compliance with [Section VIII, A., 8.](#)

RESTRICTIONS ON THE LEVEL OF SBC PARTICIPATION. Reimbursement is limited to services received that comply with 15 U.S.C. § 638(q). Only direct costs can be included in the \$6,500 allowed for TABA. Overhead costs associated with TABA must be included in the maximum award amount.

You may propose services in the following areas:

- product sales
- intellectual property protections
 - Patent prosecution costs related to obtaining United States patent protection for subject inventions of this award may be budgeted under TABA. Patent prosecution costs include attorney fees and United States Patent and Trademark Office (USPTO) fees. United States patent protection includes filings with the USPTO related to provisional, Patent Cooperation Treaty (PCT), non-provisional, continuation, and continuation-in-part patent applications. Patent prosecution

costs related to foreign patent protection (e.g. foreign attorney, foreign patent office or translation fees) are unallowable.

- market research
- market validation
- development of certifications and regulatory plans
- development of manufacturing plans

Services are defined as acts of assistance in which no goods are exchanged. In some situations, incidental goods, such as a report on the services provided, are exchanged. The following examples are provided for clarification:

- Market Research: Conducting market research in the planned area of commercialization is a service, and a report describing the finding is typically provided.
- Advertising: Developing an advertising strategy or designing advertising campaign materials are services. Paying to place ads or print brochures would not be considered a service.
- Website Development: Developing website content is a service.

Third party vendors or a federal entity issuing patents, certifications or regulatory approvals, must be used when spending TABA funds. Vendor(s) may not be the SBIR/STTR applicant or awardee or its research partner or a research institution performing part of the research and development portion of the award.

In the event some or the entire amount listed is not expended on TABA services, the remaining funds cannot be re-budgeted to other project costs. Re-budgeting of these funds for other than TABA services is not allowable.

BUDGET JUSTIFICATION (FIELD L ON THE FORM): [MANDATORY]

Provide supporting information for all proposed costs, including hours and rates for all personnel. Attach a single budget justification file for the entire project period in Field K. A budget justification template may be found here: <https://science.osti.gov/sbir/Applicant-Resources/Grant-Application>. Provide any other information you wish to submit to justify your budget request. If your organization has an Indirect Cost Rate Agreement (ICRA) in effect with your Cognizant Federal Agency [Defense Contract Audit Agency (DCAA), Department of Health and Human Service's Division of Cost Allocation (DCA), etc.] supporting the indirect rate(s) proposed, please provide this information with your application if the rate agreement (a) is dated no later than 2019 and (b) covers the proposed period of activity. Please note that if you are selected for a grant, additional budget explanation will most likely be required.

Note: All proposed purchase of equipment will be carefully reviewed relative to need and appropriateness for the research or R&D proposed. Although there is no absolute cap on indirect costs, grant applications will be evaluated for overall economy and value to DOE.

- Travel funds must be justified and related to the needs of the project, e.g., travel to DOE Headquarters to meet with the DOE Program Manager. Travel expenses for technical conferences are not permitted unless the purpose of attending the conference directly relates to the project, e.g., to present results of the project. Foreign travel is not normally an

appropriate expense. Funds to cover travel expenses outside of the United States are considered an unallowable direct cost unless written approval has been obtained from the DOE Contracting Officer.

- Grant funds may not be used to pay patent prosecution costs and related expenses. See TABA for paying such fees.
- Tuition expenses are allowable only if requested from a research institution or subcontractor that is a university, provided the amount requested for tuition is reasonable and comparable to what a student would be paid for performing research during the grant performance period.
- Any commercial and/or in-kind contribution to the project should be reflected in the project narrative and not included on the budget pages.

6. R&R SUBAWARD BUDGET ATTACHMENT(S) FORM: [if applicable, Budgets for Subawards, including Research Institutions]

Budgets for Subawardees: You must provide a separate R&R budget for each subawardee. Download the R&R Budget Attachment from the R&R SUBAWARD BUDGET ATTACHMENT(S) FORM and either e-mail it to each subawardee that is required to submit a separate budget or use the collaborative features of Workspace. After the subawardee has either e-mailed its completed budget back to you or completed it within Workspace, attach it to one of the blocks provided on the form. Use up to 10 letters of the subawardee's name (plus.pdf) as the file name (e.g., ucla.pdf or energyres.pdf). Filenames should not exceed 50 characters.

If the project involves more subawardees than there are places in the SUBAWARD BUDGET ATTACHMENT(S) FORM, the additional subaward budgets may be saved as PDF files and appended to the Budget Justification attached to Field K.

Applicants should consult their local information technology ("IT") support resources for any necessary assistance in converting the forms downloaded from Grants.gov into plain PDF files that can be combined into one non-Portfolio PDF file (the Budget Justification).

Ensure that any files received from subawardees are the PDF files extracted from the SUBAWARD BUDGET ATTACHMENT(S) FORM. Errors will be created if a subawardee sends a prime applicant a budget form that was not extracted from the application package. Do not use a sub-award budget downloaded directly from grants.gov or any source other than the application package.

Additional budget information for any sub-awardee will likely be required if selected for award.

7. SF-LLL DISCLOSURE OF LOBBYING ACTIVITIES: [OPTIONAL]

If any funds other than Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any Federal agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the grant/cooperative agreement, you must complete and submit SF-LLL "Disclosure Form to Report Lobbying."

8. SBIR/STTR INFORMATION FORM: [MANDATORY]

Complete all the required forms in accordance with the pop-up instructions on the form.

Each application must be submitted to a DOE SBIR/STTR Topic and, within the Topic, to only one Subtopic. DOE will not assign a Topic and/or Subtopic to grant applications; this must be done by the applicant. The Topic and Subtopic are also required on page 1 of the Project Narrative.

Applicants must utilize the Company Commercialization Report (CCR) from SBIR.gov to provide their company commercialization history of past SBIR/STTR awards (Question 8). The CCR allows companies to report funding outcomes resulting from prior SBIR and STTR awards. SBIR and STTR awardees are required by the SBA Policy Directive to update and maintain their organization's CCR on SBIR.gov. Companies may complete this report by logging into the company's account on SBIR.gov and starting a new Company Commercialization Report. To complete and include a Company Commercialization Report within your application you should:

1. Log into the company account at <https://www.sbir.gov/>.
2. Navigate to My Dashboard > My Documents to view or print the information currently contained in the Company Registry Commercialization Report.
3. Create or update the commercialization record, from the company dashboard, by scrolling to the “My Commercialization” section, and clicking the create/update Commercialization tab under “Current Report Version”. Please refer to the “Instructions” and “Guide” documents contained in this section of the Dashboard for more detail on completing and updating the CCR. Ensure the report is certified and submitted.
4. Click the “Company Commercialization Report” pdf under the My Documents section of the dashboard to download a pdf of the CCR.
5. Attach your CCR pdf to Question 8 of the SBIR/STTR Information Form.

PHASE I COMMERCIALIZATION PLAN (REQUIRED, FIELD 7)

A brief Commercialization Plan (4 pages maximum, 2000 words maximum, 10 point minimum font size) must be included in a Phase I grant application. If the Commercialization Plan is not included at the time of application submission, your application will be administratively declined without review. The Commercialization Plan will be evaluated under the “Impact” criterion and should address the following elements:

Project Title

- You MUST include the following statement after your project title:
“(COMPANY NAME HERE) estimates cumulative sales revenues of \$_____ and cumulative licensing revenues of \$_____ during the first 10 years of commercialization.”

Market Opportunity: Describe the market opportunity being addressed.

- Intellectual Property (IP): Describe the status of patents, trade secrets, and other steps you plan to take to protect your IP for commercialization.

- Company/Team: Describe the capability of your present personnel and/or planned additions to your staff that will enable you to successfully commercialize your innovation.

Although Phase I applications must only address the elements listed above, Applicants are encouraged to review the example of a Phase I Commercialization Plan on the DOE SBIR/STTR website, under [“Applicant Resources”](#) on the DOE SBIR/STTR website at <https://science.osti.gov/sbir/Applicant-Resources/Grant-Application>.

At this time, Question 7 of the SBIR/STTR Information Form will accept the Commercialization Plan attachment for a Phase I grant application submission after selecting DOE as agency and Phase I as application type.

Please Note: All applications lacking a separate and attached Phase I Commercialization Plan as noted above will be administratively declined and will not undergo further review or consideration for award.

COMMERCIALIZATION HISTORY (FIELD 8, IF APPLICABLE)

If you have received SBIR/STTR Phase II grants from any Federal agency, then you must provide your company Commercialization History. To assist applicants in providing a Commercialization History, an MS Excel template can be found on the DOE SBIR/STTR Programs Office web site at <https://science.osti.gov/sbir/Applicant-Resources/Grant-Application>. Please create a document entitled “Commercialization History.”

9. Summary of Required Forms and Files

The table below lists the required forms and the attachments associated with each form. Some of the information must be directly entered onto the forms and other information must be attached to the forms as directed. Please read carefully.

Please note: Applications lacking the following required documentation will be administratively declined without technical review. To assist you in submitting the necessary forms with your application, please refer to the DOE SBIR/STTR Phase I Application Checklist, located on the DOE SBIR/STTR Programs Office web site under “Applicant Resources” at <https://science.osti.gov/sbir/Applicant-Resources/Grant-Application>.

Your application must include the following documents:

Name of Document	Format	Attach to
Application for Federal Assistance, SF-424 Form	PDF	
Research and Related: Budget Form	PDF	
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	
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	
Project Abstract and Summary	PDF	Field 7
Project Narrative	PDF	Field 8
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—Level of Effort 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
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	
Budget Justification for each Sub-award	PDF	Appropriate Block
SF-LLL, Disclosure of Lobbying Activities, if applicable	PDF	
Project/Performance Site Location(s)	PDF	
SBIR/STTR Information Form	PDF	
Phase I Commercialization Plan	PDF	Field 7
Commercialization History, if applicable	PDF	Field 8

E. SUBMISSIONS FROM SUCCESSFUL PHASE I APPLICANTS

If selected for a grant, DOE reserves the right to request additional or clarifying information for any reason deemed necessary, including, but not limited to:

- Indirect cost information
- Other budget information
- Name and phone number of the “Designated Responsible Employee” for complying with national policies prohibiting discrimination (See [10 CFR 1040.5](#))
- Representation of Limited Rights Data and Restricted Software, if applicable
- Representation Concerning Financial Management System

- Consultant documentation/verification of rates
- Environmental, Safety and Health (ES&H) Information

1. SBIR/STTR Certifications

If selected for a Phase I grant, applicants will be required to sign and submit one or more certification forms. These forms will be provided by a DOE contract specialist or DOE grants management specialist during grant negotiation.

2. STTR Property and Commercialization Agreements

If selected for a Phase I STTR grant, an applicant will need to certify that they have a Property and Commercialization Rights Agreement in place with the partnering Research Institution. DOE strongly encourages preparing the Property and Commercialization Rights Agreement immediately upon notice of award selection at the latest. The following hyperlinked documents are provided for information purposes only and are subject to changes and updates prior to grant negotiation:

[Certification for Property and Commercialization Rights Agreement](#)

[Allocation of Intellectual Property Rights and Rights to Carry out Follow-on Research, Development or Commercialization](#)

F. SUBMISSION DATES AND TIMES

1. Letter of Intent

The LOI due date is printed on the cover of this FOA.

You are encouraged to submit your LOI well before the deadline. LOIs may be submitted at any time between the publication of this FOA and the stated deadline.

2. Pre-Application

A Pre-Application is not required.

3. APPLICATIONS

The application due date is printed on the cover of this FOA.

You are encouraged to transmit your application well before the deadline. Applications may be submitted at any time between the publication of this FOA and the stated deadline.

Unsolicited grant applications will not be accepted. Any submission incorporating data affecting the national security will not be accepted for evaluation. Modifications will be accepted if received before the deadline.

4. LATE SUBMISSIONS

Delays in submitting LOIs or applications may be unavoidable. DOE has accepted late submissions when applicants have been unable to make timely submissions because of technological disruptions or large scale natural disasters. Other circumstances will not justify late submissions. Examples of unacceptable justifications are provided below:

- Failure to begin submission process early enough
- Failure to provide sufficient time to complete the process
- Failure to understand the submission process
- Failure to understand the deadlines for submissions
- Failure to satisfy prerequisite registrations
- Unavailability of administrative personnel

Applicants must email the Agency Contact listed in Section I of this FOA (sbir-str@science.doe.gov within 24 hours of the submission deadline) to request a late submission. Applicants may be requested to submit a copy of the current draft of their application including attachments in response to a late submission request.

Requests for late submissions may be accepted at the sole discretion of DOE.

Late applications will only be accepted from applicants that have received permission, and only one such request will be permitted.

G. INTERGOVERNMENTAL REVIEW

This program is not subject to [Executive Order 12372](#)—Intergovernmental Review of Federal Programs.

H. FUNDING RESTRICTIONS

Funding for all awards and future budget periods are contingent upon the availability of funds appropriated by Congress for the purpose of this program and the available future-year budget authority.

1. Fee

Grants may include a profit or fee for the applicant. Fees are subject to negotiation and shall not exceed 7% of the total costs (direct and indirect). Profit or fee is not “program income” and shall not be included in field 15.d. of the SF-424 (R&R) application.

Example:

Total direct and indirect costs	= \$186,915.89
Fee (7%)	= \$ 13,084.11
Total	= \$200,000.00

The fee applies solely to the small business concern receiving the award and for-profit R&D subcontractors participating in the project. In addition, the grantee may pay a profit/fee to a contractor providing routine goods or non-R&D services in accordance with normal commercial practice.

2. Cost Principles

Costs must be allowable, allocable and reasonable in accordance with the applicable Federal cost principles referenced in 2 CFR 200 as modified by 2 CFR 910 (DOE Financial Assistance Regulation).

3. Pre-award Costs

Recipients may charge to an award resulting from this FOA pre-award costs that were incurred within the ninety (90) calendar day period immediately preceding the effective date of the award, if the costs are allowable in accordance with the applicable Federal cost principles referenced in 2 CFR 200 as modified by 2 CFR 910 (DOE Financial Assistance Regulation). Recipients must obtain the prior approval of the Contracting Officer for any pre-award costs that are for periods greater than this 90-day calendar period.

