

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



FY2021 PHASE II RELEASE 2

**FUNDING OPPORTUNITY ANNOUNCEMENT (FOA) NUMBER: DE-FOA-0002381
FOA TYPE: INITIAL
CFDA NUMBER: 81.049**

**AMENDMENT 000001:
Page 40 Late Submission Eligibility**

FOA Issue Date:	March 4, 2021
Submission Deadline for Letters of Intent:	Wednesday, March 31, 2021 5:00 PM Eastern
Submission Deadline for Applications:	Tuesday, April 20, 2021 11:59 PM Eastern

UPDATES AND REMINDERS

RECOMMENDATIONS

The Department of Energy (DOE) encourages you to register in all systems as soon as possible. You are also encouraged to submit letters of intent and applications well before the deadline.

CURRENT AND PENDING SUPPORT AND BIOGRAPHICAL SKETCHES

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.

DIGITAL DATA MANAGEMENT

The DOE has applied a digital data management policy, applicable to applications submitted under this FOA, and detailed in [Section IV](#) of this FOA.

PROPRIETARY NOTICE UPDATE

The procedure for identifying Proprietary Data contained in your application has recently changed. Please follow the instructions provided in [Section IV.D](#), and [Section VIII.C.16](#), of this FOA regarding the marking of the data considered proprietary.

GRANTS.GOV WORKSPACE

Applications submitted through Grants.gov at <https://www.Grants.gov> must be submitted through a “Workspace” or the applicant’s system-to-system service. 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>.

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>.

TABLE OF CONTENTS

UPDATES AND REMINDERS	2
SECTION I - FUNDING OPPORTUNITY DESCRIPTION.....	7
A. STATUTORY AUTHORITY	7
B. APPLICABLE REGULATIONS	7
C. SUMMARY	7
SECTION II - AWARD INFORMATION	9
A. TYPE OF AWARD INSTRUMENT	9
B. ESTIMATED FUNDING.....	9
C. MAXIMUM AND MINIMUM AWARD SIZE	9
D. EXPECTED NUMBER OF AWARDS.....	9
E. ANTICIPATED AWARD SIZE	9
F. PERIOD OF PERFORMANCE	10
G. TYPE OF APPLICATION	10
SECTION III - ELIGIBILITY INFORMATION	11
A. ELIGIBLE SBIR AND STTR APPLICANTS.....	11
B. SMALL BUSINESS CONCERNS	17
C. COST SHARING	18
D. OTHER ELIGIBILITY REQUIREMENTS	18
E. PARTICIPATION BY FEDERALLY FUNDED RESEARCH AND DEVELOPMENT CENTERS.....	23
SECTION IV - APPLICATION AND SUBMISSION INFORMATION	25
A. ADDRESS TO REQUEST APPLICATION PACKAGE	25
B. LETTER OF INTENT	25
C. GRANTS.GOV APPLICATION SUBMISSION AND RECEIPT PROCEDURES	26
D. CONTENT AND FORMAT OF APPLICATION.....	26
E. SUBMISSIONS FROM SUCCESSFUL APPLICANTS.....	38
F. SUBMISSION DATES AND TIMES.....	39
SECTION V - APPLICATION REVIEW INFORMATION	41
A. CRITERIA	41
B. REVIEW AND SELECTION PROCESS.....	44
C. ANTICIPATED NOTICE OF SELECTION AND AWARD DATES	45
SECTION VI - AWARD ADMINISTRATION INFORMATION	46
A. AWARD NOTICES.....	46
B. ADMINISTRATIVE AND NATIONAL POLICY REQUIREMENTS.....	46
C. REPORTING.....	49

D. REPORTING OF MATTERS RELATED TO RECIPIENT INTEGRITY AND PERFORMANCE (DECEMBER 2015).....	49
SECTION VII - QUESTIONS/AGENCY CONTACTS	50
A. QUESTIONS	50
B. AGENCY CONTACTS.....	50
C. DEPARTMENT OF ENERGY, OFFICE OF INSPECTOR GENERAL HOTLINE	50
SECTION VIII - SUPPLEMENTARY MATERIAL.....	51
A. HOW-TO GUIDES	51
B. POLICY PROVISIONS	78
C. ADMINISTRATIVE AND NATIONAL POLICY REQUIREMENTS.....	79
D. REFERENCE MATERIAL.....	87

Checklist for Avoiding Common Errors:

Item	Issue
Page Limits	Strictly followed throughout application, including particular attention to: <ul style="list-style-type: none"> - Research Narrative - Appendix 2 Narrative, if any - Biosketches - Data Management Plan(s) (DMPs) - Letter(s) of Recommendation, if any
Personally Identifiable Information	None present in the application
Research Narrative	Composed of one PDF file including all appendices
Project Summary / Abstract	Name(s) of applicant, PI(s), PI's institutional affiliation(s), Co-Investigator(s), Co-Investigator's institutional affiliation(s)
DOE Title Page	Follow instructions closely
Budget	Use current negotiated indirect cost and fringe benefit rates
Budget Justification (attached to budget)	Justify all requested costs
Biographical Sketches	Follow page limits strictly
Current and Pending Support	Ensure complete listing of all activities, regardless of source of funding
Data Management Plans (DMP)	<ul style="list-style-type: none"> - If referring to an experiment's DMP, describe the relationship to the proposed research - Include a DMP even if no experimental data is expected

SECTION I - FUNDING OPPORTUNITY DESCRIPTION

A. STATUTORY AUTHORITY

U.S. Department of Energy Organization Act, 42 U.S.C. Chapter 84, and § 9 of the Small Business Act, 15 U.S.C. § 638, as amended.

B. APPLICABLE REGULATIONS

Uniform Administrative Requirements, Cost Principles, and Audit Requirements for Federal awards, codified at 2 CFR 200, as modified by DOE 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.*

C. SUMMARY

The DOE invites eligible Phase I and Phase II awardees to apply for Phase II awards (grants and cooperative agreements) (both initial and second and third) under this Funding Opportunity Announcement (FOA). Topic descriptions for this FOA can be found on the DOE SBIR/STTR web site at <https://science.osti.gov/sbir/Funding-Opportunities>.

1. Initial Phase II Awards

The purpose of an Initial Phase II award is to perform the research and development (R&D) required to meet the DOE objectives stated in the topic and subtopic of the Phase I FOA. In addition, it is intended that the small business awardee would be in a position to pursue commercial applications of the R&D at the end of Phase II. In many cases, Phase II results in a prototype, product, or a working process that can be demonstrated to a potential investor or customer (either in the private sector or in the Federal government, including the DOE).

This FOA is supplemental to the FY 2020 SBIR/STTR Phase I Release 2 FOA (DE-FOA-0002146); therefore, general information already provided in the Phase I FOA also applies to this Phase II process.

If a conflict arises between the Phase I FOA and this Phase II FOA, the Phase II FOA will govern.

2. Second Phase II Awards

There are two types of DOE Second Phase II awards:

1. Phase IIA: A Phase II awardee may request additional financial support for new R&D tasks and activities that are aligned with the original scope of work for the Phase II award. The purpose of the Phase IIA award is to allow the awardee to complete the R&D associated with

initial prototype, product, or process development. The review criteria (see [Section V.A.](#)) for Phase IIA applications will be the same as for Initial Phase II awards submitted to this FOA.

Only award recipients resulting from the FY 2019 SBIR/STTR Phase II Release 2 FOA (DE-FOA-0001976) under the eligible topics detailed in [Section III.A.](#) of this FOA may apply for Phase IIA awards.

In addition, Phase IIA applications will only be accepted from Phase II awardees that have an active Phase II award at time of application. Applicants will not be able to resubmit at a later date, if a Phase IIA application is declined for award.

2. Phase IIB: A Phase II awardee may request additional financial support for new R&D tasks and activities that extend beyond the scope of the original Phase II award (see [Section V.A.](#)).

The purpose of the Phase IIB award is to assist the awardee in transitioning the innovation towards commercialization. The review criteria for Phase IIB awards (see SECTION V.A.) will be different from both Initial Phase II and Phase IIA applications submitted to this FOA. The review of Phase IIB applications will place greater emphasis on impact and applicants are expected to demonstrate a well-planned path to commercialization as evidenced in commercialization activities conducted in parallel with or after Phase IIB R&D.

Only awardees from the FY 2018 and FY 2019 SBIR/STTR Phase II Release 2 FOAs (DE-FOA-0001795, and DE-FOA-0001976) under the eligible topics detailed in [Section III.A.](#) may apply for Phase IIB awards.

A Phase II awardee may submit only one second Phase II application per eligible award as noted above to either Phase IIA or Phase IIB in response to this FOA. Phase IIA or Phase IIB awards may extend the Phase II award for up to two years and the combined Phase II and second Phase II should not exceed four years, unless an unforeseen delay is encountered.

3. Third Phase II Awards (SBIR only)

Third SBIR Phase II awards (Phase IIC) continue research and development from a second SBIR Phase II award towards commercialization and require matching funds from a third party investor. These matching funds can be used for either (1) research and development costs NOT requested in your budget or (2) other costs associated with commercialization of the proposed innovation.

In addition, Phase IIC applications will only be accepted from Phase IIA or IIB awardees that have an active Phase IIA or IIB award at time of application. Applicants will not be able to resubmit at a later date, if a Phase IIC application is declined for award.

SECTION II - AWARD INFORMATION

A. TYPE OF AWARD INSTRUMENT

DOE anticipates awarding grants and administrative revisions (“supplements”) under this FOA.

B. ESTIMATED FUNDING

Approximately \$115 million is expected to be available for awards under this FOA contingent on the availability of appropriated funds.

DOE is under no obligation to pay for any costs associated with preparation or submission of applications. DOE reserves the right to fund, in whole or in part, any, all, or none of the applications submitted in response to this FOA.

C. MAXIMUM AND MINIMUM AWARD SIZE

Ceiling (i.e., the maximum amount for an individual award made under this FOA):

1. Initial Phase II

FY 2020 Phase I Release 2 awardees: See the maximum award listed for each topic in the topics document associated with the FY 2020 Phase I Release 2 FOA (DE-FOA-0002146 - <https://science.osti.gov/sbir/Funding-Opportunities/FY-2020>). The maximum allowable Phase II award will be either \$1,100,000 or \$1,600,000 (excluding Commercialization Assistance funds).

2. Second & Third Phase II

Phase IIA: \$1,100,000 Phase IIB: \$1,100,000 Phase IIC: \$1,100,000

Floor (i.e. the minimum amount for an individual award made under this FOA): \$1.

Applications in which the total Federal funds requested (SF-424, 15a) or the total project cost (budget, section K) exceeds the maximum award size (or the maximum award plus \$50,000 for those requesting commercialization assistance funds) will be administratively declined.

D. EXPECTED NUMBER OF AWARDS

DOE anticipates making approximately 100 awards under this FOA depending on the size of the awards. All Phase II awards (Phase II, IIA, IIB, and IIC) will compete for funding. The majority of funding is anticipated to be used for initial Phase II awards.

E. ANTICIPATED AWARD SIZE

The anticipated median award will be approximately \$1,100,000.

F. PERIOD OF PERFORMANCE

DOE anticipates making awards that will run for up to 24 months over two budget periods.

For initial Phase II awards, the first budget period, which will cover 12 months, is anticipated to begin August 23, 2021. For second and third Phase II awards, the first budget period is anticipated to begin on or before August 27, 2021. Funding for the second budget period will be contingent on the demonstration of adequate progress, evaluation of programmatic priorities, availability of funds, and compliance with the terms and conditions of the award.

For second Phase II awardees, a second Phase II award may not overlap with an initial Phase II award and must start by August 27, 2021. For third Phase II awardees, a third Phase II award may not overlap with a second Phase II award and must start by August 27, 2021.

G. TYPE OF APPLICATION

DOE is accepting renewal (Phase II) applications under this FOA. Renewal (Phase II) applications are requests for additional funding for a period subsequent to that provided by a current award or Phase I award as noted under “Summary” within [Section I.C.](#) of the FOA. Renewal applications compete with all other applications and must be submitted by an established project due date/deadline. In preparing a renewal application, applicants should assume that reviewers will not have access to previous applications. The application should be developed fully, as though the applicant is applying for the first time. The application must include all the information required for a new project, plus the Project Narrative section should discuss the results from the applicable prior Phase I work (initial Phase II application) or prior Phase I and II work (Phase IIA, IIB or IIC applications).

SECTION III - ELIGIBILITY INFORMATION

A. ELIGIBLE SBIR AND STTR APPLICANTS

Only domestic small business concerns (SBCs) are eligible to submit applications and receive awards under this FOA. Additional eligibility requirements apply to the different Phase II mechanisms as described below.

Letters of Intent are required for all potential applicants. Details of how, where, and when to submit Letters of Intent may be found in [Section IV. B](#) below.

All applicants must have an active System for Award Management (SAM) registration at the award start date to be eligible to receive a Phase II award. Good practice is to keep your SAM registration active in order to submit applications and receive awards from the Federal government.

1. Initial Phase II Applicants:

Only the following two groups are eligible to apply for an Initial Phase II award under this FOA:

1. Currently active DOE SBIR or STTR Phase I awardees with awards resulting from FOA DE-FOA-0002146; or
2. Currently active non-DOE SBIR or STTR Phase I awardees that (a) received the Federal Phase I award in Federal FY 2020, (b) have received a written determination from the Director of the SBIR/STTR Programs Office that the topic under which they received funding is the same as the topic in FOA DE-FOA-0002146, and (c) are not submitting a Phase II application based on the award described in (a) to another Federal agency.*

DOE plans to issue initial Phase II awards as either grants or cooperative agreements. It is anticipated that cooperative agreements will be awarded to applicants selected under the following topics with all other Initial Phase II selections being awarded as grants:

DOE SBIR or STTR Phase I grantees from FOA DE-FOA-0002146 for the following topics:

- Topics 2-3 (Office of Defense Nuclear Nonproliferation)
- Topic 11 Solar (Office of Energy Efficiency and Renewable Energy)
- Topic 13 Water (Office of Energy Efficiency and Renewable Energy)
- Topic 18 (Office of Environmental Management)

To be eligible for an initial Phase II award, applicants must have completed their Phase I period of performance prior to the start date listed in this FOA. Phase I awardees are cautioned not to request no-cost extensions to their Phase I awards beyond this date.

*NOTE: Applicants that received their FY 2020 Phase I award from another Federal agency must request a written determination from the Director of the SBIR/STTR Programs Office that the topic under which they received funding is the same as the topic in FOA DE-FOA-0002146.

Send requests to e-mail: sbir-sttr@science.doe.gov. Applicant must: 1) provide Phase I award number, contact information for the Phase I Contracting Officer (or Grants/Agreements Officer); 2) Phase I FOA number and topic; and 3) the DOE Phase II topic number. Applicant must complete all close-out activities for the Phase I prior to award of a Phase II from the DOE.

2. Phase IIA and IIB Applicants:

SBIR/STTR initial Phase II awardees are eligible to receive a second Phase II award from DOE. There are two types of second Phase II awards: Phase IIA and Phase IIB. DOE SBIR/STTR initial Phase II awardees that have received a second Phase II from another agency are not eligible to receive Phase IIA or IIB awards from DOE.

Eligible grantees include companies that were eligible to submit to the FY 2020 Phase II, but requested a delay because of COVID-19 impacts.

PHASE IIA

Only award recipients resulting from the following FY 2019 SBIR/STTR Phase II FOAs AND from the following eligible topics may apply for second Phase IIA awards:

Eligible FY 2019 Phase II FOA	Eligible Topic(s)	DOE SBIR/STTR Funding Program	Anticipated Award Type
DE-FOA-0001976 (refer to DE-FOA-0001771)	01c	Defense Nuclear Nonproliferation	Cooperative Agreement
DE-FOA-0001976 (refer to DE-FOA-0001771)	05a, 05b	Electricity	Grant
DE-FOA-0001976 (refer to DE-FOA-0001771)	08a, 08b, 08c, 08d, 09a, 09c, 10a, 11b	Energy Efficiency and Renewable Energy	Grant
DE-FOA-0001976 (refer to DE-FOA-0001771)	17a, 18c, 18d, 19a, 19b	Fossil Energy	Grant
DE-FOA-0001976 (refer to DE-FOA-0001771)	20a, 21a, 21b, 21c, 21d, 22d	Fusion Energy Sciences	Grant
DE-FOA-0001976	26a, 26b, 28e	High Energy Physics	Grant

Eligible FY 2019 Phase II FOA	Eligible Topic(s)	DOE SBIR/STTR Funding Program	Anticipated Award Type
(refer to DE-FOA-0001771)			
DE-FOA-0001976 (refer to DE-FOA-0001771)	30a, 30b, 30c, 30d, 30e, 30f, 30g, 30i, 31a, 32a	Nuclear Energy	Grant

Eligible Phase II awardees must successfully complete their Phase II awards (including no fund extensions) prior to the award start date in this FOA to be eligible to receive a Phase IIA award.

PHASE IIB

Only award recipients of awards from the following FY 2018 and FY 2019 SBIR/STTR Phase II FOAs AND eligible topics may apply for second Phase IIB awards:

Eligible FY 2018 Phase II FOA	Eligible Topic(s)	DOE SBIR/STTR Funding Program	Anticipated Award Type
DE-FOA-0001795 (refer to DE-FOA-0001619)	01a, 01b, 01d, 02a, 04a	Defense Nuclear Nonproliferation	Cooperative Agreement
DE-FOA-0001795 (refer to DE-FOA-0001619)	05b	Electricity Delivery and Energy Reliability	Grant
DE-FOA-0001795 (refer to DE-FOA-0001619)	07a, 08a, 08b, 08c, 09a, 09b, 10a, 10b, 10c, 11c, 12a, 13a, 13c, 14a, 14b, 14c, 14d, 15a, 16a	Energy Efficiency and Renewable Energy	Grant, or Cooperative Agreement (Cooperative Agreement topics highlighted – Solar (13a and 13c, Water 16a)
DE-FOA-0001795 (refer to DE-FOA-0001619)	17a, 17b, 18a, 18c	Fossil Energy	Grant
DE-FOA-0001795 (refer to DE-FOA-0001619)	19a, 19b, 19c, 20a, 20b, 20c, 20d, 22b, 22c	Fusion Energy Sciences	Grant

Eligible FY 2018 Phase II FOA	Eligible Topic(s)	DOE SBIR/STTR Funding Program	Anticipated Award Type
DE-FOA-0001795 (refer to DE-FOA-0001619)	23b, 23c, 24d, 24e, 26a, 26b, 26c, 27a, 27e, 27j, 28a, 28e, 28f	High Energy Physics	Grant
DE-FOA-0001795 (refer to DE-FOA-0001619)	29a, 29b, 29d, 29f, 29g, 29h, 29j, 30b	Nuclear Energy	Grant

Eligible FY 2019 Phase II FOA	Eligible Topic(s)	DOE SBIR/STTR Funding Program	Anticipated Award Type
DE-FOA-0001976 (refer to DE-FOA-0001771)	01c, 01d, 02a	Defense Nuclear Nonproliferation	Cooperative Agreement
DE-FOA-0001976 (refer to DE-FOA-0001771)	05a, 05b	Electricity Delivery and Energy Reliability	Grant
DE-FOA-0001976 (refer to DE-FOA-0001771)	06a, 06b, 06c, 08a, 08b, 08c, 08d, 09a, 09b, 09c, 10a, 10c, 11b, 12b, 12c, 12d, 13a, 13c, 14b, 15a	Energy Efficiency and Renewable Energy	Grant, or Cooperative Agreement (Cooperative Agreement topics highlighted – Solar (12b, 12c and 12d, Water 15a)
DE-FOA-0001976 (refer to DE-FOA-0001771)	16a	Environmental Management	Grant
DE-FOA-0001976 (refer to DE-FOA-0001771)	17a, 18c, 18d, 19a, 19b	Fossil Energy	Grant
DE-FOA-0001976 (refer to DE-	20a, 21a, 21b, 21c, 21d, 22d	Fusion Energy Sciences	Grant

Eligible FY 2019 Phase II FOA	Eligible Topic(s)	DOE SBIR/STTR Funding Program	Anticipated Award Type
FOA-0001771)			
DE-FOA-0001976 (refer to DE-FOA-0001771)	23b, 24a, 24b, 24c, 25c, 25d, 26a, 26b, 26d, 27f, 28a, 28d, 28e, 29a	High Energy Physics	Grant
DE-FOA-0001976 (refer to DE-FOA-0001771)	30a, 30b, 30c, 30d, 30e, 30f, 30g, 30i, 31a, 32a	Nuclear Energy	Grant

3. Phase IIC Applicants

Some second Phase II awardees are eligible to receive a third SBIR Phase II award, referred to as Phase IIC, with this FOA. Third Phase II awards are restricted only to SBIR; no third Phase II awards will be made under the STTR program. In order to be eligible for a third SBIR Phase II award, a small business must meet the following criteria:

- Have received both an initial SBIR Phase II award and a second SBIR Phase II award from DOE
 - Both awards must be SBIR and have the same award number; neither award can be STTR
 - The second SBIR Phase II award must have been awarded from the FY 2016 Phase II Release 2 FOA (DE-FOA-0001490) from the following program offices:
 - Office of Electricity Delivery and Energy Reliability
 - Office of Energy Efficiency and Renewable Energy
 - Office of Fossil Energy
 - Office of Fusion Energy Sciences
 - Office of High Energy Physics
 - Office of Nuclear Energy

Or the second SBIR Phase II award must have been awarded from the FY 2017 Phase II Release 2 FOA (DE-FOA-0001646) from the following program office:

- Office of Defense Nuclear Nonproliferation (Any resultant awards under Topic 2c will be cooperative agreements)
- Office of Electricity Delivery and Energy Reliability
- Office of Energy Efficiency and Renewable Energy
- Office of Fusion Energy Science
- Office of Nuclear Energy

- Have secured an offer of matching funds, contingent on receipt of the DOE award, from an eligible third party investor prior to award as described below.
 - The term ‘eligible third-party investor’ means a small business concern other than the small business applicant, a venture capital firm, an individual investor, a non-SBIR Federal, State or local government, or any combination thereof. SBIR/STTR Phase I, II, or III funds from a Federal agency may not be used as matching funds.
 - The matching amount (excluding any fees collected by the SBC) must be equal to the amount of the award.
 - The matching funds cannot come from the following ineligible sources:
 - The applicant’s internal research and development funds,
 - Funding in forms other than cash, such as in-kind or other intangible assets.
 - Funding from the owners of the eligible entity, or the family members or affiliates of such owners.
 - Funding attained through loans or other forms of debt obligations.
 - Applicants that have secured matching funds at time of application must include a letter of commitment from each eligible third party investor. Applicants that have not secured matching funds at time of application must submit a letter of commitment from each eligible third party investor prior to 11:59 pm ET, May 7, 2021 to sbir-sttr@science.doe.gov. Applicants that fail to provide a letter of commitment from each eligible third party investor by this deadline will be ineligible for award.
 - A letter of commitment, signed by a person with authority, from each investor must include the following information:
 - A statement that the investment is contingent on the receipt of an award from DOE;
 - A statement that the investor was/is not a current owner of the small business prior to the investment, or a family member or affiliate of an owner;
 - The amount of the investment;
 - A statement that the amount of the investment will be available to the small business concern during the entire period of the award from DOE; and
 - The expectations of the investor.