Pre-award costs are incurred at the applicant's risk. DOE is under no obligation to reimburse such costs if for any reason the applicant does not receive an award or if the award is made for a lesser amount than the applicant expected.

4. Indirect Costs

Indirect costs are normally a component of a project budget and derive from an applicant's Indirect Rate(s), established in accordance with its financial management system. Experience has shown that creating and supporting these rates can be one of the most problematic elements of a budget, and the subsequent negotiation of costs for the project. Applicants are encouraged to be proactive in ensuring that all proposed rates are established in a timely manner and in accordance with applicable cost principles. If you are selected for a grant, establishing the acceptability of your proposed indirect costs, if any, is essential to the review of your budget and may take various forms, including: 1) An Indirect Cost Rate Agreement (ICRA) in effect with your Cognizant Federal Agency, which covers the period of performance of this grant and supports the indirect rate(s) proposed; 2) If no ICRA exists, an Indirect Cost Rate Proposal may be submitted to DOE for evaluation; or 3) indirect rates that have been accepted for estimating purposes by DOE or another Federal agency for the period of performance of this grant.

If you are proposing indirect costs and do not already have an Indirect Cost Rate Agreement with your Cognizant Federal Agency or documentation of rates accepted for estimating purposes by DOE or another Federal agency, it is recommended that you begin preparing an Indirect Cost Rate Proposal to be submitted, upon request, to the DOE contract specialist/grants management specialist who will evaluate your application if you are selected for award. The indirect cost base provided on your indirect cost rate proposal must be **consistent** with the indirect cost base provided on your Research & Related Budget.

For your convenience in preparing an Indirect Cost Rate proposal, links are provided below to the document titled “Guidance for Indirect Rate Submission”, to the “Simple Indirect Rate Model” in Microsoft Excel format, and to the “Indirect Rate Presentation.”

- [Guidance for Indirect Rate Submission](#)
- [Simple Indirect Rate Model in Excel Format](#)
- [Indirect Rate Presentation](#) (Complete the registration information to view the presentation)

SECTION V – APPLICATION REVIEW INFORMATION

A. CRITERIA

1. Initial Review Criteria

Applications will be evaluated for responsiveness by DOE technical program experts to ensure that they (1) meet stated FOA requirements described in [Section III - Eligibility Information](#), and [Section IV, C.](#) and [Section IV, D.](#), (2) identify and are responsive to a topic and subtopic and fully address the research and development opportunity described, (3) contain sufficient information for a meaningful technical review, (4) are for research or for research and development, (5) do not duplicate other previous or current DOE-funded work, (6) are consistent with program area mission, policies, and other strategic and budget priorities, and (7) describe an innovation that is substantially the same as that in the LOI technical abstract. Applications failing to pass this initial review will be declined without further review.

2. Merit Review Criteria

DOE plans to make selections for Phase I awards from those applications judged to have the highest overall merit within their technical program area, with equal consideration given to each of the following criteria:

Strength of the Scientific/Technical Approach as evidenced by

- (1) the innovativeness of the idea and the approach,
- (2) the significance of the scientific or technical challenge, and
- (3) the thoroughness of the presentation.

Ability to competently carry out the project as evidenced by

- (1) the qualifications of the PI, other key staff, subcontractors and consultants, if any, and the level of adequacy of equipment and facilities;
- (2) the soundness and level of adequacy of the work plan to show progress toward proving the feasibility of the concept; and
- (3) the degree to which the DOE investment in the project would be justified by the level of proposed research effort.

Impact as evidenced by

- (1) the significance of the technical and/or economic benefits of the proposed work, if successful,
- (2) the likelihood that the proposed work could lead to a marketable product or process,
- (3) the likelihood that the project could attract further development funding after the SBIR or STTR project ends, and
- (4) the appropriateness of the data management plan for the proposed work.

Please refer to [Section VIII, A.](#) of this FOA for guidance on what to include in your Commercialization Plan and Commercialization History.

B. REVIEW AND SELECTION PROCESS

1. Merit Review

Applications will be subject to a detailed technical evaluation by experts, both inside and outside the Government. The DOE will not fund any application for which there are weaknesses identified with respect to any of the three bolded merit review criteria listed above, as determined by the review process. In addition, because the DOE supports only high quality research and development, applications will be considered candidates for funding only if they receive the highest rating with respect to at least two of the three criteria.

2. Program Policy Factors

The Selection Official may consider any of the following program policy factors in making the selection, listed in no order of significance:

- Ensuring an appropriate balance of activities
- Program balance of funds distribution
- Needs of the technical programs
- The applicant's performance under prior DOE SBIR/STTR awards including timely submittal of all reports
- Availability of funds
- Promoting the diversity of institutions receiving awards
- Promoting institutions not previously funded by a DOE SBIR/STTR award.

3. Selection

Each technical program area participating in the SBIR/STTR programs is provided a predetermined target number of applications that they may select for funding. The applications that are considered candidates for funding are ranked in order of the highest quality and strongest program relevance based on the results of the evaluation. The Selection Official will consider the findings of the merit review and may consider any of the Program Policy Factors described above.

4. Review of Risk

Pursuant to 2 CFR 200.206, DOE will conduct an additional review of the risk posed by applications submitted under this FOA. Such review of risk will include:

- Technical merit of the application,
- Reports and findings from audits performed under 2 CFR 200 or OMB Circular A-133, and
- Systems maintained under 2 CFR 180.

DOE may make use of other publicly available information and the history of an applicant's performance under DOE or other Federal agency awards.

Applicants with no prior performance of DOE awards may be asked to provide information about their financial stability and or their ability to comply with the management standards of 2 CFR 200.

REPORTING OF MATTERS RELATED TO RECIPIENT INTEGRITY AND PERFORMANCE (DECEMBER 2015)

DOE, prior to making a Federal award with a total amount of Federal share greater than the simplified acquisition threshold, is required to review and consider any information about the applicant that is in the designated integrity and performance system accessible through SAM (currently FAPIIS) (see 41 U.S.C. 2313); The applicant, at its option, may review information in the designated integrity and performance systems accessible through SAM and comment on any information about itself that a Federal awarding agency previously entered and is currently in the designated integrity and performance system accessible through SAM; DOE will consider any written comments by the applicant, in addition to the other information in the designated integrity and performance system, in making a judgment about the applicant's integrity, business ethics, and record of performance under Federal awards when completing the review of risk posed by applicants as described in §200.206 Federal awarding agency review of risk posed by applicants.

5. Discussions and Award

The Government may enter into discussions with a selected applicant for any reason deemed necessary, including but not limited to the following: (1) the budget is not appropriate or reasonable for the requirement; (2) only a portion of the application is selected for award; (3) the Government needs additional information to determine that the recipient is capable of complying with the requirements in 2 CFR 200 as modified by 2 CFR 910 (DOE Financial Assistance Regulation); and/or (4) special terms and conditions are required. Failure to resolve satisfactorily the issues identified by the Government will preclude award to the applicant.

C. ANTICIPATED NOTICE OF SELECTION AND GRANT START DATES

DOE anticipates sending notice of selection mid May 2022. The anticipated grant start date is June 27, 2022.

SECTION VI – AWARD ADMINISTRATION INFORMATION

A. AWARD NOTICES

This FOA is intended for informational purposes and reflects current planning. If there is any inconsistency between the information contained herein and the terms of any resulting SBIR or STTR grant, the terms of the grant shall control.

1. Notice of Selection

Selected Applicants Notification: DOE will notify applicants selected for award. This notice of selection is not an authorization to begin performance nor does it mean award has been made. (See Section IV.H. with respect to the allowability of pre-award costs.)

Historically, not all selected applicants have received negotiated and finalized awards.

Non-selected Notification: Organizations whose applications have not been selected will be advised as promptly as possible. This notice will explain why the application was not selected.

2. Notice of Award

An Assistance Agreement issued by the DOE Contracting Officer is the authorizing award document. It normally includes, either as an attachment or by reference, the following items: (1) Special Terms and Conditions, (2) Intellectual Property Provisions, (3) Federal Assistance Reporting Checklist and Instructions, (4) Budget Pages, (5) The Research Terms and Conditions, available at https://www.nsf.gov/pubs/policydocs/rtc/rtcoverlay_march17.pdf, and DOE Agency Specific Requirements, available at <https://www.nsf.gov/awards/managing/rtc.jsp>, (6) DOE Assistance Regulations, 2 CFR 200 as amended by 2 CFR 910 at <https://www.ecfr.gov/>, (7) Application/proposal as approved by DOE, (8) National Policy Assurances to Be Incorporated as Award Terms in effect on date of award at <https://www.nsf.gov/awards/managing/rtc.jsp>.

TERMS AND CONDITIONS

Sample DOE Special Terms and Conditions for Use in Most Grants and Cooperative Agreements are located at <https://energy.gov/management/office-management/operational-management/financial-assistance/financial-assistance-forms> under Award Terms.

Sample Intellectual Property Provisions. The SBIR/STTR DOE financial assistance intellectual property provisions applicable are located at: https://science.osti.gov-/media/sbir/pdf/files/manageapp/general_terms_and_conditions.pdf

NATIONAL POLICY ASSURANCES

The National Policy Assurances To Be Incorporated As Award Terms are located at <https://energy.gov/management/office-management/operational-management/financial-assistance/financial-assistance-forms> under Award Terms.

B. ADMINISTRATIVE AND NATIONAL POLICY REQUIREMENTS

The following additional policy provisions are applicable to this FOA. The full text of each provision is in [Section VIII](#) of this FOA and may be accessed by navigating to the hyperlinks below:

- [1. Evaluation and Administration by Non-Federal Personnel](#)
- [2. Government Right to Reject or Negotiate](#)
- [3. Intergovernmental Review](#)
- [4. Modifications](#)

Awards made under this FOA are subject to the following Administrative and National Policy Requirements. The full text of each provision is in [Section VIII](#) of this FOA and may be accessed by navigating to the hyperlinks below:

- [1. Administrative Requirements](#)
- [2. Availability of Funds](#)
- [3. Audit Requirements](#)
- [4. Conference Spending \(February 2015\)](#)
- [5. Commitment of Public Funds](#)
- [6. Corporate Felony Conviction and Federal Tax Liability Representations \(March 2014\)](#)
- [7. Cost Sharing](#)
- [8. Environmental, Safety and Health \(ES&H\) Performance of Work at DOE Facilities](#)
- [9. Federal, State, and Local Requirements](#)
- [10. Funding Restrictions](#)
- [11. Intellectual Property Development Under This Program](#)
- [12. Matching Funds](#)
- [13. National Environmental Policy Act \(NEPA\) Compliance](#)
- [14. Nondisclosure and Confidentiality Agreements Representations \(June 2015\)](#)
- [15. Prohibition on Lobbying Activity](#)
- [16. Proprietary Application Information](#)
- [17. Publications](#)
- [18. Registration Requirements](#)
- [19. Subaward and Executive Reporting](#)

C. REPORTING

Reporting requirements are identified on the Federal Assistance Reporting Checklist, DOE F 4600.2, attached to the award agreement. The checklist is available at <http://energy.gov/management/office-management/operational-management/financial-assistance/financial-assistance-forms> under Award Forms.

Final technical reports are required for each SBIR or STTR award. DOE will protect final technical reports containing marked SBIR/STTR data from disclosure during the data protection period. The data protection period extends from the award start date for a period of 20 years. At the end of the data protection period, final technical reports will be released to the public to comply with DOE statutory data dissemination requirements [Atomic Energy Act of 1954,

Public Law 83-703; Energy Reorganization Act of 1974, Public Law 93-438; Department of Energy Organization Act of 1977, Public Law 95-91].

SECTION VII – QUESTIONS/AGENCY CONTACTS

A. QUESTIONS

Questions regarding the content of this FOA must be submitted to the Agency Contact listed below.

Questions regarding DOE SBIR/STTR Topics may be submitted to the contact listed with each subtopic in the Topics document associated with this FOA located on the DOE SBIR/STTR Programs web site at <https://science.osti.gov/sbir/Funding-Opportunities>.

Please note: Potential applicants may discuss their grant proposal with the DOE Program Managers as it relates to an SBIR/STTR topic or subtopic and whether the proposal appears to be responsive to the subtopic. The DOE Program Managers will not provide any feedback or guidance designed to provide a competitive advantage or to discuss the quality of a grant proposal and will not discuss or answer questions related to anything other than the technical proposal. Potential applicants may communicate with DOE Program Managers until the FOA closing date.

Questions relating to the Grants.gov registration process, system requirements, how an application form works, or the submittal process must be directed to Grants.gov at 1-800-518-4726 or support@grants.gov. DOE cannot answer these questions. Please only contact the Grants.gov help desk for questions related to Grants.gov.

For help with PAMS, click the “PAMS Help” link on the PAMS website, <https://pamspublic.science.energy.gov/>. You may also contact the PAMS Help Desk, which can be reached Monday through Friday, 9:00AM – 5:30 PM Eastern Time. Telephone: (855) 818-1846 (toll free) or (301) 903-9610, Email: sc.pams-helpdesk@science.doe.gov. All submission and inquiries about this FOA should reference the FOA number printed on the cover page. Please contact the PAMS help desk for technological issues with the PAMS system.

B. AGENCY CONTACTS

Grants.gov Customer Support (Available 24/7)	800-518-4726 (toll-free) support@grants.gov
PAMS Customer Support (Monday-Friday, 9 AM – 5:30 PM Eastern)	855-818-1846 (toll-free) 301-903-9610 sc.pams-helpdesk@science.doe.gov
All other questions	All other questions regarding the DOE SBIR/STTR processing of applications must be directed to the DOE SBIR/STTR Programs Office. Point-of-contact: Carl Hebron 301-903-5707, sbir-sttr@science.doe.gov

C. DOE, OFFICE OF INSPECTOR GENERAL HOTLINE:

The Office of Inspector General (OIG) maintains a Hotline to facilitate the reporting of allegations of fraud, waste, abuse, or mismanagement in DOE programs or operations. If you wish to report such allegations, you may call, send a letter, or email the OIG Hotline ighotline@hq.doe.gov. Allegations may be reported by DOE employees, DOE contractors, or the general public. OIG contact information is available at <http://energy.gov/ig/services>.