Alternatively, if an investment has been executed, you may submit a copy of the agreement (e.g. term sheet) and supplement the copy of the agreement with a statement of information, if the copy of the agreement does not contain all of the information listed above. If for reasons of confidentiality you do not wish to submit the agreement, you may submit a letter of commitment from each investor.

PLEASE NOTE: Failure to expend all matching funds by the period of performance end date may result in the DOE reducing the Phase IIC award amount accordingly. Also, DOE will not grant no fund extensions for the sole purpose of exhausting any unspent matching funds.

To be eligible to receive a Phase IIC award, Phase IIA or IIB awardees must complete their awards (including no fund extensions) prior to the award start date in this FOA.

In addition, SBCs applying under Phase IIC need to submit an updated Commercialization Plan per the legislative text for the commercialization assistance pilot program.

B. SMALL BUSINESS CONCERNS

Applicants must meet the SBIR/STTR program eligibility requirements in 13 CFR 121, Small Business Size Regulations. The eligibility requirements are in place to ensure that the funds go only to small, independent U.S. businesses. The regulations 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. A SBC is one that, at the time of award for both Phase I and Phase II SBIR/STTR awards and continuation of the Phase II SBIR/STTR award, meets the requirements of all three restrictions.

SBCs must meet these criteria at both time of submission and time of award.

1. Type of Business

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. Joint ventures, as defined in "Appendices/Reference Material," may apply, provided the entity created also qualifies as a small business at the time of the award. A SBC is one that, at the time of award for both Phase I and Phase II SBIR/STTR awards and continuation of the Phase II SBIR/STTR award, is:

- Organized for profit, with a place of business located in the United States (U.S.), and 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.
- May be 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, each entity to the joint venture must meet the requirements set forth in paragraphs a-c under 2. Ownership Structure below.

2. Ownership Structure

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

2. Other for-profit SBCs (each of which is more than 50% directly owned and controlled by individuals who are citizens or permanent resident aliens of the U.S.). If you include other for-profit SBCs as part of the eligible ownership majority of your firm, you must verify that each such concern is more than 50% owned and controlled by individuals who are U.S. citizens or permanent resident aliens of the U.S.;
3. A combination of (1) and (2) above. Additional ownership structures are identified in 13 CFR 121.702.

SBCs that are majority-owned by one or more venture capital operating companies, hedge funds, or private equity firms are not eligible for funding under this FOA.

3. Business Size

An SBC must meet the following size requirements:

- 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 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.
- Further information may be obtained by contacting the Small Business Administration Size District Office at <https://www.sba.gov/size>.

C. COST SHARING

Cost Sharing is not required.

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.

1. Restrictions on Submitting Applications

Applications for Phase II, IIA or IIB may be submitted to either the SBIR or STTR program, or both, regardless of which program (SBIR or STTR) your Phase I award was granted. However, the respective minimum level of effort requirements, i.e., small business participation, must be met. Please refer to “Restrictions on the Level of SBC participation” below. Please note that some topics only allow the submission of SBIR applications; awardees under those topics may only submit Phase II, IIA, or IIB SBIR applications.

2. Mandatory Application Documents

Applicants must include all mandatory documents described in [Section IV.D](#). Failure to include mandatory documents is grounds for administrative declination of the application.

3. 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 award:

NATIONAL SECURITY: CLASSIFIABLE RESULTS ORIGINATING UNDER AN AWARD (DECEMBER 2014)

- a. 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.
- b. 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:

1. Notify the DOE Project Manager and the DOE Award Administrator;
 2. 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.
 3. 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.
- c. 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:
1. Notify the DOE Project Manager and the DOE Award Administrator;
 2. 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
 3. 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.
- d. 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 200.339(a)(3). All material deemed to be classified must be forwarded to the DOE, in a manner specified by DOE.
- e. If DOE does not respond within the specified time periods, you are under no further obligation to restrict access to the information.

4. Export Control

The SBIR/STTR programs support research with commercial potential. As such, research in fields subject to export control regulation is not within the scope of this FOA. Applications marked as containing material subject to export control regulation may be declined without merit review.

5. Restrictions on the Level of SBC Participation

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.

- SBIR - At least 50 percent of the research or analytical effort must be performed by the SBC.

Accordingly, at least 50 percent of the total funding requested on the budget form must be allocated to the SBC.

- STTR - Awards will be made to SBCs for cooperative R&D to be conducted jointly with a research institution. At least 40 percent of the work must be performed by the SBC, and at least 30 percent of the work must be performed by a single research institution. Accordingly, at least 40 percent of the total funding requested on the budget form must be allocated to the SBC, and at least 30 percent must be allocated to a single research institution.

A Level-of-Effort worksheet in both PDF and Microsoft Excel versions is available to assist in calculating the analytical effort for the project at <https://science.osti.gov/sbir/Applicant-Resources/Grant-Application>.

6. Restrictions of the Principal Investigator (PI)

GENERAL PI REQUIREMENTS AND RESTRICTIONS

The PI is the individual designated by the applicant to direct the project. The PI must be knowledgeable in all technical aspects of the application and be capable of leading the research effort. Because DOE's evaluation of the application is critically dependent on the qualifications of the PI, changes in the PI that are made after award selection are strongly discouraged. Requests for PI changes will be closely scrutinized and may cause delays in award execution.

In addition, the PI must devote a minimum of 520 hours to the project or at least five hours per week if the project is less than 24 months in duration. If the project is less than 24 months in duration, applicants must state in the Performance Schedule of the Project Narrative the duration of the project in weeks, in order to make clear that this requirement is fully met. If the application is selected for funding, the PI may be required to sign a statement certifying adherence to all PI requirements.

In order to ensure appropriate technical guidance for the project, only one PI will be accepted per project. Processing of applications that include co-PIs may be delayed while the error is corrected by the applicant. Non-U.S. citizens are eligible to perform work on SBIR/STTR projects provided he/she is legally empowered to work in the U.S. at the time that an award is made.

ADDITIONAL PI RESTRICTIONS WHEN SUBMITTING TO SBIR ONLY

To receive an SBIR award, the applicant must meet the general requirements and the PI's primary employment must be with the SBC 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 SBC during the conduct of the project and no more than 19 hours per week spent in the employment of another organization.

ADDITIONAL PI RESTRICTIONS WHEN SUBMITTING TO STTR ONLY

To receive an STTR award, the applicant must meet the general requirements and the PI's

primary employment may be with the SBC or the research institution. However, the SBC must still provide technical control and oversight of the project. If the PI is employed by the research institution, his/her primary employment must be with the research institution in order to qualify under STTR. If the PI is employed by the SBC, his/her primary employment must be with the SBC. **The PI must be listed and funds must be requested on the budget submitted from the entity that is the primary employer of the PI.**

7. Restrictions on the Management of SBIR/STTR Projects

All SBIR and STTR funding agreements are made with the SBC regardless of the proportion of the work or funding of each of the performers (SBC, research institution, subcontractor, etc.) under the award. As the primary awardee, the SBC has the overall responsibility of the project, including financial management and the direction and control of the performance. For STTR projects, even if the PI is from the research institution, the SBC must provide overall direction and supervision of the project while the PI will manage the research portion of the project.

It is recommended that all agreements between the SBC and any subcontractor (including the research institution collaborating in a STTR project) reflect the controlling management position of the SBC during the performance of the Phase I and/or Phase II. 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.

8. Restrictions on Subcontracting and Consultants

None of the employees or owners of the applicant SBC may be consultants. None of the employees or owners of the applicant SBC may be employees of a Subcontractor except when the Subcontractor is a Research Institution. Consultants must not be employees of any proposed Subcontractor. SBC personnel cannot be reimbursed with DOE funding as a consultant under the project. SBC personnel cannot be reimbursed with DOE funding as an employee of a Subcontractor except when the Subcontractor is a Research Institution under the project. 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 the award is made.

9. Technology Transfer Opportunity Requirements

Each Phase II Technology Transfer Opportunity (TTO) requires a written statement certifying that the small business and Research Institution have executed at least an option to license to any patents owned by the Research Institution related to the TTO topic. The Research Institution provided the awardee, prior to the start of its Phase I award, with a no-cost, six-month option to license the technology.

However, it is 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 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. The small business should also ensure that it has secured any other intellectual

property rights necessary to successfully commercialize the technology.

E. 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 subcontractor or consultant subject to the following guidelines:

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 a FFRDC must be consistent with the contractor's authority under its award and must not place the FFRDC in direct competition with the private sector.

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 Laboratory Contractor to participate in the proposed project. The work proposed for the 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 an award is made, as work may not be performed by the FFRDC until DOE Contracting Officer approval is provided.

1. Responsibility

The applicant, if successful, 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 contractor.

2. 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)/owner(s) 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 Technology Transfer Opportunity (TTO) from a National Laboratory Contractor (Contractor) and the applicant subcontracts to the same Contractor for work to be performed in commercializing the TTO. (The subcontracted work might either be a Strategic

Partnership Project (formerly called Work for Others) or a CRADA.)

Any conflict of interest related to a subcontracted effort 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 Contractor is aware of the ownership (or dual employment) and that the 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.

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 Catalog of Federal Domestic Assistance (CFDA) and/or the FOA located 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 at <https://pamspublic.science.energy.gov>.

B. LETTER OF INTENT

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.

The LOI must be submitted electronically through the DOE SC Portfolio Analysis and Management System (PAMS) website <https://pamspublic.science.energy.gov/>. It is important that the LOI be a single file with extension .pdf, .docx, or .doc. Anyone submitting an LOI must register for an account in PAMS before it will be possible to submit the LOI. Anyone submitting an LOI is encouraged to establish a PAMS account as soon as possible to avoid submission delays.

The 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)
- DOE Award Number DE-SC000XXXX
- Type of Phase II submission: Phase IIA, IIB or IIC
- Phase IIA, IIB, or IIC Project Title (same as your initial Phase II project title)
- Phase I topic and subtopic number (same as your Phase I and initial Phase II)
- 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.

There is no requirement to seek approval if teaming arrangements, proposed personnel, topics, or the anticipated title change between submitting the LOI and when an application is submitted.

The pre-application must be machine readable. Do not submit a scanned image of a printed document.