SECTION VIII – SUPPLEMENTAL INFORMATION

A. HOW-TO GUIDES

1. How to Register in PAMS

After you submit your application through Grants.gov, the application will automatically transfer into the Portfolio Analysis and Management System (PAMS) for processing by the DOE SC. Many functions for grants can be done in PAMS, which is available at <https://pamspublic.science.energy.gov>.

You will want to “register to” your application: a process of linking yourself to the application after it has been submitted through Grants.gov and processed by DOE.

You must register in PAMS to submit a pre-application or a letter of intent. You may use the Internet Explorer, Firefox, Google Chrome, or Safari browsers to access PAMS. Notifications sent from the PAMS system will come from the PAMS email address <PAMS.Autoreply@science.doe.gov>. Please make sure your email server/software allows delivery of emails from the PAMS email address to yours.

Registering to PAMS is a two-step process; once you create an individual account, you must associate yourself with (“register to”) your institution. Detailed steps are listed below.

CREATE PAMS ACCOUNT

To register, click the “Create New PAMS Account” link on the website <https://pamspublic.science.energy.gov/>.

- Click the “No, I have never had an account” link and then the “Create Account” button.
- You will be prompted to enter your name and email address, create a username and password, and select a security question and answer. Once you have done this, click the “Save and Continue” button.
- On the next page, enter the required information (at least one phone number and your mailing address) and any optional information you wish to provide (e.g., FAX number, website, mailstop code, additional email addresses or phone numbers, Division/Department). Click the “Create Account” button.
- Read the user agreement and click the “Accept” button to indicate that you understand your responsibilities and agree to comply with the rules of behavior for PAMS.
- PAMS will take you to the “Having Trouble Logging In?” page. (If you have been an SC merit reviewer or if you have previously submitted an application, you may already be linked to an institution in PAMS. If this happens, you will be taken to the PAMS home page.)

REGISTER TO YOUR INSTITUTION

To submit to the SBIR/STTR programs, your institution must be a small business or individual.

- Click the link labeled “Option 2: I know my institution and I am here to register to the

institution.” (Note: If you previously created a PAMS account but did not register to an institution at that time, you must click the Institutions tab and click the “Register to Institution” link.)

- PAMS will take you to the “Register to Institution” page.
- Type a word or phrase from your institution name in the field labeled, “Institution Name like,” choose the radio button next to the item that best describes your role in the system, and click the “Search” button. A “like” search in PAMS returns results that contain the word or phrase you enter; you do not need to enter the exact name of the institution, but you should enter a word or phrase contained within the institution name. (If your institution has a frequently used acronym, such as ANL for Argonne National Laboratory or UCLA for the Regents of the University of California, Los Angeles, you may find it easiest to search for the acronym under “Institution Name like.” Many institutions with acronyms are listed in PAMS with their acronyms in parentheses after their names.)
- Find your institution in the list that is returned by the search and click the “Actions” link in the Options column next to the institution name to obtain a dropdown list. Select “Add me to this institution” from the dropdown. PAMS will take you to the “Institutions – List” page.
- If you do not see your institution in the initial search results, you can search again by clicking the “Cancel” button, clicking the Option 2 link, and repeating the search.
- If, after searching, you think your institution is not currently in the database, click the “Cannot Find My Institution” button and enter the requested institution information into PAMS. Click the “Create Institution” button. PAMS will add the institution to the system, associate your profile with the new institution, and return you to the “Institutions – List” page when you are finished.

For help with PAMS, click the “External User Guide” link on the PAMS website, <https://pamspublic.science.energy.gov/>. You may also contact the PAMS Help Desk, which can be reached Monday through Friday, 9:00 AM – 5:30 PM Eastern Time. Telephone: (855) 818-1846 (toll free) or (301) 903-9610, email: sc.pams-helpdesk@science.doe.gov. All submission and inquiries about this FOA should reference the FOA number printed on the cover page.

2. How to Submit Letters of Intent

It is important that the LOI be a single file with extension .pdf, .docx, or .doc. The filename must not exceed 50 characters. The PI and anyone submitting on behalf of the PI must register for an account in PAMS before it will be possible to submit a letter of intent.

You may use the Internet Explorer, Firefox, Google Chrome, or Safari browsers to access PAMS.

Submit Your Letter of Intent:

- Create your letter of intent outside the system and save it as a file with extension .docx, .doc, or .pdf. Make a note of the location of the file on your computer so you can browse for it later from within PAMS.
- Log into PAMS and click the Proposals tab. Click the “View / Respond to Funding Opportunity Announcements” link and find the current announcement in the list. Click the “Actions/Views” link in the Options column next to this announcement to obtain a dropdown menu. Select “Submit Letter of Intent” from the dropdown.

- On the Submit Letter of Intent page, select the institution from which you are submitting this LOI from the Institution dropdown. If you are associated with only one institution in the system, there will only be one institution in the dropdown.
- Note that you must select one and only one PI per LOI; to do so, click the “Select PI” button on the far right side of the screen. Find the appropriate PI from the list of all registered users from your institution returned by PAMS. (Hint: You may have to sort, filter, or search through the list if it has multiple pages.) Click the “Actions” link in the Options column next to the appropriate PI to obtain a dropdown menu. From the dropdown, choose “Select PI.”
- If the PI for whom you are submitting does not appear on the list, it means he or she has not yet registered in PAMS. For your convenience, you may have PAMS send an email invitation to the PI to register in PAMS. To do so, click the “Invite PI” link at the top left of the “Select PI” screen. You can enter an optional personal message to the PI in the “Comments” box, and it will be included in the email sent by PAMS to the PI. You must wait until the PI registers before you can submit the LOI. Save the LOI for later work by clicking the “Save” button at the bottom of the screen. It will be stored in “My Letters of Intent” for later editing.
- Enter a title for your letter of intent.
- Select the appropriate technical contact from the Program Manager dropdown.
- Select the appropriate Technical Topic Number from the dropdown. Click “Populate Subtopic”.
- Select the appropriate Technical Subtopic Letter from the dropdown.
- To upload the LOI file into PAMS, click the “Attach File” button at the far right side of the screen. Click the “Browse” (or “Choose File” depending on your browser) button to search for your file. You may enter an optional description of the file you are attaching. Click the “Upload” button to upload the file.
- At the bottom of the screen, click the “Submit to DOE” button to save and submit the LOI to DOE.
- Upon submission, the PI will receive an email from the PAMS system <PAMS.Autoreply@science.doe.gov> acknowledging receipt of the LOI.

You are encouraged to register for an account in PAMS at least a week in advance of the LOI submission deadline so that there will be no delays with your submission.

WARNING: The PAMS website at <https://pamspublic.science.energy.gov/> will permit you to edit a previously submitted LOI in the time between your submission and the deadline. If you choose to edit, doing so will remove your previously submitted version from consideration. If you are still editing at the time of the deadline, you will not have a valid submission. Please pay attention to the deadline.

3. How to Register and Submit an Application in Grants.gov

This section provides the application submission and receipt instructions for applications to SC. Please read the following instructions carefully and completely.

ELECTRONIC DELIVERY

SC is participating in the Grants.gov initiative to provide the grant community with a single site to find and apply for grant funding opportunities. SC requires applicants to submit their applications online through Grants.gov.

HOW TO REGISTER TO APPLY THROUGH GRANTS.GOV

Instructions: Read the instructions below about registering to apply for SC funds. Applicants should read the registration instructions carefully and prepare the information requested before beginning the registration process. Reviewing and assembling the required information before beginning the registration process will alleviate last-minute searches for required information.

Organizations must have a Data Universal Numbering System (DUNS) Number, active System for Award Management (SAM) registration, and Grants.gov account to apply for grants. If individual applicants are eligible to apply for this FOA, then you may begin with step 3, Create a Grants.gov Account, listed below.

Creating a Grants.gov account can be completed online in minutes, but DUNS and SAM registrations may take several weeks. Therefore, an organization's registration should be done in sufficient time to ensure it does not impact the entity's ability to meet required application submission deadlines.

Complete organization registration instructions can be found on Grants.gov here:
<https://www.Grants.gov/web/grants/applicants/organization-registration.html>

- 1) *Obtain a DUNS Number:* All entities applying for funding, including renewal funding, must have a DUNS Number from Dun & Bradstreet (D&B). Applicants must enter the DUNS Number in the data entry field labeled "Organizational DUNS" on the SF-424 form. For more detailed instructions for obtaining a DUNS Number, refer to:
<https://www.Grants.gov/web/grants/applicants/organization-registration/step-1-obtain-duns-number.html>
- 2) *Register with SAM:* All organizations applying online through Grants.gov must register with SAM at <https://www.sam.gov>. Failure to register with SAM will prevent your organization from applying through Grants.gov. SAM registration must be renewed annually. For more detailed instructions for registering with SAM, refer to:
<https://www.Grants.gov/web/grants/applicants/organization-registration/step-2-register-with-sam.html>
- 3) *Create a Grants.gov Account:* The next step is to register an account with Grants.gov. Follow the on-screen instructions or refer to the detailed instructions here:
<https://www.Grants.gov/web/grants/applicants/registration.html>
- 4) *Add a Profile to a Grants.gov Account:* A profile in Grants.gov corresponds to a single applicant organization the user represents (i.e., an applicant) or an individual applicant.

If you work for or consult with multiple organizations and have a profile for each, you may log in to one Grants.gov account to access all of your grant applications. To add an organizational profile to your Grants.gov account, enter the DUNS Number for the organization in the DUNS field while adding a profile. For more detailed instructions about creating a profile on Grants.gov, refer to:

<https://www.Grants.gov/web/grants/applicants/registration/add-profile.html>

5) *EBiz POC Authorized Profile Roles:* After you register with Grants.gov and create an Organization Applicant Profile, the organization applicant's request for Grants.gov roles and access is sent to the Electronic Business Point of Contact (EBiz POC). The EBiz POC will then log in to Grants.gov and authorize the appropriate roles, which may include the Authorized Organization Representative (AOR) role, thereby giving you permission to complete and submit applications on behalf of the organization. You will be able to submit your application online any time after you have been assigned the AOR role. For more detailed instructions about creating a profile on Grants.gov, refer to:

<https://www.Grants.gov/web/grants/applicants/registration/authorize-roles.html>

6) *Track Role Status:* To track your role request, refer to:

<https://www.Grants.gov/web/grants/applicants/registration/track-role-status.html>

b. Electronic Signature: When applications are submitted through Grants.gov, the name of the organization applicant with the AOR role that submitted the application is inserted into the signature line of the application, serving as the electronic signature. The EBiz POC **must** authorize people who are able to make legally binding commitments on behalf of the organization as a user with the AOR role; **this step is often missed and it is crucial for valid and timely submissions.**

HOW TO SUBMIT AN APPLICATION TO SC VIA GRANTS.GOV

Grants.gov applicants can apply online using Workspace. Workspace is a shared, online environment where members of a grant team may simultaneously access and edit different webforms within an application. For each FOA, you can create individual instances of a workspace.

Below is an overview of applying on Grants.gov. For access to complete instructions on how to apply for opportunities, refer to:

<https://www.Grants.gov/web/grants/applicants/apply-for-grants.html>

- 1) Create a Workspace: Creating a workspace allows you to complete it online and route it through your organization for review before submitting.
- 2) Complete a Workspace: Add participants to the workspace, complete all the required forms, and check for errors before submission.
 - a. Adobe Reader: If you decide not to apply by filling out webforms you can download

individual PDF forms in Workspace so that they will appear similar to other Standard forms. The individual PDF forms can be downloaded and saved to your local device storage, network drive(s), or external drives, then accessed through Adobe Reader.

NOTE: Visit the Adobe Software Compatibility page on Grants.gov to download the appropriate version of the software at:

<https://www.Grants.gov/web/grants/applicants/adobe-software-compatibility.html>

- b. Mandatory Fields in Forms: In the forms, you will note fields marked with an asterisk and a different background color. These fields are mandatory fields that must be completed to successfully submit your application.
- c. Complete SF-424 Fields First: The forms are designed to fill in common required fields across other forms, such as the applicant name, address, and DUNS number. To trigger this feature, an applicant must complete the SF-424 information first. Once it is completed, the information will transfer to the other forms.

Submit a Workspace: An application may be submitted through workspace by clicking the Sign and Submit button on the Manage Workspace page, under the Forms tab. Grants.gov recommends submitting your application package *at least 24-48 hours prior to the close date* to provide you with time to correct any potential technical issues that may disrupt the application submission.

- 3) Track a Workspace: After successfully submitting a workspace package, a Grants.gov Tracking Number (GRANTXXXXXXXX) is automatically assigned to the package. The number will be listed on the Confirmation page that is generated after submission.

For additional training resources, including video tutorials, refer to:
<https://www.Grants.gov/web/grants/applicants/applicant-training.html>

Applicant Support: Grants.gov provides applicants 24/7 support via the toll-free number 1-800-518-4726 and email at support@Grants.gov. For questions related to the specific grant opportunity, contact the number listed in the application package of the grant you are applying for.

If you are experiencing difficulties with your submission, it is best to call the Grants.gov Support Center and get a ticket number. The Support Center ticket number will assist SC with tracking your issue and understanding background information on the issue.

TIMELY RECEIPT REQUIREMENTS AND PROOF OF TIMELY SUBMISSION

Proof of timely submission is automatically recorded by Grants.gov. An electronic date/time stamp is generated within the system when the application is successfully received by Grants.gov. The applicant AOR will receive an acknowledgement of receipt and a tracking number (GRANTXXXXXXXX) from Grants.gov with the successful transmission of their application. Applicant AORs will also receive the official date/time stamp and Grants.gov

Tracking number in an email serving as proof of their timely submission.

When SC successfully retrieves the application from Grants.gov, and acknowledges the download of submissions, Grants.gov will provide an electronic acknowledgment of receipt of the application to the email address of the applicant with the AOR role. Again, proof of timely submission shall be the official date and time that Grants.gov receives your application. Applications received by Grants.gov after the established due date for the program will be considered late and may not be considered for funding by SC.

Applicants using slow internet, such as dial-up connections, should be aware that transmission can take some time before Grants.gov receives your application. Again, Grants.gov will provide either an error or a successfully received transmission in the form of an email sent to the applicant with the AOR role. The Grants.gov Support Center reports that some applicants end the transmission because they think that nothing is occurring during the transmission process. Please be patient and give the system time to process the application.

4. How to Prepare an Application

APPLICATION PREPARATION

You must submit the application through Grants.gov at <https://www.Grants.gov/>, using either the online webforms or downloaded forms. (Additional instructions are provided in [Section VIII, A.](#)) You are required to use the compatible version of Adobe Reader software to complete a [Grants.gov](#) Adobe application package. To ensure you have the [Grants.gov](#) compatible version of Adobe Reader, visit the software compatibility page at <https://www.Grants.gov/web/grants/applicants/adobe-software-compatibility.html>.

You must complete the mandatory forms and any applicable optional forms (e.g., Disclosure of Lobbying Activities (SF-LLL)) in accordance with the instructions on the forms and the additional instructions below.

Files that are attached to the forms must be PDF files unless otherwise specified in this FOA. Attached PDF files must be plain files consisting of text, numbers, and images without editable fields, signatures, passwords, redactions, or other advanced features available in some PDF-compatible software. Do not use PDF portfolios or binders.

Please note the following restrictions that apply to the names of all files attached to your application:

- Please limit file names to 50 or fewer characters
- Do not attach any documents with the same name. All attachments must have a unique name.
- Please use only the following characters when naming your attachments: A-Z, a-z, 0-9, underscore, hyphen, space, period, parenthesis, curly braces, square brackets, ampersand, tilde, exclamation point, comma, semi colon, apostrophe, at sign, number sign, dollar sign, percent sign, plus sign, and equal sign. Attachments that do not follow this rule may cause the entire application to be rejected or cause issues during processing.

RESUBMISSION OF APPLICATIONS

Applications submitted under this FOA may be withdrawn from consideration by using the PAMS website at <https://pamspublic.science.energy.gov>. Applications may be withdrawn at any time between when the applicant submits the application and when DOE makes the application available to merit reviewers. Such withdrawals take effect immediately and cannot be reversed. Please exercise due caution. After the application is made available to merit reviewers, the applicant may contact the DOE program office identified in this FOA to request that it be withdrawn.

After an application is withdrawn, it may be resubmitted, if this FOA is still open for the submission of applications. Such resubmissions will only count as one submission if this FOA restricts the number of applications from an applicant.

Note that there may be a delay between the application's submission in Grants.gov and when it is available to be withdrawn in PAMS. SC will usually consider the last submission, according to its Grants.gov timestamp, to be the intended version. Please consult with your program manager to resolve any confusion about which version of an application should be considered.

IMPROPER CONTENTS OF APPLICATIONS

Applications submitted under this FOA will be stored in controlled-access systems, but they may be made publicly available if an award is made. As such, it is critical that applicants follow these guidelines:

- Do not include information subject to any legal restriction on its open distribution, whether classified, export control, or unclassified controlled nuclear information.
- Do not include sensitive and protected personally identifiable information, including social security numbers, birthdates, citizenship, marital status, or home addresses. Pay particular attention to the content of biographical sketches and curriculum vitae.
- Do not include letters of support from Federal officials.
- Do not include letters of support on Federal letterhead. Letters that are not letters of support (such as letters confirming access to sites, facilities, equipment, or data; or letters from cognizant contracting officers) may be on Federal letterhead.
- Clearly mark all proprietary or trade-secret information.
- Applicants should not include the DOE logo or seal in their applications. Use of the DOE logo and seal require permission of DOE as discussed on the DOE website: <https://energy.gov/management/office-management/employee-services/graphics/doe-logo-seal-and-word-mark>.

5. How to Write an Option 2 Digital Data Management Plan

1. DMPs should describe whether and how data generated in the course of the proposed research will be shared and preserved. If the plan is not to share and/or preserve certain data, then the plan must explain the basis of the decision (for example, cost/benefit considerations, other parameters of feasibility, scientific appropriateness, or limitations

discussed in #4 below). At a minimum, DMPs must describe how data sharing and preservation will enable validation of results, or how results could be validated if data are not shared or preserved.

2. DMPs should provide a plan for making all research data displayed in publications resulting from the proposed research digitally open, machine-readable and digitally accessible to the public at the time of publication. This includes data that are displayed in charts, figures, images, etc. In addition, the underlying digital research data used to generate the displayed data should be made as accessible as possible to the public in accordance with the principles stated in the SC Statement on Digital Data Management (<https://science.osti.gov/sbir/Applicant-Resources/Digital-Data-Management>). This requirement could be met by including the data as supplementary information to the published article, or through other means. The published article should indicate how these data can be accessed.
3. DMPs should consult and reference available information about data management resources to be used in the course of the proposed research. In particular, DMPs that explicitly or implicitly commit data management resources at a facility beyond what is conventionally made available to approved users should be accompanied by written approval from that facility. In determining the resources available for data management at SC User Facilities, researchers should consult the published description of data management resources and practices at that facility and reference it in the DMP.
4. DMPs must protect confidentiality, personal privacy, sensitive and protected personally identifiable information, and U.S. national, homeland, and economic security; recognize proprietary interests, business confidential information, and intellectual property rights; avoid significant negative impact on innovation, and U.S. competitiveness; and otherwise be consistent with all applicable laws and regulations. There is no requirement to share proprietary data.

ADDITIONAL DMP GUIDANCE

In determining which data should be shared and preserved, researchers must consider the data needed to validate research findings as described in the Requirements noted above and are encouraged to consider the potential benefits of their data to their own fields of research, fields other than their own, and society at large.

- DMPs should reflect relevant standards and community best practices for data and metadata and make use of community accepted repositories whenever practicable.
- Costs associated with the scope of work and resources articulated in a DMP may be included in the proposed research budget as permitted by the applicable cost principles.
- To improve the discoverability of and attribution for datasets created and used in the course of research, the applicant is encouraged to cite publicly available datasets within the reference section of publications, and the identification of datasets with persistent identifiers such as Digital Object Identifiers (DOIs). In most cases, the SC can provide DOIs free of charge for data resulting from DOE-funded research through its Office of Science and Technical Information (OSTI) [Data ID Service](#).

- The following list of elements for a DMP provides suggestions regarding the data management planning process and the structure of the DMP:
 - Data Types and Sources. A brief, high-level description of the data to be generated or used through the course of the proposed research and which of these are considered digital research data necessary to validate the research findings.
 - Content and Format. A statement of plans for data and metadata content and format including, where applicable, a description of documentation plans, annotation of relevant software, and the rationale for the selection of appropriate standards. (Existing, accepted community standards should be used where possible. Where community standards are missing or inadequate, the DMP could propose alternate strategies that facilitate sharing, and should advise the sponsoring program of any need to develop or generalize standards.)
 - Sharing and Preservation. A description of the plans for data sharing and preservation. This should include, when appropriate:
 - the anticipated means for sharing and the rationale for any restrictions on who may access the data and under what conditions;
 - a timeline for sharing and preservation that addresses both the minimum length of time the data will be available and any anticipated delay to data access after research findings are published;
 - any special requirements for data sharing, for example, proprietary software needed to access or interpret data, applicable policies, provisions, and licenses for re-use and re-distribution, and for the production of derivatives, including guidance for how data and data products should be cited;
 - any resources and capabilities (equipment, connections, systems, software, expertise, etc.) requested in the research proposal that are needed to meet the stated goals for sharing and preservation. (This could reference the relevant section of the associated research proposal and budget request);
 - cost/benefit considerations to support whether/where the data will be preserved after direct project funding ends and any plans for the transfer of responsibilities for sharing and preservation;
 - whether, when, or under what conditions the management responsibility for the research data will be transferred to a third party (e.g. institutional, or community repository);
 - any other future decision points regarding the management of the research data including plans to reevaluate the costs and benefits of data sharing and preservation.
 - Protection. A statement of plans, where appropriate and necessary, to protect confidentiality, personal privacy, sensitive and protected personally identifiable information, and U.S. national, homeland, and economic security; recognize proprietary interests, business confidential information, and intellectual property rights; and avoid significant negative impact on innovation, and U.S. competitiveness.
 - Rationale. A discussion of the rationale or justification for the proposed data management plan including, for example, the potential impact of the data within the immediate field and in other fields, and any broader societal impact.

6. How to Prepare a Biosketch

A biosketch is to provide information that can be used by reviewers to evaluate the PI's potential for leadership within the scientific community. Examples of information of interest are invited and/or public lectures, awards received, scientific program committees, conference or workshop organization, professional society activities, special international or industrial partnerships, reviewing or editorship activities, or other scientific leadership experiences.

SC requires the use of the format approved by the National Science Foundation (NSF), which may be generated by the Science Experts Network Curriculum Vita (SciENcv), a cooperative venture maintained at <https://www.ncbi.nlm.nih.gov/sciencv/>, and is also available at <https://nsf.gov/bfa/dias/policy/nsfapprovedformats/biosketch.pdf>. The use of a format required by another agency is intended to reduce the administrative burden to researchers by promoting the use of common formats.

- **Education and Training:** Undergraduate, graduate and postdoctoral training, provide institution, major/area, degree and year.
- **Research and Professional Experience:** Beginning with the current position list, in chronological order, professional/academic positions with a brief description.
- **Publications:** Provide a list of up to 10 publications most closely related to the proposed project. For each publication, identify the names of all authors (in the same sequence in which they appear in the publication), the article title, book or journal title, volume number, page numbers, year of publication, and website address if available electronically. Patents, copyrights and software systems developed may be provided in addition to or substituted for publications. An abbreviated style such as the Physical Review Letters (PRL) convention for citations (list only the first author) may be used for publications with more than 10 authors.
- **Synergistic Activities:** List no more than 5 professional and scholarly activities related to the effort proposed.

Biosketches may be presented in a format developed for other agencies or generated by any software package, though SciENcv will facilitate submissions to other Federal sponsors.

Personally Identifiable Information: Do not include sensitive and protected personally identifiable information including social security numbers, birthdates, citizenship, marital status, or home addresses. Do not include information that a merit reviewer should not make use of.

7. How to Prepare Current and Pending Support

WARNING: These instructions have been significantly revised to require disclosure of a variety of potential conflicts of interest or commitment, including participation in foreign government-sponsored talent recruitment programs.

Current and Pending support is intended to allow the identification of potential duplication, over commitment, potential conflicts of interest or commitment, and all other sources of support. The PI and each senior/key person at the prime applicant and any proposed subaward must provide a list of all sponsored activities, awards, and appointments, whether paid or unpaid; provided as a gift with terms or conditions or provided as a gift without terms or conditions; full-time, part-

time, or voluntary; faculty, visiting, adjunct, or honorary; cash or in-kind; foreign or domestic; governmental or private-sector; directly supporting the individual's research or indirectly supporting the individual by supporting students, research staff, space, equipment, or other research expenses. All foreign government-sponsored talent recruitment programs must be identified in current and pending support. SC requires the use of the format approved by the National Science Foundation (NSF), which may be generated by the Science Experts Network Curriculum Vita (SciENcv), a cooperative venture maintained at <https://www.ncbi.nlm.nih.gov/sciencv/>, and is also available at <https://www.nsf.gov/bfa/dias/policy/nsfapprovedformats/cps.pdf>. The use of a format required by another agency is intended to reduce the administrative burden to researchers by promoting the use of common formats.

For every activity, list the following items:

- The sponsor of the activity or the source of funding
- The award or other identifying number
- The title of the award or activity
- The total cost or value of the award or activity, including direct and indirect costs. For pending proposals, provide the total amount of requested funding.
- The award period (start date – end date).
- The person-months of effort per year being dedicated to the award or activity
- Briefly describe the research being performed and explicitly identify any overlaps or synergies with the proposed research.

Details of any obligations, contractual or otherwise, to any program, entity, or organization sponsored by a foreign government must be provided on request to either the applicant institution or DOE.

8. How to Prepare a Research and Related Budget and Justification

The following advice will improve the accuracy of your budget request:

- Funds requested for personnel (senior, key, and other) must be justified as the product of their effort on the project and their institutional base salary.
- Funds requested for fringe benefits must be calculated as the product of the requested salary and, if present, the negotiated fringe benefit rate contained in an institution's negotiated indirect cost rate agreement.
- Funds requested for indirect costs must be calculated using the correct indirect cost base and the negotiated indirect cost rate.
- You are encouraged to include the rate agreement used in preparing a budget as a part of the budget justification.
- Do not prepare a budget justification using the expired DOE form F4620.1.

If you are proposing indirect costs and do not already have an Indirect Cost Rate Agreement with your Cognizant Federal Agency or documentation of rates accepted for estimating purposes by DOE or another Federal agency, it is recommended that you begin preparing an Indirect Cost Rate Proposal to be submitted, upon request, to the DOE contract specialist/grants management specialist who will evaluate your application if you are selected for award.

For your convenience in preparing an Indirect Cost Rate proposal, a link to applicant resources, including indirect rate model templates, has been provided below:
<https://science.osti.gov/sbir/applicant-resources/grant-application/>.

Cost sharing or matching funds are not to be included in the Research and Related Budget form. The amount and planned use of these funds can be described in the technical narrative.

Complete the Research and Related Budget form in accordance with the instructions on the form and the following instructions. You must complete a separate budget for each year of support requested. The form will generate a cumulative budget for the total project period. You must complete all the mandatory information on the form before the NEXT PERIOD button is activated. You may request funds under any of the categories listed as long as the item and amount are necessary to perform the proposed work, meet all the criteria as allowable under the applicable Federal cost principles, and are not prohibited by the funding restrictions in this FOA (See [Section II C.](#) Maximum and Minimum Award Size). Note, however, that foreign travel and participant/trainee costs are typically considered unallowable costs unless approved by the DOE Contracting Officer.

Round all funds to the nearest dollar across all budget documents including the budget justification. The dollar amounts in the budget justification must match the amounts found on the Research and Related Budget form. The Research and Related Budget form is only to be used for funding requested from DOE.

**TECHNICAL AND BUSINESS ASSISTANCE (FORMERLY COMMERCIALIZATION ASSISTANCE)
(SECTION F, FIELD 3, CONSULTANT SERVICES) [OPTIONAL]**

In accordance with Sec. 854 of the John S. McCain National Defense Authorization Act for 2019, Pub. L. 115-232, DOE is able to fund discretionary technical and business assistance (TABA) to all DOE SBIR and STTR Phase I awardees. Recipients have two options for receiving TABA: (1) utilize services provided by a DOE vendor or (2) identify their own TABA provider(s).