Detailed instructions about how to submit an LOI are in Section VIII. of 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 FORMAT OF APPLICATION

1. SUMMARY OF REQUIRED FORMS AND FILES

Your Application must include the following documents:

NAME OF DOCUMENT	FORMAT	ATTACH TO
Application for Federal Assistance, SF 424 Form	PDF	
SF-LLL, Disclosure of Lobbying Activities, if applicable	PDF	Field 18
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 Summary/Abstract	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, as applicable	PDF	Field 12
Other - SBA Company Registration	PDF	Field 12
Other - Phase I Final Technical Report (For initial Phase II applicants)	PDF	Field 12
Other – Phase II Final Technical Report (if completed, for Phase IIB applicants)	PDF	Field 12
Other – Table of Go/No Go Milestones and Technical Metrics for Cooperative Agreements, if applicable	PDF	Field 12

Research and Related: Sub-award Budget Form, if applicable	PDF	
Budget Justification for each Sub-award	PDF	Appropriate Block
Project/Performance Site Location(s) Form	PDF	
SBIR/STTR Information Form	PDF	
Phase II Commercialization Plan	PDF	Field 7
NAME OF DOCUMENT	FORMAT	ATTACH TO
Commercialization History, if applicable	PDF	Field 8

2. SF-424 (R&R): [MANDATORY]

Complete this form first to populate data in other forms. Identify the Award Number assigned to the project in the Federal Identifier field (number 4). 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. The principal investigator must be identified by name in the SF 424.

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.

Use 08/23/2021 as the proposed project start date for initial Phase II applications and a date between 08/27/2021 as the proposed project start date for second and third Phase II applications.

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 affect the decision to make an award even if the information is not listed as a review criterion in Section V of this FOA.

DUNS/UEI AND EIN NUMBERS (FIELDS 5 AND 6)

The DUNS/UEI 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.

TYPE OF APPLICATION (FIELD 8)

Please answer “yes” to the question “Is this application being submitted to other agencies?” if substantially similar, identical, or closely related research objectives are being submitted to another Federal agency. Indicate the agency or agencies to which the similar objectives have been submitted.

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

Complete questions 1 through 6 and attach files.

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>.

If the answer to question 3 is “Yes”, you must identify proprietary information with a legend on the first page of your project narrative and on each page that contains proprietary information in accordance with instructions provided in [Section VIII.C.16](#) Proprietary Application Information. Failure to comply may result in DOE’s inability to treat such information as proprietary and may delay the award process.

Note regarding question 4.a. and 4.b.:

If any environmental impact, positive or negative, is anticipated, indicate “yes” in response to question 4.a., “potential impact – positive or negative - on the environment.” Disclosure of the impact should be provided in response to question 4.b. First indicate whether the impact is positive or negative and then identify the area of concern (e.g., air, water, exposure to radiation, etc.). Should the applicant have any uncertainty, they should check “yes.”

DOE understands the phrase in field 4.a., “potential impact ... negative” 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 in Appendix B. (<http://www.ecfr.gov>)

Additionally, for actions which could have any other adverse impacts to the environment or have any possibility for adverse 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 use of or exposure to any radioactive materials beyond de minimis levels), applicants should indicate a “negative” impact on the environment.

Lastly, 1) if 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) if the work is connected to other actions with potentially significant impacts (10 CFR 1021.410 (b)(3), or 3) if the work is related to other nearby actions with the potential for cumulatively significant impacts

(10 CFR 1021.410 (b)(3)), applicants should indicate a “negative” impact on the environment.

The bulk of your application will consist of files attached to the Research and Related Other Project Information form. For fields 7 through 12, the files that are attached must comply with the following instructions:

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

The Project Summary/Abstract 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 Summary must not exceed 500 words of text. Save this information in a file named “Summary.pdf,” and click on “Add Attachment” to attach it.

The purpose of the Project Summary is to communicate the overall sense of the project, not every step of the work plan or every accomplishment in Phase I. 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 SBC, any subcontractors or institutions, or any trade/product name) in the body of the summary.

The header must include:

- Company name
- Project Title
- Principal Investigator
- Topic number/subtopic letter

The body must include:

- Statement of the problem or situation that is being addressed. 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 service 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 combined Phase I and Phase II projects. How is this problem being addressed? What is the overall approach of the combined Phase I/Phase II project? (Typically one to two sentences).
- What was done in Phase I (and, if applicable, Phase II awards)? (Typically two to six sentences).
- What is planned for the Phase II project? (Typically two to three 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 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: (layman’s terms, two sentences with a maximum of 50 words). The DOE notifies members of Congress of awards; therefore, please provide, in clear and concise layperson’s terms, a very brief summary of the project, suitable for a possible

press release from a Congressional office.

Suggested Format: To ensure that the research need is clearly identified, please state the problem to be addressed in the first sentence. In the second sentence, state what is being done to address the problem.

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

The Project Narrative describing your technology is considered the main portion of the application and must not exceed 20 pages and 10,000 words of text, 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 text in tables and graphs. Also, sections such as the budget, budget justification, key personnel, commercialization plans and final technical reports should not be included in the Project Narrative but attached in the appropriate fields for those forms.

Phase II applications must propose R&D required to meet the DOE objectives stated in the technical topic of the Phase I 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](#). The work proposed in Phase II, assuming that it proceeds successfully, should be suitable in nature for subsequent progression into Phase III. To attach a Project Narrative, click “Add Attachment.”

The Project Narrative must include ALL of the following using this outline:

- Title page - Provide company-specific and project information including company name and address, principal investigator, project title, topic number, subtopic letter, and award number.
- Provide a Proprietary Data Legend - if applicable in accordance with [Section VIII C. 16](#) Proprietary Application Information.
- Table of Contents

Significance, Background Information, and Technical Approach

- 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, if the project is successful and is carried over into Phase 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.

- Degree to which Technical Feasibility has been Demonstrated - For Initial Phase II applications, discuss the purpose of your Phase I research, the research carried out, the research findings or results, and your estimate of technical feasibility. In particular, address the degree to which the Phase I objectives have been met. The Initial Phase II application should include all relevant information concerning the research carried out in Phase I. Technical reviewers are not always the same as used in Phase I, therefore, may not be familiar with the Phase I application.
- For Technology Transfer Opportunities, you must include an update on the status of the option agreement with the Research Institution.
- Phase IIA: Please discuss the R&D that was originally proposed for Phase II and the R&D that was or will be completed by the end of Phase II. The scope of work proposed for Phase IIA is limited to completing that originally proposed for Phase II.
- Phase IIB: Please discuss how the originally proposed work for Phase II has or will be successfully completed during the Phase II project period. Also discuss how the proposed Phase IIB R&D builds upon the successful Phase II work to enhance the opportunity for commercialization. If you have completed your Phase II Final Technical Report, you may cite it here and attach it to Field 12 of the RESEARCH AND RELATED Other Project Information form.
- Phase IIC: Please discuss your plans to continue the research conducted in either Phase IIA or IIB and how this will enable you to transition your innovation to commercialization. Also discuss the following information regarding matching funds: (1) the third party providing the matching funds and the amount of funds provided (The matching amount (excluding any fees collected by the SBC) must be equal to the amount of the award); (2) the expectations of the third party for the use of the funds and the expected outcomes; and (3) your plan for expending the funds during the period of performance of the award.
- The Phase II Project
 - Technical Objectives - State the specific technical objectives of the Phase II research and development. If submitting a Phase IIA or IIB application, please clearly indicate the need for additional funding beyond that provided in the initial Phase II award. If submitting a Phase IIC application, please clearly indicate the need for additional funding beyond the first and second Phase II awards.
 - Work Plan - This section should be a substantial part of the technical application. Provide an explicit, detailed description of the Phase II research approach and work to be performed. Indicate what will be done, by whom (SBC, subcontractors, or consultants) where it will be done, and how the work will be carried out, both programmatically and in regards to protection of human health and the environment.
 - Link the work plan to the 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 in Phase III. 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 award, the SBC is to be the primary awardee with overall responsibility for its performance.

- Performance Schedule - Phase II projects are typically for 24 months. Please note that the performance period should cover two budget periods of up to 12 months each; however, the first budget period should be 12 months. Funding for the 2nd budget period will be contingent on the demonstration of adequate progress, evaluation of programmatic priorities, availability of funds, and compliance with the terms and conditions of the award. Please state in this section if the project will be completed in less than 24 months and identify the proposed project length in weeks. Briefly describe the important milestones and the estimated amount of time for completing each task described in the work plan.
- Go/No Go Milestones and Go/No Go Technical Metrics, if applicable - Applications submitted under topics with awards designated as cooperative agreements (see Section III, Eligibility Information) must also include one to four go/no go milestones and/or technical metrics that can be achieved by month nine and reported in month ten. These go/no go milestones and technical metrics should be included in the performance schedule. In addition, a separate table listing just the nine month go/no go milestones and technical metrics should be attached in field 12. A template for this table along with a completed example is available here: <https://science.osti.gov/sbir/Applicant-Resources> . For cooperative agreements, achievement of the go/no go milestones and technical metrics is a requirement for demonstrating adequate progress during the first budget period. The go/no go milestone and technical metric decision and funding decision for the second budget period is distinct from a non-compliance determination.
- Facilities/Equipment - Describe available equipment and physical facilities necessary to carry out the Phase II effort. Equipment is defined in 2 CFR 200.33 as “tangible personal property (including information technology systems) having a useful life of more than one year and a per-unit acquisition cost which equals or exceeds the lesser of the capitalization level established by the non-Federal entity for financial statement purposes, or \$5,000.” Items of equipment to be leased or purchased must be described and justified in this section. 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. SBCs may get credit for obtaining this equipment as an in-kind Phase II commercial contribution as described in section 6 below.

- 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 Phase II awards.
- Consultants and Subcontractors (including Research Institutions for STTR)
 - Research Institution - If the application contains substantial collaboration with a research institution (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 research institution, and the total dollar amount of the subcontract; (2) describe in detail the work to be done by this institution in the Work Plan section; (3) provide a budget and budget justification; (4) and provide 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 application.

The research institution will be considered a subcontractor to the SBC applicant. The research institution must provide a letter of commitment on official letterhead from an authorized representative of the institution which commits the institution to participate in the project as described in the application. The letter should be attached as an “Other Attachment” in field 12, on the Research & Related Other Project Information form. If selected for award, participation of the research institution will be verified by the Contracting Office.

Consultants and Other Subcontractors - Involvement of consultants or subcontractors in the planning and research stages of the project is permitted provided the work is performed in the United States. 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” from an authorized representative of the consultants and/or subcontractors. The letters 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 they have agreed to serve in the manner and to the extent described in the Work Plan section of the application. Each letter 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 award, the Contracting Office will verify the participation of any subcontractors and/or consultants and will require budget and budget justifications for subcontractors and verification of the rates for consultants.

- Note: None of the employees or owners of the applicant SBC may be consultants. None of the employees or owners of the applicant SBC may be employees of a Subcontractor except when the Subcontractor is a Research Institution. Consultants must not be employees of any proposed Subcontractor. SBC personnel cannot be reimbursed with DOE funding as a consultant under the project. SBC personnel cannot be reimbursed with DOE funding as an employee of a Subcontractor except when the Subcontractor is a Research Institution under the project. 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 the award is made.

- Phase II Funding Commitment (Commercial Contribution) [OPTIONAL for Phase II, Phase IIA, or Phase IIB; MANDATORY FOR Phase IIC]
 - While not a requirement to obtain Phase II, IIA, or IIB funding, applicants are encouraged to submit a Phase II commitment from the private sector or non-SBIR/STTR funding sources.
 - Phase IIC: This section should state the source and amount of the matching funds and the planned use of the matching funds. You must ensure that the matching amount (excluding any fees collected by the SBC) must be equal to the amount of the award. Although Phase II award funds (with the exception of commercialization assistance) are to be used solely for research and development, matching funds can be used for research and development or other purposes associated with commercialization of technology developed under the award. Note: do not include matching funds in your budget, budget justification, or SF-424 form. Those forms are only for the research and development funds you are requesting from DOE.
- Phase III Follow-On Funding Commitment [OPTIONAL] - Applicants are encouraged to submit a Phase III follow-on funding commitment. The commitment must indicate when the funds will be made available, and contain specific technical objectives which, if achieved in Phase II, will make the commitment exercisable by the applicant. If the commitment is firm regardless of technical objectives achieved, it should state so. The commitment may include: (1) third party financing; (2) self-financing (in which case the proposing SBC 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 contributions. The Phase III commitment must be submitted with the Phase II 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 the form). [DO NOT USE THIS FIELD] - Include this information, if any, in the project narrative. Do not attach a file in this field.
- Facilities & Other Resources (Field 10 on the form) [DO NOT USE THIS FIELD] - Include this information, if any, in the project narrative. Do not attach a file in this field.
- Equipment (Field 11 on the form) [DO NOT USE THIS FIELD] - Include this information, if any, in the project narrative. Do not attach a file in this field.

OTHER ATTACHMENTS (FIELD 12 ON THE FORM) [MANDATORY]

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” document, provide the information in a single file named “projinfo.pdf.” Click on “Add Attachments” in Field 12 to attach file. See the instructions in the subsections below.

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.”

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 using the standards in Section VIII.A.5 of this FOA.

ADDITIONAL ATTACHMENTS TO FIELD 12 **[MANDATORY]**

Also, attach the following files. Do not attach these to the SF-424, but attach these files to Field 12 of the “Other Project Information” form.

- Phase I Final Technical Report [mandatory for Initial Phase II applications]. If your Phase I project period ends less than 14 days before the Phase II application due date or after the Phase II application due date, you must attach in Field 12 an interim Final Technical Report [mandatory] on your progress to date. Please note that your Phase I Final Technical Report may contain SBIR/STTR data per your Phase I award terms and conditions. However, no company proprietary information should be included in the report. Please refer to the following tutorial that explains the difference between SBIR/STTR data and proprietary information: <https://www.sbir.gov/tutorials/data-rights>.
- Latest Phase II progress report or final technical report [mandatory for Phase IIA, IIB or IIC applications].
- Signed Letter of Phase II Funding Commitment, if applicable.
- Phase III Follow-On Funding Commitment, if applicable.
- Signed Letter of Commitment from any subcontractors (including Research Institutions).
- Letters of Commitment from consultants, subcontractors, or other third parties.
- Level-of-Effort Worksheet (discussed in Section III) 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 attaching it to the application.
- A copy of the SBIR.gov SBC Registration PDF file received from the Small Business Administration (when a Control ID was provided), after the completion of the SBA Company Registration at <http://sbir.gov/registration>.

- Table of Go/No Go Milestones and Technical Metrics, if applicable. Only required for applications for cooperative agreements. See discussion of the Performance Schedule above.

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

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

Principal Investigator and other Key Personnel - The PI is the key individual designated by the applicant to direct the project. Only one PI is acceptable per project and all work must be performed in the United States. See “Restrictions of the Principal Investigator” in [Section III, 6](#).

The principal investigator should be named in the application and be an employee of the small business (or Research Institution for STTR) as of the start date of the award. 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 award. If the person will be joining the small business at a later date to fulfill the research needs, please list them by the position title (E.g. Senior Engineer) only.

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. Sub-awardees and consultants must be included if they meet this definition. For each senior/key person provide a biographical sketch and a list of current and pending support, following the detailed instructions in Section VIII, A.6 of this FOA.

The biographical sketch for each senior/key person must be attached to the “Attach Biographical Sketch” field in each profile.

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.

The current and pending support must be attached to the “Attach Current and Pending Support” field in each profile.

5. Research and Related Budget: [MANDATORY]

Complete the Research and Related Budget form in accordance with the instructions on the form (Activate Help Mode to see instructions) 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 for allowability under the applicable Federal cost principles, and are not prohibited by the funding restrictions in this FOA.

Additional information is found in Section VIII. of this FOA.

Budget Justification (Field K On the Form) BUDGET JUSTIFICATION (FIELD K ON THE FORM): [MANDATORY]

Provide a justification that explains all costs proposed in the budget. The following items of advice are offered to assist you in developing a justification.

- Organize the justification by listing items in the same order as presented on the budget.
- Ensure that the narrative matches the budget in dollar amounts and language.
- Explain the line items. If costs are estimated, provide a basis for the estimate. Explain if costs are based on prior experience of similar activities. If a cost is based on the product of two numbers (such as a number of items at a per-item price), ensure that your math is correct.
- If including an inflationary factor for future budget periods, explain the basis for the inflation. Provide any other information you wish to submit to justify your budget request. Including items in the budget justification is not considered a form of cost-sharing: Provide the details of all personnel (key or other) who will be working on the award, regardless of their source(s) of compensation. Explain their source(s) of compensation if it is not from this award. Include the indirect cost rate agreement as a part of the budget justification.

Attach a single budget justification file for the entire project period in field L.

The file automatically carries over to each budget year.

Additional information is found in [Section VIII](#) of this FOA.

6. R&R Subaward Budget Attachment(s) Forms: [IF APPLICABLE, Budgets for Sub-awardees (including research institutions)]

You must provide a separate SF-424 (R&R) budget and budget justification for each sub-awardee that is expected to perform work. This documentation should be in the same format submitted by the applicant.

Download the R&R Budget Attachment from the R&R SUB-AWARD BUDGET ATTACHMENT(S) FORM and email it to each sub-awardee that is required to submit a separate budget or use the collaborative features of Workspace. After the sub-awardee has emailed 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 sub-awardee's name (plus.pdf) as the file name (e.g., ucla.pdf or energyres.pdf). Filenames must not exceed 50 characters.

You may enter the sub-awardee budget information on a separate budget extracted from the SUB- AWARD BUDGET ATTACHMENT(S) FORM.

If the project involves more sub-awardees than there are places in the SUB-AWARD BUDGET ATTACHMENT(S) FORM, the additional sub-award budgets may be saved as PDF files and appended to the Budget Justification attached to Field K.

Ensure that any files received from sub-awardees are the PDF files extracted from the SUB-AWARD BUDGET ATTACHMENT(S) FORM. Errors will be created if a sub-awardee 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. SBIR/STTR Information Form [MANDATORY]

Complete all the required forms in accordance with the pop-up instructions on the form. Applications that lack the required documents will be administratively declined. The commercialization plan (Question 7) must be prepared in accordance with the instructions in [Section VIII, A.9](#) of this FOA.

8. Disclosure of Lobbying Activities (SF-LLL)

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 agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the grant, you must complete and submit Standard Form - LLL, "Disclosure Form to Report Lobbying."

E. SUBMISSIONS FROM SUCCESSFUL APPLICANTS

If selected for award, DOE reserves the right to request additional or clarifying information including, but not limited to:

- Indirect cost information – If you are proposing indirect costs and do not already have a Negotiated Indirect Cost Rate Agreement (NICRA) or documentation of indirect rates accepted for estimating purposes by DOE or another Federal agency, it is recommended that you begin preparing an Indirect Rate Model (IRM) to be submitted, upon request. For your convenience, IRM templates are available at <https://science.osti.gov/sbir/Applicant-Resources/Grant-Application>;
- 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
- Commitment Letter from Third Parties Contributing to Cost Sharing, if applicable
- Environmental Information
- Consultant documentation/verification of rates.

CERTIFICATIONS AND ASSURANCES

By submitting an application in response to this FOA the applicant certifies that:

- It is not a corporation that has been convicted (or had an officer or agent of such corporation acting on behalf of the corporation 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 Corporation. It includes both for-profit and non-profit organizations.

If selected for award, applicants will be required to sign and submit one or more of the certifications available at <https://science.osti.gov/sbir/Awardee-Resources/Awardee-Documents>. Any forms required will be provided by the DOE Contract/Grants Management Specialist during award negotiation.

F. SUBMISSION DATES AND TIMES

1. Letter of Intent Due Date

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

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

2. Application Due Date

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

Modifications will be accepted if received by the deadline time on the due date. 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.

3. Late Submissions

Delays in submitting letters of intent 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 VII. B.](#) of this FOA (sbir-str@science.doe.gov) no later than 24 hours after the submission deadline to request a late submission.

You are responsible for beginning the submission process in sufficient time to accommodate reasonably foreseeable incidents, contingencies, and disruptions.

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.

Disruptions from the COVID-19 outbreak may impact the ability of eligible applicants to complete planned research and development on existing Phase I or Phase II awards or their ability to prepare applications to this FOA by the submission deadline. Eligible applicants to this FOA may request either (1) a late submission to this FOA that is received on or before May 4, 2021, or (2) permission to submit to the FY 2022 Phase II Release 2 FOA. Requests for these late submissions require justification.

4. Withdrawal of Applications

Applications submitted under this FOA may be withdrawn from consideration by using SC's 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.

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.

SECTION V - APPLICATION REVIEW INFORMATION

A. CRITERIA

1. Initial Administrative Review Criteria

The SBIR/STTR Office will perform an initial review to ensure that the applications meet minimum requirements and include all required forms and documentation as sought in the FOA. If it is determined that the minimum requirements for any application have not been met, the application will be administratively declined and will not undergo merit review.

2. Merit Review Criteria: Initial Phase II Applications:

The Phase II application must contain enough information on progress accomplished under Phase I to enable an evaluation of the project's promise.

DOE plans to make selections for Phase II awards from those applications judged to have the highest overall merit within their technical program area. The review criteria and their weighting are provided below.

STRENGTH OF THE SCIENTIFIC/TECHNICAL APPROACH (1/3)

As evidenced by: (1) the innovativeness of the overall idea and approach for the combined Phase I/Phase II project, (2) the significance of the scientific or technical challenge, and (3) the thoroughness of the presentation.

ABILITY TO COMPETENTLY CARRY OUT THE PROJECT (1/3)

As evidenced by: (1) the qualifications of the PI, other key staff, consultants and subcontractors, if any, and the level of adequacy of equipment and facilities; (2) the soundness and level of adequacy of the work plan to meet the problem or opportunity; (3) with regard to the Phase I objectives, the degree to which Phase I has proven feasibility of the concepts; and (4) the degree to which the DOE investment in the project would be justified by the level of proposed research effort.

IMPACT (1/3)

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. Phase II applications will be evaluated for commercial potential using the Commercialization Plan criteria (see [Section VIII. A. 9](#). How to Prepare a Commercialization Plan for details): (1) Market Opportunity, (2) Company/Team, (3) Competition/Intellectual Property, and (4) Finance and Revenue Model. Each section should be developed with careful analysis of your company's position within the industry and the market opportunity that is enabled by the proposed innovation.