If you wish to receive TABA from a DOE vendor, you do not need to include this in your budget. If you receive a Phase I award, you will receive notification from DOE on what services are available and how to obtain these services at no cost to your SBC.

If you wish to utilize your own TABA provider(s), you are required to include this as one or more subcontracts or consultants in your budget and to provide a detailed budget justification. You may include up to \$6500 per project. The total amount of Phase I assistance that a company may receive during a fiscal year is subject to Small Business Administration policy per the statute. Please note that TABA does not count toward the maximum award size listed in [Section II, C.](#); e.g., seeking TABA from your provider could result in a maximum award in the amount of \$206,500 for topics that specify a maximum award amount of \$200,000.

RESTRICTIONS ON THE LEVEL OF SBC PARTICIPATION. Reimbursement is limited to services received that comply with 15 U.S.C. § 638(q); examples of acceptable services include assistance with:

- product sales
- intellectual property protections
- Patent prosecution costs related to obtaining United States patent protection for subject inventions of this award may be budgeted under TABA. Patent prosecution costs include attorney fees and United States Patent and Trademark Office (USPTO) fees. United States patent protection includes filings with the USPTO related to provisional, Patent Cooperation Treaty (PCT), non-provisional, continuation, and continuation-in-part patent applications. Patent prosecution costs related to foreign patent protection (e.g. foreign attorney, foreign patent office or translation fees) are unallowable.
- market research
- market validation
- development of certifications and regulatory plans
- development of manufacturing plans

Services are defined as acts of assistance in which no goods are exchanged. In some situations, incidental goods, such a report on the services provided, are exchanged. The following examples are provided for clarification:

- Market Research: Conducting market research in the planned area of commercialization is a service, and a report describing the finding is typically provided.
- Advertising: Developing an advertising strategy or designing advertising campaign materials are services. Paying to place ads or print brochures would not be considered a service.
- Website Development: Developing website content is a service.

Third party vendors or a federal entity issuing patents, certifications or regulatory approvals, must be used when spending TABA funds. Vendor(s) may not be the SBIR/STTR applicant or awardee or its research partner or a research institution performing part of the research and development portion of the award.

In the event some or the entire amount listed is not expended on TABA services, the remaining funds cannot be re-budgeted to other project costs. Re-budgeting of these funds to other project costs is not allowable.

BUDGET FIELDS

Section A Senior/Key Person	<p>For each Senior/Key Person, enter the requested information. List personnel, base salary, the number of months that person will be allocated to the project, requested salary, fringe benefits, and the total funds requested for each person. The requested salary must be the product of the base salary and the effort.</p> <p>Include a written narrative in the budget justification that justifies the need for requested personnel. Within the justification, explain the fringe benefit rate used if it is not the standard faculty rate.</p>
Section B Other Personnel	<p>List personnel, the number of months that person will be allocated to the project, requested salary fringe benefits, and the total funds requested for each person.</p> <p>Include a written narrative in the budget justification that fully justifies the need for requested personnel. Within the justification, provide the number of positions being filled in each category of other personnel.</p>
Section C Equipment	<p>For the purpose of this budget, equipment is designated as an item of property that has an acquisition cost of \$5,000 or more and an expected service life of more than one year, unless a different threshold is specified in a negotiated Facilities and Administrative Cost Rate. (Note that this designation applies for proposal budgeting only and differs from the DOE definition of capital equipment.) List each item of equipment separately and justify each in the budget justification section. Do not aggregate items of equipment. Allowable items ordinarily will be limited to research equipment and apparatus not already available for the conduct of the work. General-purpose office equipment is not eligible for support unless primarily or exclusively used in the actual conduct of scientific research.</p>
Section D Travel	<p>For purposes of this section only, travel to Canada or to Mexico is considered domestic travel. In the budget justification, list each trip's destination, dates, estimated costs including transportation and subsistence, number of staff traveling, the purpose of the travel, and how it relates to the project. Indicate the basis for the cost estimate (quotes from vendors or suppliers, past experience of similar items, or some other basis). To qualify for support, attendance at meetings or conferences must enhance the investigator's capability to perform the research, plan extensions of it, or disseminate its results. Domestic travel is to be justified separately from foreign travel. Within the budget justification, detail the number of personnel planning to travel and the estimated per-traveler cost for each trip.</p>

Section E Participant/Trainee Support Costs	<p>If applicable, submit training support costs. Educational projects that intend to support trainees (precollege, college, graduate and post graduate) must list each trainee cost that includes stipend levels and amounts, cost of tuition for each trainee, cost of any travel (provide the same information as needed under the regular travel category), and costs for any related training expenses. Participant costs are those costs associated with conferences, workshops, symposia or institutes and breakout items should indicate the number of participants, cost for each participant, purpose of the conference, dates and places of meetings and any related administrative expenses.</p> <p>Indicate the basis for the cost estimate (quotes from vendors or suppliers, past experience of similar items, or some other basis).</p>
Section F Other Direct Costs	<ul style="list-style-type: none"> • Materials and Supplies: Enter total funds requested for materials and supplies in the appropriate fields. In the budget justification, indicate general categories such as glassware, and chemicals, including an amount for each category (items not identified under “Equipment”). Categories less than \$1,000 are not required to be itemized. State the basis for the cost estimate (quotes from vendors or suppliers, past experience of similar items, or some other basis). • Publication Costs: Enter the total publication funds requested. The proposal budget may request funds for the costs of documenting, preparing, publishing or otherwise making available to others the findings and products of the work conducted under the award. In the budget justification, include supporting information. Indicate the basis for the cost estimate (quotes from vendors or suppliers, past experience of similar items, or some other basis). • Consultant Services: Enter total funds requested for all consultant services. In the budget justification, identify each consultant, the services he/she will perform, total number of days, travel costs, and total estimated costs. Indicate the basis for the cost estimate (quotes from vendors or suppliers, past experience of similar items, or some other basis). • ADP/Computer Services: Enter total funds requested for ADP/Computer Services. The cost of computer services, including computer-based retrieval of scientific, technical and education information may be requested. In the budget justification, include the established computer service rates at the proposing organization if applicable. Indicate the basis for the cost estimate (quotes from vendors or suppliers, past experience of similar items, or some other basis). • Subawards/Consortium/Contractual Costs: Enter total costs for all subawards/consortium organizations and other contractual costs proposed for the project. In the budget justification, justify the details. • Equipment or Facility Rental/User Fees: Enter total funds requested for Equipment or Facility Rental/User Fees. In the budget justification,

	<p>identify each rental/user fee and justify. Indicate the basis for the cost estimate (quotes from vendors or suppliers, past experience of similar items, or some other basis).</p> <ul style="list-style-type: none"> • Alterations and Renovations: Enter total funds requested for Alterations and Renovations. In the budget justification, itemize by category and justify the costs of alterations and renovations, including repairs, painting, removal or installation of partitions, shielding, or air conditioning. Where applicable, provide the square footage and costs. • Other: Add text to describe any other Direct Costs not requested above. Enter costs associated with “Other” item(s). Use the budget justification to further itemize and justify.
Section G Direct Costs	This represents Total Direct Costs (Sections A through F)
Section H Other Indirect Costs	Enter the Indirect Cost information, including the rates and bases being used, for each field. Only four general categories of indirect costs are allowed/requested on this form, so please consolidate if needed. Include the cognizant Federal agency and contact information if using a negotiated rate agreement. Within the budget justification, explain the use of multiple rates, if multiple rates are used.
Section I Total Direct and Indirect Costs	This is the total of Sections G and H

Provide supporting information for all proposed costs. Personnel justification must include a brief justification explaining the need for individual personnel and the total hours and hourly rates for each individual. Attach a single budget justification file for the entire project period in Field K. The file automatically carries over to each budget year. Provide any other information you wish to submit to justify your budget request including, but not limited to, any recent audits, clearly defined indirect cost rate bases, and voluntary reductions of indirect rates. If your organization has an Indirect Cost Rate Agreement in effect with your Cognizant Federal Agency [Defense Contract Audit Agency (DCAA), Department of Health and Human Services (DHHS), etc.] supporting the indirect rate(s) proposed and dated within one year of your anticipated award start date, then please provide this information with your application. Although there is no absolute cap on indirect costs, applications will be evaluated for overall economy and value to DOE.

If you are selected for an award, additional budget explanation will most likely be required.

All proposed purchases of equipment will be carefully reviewed relative to need and appropriateness for the research or R&D proposed.

Travel funds must be justified and related to the needs of the project, as in travel to DOE Headquarters to meet with DOE program managers. Travel expenses for technical conferences are not permitted unless the purpose of attending the conference directly relates to the project (e.g., to present results of the project). Foreign travel is not normally an appropriate expense. Funds to cover travel expenses outside of the United States are considered an unallowable direct

cost unless concurrence has been obtained by the DOE Program Manager and unless written approval has been obtained from the DOE Contracting Officer.

Tuition expenses are allowable only if requested from a subcontractor that is a university and the amount requested for tuition is reasonable and comparable to what a student would be paid for performing research during the award performance period.

Awards may include a profit or fee for the applicant. Fees are subject to negotiation and shall not exceed 7% of the total award amount. Profit or fee is not “program income” and shall not be included in field15.d. of the SF 424 (R&R) application. The fee applies solely to the small business concern receiving the award and for-profit R&D subcontractors participating in the project. In addition, the awardee may pay a profit/fee to a contractor providing routine goods or non-R&D services in accordance with normal commercial practice.

Any commercial and/or in-kind contribution to the project should be reflected in the project narrative and not included on the budget pages.

Round all funds to the nearest dollar across all budget documents including the budget justification. The dollar amounts in the budget justification must match the amounts found on the Research and Related Budget form. Cost sharing or matching funds provided by the small business or third parties shall not be included on the Research and Related Budget Form—this form should only include funds being requested from DOE. Cost sharing or matching funds can be included in the budget justification and must be clearly marked as cost sharing or matching funds.

Complete the Level-of-Effort worksheet located at <https://science.osti.gov/sbir/Applicant-Resources/Grant-Application>. If the Microsoft Excel version is used, it must be converted to PDF before it is attached to the application in Field 12 – Research & Related Other Project Information.

9. How to Prepare a Commercialization Plan

COMMERCIALIZATION PLAN (QUESTION 7) [REQUIRED]

A brief Commercialization Plan (4 pages maximum, 2000 words maximum, 10 point minimum font size) must be included in a Phase I grant application. If the Commercialization Plan is not included at the time of application submission, your application will be administratively declined without review. The Commercialization Plan will be evaluated under the “Impact” criterion and should address the following elements:

Project Title

- You MUST include the following statement after your project title:
“(COMPANY NAME HERE) estimates cumulative sales revenues of \$ _____ and cumulative licensing revenues of \$ _____ during the first 10 years of commercialization.”

Market Opportunity: Describe the market opportunity being addressed.

- Intellectual Property (IP): Describe the status of patents, trade secrets, and other steps you plan to take to protect your IP for commercialization.
- Company/Team: Describe the capability of your present personnel and/or planned additions to your staff that will enable you to successfully commercialize your innovation.

Although Phase I applications must only address the elements listed above, Applicants are encouraged to review the example of a Phase I Commercialization Plan on the DOE SBIR/STTR website, under [“Applicant Resources”](#) on the DOE SBIR/STTR website at <https://science.osti.gov/sbir/Applicant-Resources/Grant-Application>.

At this time, Question 7 of the SBIR/STTR Information Form will accept the Commercialization Plan attachment for a Phase I grant application submission after selecting DOE as agency and Phase I as application type.

Please Note: All applications lacking a separate and attached Phase I Commercialization Plan as noted above will be administratively declined and will not undergo further review or consideration for award.

10. How to View Applications in PAMS

Each Grants.gov application submitted to the DOE SC automatically transfers into PAMS and is subsequently assigned to a program manager. At the time of program manager assignment, the three people listed on the SF-424 (R&R) cover page will receive an email with the subject line, “Receipt of Proposal 0000xxxxxx by the DOE Office of Science.” These three people are the PI (Block 14), Authorized Representative (Block 19), and Point of Contact (Block 5). In PAMS notation, applications are known as proposals, the PI is known as the PI, the Authorized Representative is known as the Sponsored Research Officer/Business Officer/Administrative Officer (SRO/BO/AO), and the Point of Contact is known as the POC.

There will be a period of time between the application’s receipt at Grants.gov and its assignment to a DOE SC program manager. Program managers are typically assigned two weeks after applications are due at Grants.gov: please refrain from attempting to view the proposal in PAMS until you receive an email providing the assignment of a program manager.

Once the email is sent, the PI, SRO/BO/PO, and POC will each be able to view the submitted proposal in PAMS. Viewing the proposal is optional.

You may use the Internet Explorer, Firefox, Google Chrome, or Safari browsers to access PAMS.

Following are two sets of instructions for viewing the submitted proposal, one for individuals who already have PAMS accounts and one for those who do not.

If you already have a PAMS account, follow these instructions:

1. Log in to PAMS at <https://pamspublic.science.energy.gov/>.
2. Click the “Proposals” tab and click “Access Previously Submitted Grants.gov Proposal.”

3. Enter the following information:
 - Proposal ID: Enter the ten-digit PAMS proposal ID, including the leading zeros (e.g., 00002xxxxx). Do not use the Grants.gov proposal number. Use the PAMS number previously sent to you in the email with subject line, “Receipt of Proposal ...”.
 - Email (as entered in Grants.gov application): Enter your email address as it appears on the SF424(R&R) Cover Page.
 - Choose Role: Select the radio button in front of the role corresponding to the SF-424 (R&R) cover page. If your name appears in block 19 of the SF-424 (R&R) cover page as the authorizing representative, select “SRO/BO/AO (Sponsored Research Officer/Business Officer/Administrative Officer).” If your name appears in block 14 of the SF424 R&R cover page as the PI, select “Principal Investigator (PI).” If your name appears in block 5 of the SF424 R&R as the point of contact, select “Other (POC).”
4. Click the “Save and Continue” button. You will be taken to your “My Proposals” page. The Grants.gov proposal will now appear in your list of proposals. Click the “Actions/Views” link in the options column next to this proposal to obtain a dropdown list. Select “Proposal” from the dropdown to see the proposal. Note that the steps above will work only for proposals submitted to the DOE SC since May 2012.