Applications that receive poor commercialization potential reviews may not be eligible for

funding. The key points required for each section are further described below in [Section V.B.](#) “REVIEW AND SELECTION PROCESS.”

3. Merit Review Criteria: Phase IIA Applications

The Phase IIA application must contain information on progress accomplished under Phase II to enable an evaluation of the project's promise.

DOE plans to make selections for Phase IIA awards from those applications judged to have the highest overall merit within their technical program area. The review criteria and their weighting are provided below.

STRENGTH OF THE SCIENTIFIC/TECHNICAL APPROACH (1/3)

As evidenced by: (1) the innovativeness of the overall idea and approach for the combined Phase I/Phase II/Phase IIA project, (2) the significance of the scientific or technical challenge, and (3) the thoroughness of the presentation.

ABILITY TO COMPETENTLY CARRY OUT THE PROJECT (1/3)

As evidenced by: (1) the qualifications of the PI, other key staff, consultants and subcontractors, if any, and the level of adequacy of equipment and facilities; (2) the soundness and level of adequacy of the work plan to meet the problem or opportunity; (3) with regard to the Phase II objectives, the degree to which Phase II has proven the soundness of the technical approach; and (4) the degree to which the DOE investment in the project would be justified by the level of proposed research effort.

IMPACT (1/3)

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, and (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. Phase IIA applications will be evaluated for commercial potential using the Commercialization Plan criteria (see [Section VIII.A.9](#) for details): (1) Market Opportunity, (2) Company/Team, (3) Competition/Intellectual Property, and (4) Finance and Revenue Model. Each section should be developed with careful analysis of your company's position within the industry and the market opportunity that is enabled by the proposed innovation. Applications that receive poor commercialization potential reviews will not be eligible for funding. The key points required for each section are further described below in [Section V.B.](#) “REVIEW AND SELECTION PROCESS.”

4. Merit Review Criteria: Phase IIB Applications

The Phase IIB application must contain information on progress accomplished under Phase II to enable an evaluation of the project's promise.

DOE plans to make selections for Phase IIB awards from those applications judged to have the highest overall merit within their technical program area. The review criteria and their

weightings are provided below.

IMPACT (1/2)

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, and (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. Phase IIB applications will place significant emphasis on the existence of Phase II funding commitments and Phase III follow-on funding commitments. Applicants who lack these commitments are not encouraged to apply. Phase IIB applications will be evaluated for commercial potential using the Commercialization Plan (see [Section VIII.A.9](#). How to Prepare a Commercialization Plan for details): (1) Market Opportunity, (2) Company/Team, (3) Competition/Intellectual Property, and (4) Finance and Revenue Model. Each section should be developed with careful analysis of your company's position within the industry and the market opportunity that is enabled by the proposed innovation. Applications that receive poor commercialization potential reviews will not be eligible for funding. The key points required for each section are further described below in [Section V.B](#). "REVIEW AND SELECTION PROCESS."

STRENGTH OF THE SCIENTIFIC/TECHNICAL APPROACH (1/4)

As evidenced by: (1) the innovativeness of the overall idea and approach for the combined Phase I/Phase II/Phase IIB project, (2) the significance of the scientific or technical challenge, and (3) the thoroughness of the presentation.

ABILITY TO COMPETENTLY CARRY OUT THE PROJECT (1/4)

As evidenced by: (1) the qualifications of the PI, other key staff, consultants and subcontractors, if any, and the level of adequacy of equipment and facilities; (2) the soundness and level of adequacy of the work plan to meet the problem or opportunity; (3) with regard to the Phase II objectives, the degree to which Phase II has proven soundness of the technical approach; and (4) the degree to which the DOE investment in the project would be justified by the level of proposed research effort.

5. Merit Review Criteria: Phase IIC Applications

The Phase IIC application must contain information on progress accomplished through Phase IIA or IIB to enable an evaluation of the project's promise.

DOE plans to make selections for Phase IIC awards from those applications judged to have the highest overall merit within their technical program area. The review criteria and their weightings are provided below.

Phase IIC applicants that do not submit an updated Commercialization Plan are ineligible for award.

IMPACT (1/2)

As evidenced by: (1) the significance of the technical, economic and/or societal benefits of the

proposed work, if successful, (2) the likelihood that the proposed work, and the work accomplished with matching funds, could lead to a marketable product or process, and (3) the likelihood that the project could attract further development funding after the SBIR project ends, (4) the expectations of the third party investor providing the matching funds, and (5) the appropriateness of the data management plan for the proposed work. Phase IIC applications require the existence of Phase II matching fund commitment; applicants who lack a Phase II matching funds commitment are ineligible to receive Phase IIC awards. Phase III follow-on funding commitments are also strongly encouraged. Phase IIC applications will be evaluated for commercial potential using the Commercialization Plan (see [Section VIII A. 9. How to Prepare a Commercialization Plan](#) for details): (1) Market Opportunity, (2) Company/Team, (3) Competition/Intellectual Property, and (4) Finance and Revenue Model. Each section should be developed with careful analysis of your company's position within the industry and the market opportunity that is enabled by the proposed innovation. Applications that receive poor commercialization potential reviews will not be eligible for funding. The key points required for each section are further described below in [Section V.B. "REVIEW AND SELECTION PROCESS."](#)

STRENGTH OF THE SCIENTIFIC/TECHNICAL APPROACH (1/4)

As evidenced by: (1) the innovativeness of the overall idea and approach for the combined Phase I/Phase II/Phase IIA or IIB/Phase IIC project, (2) the significance of the scientific or technical challenge, and (3) the thoroughness of the presentation.

ABILITY TO COMPETENTLY CARRY OUT THE PROJECT (1/4)

As evidenced by: (1) the qualifications of the PI, other key staff, consultants and subcontractors, if any, and the level of adequacy of equipment and facilities; (2) the soundness and level of adequacy of the work plan to meet the problem or opportunity; (3) with regard to the Phase II objectives, the degree to which Phase II has proven soundness of the technical approach; and (4) the degree to which the DOE investment in the project would be justified by the level of proposed research effort.

6. Program Policy Factors

The Selection Official may consider program balance of funds distribution, needs of the technical programs, and the applicant's performance under prior DOE SBIR/STTR awards including timely submittal of all reports.

B. REVIEW AND SELECTION PROCESS

1. Merit Review

Phase II 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 significant weaknesses identified with respect to any of the three evaluation criteria, 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. In addition, Phase IIB applications

will be considered candidates for funding only if they receive the highest rating for the impact criterion.

2. 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. Selections are made from this ranked list until the program's SBIR/STTR Phase II budget is exhausted. The Selection Official may also consider program balance of funds distribution, needs of the technical programs, and the applicant's performance under prior DOE SBIR/STTR awards including timely submittal of all reports as Program Policy Factors.

3. Discussions and Award

The Government may enter into discussions with a selected applicant for any reason deemed necessary, including but not limited to: (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; 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.

4. Review of Risk

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

- Technical merit of the application,
- Reports and findings from audits performed under 2 CFR 200 or 2 CFR 910,
- Systems maintained under 2 CFR 180, and
- Information available through any OMB-designated repositories of government-wide eligibility qualification or financial integrity information as appropriate.

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

C. ANTICIPATED NOTICE OF SELECTION AND AWARD DATES

DOE anticipates sending notice of selection on July 12, 2021 and the anticipated award start date is August 23, 2021. Applicants for second or third Phase II awardees whose period of performance (without additional extensions) extends beyond August 23, 2021 will have award start dates commensurate with the end of their budget period but no later than September 30, 2021.

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 award, the terms of the award shall control.

1. Notice of Selection

The SBIR/STTR Programs Office will notify all applicants of the outcomes of award selections via email.

2. Notice of Award

An Assistance Agreement issued by the Contracting Officer is the authorizing award document. The initial funding Assistance Agreement normally includes, either as an attachment or by reference: 1. Special Terms and Conditions; 2. General Terms and Conditions for DOE SBIR and STTR awards; 3. Application as approved by DOE; 4. National Policy Assurances to be incorporated as award terms; 5. Budget; 6. Federal Assistance Reporting Checklist and Instructions; and 7. Regulations at 2 CFR 200 as amended by 2 CFR 910.

TERMS AND CONDITIONS

The 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.

The standard DOE financial assistance intellectual property provisions applicable to various types of recipients are located at:
<https://energy.gov/gc/standard-intellectual-property-ip-provisions-financial-assistance-awards>

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](#)

Statement of Substantial Involvement

Cooperative agreements may be awarded under this FOA. DOE will provide a Statement of Substantial Involvement prior to award, similar to the example provided below.

Statement of Substantial Involvement (SSI)

The U.S. Department of Energy (hereinafter “DOE”) and Awardee enter into a Cooperative Agreement (“Agreement”) for the purpose of conducting a two year mutually agreeable research project.

Therefore, in accordance with the Financial Assistance Regulations contained in 2 CFR 200 as amended by DOE’s Financial Assistance Regulations at 2 CFR 910, the following statements describe the anticipated substantial involvement between DOE and the Awardee under the Agreement.

A. PROJECT INVOLVEMENT

A.1. DOE ROLES AND RESPONSIBILITIES:

Substantial involvement of DOE is required to assure success in meeting the overall objectives of the project.

A.2. RECIPIENT ROLES AND RESPONSIBILITIES: Awardee shall provide all personnel, facilities, equipment, supplies and services, and otherwise do all things necessary for, or incident to, conducting the project. Awardee is responsible for the overall management of the effort necessary for timely and professional execution of the project, and for coordination with other participants and collaborators in conjunction with guidance from the DOE Program Manager.

B. TECHNICAL DIRECTION

B.1. DOE ROLES AND RESPONSIBILITIES: DOE may provide technical direction to Awardees as follows: (1) redirect the work effort; (2) shift work emphasis between work areas or tasks; (3) require pursuit of certain lines of inquiry; and/or (4) fill in details or otherwise provide technical guidance to Awardee in order to accomplish the tasks and requirements stated in the financial assistance application incorporated into this Agreement. To be valid, technical direction must be issued in writing. Technical direction may not: (1) constitute an assignment of additional or different work outside the tasks and requirements stated in the financial assistance application incorporated into this Agreement; (2) in any manner cause an increase or decrease in the total estimated project cost or the time required for project performance; (3) change any of the expressed terms and conditions of the Agreement; or (4) accept non-conforming work.

DOE will actively monitor Awardees's project. DOE may actively collaborate with the Awardee.

B.2. RECIPIENT ROLES AND RESPONSIBILITIES: Awardee shall proceed promptly with the performance of technical directions duly issued by the DOE Program Manager in the manner described in B.1. DOE ROLES AND RESPONSIBILITIES, above, and which are within the DOE Program Manager's authority. Awardee shall immediately cease performance of any technical direction upon receipt of a written instruction to that effect from the Grants/Agreements Officer. If, in the opinion of Awardee, any technical direction issued by the DOE Program Manager is not within the authorities defined in B.1. DOE ROLES AND RESPONSIBILITIES, above, Awardee shall not proceed but shall notify the Grants/Agreements Officer in writing within 5 working days after the receipt of any such technical direction and shall request the Grants/Agreements Officer to rescind such direction or mutually agree to modify the Agreement accordingly. The Grants/Agreements Officer shall have the authority to make the final determination with respect to technical direction. If Awardee disputes the determination and cannot informally resolve the dispute with DOE, Awardee shall follow the procedures set forth in 2 CFR 910.128. The only persons authorized to give technical direction to Awardee under this Agreement are the Grants/Agreements Officer and any DOE Program Manager as listed in Block 15 of the Assistance Agreement. Any action taken by Awardee in response to any direction given by any person other than the Grants/Agreements Officer or DOE Program Manager shall not be binding upon the Government.