If you do not already have a PAMS account, follow these instructions:

1. To register, click the “Create New PAMS Account” link on the website <https://pamspublic.science.energy.gov/>.
2. Click the “No, I have never had an account” link and then the “Create Account” button.
3. You will be prompted to enter your name and email address, create a username and password, and select a security question and answer. Once you have done this, click the “Save and Continue” button.
4. On the next page, enter the required information (at least one phone number and your mailing address) and any optional information you wish to provide (e.g., FAX number, website, mailstop code, additional email addresses or phone numbers, Division/Department). Click the “Create Account” button.
5. Read the user agreement and click the “Accept” button to indicate that you understand your responsibilities and agree to comply with the rules of behavior for PAMS.
6. You will be taken to the Register to Institution page. Select the link labeled, “Option 1: My institution has submitted a proposal in Grants.gov. I am here to register as an SRO, PI, or POC (Sponsored Research Officer, Principal Investigator, or Point of Contact).”
7. Enter the following information:
 - Proposal ID: Enter the ten-digit PAMS proposal ID, including the leading zeros (e.g., 00002xxxxx). Do not use the Grants.gov proposal number. Use the PAMS number previously sent to you in the email with subject line, “Receipt of Proposal ...”.
 - Email (as entered in Grants.gov proposal): Enter your email address as it appears on the SF424(R&R) Cover Page.
 - Choose Role: Select the radio button in front of the role corresponding to the SF-424 (R&R) cover page. If your name appears in block 19 of the SF-424 (R&R) cover page as the authorizing representative, select “SRO/BO/AO (Sponsored Research Officer/Business Officer/Administrative Officer).” If your name appears in block 14 of the SF424 R&R cover page as the PI, select “Principal Investigator (PI).” If your name appears in block 5 of the SF424 R&R as the point of contact, select “Other (POC).”

8. Click the “Save and Continue” button. You will be taken to your “My Proposals” page. The Grants.gov proposal will now appear in your list of proposals. Click the “Actions/Views” link in the options column next to this proposal to obtain a dropdown list. Select “Proposal” from the dropdown to see the proposal.

If you were listed as the PI on a prior submission but you have not previously created an account, you may already be listed in PAMS. If this is the case, you will be taken to the PAMS home page after agreeing to the Rules of Behavior. If that happens, follow the instructions listed above under “If you already have a PAMS account...” to access your Grants.gov proposal.

11. How to Register in Other Systems Before Submitting an Application

SYSTEMS TO REGISTER IN

Applicants must complete a series of registrations and enrollments to submit applications in response to this FOA. Applicants not currently registered with SAM and Grants.gov should allow **at least four weeks** to complete these requirements.

You should start the process as soon as possible.

You may not be able to use your preferred Internet browser: Each system has its own requirements. Applicants must obtain a DUNS number at <https://fedgov.dnb.com/webform>. Applicants must register with SAM at <https://www.sam.gov/>. More information about SAM registration for applicants is found at https://www.sam.gov/SAM/transcript/Quick_Guide_for_Grants_Registrations.pdf. SAM maintains a complete user guide at https://www.sam.gov/SAM/transcript/SAM_Non_Federal_User_Guide.pdf.

Applicants must provide a Taxpayer Identification Number (TIN) to complete their registration in www.SAM.gov. An applicant’s TIN is an EIN assigned by the Internal Revenue Service (IRS). In limited circumstances, a Social Security Number (SSN) assigned by the Social Security Administration (SSA) may be used as a TIN. You may obtain an EIN from the IRS at <https://www.irs.gov/businesses/small-businesses-self-employed/apply-for-an-employer-identification-number-ein-online>.

Do not use a SSN as a TIN. Obtain a TIN from the IRS using the website listed above.

Applicants must register with FedConnect at www.FedConnect.net. The full, binding version of assistance agreements will be posted to FedConnect.

Recipients must register with the Federal Funding Accountability and Transparency Act Subaward Reporting System at <https://www.fsrs.gov>. This registration must be completed before an award may be made: you are advised to register while preparing your application.

REGISTERING IN GRANTS.GOV

Applicants must register with Grants.gov, following the instructions at <https://www.Grants.gov/web/grants/applicants/registration.html> and described above.

WHERE TO SUBMIT AN APPLICATION

You must submit the application through Grants.gov at www.Grants.gov, using either the online webforms or downloaded forms, or a system-to-system service

Submit electronic applications through the “Apply for Grants” function at www.Grants.gov. If you have problems completing the registration process or submitting your application, call Grants.gov at 1-800- 518-4726 or send an email to support@Grants.gov.

Please ensure that you have read the applicable instructions, guides, help notices, frequently asked questions, and other forms of technical support on Grants.gov.

DOE SC PORTFOLIO ANALYSIS AND MANAGEMENT SYSTEM (PAMS)

Applicants must register in the Portfolio Analysis and Management System (PAMS) to submit letters of intent and pre-applications, to view merit reviewer comments, or to take a number of post-award actions.

B. POLICY PROVISIONS

1. Evaluation and Administration by Non-Federal Personnel

In conducting the merit review evaluation, the Government may seek the advice of qualified non- Federal personnel as reviewers. The Government may also use non-Federal personnel to conduct routine, nondiscretionary administrative activities. The applicant, by submitting its application, consents to the use of non-Federal reviewers/administrators. Non-Federal reviewers must sign conflict of interest and non-disclosure agreements prior to reviewing an application. Personnel conducting administrative activities must sign a non-disclosure agreement.

Data contained in successful and unsuccessful applications may be used by the Government for completing studies required by §9 of the Small Business Act, 15 U.S.C. §638, as amended. The results of these studies will be available to the public, but will not include information that identifies individual small business applicants.

2. Government Right to Reject or Negotiate

DOE reserves the right, without qualification, to reject any or all applications received in response to this FOA and to select any application, in whole or in part, as a basis for negotiation and/or award.

3. Intergovernmental Review

This program is not subject to Executive Order 12372 Intergovernmental Review of Federal Programs.

4. Modifications

Notices of any modifications to this FOA will be posted on Grants.gov and the FedConnect portal. You can receive an email when a modification or an FOA message is posted by registering with FedConnect as an interested party for this FOA. It is recommended that you register as soon after release of the FOA as possible to ensure you receive timely notice of any modifications or other FOAs. More information is available at www.FedConnect.net.

C. ADMINISTRATIVE AND NATIONAL POLICY REQUIREMENTS

1. Administrative Requirements

The administrative requirements for DOE grants and cooperative agreements are contained in 2 CFR 200 as modified by 2 CFR 910 (DOE Financial Assistance Regulations).

2. Availability of Funds

Funds are not presently available for this award. The Government's obligation under this award is contingent upon the availability of appropriated funds from which payment for award purposes can be made. No legal liability on the part of the Government for any payment may arise until funds are made available to the contracting officer for this award and until the awardee receives notice of such availability, to be confirmed in writing by the contracting officer.

3. Audit Requirements

Under 2 CFR 910.501, a for-profit recipient that expends \$750,000 or more in a year (including any pre- award costs) under DOE Financial Assistance awards must have an audit made for that year by an independent auditor (regardless of when the expenditures are presented to DOE for reimbursement). In determining whether the \$750,000 threshold is met, recipients should assess the amount of DOE funds expended under the award and shall not include any cost-sharing amounts.

4. Conference Spending (February 2015)

The recipient shall not expend any funds on a conference not directly and programmatically related to the purpose for which the grant or cooperative agreement was awarded that would defray the cost to the United States Government of a conference held by any Executive branch department, agency, board, commission, or office for which the cost to the United States Government would otherwise exceed \$20,000, thereby circumventing the required notification by the head of any such Executive Branch department, agency, board, commission, or office to the Inspector General (or senior ethics official for any entity without an Inspector General), of the date, location, and number of employees attending such conference.

5. Commitment of Public Funds

(a) A DOE financial assistance award is valid only if it is in writing and is signed, either in writing or electronically, by a DOE Contracting Officer.

(b) Recipients are free to accept or reject the award. A request to draw down DOE funds constitutes the Recipient's acceptance of the terms and conditions of this Award.

6. Corporate Felony Conviction and Federal Tax Liability Representations (March 2014)

In submitting an application in response to this FOA the Applicant represents that:

- It is **not** a corporation that has been convicted of a felony criminal violation under any Federal law within the preceding 24 months,
- It is **not** a corporation that has any unpaid Federal tax liability that has been assessed, for which all judicial and administrative remedies have been exhausted or have lapsed, and that is not being paid in a timely manner pursuant to an agreement with the authority responsible for collecting the tax liability.

For purposes of these representations the following definitions apply:

- A Corporation includes any entity that has filed articles of incorporation in any of the 50 states, the District of Columbia, or the various territories of the United States [but not foreign corporations]. It includes both for-profit and non-profit organizations.

7. Cost Sharing

For this FOA, cost sharing is defined as contributions made by the applicant to the proposed research and development project described in the technical narrative. Cost sharing is not required. However, any commercial contributions will be considered as part of the evaluation.

8. Environmental, Safety and Health (ES&H) Performance of Work at DOE Facilities

With respect to the performance of any portion of the work under this award which is performed at a DOE-owned or controlled site, the recipient agrees to comply with all state and Federal ES&H regulations, and with all other ES&H requirements of the operator of such site.

Prior to the performance on any work at a DOE-Owned or controlled site, the recipient shall contact the site facility manager for information on DOE and site specific ES&H requirements.

The recipient shall apply this provision to all subawardees at any tier.

9. Federal, State, and Local Requirements

With respect to the performance of any portion of the work under this award, the recipient agrees to comply with all applicable local, state, and Federal ES&H regulations. The recipient shall apply this provision to all subawardees at any tier.

10. Funding Restrictions

Cost Principles: Costs must be allowable, allocable and reasonable in accordance with the applicable Federal cost principles referenced in 2 CFR 200 as modified by 2 CFR 910 (DOE Financial Assistance Regulation).

Pre-award Costs: Recipients may charge to an award resulting from this FOA pre-award costs that were incurred within the ninety (90) calendar-day period immediately preceding the effective date of the award, if the costs are allowable in accordance with the applicable Federal cost principles referenced in 2 CFR 200 as modified by 2 CFR 910 (DOE Financial Assistance Regulation). Recipients must obtain the prior approval of the contracting officer for any pre-award costs that are for periods greater than this 90 calendar-day period.

Pre-award costs are incurred at the applicant's risk. DOE is under no obligation to reimburse such costs if for any reason the applicant does not receive an award or if the award is made for a lesser amount than the applicant expected.

11. Intellectual Property Development Under This Program

U.S. Competitiveness

A primary objective of DOE's multi-billion dollar research, development and demonstration investments is to cultivate new research and development ecosystems, manufacturing capabilities, and supply chains for and by U.S. industry and labor. Therefore, in exchange for receiving taxpayer dollars to support an applicant's project, the applicant must agree to the following U.S. Competitiveness Provision as part of an award under this FOA.

U. S. Competitiveness

The Contractor agrees that any products embodying any subject invention or produced through the use of any subject invention will be manufactured substantially in the United States unless the Contractor can show to the satisfaction of DOE that it is not commercially feasible. In the event DOE agrees to foreign manufacture, there will be a requirement that the Government's support of the technology be recognized in some appropriate manner, e.g., alternative binding commitments to provide an overall net benefit to the U.S. economy. The Contractor agrees that it will not license, assign or otherwise transfer any subject invention to any entity, at any tier, unless that entity agrees to these same requirements. Should the Contractor or other such entity receiving rights in the invention(s): (1) undergo a change in ownership amounting to a controlling interest, or (2) sell, assign, or otherwise transfer title or exclusive rights in the invention(s), then the assignment, license, or other transfer of rights in the subject invention(s) is/are suspended until approved in writing by DOE. The Contractor and any successor assignee will convey to DOE, upon written request from DOE, title to any subject invention, upon a breach of this paragraph. The Contractor will

include this paragraph in all subawards/contracts, regardless of tier, for experimental, developmental or research work.

A subject invention is any invention conceived or first actually reduced in performance of work under an award. An invention is any invention or discovery which is or may be patentable. The contractor includes any awardee, recipient, sub-awardee, or sub-recipient.

As noted in the U.S. Competitiveness Provision, at any time in which an entity cannot meet the requirements of the U.S. Competitiveness Provision, the entity may request a modification or waiver of the U.S. Competitiveness Provision. For example, the entity may propose modifying the language of the U.S. Competitiveness Provision in order to change the scope of the requirements or to provide more specifics on the application of the requirements for a particular technology. As another example, the entity may request that the U.S. Competitiveness Provision be waived in lieu of a net benefits statement or U.S. manufacturing plan. The statement or plan would contain specific and enforceable commitments that would be beneficial to the U.S. economy and competitiveness. Examples of such commitments could include manufacturing specific products in the U.S., making a specific investment in a new or existing U.S. manufacturing facility, keeping certain activities based in the U.S. or supporting a certain number of jobs in the U.S. related to the technology. If DOE, in its sole discretion, determines that the proposed modification or waiver promotes commercialization and provides substantial U.S. economic benefits, DOE may grant the request and, if granted, modify the award terms and conditions for the requesting entity accordingly.

The U.S. Competitiveness Provision is implemented by DOE pursuant to a Determination of Exceptional Circumstances (DEC) under the Bayh-Dole Act and DOE Patent Waivers. See Subsection entitled 'PATENTS' in this Section 11 for more information on the DEC and DOE Patent Waiver.

PROPERTY AND COMMERCIALIZATION RIGHTS AGREEMENTS

When using subcontractors, including research institutions, the applicant is responsible for protecting its own interests with regard to the retention of intellectual property and commercialization rights.

It is in the best interest of the applicant, when collaborating with a research institution or other subcontractors, to negotiate a written agreement for allocating, between the parties, intellectual property rights, and rights to carry out any follow-on research, development, or commercialization.

A model agreement, found on the SBIR/STTR Programs Office web site at <https://science.osti.gov/sbir/Awardee-Resources/Awardee-Documents> may be used or revised through negotiation between the applicant and the research institution.

The completed agreement should not be submitted with the application, but retained by the parties to the agreement. The Federal government will not be a party to any agreement between the SBC and any subcontractor, including the STTR research institution. However, applicants are

reminded that nothing in such agreements should conflict with any provisions setting forth the respective rights of the U.S. and the SBC with respect to both intellectual property rights and any rights to carry out follow-on research.