DURATION OF SUBSTANTIAL INVOLVEMENT: The substantial involvement by DOE under this Agreement will remain for the term of the Agreement unless otherwise amended. Moreover, this Statement of Substantial Involvement by DOE does not increase DOE's liability under this Agreement.

C. REPORTING

Reporting requirements are identified on the Federal Assistance Reporting Checklist and Instructions DOE F 4600.2, attached to the SBIR or STTR award agreement. The current version of the checklist will be available at: <https://science.osti.gov/sbir/Awardee-Resources/Awardee-Documents>. Please review the checklist carefully as requirements have recently changed.

Final technical reports are a 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 in accordance with the award terms. The data protection period extends from the date the SBIR/STTR award is issued 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 [e.g. 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].

D. 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 USC 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 2 CFR 200.206 Federal awarding agency review of risk posed by applicants.

SECTION VII - QUESTIONS/AGENCY CONTACTS

A. QUESTIONS

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.

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 on the cover of this Announcement. Please contact the PAMS help desk for technological issues with the PAMS system.

Questions regarding the specific program areas and technical requirements may be directed to the technical contacts listed for each program within the FOA or below.

B. AGENCY CONTACTS

Grants.gov Customer Support	800-518-4726 (toll-free) support@Grants.gov
PAMS Customer Support	855-818-1846 (toll-free) 301-903-9610 sc.pams-helpdesk@science.doe.gov
Program Manager Scientific Contact	Carl Hebron 301-903-5707 sbir-sttr@science.doe.gov

C. DEPARTMENT OF ENERGY, 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 <https://www.energy.gov/ig/ig-hotline>.

SECTION VIII - SUPPLEMENTARY MATERIAL

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

- 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.

Note: Each Phase IIA, Phase IIB and/or Phase IIC application you submit must have the same title, topic, and subtopic as your 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>

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>

5) *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 IV.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 F4260.1.

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/>.

Initial Phase II applicants may request funding of up to \$1,100,000 (or up to \$1,600,000 if designated in the Phase I topic header) for up to 24 months over two budget periods. Phase IIA, IIB, or IIC applicants may request up to \$1,100,000. The first budget period should cover a period of 12 months. Funding for the second budget period will be contingent on the demonstration of adequate progress, evaluation of programmatic priorities, availability of funds and compliance with the terms and conditions of the award. The amount budgeted for the first 12 month budget period should not exceed 50% of the total budget. If an applicant requires more than 50% of the total budget during the first 12 month budget period, a thorough explanation is required in the budget justification, and is subject to DOE approval.

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.

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 commercialization assistance to all DOE SBIR and STTR Phase II awardees. Recipients have two options for receiving commercialization assistance: (1) utilize services provided by a DOE vendor or (2) identify their own commercialization assistance provider(s).

If you wish to receive commercialization assistance from a DOE vendor, you do not need to include this in your budget. If you receive a Phase II 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 commercialization assistance 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 \$50,000 per project. The total amount of Phase II assistance that a company may receive during a fiscal year is subject to Small Business

Administration policy per the statute. Please note that the commercialization assistance does not count toward the maximum award size listed in [Section II.C.](#); e.g., seeking commercialization assistance from your provider could result in a maximum award in the amount of \$1,150,000 for topics that specify a maximum award amount of \$1,100,000.

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 commercialization assistance. 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

Third party vendors or a federal entity issuing patents, certifications or regulatory approvals, must be used when spending commercialization assistance 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 a commercialization assistance 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>
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<p>Section B Other Personnel</p>	<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. 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>
<p>Section C Equipment</p>	<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>
<p>Section D Travel</p>	<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>
<p>Section E Participant/Trainee Support Costs</p>	<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. Indicate the basis for the cost estimate (quotes from vendors or suppliers, past experience of similar items, or some other basis).</p>

<p>Section F Other Direct Costs</p>	<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. Indicate 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, 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). • 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.
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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 also 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 field 15.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]

Your Commercialization Plan narrative cannot exceed 15 pages. This page limit does not include return on investment and net present value worksheets, pro forma worksheet, and Letters of Support, which must be appended to the commercialization plan narrative. Your Commercialization Plan must be uploaded to field 7 as a single document. This information will be evaluated and considered part of the score for the “Impact” criterion discussed in [Section V](#). Phase IIC applicants must submit an updated Commercialization Plan.

DOE recognizes that each innovation requires a varied strategy to generate returns on invested capital and that no two businesses are exactly alike. Therefore, DOE supports a broad array of commercialization strategies. Each strategy requires varied emphasis on the parts of the plan depending on your innovation and the market landscape. For instance, the strategy and mechanisms for leveraging and protecting intellectual property (IP) vary according to industry and innovation

The Commercialization Plan is your roadmap for the future and should convey how you plan to generate profits from your innovation. It should represent a compelling vision that describes a unique business opportunity that could be addressed with continued support from Phase II funding. The depth and quality of the analysis within your Commercialization Plan is a critical element of the DOE SBIR/STTR application review.

Please Note: All assumptions and estimates provided should be clearly stated as such and evidence of validation should be provided in a footnote. Where you provide numerical data (e.g. market size, price, etc.) or data about customer needs, market forces, barriers to entry and the

like, you should indicate the source of the data using footnotes. Market research reports, articles by experts in trade publications or professional journals, interviews, focus groups, surveys, are among commonly used sources of data.

The following four sections must be addressed in your Commercialization Plan using a narrative format. Do not submit your Commercialization Plan in a question and answer format:

Market Opportunity

- a) Describe succinctly what product or service you are planning to deliver based on your innovation.
 - Identify your target customer(s) providing generally known examples.
 - Describe the critical needs that your product or service will fulfill for your customer(s) (i.e. these can be current or emerging).
 - How does the target customer(s) currently meet the need that you are addressing and what do they pay to meet the need?
 - What is/are your customer(s) willing to pay for your product or service? How have you validated this assumption?
 - What features of your product or service will allow you to provide a compelling value proposition? How have you validated the significance of these features? State the value proposition for your product or service.
- b) Address Market Opportunity
 - What is the current size of the broad market you plan to enter? How large is your “niche” market opportunity, in terms of either numbers of customers or revenues? (If you use number of customers, estimate revenues based on the anticipated selling price of your product or service.)
 - Is the target market domestic, international, or both?
 - What are the growth trends for the market and the key market drivers that will affect whether customers will buy your product or service?
 - What barriers to entry exist in this market which will inhibit sales of your product or service?
- c) Describe the channels you would employ to reach the targeted customer.
- d) What business model will you adopt to generate revenue from your innovation?
 - Will you make and sell? License? Form a strategic alliance with a company already in the industry? Use a different model?
 - Explain why this model makes sense for the market opportunity described.
- e) If there are potential societal, educational, or scientific benefits beyond commercial considerations that will generate goodwill for your company or the product or service, they should be included here and explained in sufficient detail to convey the significance of the effort.

Company/Team

- a) Provide a short description of the origins of the company.
- b) What type of corporate structure is in place?
- c) What is the current capitalization and is it sufficient for implementing your

Commercialization Plan?

- d) What is the revenue history for the past three years? What is your anticipated revenue history through Phase II? Provide a table with percentages or sums of operating capital or revenue: product sales, consulting/services, license revenues, research and development grants/contracts, and others.
- e) What is the current employee count?
- f) Give a brief description of the experience and credentials of the personnel responsible for taking the innovation to market and clarify how the background and experience of the team enhance the credibility of the Commercialization Plan.
- g) What specific experience does the team lack and how will this be addressed during the Phase II effort and beyond? From what additional resources do you have commitments to address these limitations e.g., Board of Directors, technical advisors, or retained legal counsel? Please provide details on names, affiliations, and expertise of these resources.

Competition/Intellectual Property

- a) Describe currently existing products or services that are found in the patent literature (and if relevant, copyright and trademark literature) or that is emerging from research or R&D which may be substitutes for your product or service.
 - How does your product or service match up to these substitutes in terms of the needs customers are seeking to meet?
 - Who is developing, making, and selling those products or services and what do you anticipate the competitive landscape to look like when you get to market?
- b) Describe IP rights you have secured for your technology to date and if any procedures are underway to expand or enhance the protection provided by those rights. Please describe your actions to protect these rights.
- c) Describe which IP is closest and which is most threatening to your “freedom to operate” and how you are different enough to be able to secure your freedom to operate.
- d) What other IP will you need to secure rights to make, use, or sell in order to address the market opportunity described above?

Finance and Revenue Model

- a) Describe an appropriate staged finance plan given the market opportunity. Outline the level of funding required for each stage along the path to commercialization.
 - What are your costs to complete research and development, product, and production development/design/engineering, and to produce the product or service?
 - What are the costs required to implement your commercialization strategy?
 - How will you access the appropriate funds?
- b) Provide a table with anticipated costs identifying the anticipated source of each detailing revenues or other operating capital you can devote to these. If there is a shortfall, explain how you will raise or access the appropriate funds. If no additional cash is needed explain why you are confident that is the case.
- c) Provide specific contacts, leads, previous relationships, and agreements already in place. Are any other commitments in place which will affect your ability to raise Phase III follow-on funding?

- d) Provide an estimate of the DOE Return on Investment (ROI) or Net Present Value (NPV) for this project. A template for estimating ROI is provided at the DOE SBIR/STTR Programs Office web site at <http://science.energy.gov/sbir/applicant-and-awardee-resources/>. This estimate should incorporate the profit before taxes (positive cash flow) for the first 10 years of commercialization and treat the DOE SBIR or STTR funding as an investment (negative cash flow). Describe the revenue streams (licensing, product sales or other) associated with your Commercialization Plan. When do you anticipate “first revenues” from each stream? When do you expect to reach “break even”? To help project NPV, please refer to following worksheets on the DOE SBIR/STTR Programs Office web site at <https://science.osti.gov/sbir/Applicant-Resources/Grant-Application>.
- e) Provide annual pro formas for the next five years (two years of the Phase II effort + three years post Phase II). Income Statements are required. Cash Flow and Balance Sheets may be included if they are considered critical for your strategy. If not included, Cash Flow and Balance Sheets should be made available, upon request from DOE.

Please Note: You must indicate the assumptions and estimates being made in this part of your application and clearly state the source of the data you have used to validate these assumptions or as a basis for making assumptions or estimates. You must also indicate the source for any numerical or other hard data provided, such as market size, price, market drivers, and barriers to entry. Evaluate the competitive advantages of this technology vs. alternate technologies that can meet similar market needs.

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 4 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.
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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.

12. How to Request a Diversity Supplement

Only DOE SBIR and STTR awardees that received a Phase II award under FOA (#DE-FOA-0002380) are eligible to apply for an administrative diversity supplement to be effective only in the summer months of their Phase II second year project period as outlined below.

PURPOSE

The purpose of an administrative Phase II supplement is to improve the diversity of the research workforce by recruiting and supporting undergraduate and graduate students from groups that have been shown to be underrepresented in federal SBIR/STTR research programs.

Fostering diversity by encouraging the participation of individuals from nationally underrepresented groups in the scientific research workforce is a longstanding interest of Congress, and a key component of the DOE SBIR/STTR outreach strategy to identify, develop, support, and maintain the quality of its scientific workforce. Similarly, fostering and encouraging participation by women and socially and economically disadvantaged individuals are equally critical to the success of the SBIR and STTR programs. Scientists, engineers, and entrepreneurs from underrepresented backgrounds and life experiences bring different perspectives, creativity, and individual enterprise to address complex scientific problems.

This administrative supplement is designed to provide support for research and entrepreneurial

experiences for individuals from the identified groups throughout the continuum from undergraduate to the graduate level. Continuation of this program in the future will depend on evaluation of the career outcomes of the supported individuals as well as continuing assessments of the diversity of the small business programs by the U. S. Small Business Administration and the National Academies.

In all cases, the proposed research experience must be an integral part of the approved ongoing research of the eligible DOE Phase II award and must have the potential to contribute to the research and entrepreneurial career development of the candidates.

CANDIDATES

SBCs are encouraged to identify women, individuals from nationally underrepresented groups, and/or individuals meeting the SBA definition of socially and economically disadvantaged (<https://www.sba.gov/contracting/government-contracting-programs/8a-business-development-program/eligibility-requirements/social-disadvantage-eligibility>).

Members of designated underrepresented groups include:

- Black Americans;
- Hispanic Americans;
- Native Americans (Alaska Natives, Native Hawaiians, or enrolled members of a Federally or State recognized Indian Tribe);
- Asian Pacific Americans (persons with origins from Burma, Thailand, Malaysia, Indonesia, Singapore, Brunei, Japan, China (including Hong Kong), Taiwan, Laos, Cambodia (Kampuchea), Vietnam, Korea, The Philippines, U.S. Trust Territory of the Pacific Islands (Republic of Palau), Republic of the Marshall Islands, Federated States of Micronesia, the Commonwealth of the Northern Mariana Islands, Guam, Samoa, Macao, Fiji, Tonga, Kiribati, Tuvalu, or Nauru); and
- Subcontinent Asian Americans (persons with origins from India, Pakistan, Bangladesh, Sri Lanka, Bhutan, the Maldives Islands or Nepal)

Undergraduate Students: As part of this supplement program, undergraduate students who have a demonstrated interest in or desire to pursue science, technology, engineering, or math (STEM) training and entrepreneurship, may participate in a Phase II research project during the summer months. This experience is separate from any requirement of the regular academic program. Any eligible undergraduate student interested in STEM research and entrepreneurship is encouraged to participate in this program.

Baccalaureate and Master's Degree Holders: This supplement will provide opportunities for baccalaureate or master's degree holders who have demonstrated an interest in and wish to pursue science, technology, engineering, or math (STEM) training and entrepreneurship. Students who plan to attend engineering and professional schools are encouraged to use this program to gain research and entrepreneurial experience.

Graduate Students: The objective of this program is to support graduate students in STEM fields who wish to develop their research and entrepreneurial capabilities.

The duration of the program is normally 10 weeks.

This supplement program is limited to citizens or non-citizen nationals of the United States or individuals who have been lawfully admitted for permanent residence in the United States.

CONTENT AND FROM OF APPLICATION SUBMISSION

It is critical that applicants follow the instructions for their diversity supplement request. Conformance to documented requirements is required and strictly enforced. Applications that are out of compliance with these instructions may be delayed or not accepted for review. Please visit the DOE Office of SBIR/STTR Programs website for the required budget forms documentation, under “Awardee Resources” at <https://science.osti.gov/sbir/Awardee-Resources>.

SALARY, BUDGET, TERMS AND CONDITIONS

All DOE diversity supplements are subject to the terms and conditions, cost principles, and other considerations described in the DOE SBIR/STTR Specific Terms and Conditions that accompany every Phase II award. Application budgets are limited to no more than \$10,000 and must reflect the actual needs of the proposed project. DOE will consider whether the budget and the requested period of support are fully justified and reasonable in relation to the proposed Phase II research. The request of up to \$10,000 for a ten-week internship will supplement and may exceed the maximum Phase II topic award amount. This program does not require cost sharing.

Undergraduate Students: The salary for an undergraduate student should be consistent with SBC salary policies. Rates for undergraduate salary that exceed \$12 per hour must be justified. An additional amount of \$200 per month for supplies and travel may also be requested. Students are expected to devote the equivalent of at 10 weeks of full-time effort to the research project and related activities in a one year period. Exceptions to these requirements will be considered, depending on the circumstances of the Phase II grant circumstances warranting the specific request.

Baccalaureate and Master's Degree Holders: The salary for baccalaureate and master's degree holders should be reasonable and consistent with the SBC salary policies and cannot exceed the compensation allowed for graduate students. Additional funds up to \$1,000 per year may be requested for supplies and travel.

Graduate (Predoctoral) Students: The DOE will provide salary support in addition to other necessary expenses, such as supplies and travel, to enable the individual to participate as a graduate research assistant in a funded research project. DOE will provide compensation that (1) conforms to the established, consistently applied salary and wage policies of the SBC and (2) reflects the percentage of time devoted to the DOE-funded project. Additional funds up to \$1,000 per year may be requested for supplies and travel.

REVIEW AND SELECTION PROCESS

The diversity supplements are not peer reviewed. All diversity supplement requests will undergo

an administrative evaluation and approval process by a DOE program manager.

DOE program managers will review requests for supplements to determine merit with respect to overall impact on diversity and entrepreneurship. Following program manager review and selection of Phase II diversity applications, the selected candidates will remain conditionally approved until the DOE program manager formally approves the associated Phase II project's second year funding. Once this occurs, you will be notified of final approval of your diversity supplemental application. Please note, when submitting a request for a diversity supplement, you must submit a candidate, by name, as well.

The DOE will not accept "To-Be-Determined" applications or those without a named candidate.

Only the administrative review criteria described below will be considered in the supplemental review process:

- The strength of the description of how this particular appointment will promote diversity in small business, particularly with regards to entrepreneurship.
- The qualifications of the candidate including career goals, prior research training, research potential, and any relevant experience.
- Evidence that the proposed experience will expand and foster the research and entrepreneurial capabilities, knowledge, and/or skills of the candidate.
- Evidence that the activities of the candidate will be an integral part of the project.
- Evidence that the candidate will receive research and entrepreneurial career mentoring.
- The plan and timeline for the proposed research and career development experiences in the supplemental request and its relationship to the Phase II award.

HOW TO REQUEST A DIVERSITY SUPPLEMENT

The request for an administrative diversity supplement must be submitted by the Phase II awardee in an email to the DOE Office of SBIR/STTR Programs email address at sbir-sttr@science.doe.gov no later than December 4, 2021. You will be notified of final DOE selections by mid-January 2022.

The Phase II Business Official and Principle Investigator from the award must be included on the email and the email must follow the following requirements and documentation. Please visit the DOE Office of SBIR/STTR Programs website at <https://science.osti.gov/sbir/Awardee-Resources> for document templates.

- Subject Line: Diversity Supplement Request for DOE Award # [Award Number]
- Pdf Attachment: (Please refer to the DOE Office of SBIR/STTR Programs website at <https://science.osti.gov/sbir/Awardee-Resources> for the acceptable template to be saved as one

.pdf attachment). The attachment will constitute the diversity supplement application and include:

- A header with Award Number, Company Name, Business Official Name, and PI Name.
- Candidate's full name

- Address of Primary Site where the proposed supplement activities will be performed. The supplemental activities must principally take place at the small business. Applications that request supplemental funding for activities that occur principally at a subawardee location will be declined. If a portion of the proposed supplement activities will be performed at any other sites, identify all locations.
- Diversity Justification: Address the six (6) review criteria listed above in two (2) pages or fewer and provide evidence to support a focus on the enhancement of the research and entrepreneurial capability of the underrepresented intern and how that experience is intended to provide opportunities for development as a productive researcher or future small business leader.
- Research Plan: In one (1) page, please include a research and mentoring plan for the candidate intern to interact with other individuals on the Phase II award, to contribute intellectually to the research, and to enhance his/her research skills and knowledge regarding the selected area of R&D along with business and entrepreneurship.
- Using the budget forms provided on the website ([https://science.osti.gov/sbir/Awardee- Resources](https://science.osti.gov/sbir/Awardee-Resources)), please provide a budget and a separate abbreviated budget justification showing the amount requested and how the funds will be used.
- Intern Biographical Sketch and/or resume (should not exceed 1 page) that includes:
 - Evidence of STEM achievement and entrepreneurial interest
 - Any source(s) of current funding
 - A statement from the candidate outlining his/her research objectives and career goals

REPORTING

Reporting requirements will be specified in the terms and conditions of award as applicable to the supplemental activities.

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. See [Section IV.D.](#), Phase II Funding Commitment (Commercial Contribution) [OPTIONAL for Phase II, Phase IIA, or Phase IIB; MANDATORY for Phase IIC] and Phase III Follow-On Funding Commitment [OPTIONAL] and the review criteria in [Section V.A.](#), Criteria.

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

Funds will be allocated over the two budget periods. Funding for the 2nd budget period will be contingent on the demonstration of adequate progress, evaluation of programmatic priorities, availability of funds and compliance with the terms and conditions of the award.

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

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> and 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 award terms available at

<https://www.energy.gov/sites/prod/files/2019/10/f67/Genl%20TC%20for%20SBIR%20STTR%20-%20FINAL%20-%20May%202019.pdf>

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 that anyone exclusively licensed to sell must normally manufacture it domestically. Information regarding patent rights

is available at

<https://www.energy.gov/sites/prod/files/2019/10/f67/Genl%20TC%20for%20SBIR%20STTR%20-%20FINAL%20-%20May%202019.pdf>

With justification, Commercialization and Technical Assistance funds may be used to pay 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

Not applicable.

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. Matching funds are required for Phase IIC applications and must be expended during the period of performance of the award. See [Section IV.D.](#), Phase II Funding Commitment (Commercial Contribution) [OPTIONAL for Phase II, Phase IIA, or Phase IIB; MANDATORY FOR Phase IIC].

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 Reporting Requirements Checklist 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.fsr.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)(1) 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.
- Owned and controlled by one or more U.S. citizens
- 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 of which inures to the benefit of 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.
- Research institutions may include government-owned, government-operated facilities. However, for this FOA, the National Energy Technology Laboratory (NETL) may not participate as a research institution on topics issued by the Office of Fossil Energy.

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 (<https://science.osti.gov/sbir/Funding-Opportunities/FY-2019>).

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.

- DOE R&D Project Summaries (<https://energy.gov/search/site/DOE%20R%26D%20Project%20Summaries>), a searchable database of descriptions of approximately 22,000 ongoing or recently completed DOE research projects.
- 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.
- Science Conferences (<https://www.osti.gov/scienceconferences>), a portal providing a unified search of 26 web sites for science and technology conference proceedings and conference papers of interest to DOE.
- 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>.