INTELLECTUAL PROPERTY INCLUDING INNOVATIONS, INVENTIONS, AND PATENTS PROPRIETARY INFORMATION

Information contained in unsuccessful applications will remain the property of the applicant. The Government will retain for at least three years one electronic file copy of each unsuccessful application. Public release of information in any application submitted will be subject to existing statutory and regulatory requirements, such as the Freedom of Information and Privacy Acts.

If proprietary information is provided in an application that constitutes proprietary technical data, confidential personnel information, or proprietary commercial or financial information, it will be treated in confidence, to the extent permitted by law, provided this information is clearly marked by the applicant in accordance with paragraph D, above, and provided appropriate page numbers are inserted in the Proprietary Notice legend printed on the first page of the Project Narrative.

Applications will not automatically be withheld in their entirety unless justified by the applicant. The Government will limit dissemination of such information to official channels to the extent permitted by law. Any other legend may be unacceptable to the Government and may constitute grounds for removing the application from further consideration and without assuming any liability for inadvertent disclosure.

PROTECTION OF APPLICATION INFORMATION

DOE's policy is to use data included in applications for evaluation purposes only and to protect, to the extent allowed by law, such information from unauthorized use or disclosure.

In addition to Government personnel, scientists and engineers from outside the government may be used in the application evaluation process. The decision to obtain outside evaluation will take into consideration requirements for the avoidance of organizational conflicts of interest and the competitive relationship, if any, between the applicant and the prospective outside evaluator. The evaluation will be performed under an agreement with the evaluator that the information contained in the application will be used only for evaluation purposes and will not be further disclosed.

RIGHTS IN DATA DEVELOPED UNDER SBIR/STTR FUNDING AGREEMENTS

Rights in technical data, including software developed under the terms of any funding agreement resulting from applications submitted in response to this FOA, shall remain with the awardee, except that the Government shall have the limited right to use such data for Government purposes. DOE will protect properly marked SBIR/STTR data from disclosure from the date the SBIR/STTR award is issued for a period of 20 years in accordance with the most recent SBIR/STTR Intellectual Property Provision available at <https://www.energy.gov/gc/standard-intellectual-property-ip-provisions-financial-assistance-awards>

COPYRIGHTS

The awardee may copyright and publish (consistent with appropriate national security considerations, if any) material developed with DOE support. DOE receives a royalty-free license for the Federal Government and requires that each publication contain an appropriate acknowledgment and disclaimer statement.

PATENTS

SBCs may retain the principal worldwide patent rights to any invention developed with Federal support. The government receives a royalty-free license for Federal use, reserves the right to require the patent holder to license others in certain circumstances, and requires domestic manufacture. Information regarding patent rights

is available at 37 CFR 401.14 or the most recent SBIR/STTR Intellectual Property Provision available at <https://www.energy.gov/gc/standard-intellectual-property-ip-provisions-financial-assistance-awards>.

On June 07, 2021, DOE approved a DETERMINATION OF EXCEPTIONAL CIRCUMSTANCES (DEC) UNDER THE BAYH-DOLE ACT TO FURTHER PROMOTE DOMESTIC MANUFACTURE OF DOE SCIENCE AND ENERGY TECHNOLOGIES. In accordance with this DEC, all awards, including sub-awards, under this FOA shall include the U.S. Competitiveness Provision in accordance with Section 11 of this FOA. A copy of the DEC can be found at <https://www.energy.gov/gc/determination-exceptional-circumstances-decs>.

Pursuant to 37 CFR § 401.4, any nonprofit organization or small business firm as defined by 35 U.S.C. 201 affected by this DEC has the right to appeal it by providing written notice to DOE within 30 working days from the time it receives a copy of the determination.

DOE may require additional submissions or requirements as authorized by any applicable DEC.

On August 28, 2020, DOE approved a DETERMINATION OF EXCEPTIONAL CIRCUMSTANCES UNDER THE BAYH-DOLE ACT FOR QUANTUM INFORMATION SCIENCE TECHNOLOGIES. In accordance with this DEC, all awards, including sub-awards, under this FOA shall include the U.S. Competitiveness Provision in accordance with Section 11 of this FOA. A copy of the DEC can be found at <https://www.energy.gov/gc/determination-exceptional-circumstances-decs>.

With justification, Technical and Business Assistance funds may be used to pay U.S. patent prosecution costs for inventions developed under the Phase I or Phase II projects.

DISTRIBUTION OF INTELLECTUAL PROPERTY AND COMMERCIALIZATION RIGHTS BETWEEN THE SBC AND SUBCONTRACTOR

When using subcontractors, including research institutions, the SBC is responsible for providing that its subcontractors retain all rights provided for the SBC. Large business subcontractors will need to petition DOE to retain title to inventions.

NOTICE OF RIGHT TO REQUEST PATENT WAIVER

Large business subcontractors may request a waiver of all or any part of the rights of the United States in inventions conceived or first actually reduced to practice in performance of an agreement as a result of this FOA, in advance of or within 30 days after the effective date of the award. Even if such advance waiver is not requested or the request is denied, the recipient will have a continuing right under the award to request a waiver of the rights of the United States in identified inventions, i.e., individual inventions conceived or first actually reduced to practice in performance of the award. Any patent waiver that may be granted is subject to certain terms and conditions in 10 CFR 784. For more information, see <https://energy.gov/gc/services/technology-transfer-and-procurement/office-assistant-general-counsel-technology-transf-1> ..

NOTICE REGARDING ELIGIBLE/INELIGIBLE ACTIVITIES

Eligible activities under this program include those which describe and promote the understanding of scientific and technical aspects of specific energy technologies, but not those which encourage or support political activities such as the collection and dissemination of information related to potential, planned or pending legislation.

12. Matching Funds

For this FOA, matching funds are defined as contributions made by the applicant either (1) for research and development costs NOT requested in your budget or (2) other costs associated with commercialization of the proposed innovation

13. National Environmental Policy Act (NEPA) Compliance

If question 4.a. on the “Research and Related Other Project Information” document indicates “potential impact on the environment”, or if DOE’s own review indicates it, DOE may ask the applicant to provide additional information on those impacts in order to prepare an environmental critique/synopsis per 10 CFR 1021.216. Note that this pre-award environmental critique/synopsis process would be separate from the preparation of a NEPA document such as an environmental impact statement (EIS) or an environmental assessment (EA). If DOE determines the latter documentation is necessary, this process would need to be completed, funded by and with the participation of the awardee, prior to them taking any action on the proposed project that could have adverse environmental effects or that could limit the choice of reasonable alternatives. Note that in most cases, even when “Potential Impact to the Environment” is checked “Yes,” preparation of such NEPA documents is rarely necessary, but DOE has the expectation that the Applicant will disclose the potential, which would serve to initiate dialog with DOE if necessary. The inability to satisfy the NEPA requirements after an award would result in cancellation of the award.

14. Nondisclosure and Confidentiality Agreements Representations (June 2015)

In submitting an application in response to this FOA the Applicant represents that:

- (1) It **does not and will not** require its employees or contractors to sign internal nondisclosure or confidentiality agreements or statements prohibiting or otherwise restricting its employees or contractors from lawfully reporting waste, fraud, or abuse to a designated investigative or law enforcement representative of a Federal department or agency authorized to receive such information.
- (2) It **does not and will not** use any Federal funds to implement or enforce any nondisclosure and/or confidentiality policy, form, or agreement it uses unless it contains the following provisions:
 - a. "These provisions are consistent with and do not supersede, conflict with, or otherwise alter the employee obligations, rights, or liabilities created by existing statute or Executive order relating to (1) classified information, (2) communications to Congress, (3) the reporting to an Inspector General of a violation of any law, rule, or regulation, or mismanagement, a gross waste of funds, an abuse of authority, or a substantial and specific danger to public health or safety, or (4) any other whistleblower protection. The definitions, requirements, obligations, rights, sanctions, and liabilities created by controlling Executive orders and statutory provisions are incorporated into this agreement and are controlling." The limitation above shall not contravene requirements applicable to Standard Form 312, Form 4414, or any other form issued by a Federal department or agency governing the nondisclosure of classified information.
 - b. Notwithstanding provision listed in paragraph (a), a nondisclosure or confidentiality policy form or agreement that is to be executed by a person connected with the conduct of an intelligence or intelligence-related activity, other than an employee or officer of the United States Government, may contain provisions appropriate to the particular activity for which such document is to be used. Such form or agreement shall, at a minimum, require that the person will not disclose any classified information received in the course of such activity unless specifically authorized to do so by the United States Government. Such nondisclosure or confidentiality forms shall also make it clear that they do not bar disclosures to Congress, or to an authorized official of an executive agency or the Department of Justice, that are essential to reporting a substantial violation of law.

15. Prohibition on Lobbying Activity

By accepting funds under this award, you agree that none of the funds obligated on the award shall be expended, directly or indirectly, to influence congressional action on any legislation or appropriation matters pending before Congress, other than to communicate to Members of Congress as described in 18 USC 1913. This restriction is in addition to those prescribed elsewhere in statute and regulation.

16. Proprietary Application Information

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 and program evaluation as permitted by statute. Only the following documents may contain

proprietary information: (1) the commercialization plan, (2) the project narrative, and (3) the budget justification, (4) letters of support, and (5) commercialization history.

To protect such data, each of the documents containing proprietary data must be marked in the following manner utilizing the three-step process outlined below:

1. The Cover Page must contain the notice below (please cut and paste):

“Pages [] of this document may contain trade secrets or commercial or financial information that is privileged or confidential and is exempt from public disclosure. Such information shall be used or disclosed only for evaluation purposes or in accordance with a financial assistance or loan agreement between the submitter and the Government. The Government may use or disclose any information that is not appropriately marked or otherwise restricted, regardless of source.”

“Proprietary Data Legend

Lines, paragraphs, tables, charts, and other graphics containing trade secrets, commercial, and/or financial information are marked with brackets [].”

Alternatively you may select: “highlighted” or “underlined text” or “a vertical line in the side margin | ” in place of “brackets [].”

To see examples of proper IP markings, please visit the SBIR/STTR Programs web site at <https://science.osti.gov/sbir/Applicant-Resources/Protecting-your-Trade-Secrets>.

2. To further protect such data, each page containing trade secrets or commercial or financial information that is privileged or confidential must be specifically identified and marked with the following (please cut and paste):

“May contain trade secrets or commercial or financial information that is privileged or confidential and exempt from public disclosure.”

Do not include this statement on pages that do not contain proprietary information.

3. In addition, each line or paragraph containing trade secrets or commercial or financial information that is privileged, must be marked with brackets or other clear identification, such as highlighting.

Please ensure this information is consistent with question number three (3) of the Research and Related Other Project Information form.

17. Publications

The recipient is expected to publish or otherwise make publicly available the results of the work conducted under any award resulting from this FOA. Publications and other methods of public communication describing any work based on or developed under an award resulting from this

FOA must contain an acknowledgment of SC support. The format for such acknowledgments is provided at <https://science.osti.gov/Funding-Opportunities/Acknowledgements>. The author's copy of any peer-reviewed manuscript accepted for funding must be announced to DOE's Office of Scientific and Technical Information (OSTI) and made publicly available in accordance with the instructions contained in the Federal Assistance Reporting Requirements Checklist and Instructions incorporated in all Assistance Agreements.

18. Registration Requirements

Additional administrative requirements for DOE grants and cooperative agreements are contained in 2 CFR 25 (See: www.eCFR.gov). Prime awardees must keep their data in SAM current at www.SAM.gov. Subawardees at all tiers must obtain DUNS numbers and provide the DUNS to the prime awardee before the subaward can be issued.

19. Subaward and Executive Reporting

Additional administrative requirements necessary for DOE grants and cooperative agreements to comply with the Federal Funding and Transparency Act of 2006 (FFATA) are contained in 2 CFR 170. (See: www.eCFR.gov). Prime awardees must register with the new FSRS database at <https://www.fsrs.gov> and report the required data on their first tier subawardees. Prime awardees must report the executive compensation for their own executives as part of their registration profile in SAM.

D. REFERENCE MATERIAL

1. Definitions

COMMERCIALIZATION

This concerns the process of developing markets and producing and delivering products for sale (whether by the originating party or by others). As used here, commercialization includes both Government and private sector markets.

CONSULTANT

A consultant is generally an individual who is not using any institutional or organizational facilities and is acting as a direct agent. The individual usually bills by the hour, submitting invoices. Invoices occasionally include additional direct expenses incurred. Consultants are normally subject matter experts and are not directly supervised by the awardee.

COOPERATIVE AGREEMENT

Cooperative agreement means a type of financial assistance used when there will be substantial Federal scientific or programmatic involvement. Substantial involvement means that, after award, scientific or program staff will assist, guide, coordinate, or participate in program activities.

EMPLOYEE

A person listed on the budget form (Section A - Key/Senior Person or Section B - Other Personnel) as an employee of the SBC is required to either (a) be paid using a W-2 form or (b) possess an Internal Revenue Service determination that the person is an employee using Form SS-8. Persons paid by a 1099 (and not possessing an employee determination using Form SS-8) are to be treated as independent contractors and should be listed on the budget form in Section F - Other Direct Costs.

GRANT AGREEMENT

Grant agreement means a legal instrument of financial assistance between a Federal awarding agency or pass-through entity and a non-Federal entity that, consistent with 31 U.S.C. 6302, 6304:

1. Is used to enter into a relationship the principal purpose of which is to transfer anything of value from the Federal awarding agency or pass-through entity to the non-Federal entity to carry out a public purpose authorized by a law of the United States (see 31 U.S.C. 6101(3)); and not to acquire property or services for the Federal awarding agency or pass-through entity's direct benefit or use;
2. Is distinguished from a cooperative agreement in that it does not provide for substantial involvement between the Federal awarding agency or pass-through entity and the non-Federal entity in carrying out the activity contemplated by the Federal award.
3. Does not include an agreement that provides only:
 - a. Direct United States Government cash assistance to an individual;
 - b. A subsidy;
 - c. A loan;
 - d. A loan guarantee; or
 - e. Insurance.

GRANTEE

Grantee means the organization or individual awarded a grant agreement by DOE that is responsible and accountable for the use of the funds provided and for the performance of the grant-supported project or activity. The grantee is the entire legal entity even if a particular component is designated in award documents. The grantee is legally responsible and accountable to DOE for the performance and financial aspects of the grant-supported project or activity. Also known as awardee or recipient.

HISTORICALLY UNDERUTILIZED BUSINESS ZONE (HUBZONE) – A SBC MEETING THE FOLLOWING CRITERIA:

Located in a “historically underutilized business zone” or HUBZone area located in one or more of the following:

- A qualified census tract (as defined in section 42 (d)(5)(c)(i)(I) of the Internal Revenue Code of 1986; or

- A qualified “non-metropolitan county” (as defined in section 143(k)(2)(B) of the International Revenue Code of 1986) with a median household income of less than 80 percent of the state median household income or with an unemployment rate of not less than 140 percent of the statewide average, based on U.S. Department of Labor recent data; or
- Lands within the boundaries of Federally recognized Indian reservations.
- At least 35 percent of its employees must reside in a HUBZone.

To find out if your business is in a HUBZone, use the mapping utility provided by the U. S. SBA at its HUBZone Contracting website at <https://www.sba.gov/hubzone/>.

INNOVATION

Something new or improved that has marketable potential, including (1) development of new technologies, (2) refinement of existing technologies, or (3) new applications for existing technologies.

INTELLECTUAL PROPERTY

The separate and distinct types of intangible property that are referred to collectively as “intellectual property,” including but not limited to: patents, trademarks, copyrights, trade secrets, SBIR/STTR technical data, ideas, designs, know-how, business, technical and research methods, and other types of intangible business assets, and including all types of intangible assets either proposed or generated by a SBC as a result of its participation in the SBIR or STTR program.

JOINT VENTURE

A joint venture is an association between two or more firms and or individuals to participate jointly in a single business enterprise. There must be a community of interests, a sharing of profits and losses, and, for the purposes of this FOA, the new entity must qualify as a small business. If a joint venture is selected for award, a DOE Contract Specialist will request a signed agreement from the parties involved. The agreement must state which company will negotiate the award and serve as the main point of contact. See 13 CFR 121.103(h) Affiliation based on joint ventures.

NATIONAL ENVIRONMENTAL POLICY ACT (NEPA)

The National Environmental Policy Act of 1969 (NEPA). The Long Title describes it as follows: “An Act to establish a national policy for the environment, to provide for the establishment of a Council on Environmental Quality, and for other purposes.” NEPA requires Federal Agencies to assess and consider potential impacts from Federal actions in their decision-making.

POTENTIAL IMPACT ON THE ENVIRONMENT

DOE understands “potential impact on the environment” to apply if the work described in the application could potentially have any of the impacts identified below:

- (1) Threaten a violation of applicable statutory, regulatory, or permit requirements for environment, safety, and health;
- (2) Require siting and construction or major expansion of waste storage, disposal, recovery, or treatment facilities (including incinerators);
- (3) Disturb hazardous substances, pollutants, contaminants, or CERCLA-excluded petroleum and natural gas products that preexist in the environment;
- (4) Have the potential to cause significant impacts on environmentally sensitive resources.

Environmentally sensitive resources include, but are not limited to:

- (i) Property (such as sites, buildings, structures, and objects) of historic, archeological, or architectural significance designated by a Federal, state, or local government, Federally recognized Indian tribe, or Native Hawaiian organization, or property determined to be eligible for listing on the National Register of Historic Places;
- (ii) Federally-listed threatened or endangered species or their habitat (including critical habitat) or Federally-proposed or candidate species or their habitat (Endangered Species Act); state- listed or state-proposed endangered or threatened species or their habitat; Federally-protected marine mammals and Essential Fish Habitat (Marine Mammal Protection Act; Magnuson- Stevens Fishery Conservation and Management Act); and otherwise Federally-protected species (such as the Bald and Golden Eagle Protection Act or the Migratory Bird Treaty Act);
- (iii) Floodplains and wetlands, as defined in 10 CFR 1022.4, “Compliance with Floodplain and Wetland Environmental Review Requirements: Definitions,” or its successor;
- (iv) Areas having a special designation such as Federally- and state-designated wilderness areas, national parks, national monuments, national natural landmarks, wild and scenic rivers, state and Federal wildlife refuges, scenic areas (such as National Scenic and Historic Trails or National Scenic Areas), and marine sanctuaries;
- (v) Prime or unique farmland, or other farmland of statewide or local importance, as defined at 7 CFR 658.2(a), “Farmland Protection Policy Act: Definitions,” or its successor;
- (vi) Special sources of water (such as sole source aquifers, wellhead protection areas, and other water sources that are vital in a region); and
- (vii) Tundra, coral reefs, or rain forests; or

(5) Involve genetically engineered organisms, synthetic biology, governmentally designated noxious weeds, or invasive species.

In addition, DOE understands “potential impact on the environment,” to apply if the work described in the application could potentially have any of the impacts identified below:

Any other high consequence impacts to the environment which have any possibility for high consequence impacts to human health (e.g., use of human subjects, Biosafety Level 3-4 laboratory construction/operation, manufacture or use of certain nanoscale materials which are known to impact human health, or any activities involving transuranic or high level radioactive waste or materials or exposure to any radioactive materials beyond de minimis levels) or:

- a) Have extraordinary circumstances (i.e., scientific or related public controversy) related to the significance of environmental effects [see 10 CFR 1021.410(b)(2)];
- b) Are connected to other actions with potentially significant impacts [see 10 CFR 1021.410 (b)(3)]; or

c) Are related to other nearby actions with the potential for cumulatively significant impacts [see 10 CFR 1021.410 (b)(3)].

RESEARCH OR RESEARCH AND DEVELOPMENT (R&D)

Research or R&D is any scientific or engineering activity which is (1) a systematic, intensive study directed toward greater knowledge or understanding of the subject; (2) a systematic study directed specifically toward applying new knowledge to meet a recognized need; and/or (3) a systematic application of knowledge toward the production of useful materials, devices, and systems or methods, including design, development, and improvement of prototypes and new processes to meet specific requirements.

RESEARCH INSTITUTION

A research institution is one that has a place of business located in the United States, which operates primarily within the United States or which makes a significant contribution to the U.S. economy through payment of taxes or use of American products, materials or labor, and is:

(1) A non-profit institution as defined in section 4(3) of the Stevenson-Wydler Technology Innovation Act of 1980 (that is, an organization that is owned and operated exclusively for scientific or educational purposes, no part of the net earnings, which benefits any private shareholder or individual); or

(2) A Federally-funded R/R&D center (FFRDC) as identified by the National Science Foundation (NSF) in accordance with the Federal Acquisition Regulation issued in accordance with section 35(c)(1) of the Office of Federal Procurement Policy Act (or any successor regulation). <https://www.nsf.gov/statistics/ffrdclist/>

- A non-profit institution can include hospitals and military educational institutions, if they meet the definition above.
- Research institutions may include a non-profit college or university.
- DOE FFRDCs include Ames Laboratory, Argonne National Laboratory, Brookhaven National Laboratory, Fermi National Accelerator Laboratory, Idaho National Laboratory, Lawrence Berkeley National Laboratory, Lawrence Livermore National Laboratory, Los Alamos National Laboratory, National Renewable Energy Laboratory, Oak Ridge Institute for Science and Education, Oak Ridge National Laboratory, Pacific Northwest National Laboratory, Princeton Plasma Physics Laboratory, Sandia National Laboratories, Savannah River National Laboratory, SLAC National Accelerator Facility, and the Thomas Jefferson National Accelerator Facility. DOE-sponsored FFRDC's may be viewed by selecting the Department of Energy under the Sponsoring agency tab at <https://www.nsf.gov/statistics/ffrdclist>.
- Research institutions may include government-owned, government-operated facilities. However, the National Energy Technology Laboratory (NETL) may participate as a research institution for all but the following topics and subtopics in this FOA: 21b, 21c, 21d, 21e, 22a, 22b, and 22c.

RESEARCH MISCONDUCT

Research misconduct means fabrication, falsification, or plagiarism in proposing, performing, or reviewing research, or in reporting research results, but does not include honest error or differences of opinion. 2 CFR 910.132 Research misconduct.

SOCIALLY AND ECONOMICALLY DISADVANTAGED SMALL BUSINESS

A socially and economically disadvantaged small business is one:

- That is at least 51 percent owned by (i) an Indian tribe or a native Hawaiian organization, or (ii) one or more socially and economically disadvantaged individuals; and,
- Whose management and daily business operations are controlled by one or more socially and economically disadvantaged individuals. A socially and economically disadvantaged individual is defined as a member of any of the following groups: African Americans, Hispanic Americans, Native Americans, Asian-Pacific Americans, Subcontinent Asian Americans, other groups designated from time to time by the Small Business Administration (SBA) to be socially disadvantaged, or any other individual found to be socially and economically disadvantaged by SBA pursuant to section 8(a) of the Small Business Act, 15 U.S.C. 637(a).

SUBCONTRACT

A subcontract is any agreement, other than one involving an employer-employee relationship, entered into by the recipient of a Federal Government award, calling for supplies or services required solely for the performance of the original award.

WOMAN-OWNED SMALL BUSINESS

A woman-owned small business is a small business that is at least 51 percent owned by a woman or women who also control and operate it. “Control” in this context means exercising the power to make policy decisions. “Operate” in this context means being actively involved in the day-to-day management.

2. Working with National Labs, Universities, Research Institutions, and Other Subcontractors

DOE USER FACILITIES

DOE operates a number of major scientific user facilities to serve researchers from universities, national laboratories, and industry. These facilities enable the acquisition of new knowledge that often cannot be obtained by any other means. Thousands of researchers collaborate with these facilities and analyze their respective data from the experiments to publish new scientific findings in peer-reviewed journals. These facilities may be found at the following web addresses: <https://science.osti.gov/bes/suf/User-Facilities> and <https://science.osti.gov/ber/Facilities/User-Facilities>.

Potential applicants to the SBIR or STTR programs should consider whether the use of any of these facilities would contribute to the scientific efforts proposed in either Phase I or II. For approved experiments (access to these facilities is through a peer-reviewed system), operating time is available without charge to those scientists whose intent is to publish their results in the open literature. If the investigator wishes to perform proprietary research, the user must pay the full-cost recovery rate for facility usage (in which case, the cost could be charged to the SBIR/STTR project); in return, the facility will treat all technical data generated as proprietary, and the user may take title to any inventions resulting from the research. Information on other laboratory facilities which may be available on a case- by-case basis may be obtained through the Federal Laboratory Consortium Locator or directly from the DOE laboratory involved.

IDENTIFYING INSTITUTIONS

Experts at institutions such as DOE contractor-operated national laboratories, universities, colleges, or other research institutions, may be consulted during the preparation of the application. Any of these institutions may also serve as a subcontractor to SBIR/STTR Phase I or Phase II projects, providing technical expertise, facilities, or equipment. In such cases, the SBC must have the necessary expertise to direct the project.

For STTR, the SBC must conduct cooperative R&D with a research institution (see definition list). An alliance between the SBC and a research institution must be formed before submitting the application. Awards will be awarded to the applicant, which will receive all funding for the project and disperse the appropriate funds to the research institution.

A list of DOE National Laboratories and relevant small business contacts is available at <https://science.osti.gov/sbir/Applicant-Resources/National-Labs-Profiles-and-Contacts>. For help in contacting personnel at other Federal agency laboratories, go to <https://www.federallabs.org>, or contact the FLC Management Support Office by, Phone: (856) 667-7727 or email: flcmso@utrs.com.

SCIENTIFIC AND TECHNICAL INFORMATION RESOURCES

Applicants may want to obtain scientific and technical information related to their proposed effort as background or for other purposes. Sources of this information are listed in the references for each technical topic and below references for each technical topic and below (<https://science.osti.gov/sbir/Funding-Opportunities>)

National Technical Information Service – Reports resulting from Federal research and those received from exchange agreements with foreign countries and international agencies are available to the public in both paper copy and microfiche through the National Technical Information Service. They may be ordered electronically from <https://www.ntis.gov/> or by phone at 1-800-553-6847.

DOE Office of Scientific and Technical Information (OSTI) - OSTI is responsible for fulfilling the requirements of the Energy Policy Act of 2005 to maintain “... publicly available collections of scientific and technical information resulting from research, development, demonstration, and commercial application activities supported by the Department.” OSTI collects, preserves, and disseminates research results via web-based information systems developed on behalf of DOE.

SBIR and STTR applicants may obtain information from the following OSTI sources, available via the web at <https://www.osti.gov> or at the specific web addresses below.

- Information Bridge (<https://www.osti.gov/bridge>), over 125,000 searchable full-text documents reporting results of DOE-funded research.
- Energy Citations Database (<https://www.osti.gov/energycitations>), over 2 million searchable citations covering disciplines of interest to DOE from 1948 to the present, with links to full-text when available.
- E-print Network (<https://www.osti.gov/eprints>) offers single-query access to a network of scientific and technical information and communication, searching more than 900,000 manuscripts, scholarly papers, and other scientific documents residing on approximately 35,300 websites and databases worldwide, containing over 5.5 million e-prints in basic and applied sciences.
- DOE R&D Accomplishments (<https://www.osti.gov/accomplishments>), a central forum for information about the outcomes of past DOE R&D.

OTHER RESOURCES

Literature and database searches for abstracts, publications, patents, lists of Federal research in progress, and names of potential consultants in the specific research area can be obtained at good technical libraries (especially those of universities), and from some state organizations.

Science.gov (<https://www.science.gov/>), a web portal providing single-query search of more than 50 million pages of science information and research results from DOE and 11 other Federal science agencies.

Technical Assistance for Application Preparation and Project Conduct - SBCs may wish to contact their local National Institute of Standards and Technology Hollings Manufacturing Extension Partnership (MEP) for manufacturing and other business-related support services.

The MEP works with small and mid-sized companies to help them create and retain jobs, increase profits, and save time and money. The nationwide network provides a variety of services, from business development assistance to innovation strategies to process improvements and the identification of commercialization opportunities. MEP is a nationwide network of locally managed extension centers with over 1,400 technical experts - located in every state. To contact an MEP center, call 1-800-MEP-4- MFG (1-800-637-4634) or visit MEP's website at <https://www.nist.gov/mep>.